Faculty of Health Sciences
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A mixed methods study of drug use at outdoor music festivals in Western Australia and Victoria

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Author's Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number #HR144/2015

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[Date]

Abstract

Background. Outdoor music festivals (herein termed 'festivals') have become increasingly popular in Australia and internationally, particularly those with a focus on electronic dance music. Since their emergence, these events have been consistently identified as popular contexts for alcohol and other drug use, and in recent years have been linked to drug-related deaths. These deaths have led to increasing concern about the risk of future drug-related harm, but contention about how to respond effectively. While festivals have been identified as a high-risk context for drug-related harm, there exists a dearth of research focused on drug use, drug-related harm and harm reduction strategies at these events that can inform interventions.

Aims. This study aimed to: (1) investigate the nature and extent of drug use (including alcohol) associated with festivals; (2) assess current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm at festivals; and (3) develop recommendations aimed at improving current strategies in Australia.

Methods. A pragmatic mixed-methods approach was employed, involving three stepped phases: (1) qualitative interviews with 29 key informants (KIs) and 20 regular festivalgoers ('pre-survey interviews'); (2) an anonymous online survey of 1967 festivalgoers; and (3) qualitative interviews with 15 KIs and 10 regular festivalgoers ('post-survey interviews'). Festivalgoer interviews were conducted via online instant messaging through an encrypted application, while KI interviews were conducted via telephone or an online survey alternative. Thematic analyses of the qualitative interviewee data were used to inform, complement and interpret descriptive statistical analyses of the core data collected from the quantitative online questionnaire. Although this was not a theory-driven project, 'risk/enabling environment' theory and 'assemblage' theory were considered throughout different phases of this project.

Results. Sixty-two per cent of survey participants reported using an illicit drug at the last festival they attended (ecstasy/MDMA=51%). Almost all (96%) believed illicit drug use was a normal feature of attending festivals. Polydrug use (excluding tobacco) was reported by most respondents who used a drug (68%). Pre- and post-festival drug use was very common, with a third of ecstasy users reporting use before arriving and a fifth after leaving. Almost half (48%) of those who used ecstasy pills reported 'double dropping' (i.e. simultaneously consuming ≥ 2 pills).

Most respondents reported actively seeking information about drug content and engaging in a variety of other practices they believed would reduce health risks. For example, over half obtained peer reviews, almost a tenth reported using a reagent testing kit, and half those who used pills reported visiting the Pill Reports website. Of those who used illicit drugs at their last festival, almost three-quarters reported carrying their drugs in, a fifth had someone else carry drugs in for them, and a quarter organised and/or obtained drugs inside the festival. One in 10 females who carried drugs in, reported concealing them internally. Additionally, five respondents who carried drugs in reported swallowing concealed drugs to retrieve once inside the festival. There were indications of high illicit drug demand and supply inside festivals. For example, 78% of survey participants thought it would have been easy to obtain illicit drugs at the last festival attended, and 18% reported supplying illicit drugs in some form.

Unsurprisingly, the most commonly reported motives for using ecstasy were fun (87%), to enhance the music (80%), to increase energy (71%) and to enhance social interaction (60%). In-depth interviews also revealed a strong preference for the effects of ecstasy over alcohol, particularly in festival settings where the drug was perceived as better suited (in terms of psychoactive effects and convenience). Most reported a variety of positive drug-related effects, and the experience of moderate to severe negative effects was rare (3% moderate, 1% severe).

Few who experienced moderate to severe effects reported seeking onsite medical attention (4%). Concerningly, 24% of respondents who used illicit drugs reported they would have felt uncomfortable accessing onsite medical support. The main barriers to seeking help were fear of legal issues (65%), negative treatment (46%), parents being notified (39%) and others seeing/embarrassment (31%). While most respondents observed key harm reduction strategies such as first aid and free water at their last festival (each 82%), fewer observed drug safety messages (17%) and reports of difficulties were common. For example, a third reported difficulty accessing toilets, a quarter reported difficulty accessing shade and free water, a fifth felt uncomfortable due to overcrowding, and 3% needed help but didn't know where to go.

Very few respondents (4%) reported that the expected presence of drug detection dogs deterred them from using illicit drugs. Rather, the expected presence of dogs resulted in a variety of alternative responses to avoid detection, including concealing drugs well (48%), getting someone else to carry drugs (15%), buying drugs inside the festival (11%), taking less easily detected drugs (10%) and taking drugs before entering (7%). Moreover, of

respondents who had drugs on their person when they saw a drug detection dog, 10% reported consuming them immediately.

Eighty per cent of survey respondents reported that they would have accessed a drug testing service had one been available to them for the last festival attended. When presented with the hypothetical scenario of a test result indicating their drugs' content was not what they expected, 19% reported they would not consume them under any circumstances, and a further 55% reported they would not consume them if they contained something dangerous. There were mixed views on likelihood of discarding drugs in drug amnesty bins if concerned about detection. The most common barriers to doing so were not wanting to waste the money (80%) or effort (40%) spent getting the drugs. Legal concerns were also common (29%). Multivariable analyses revealed younger people were less likely to discard drugs in amnesty bins when concerned about detection and more likely to still use drugs despite being advised they contained something very dangerous. Lastly, the analysis revealed strong support for harm reduction strategies, and low support for and perceived efficacy of zero-tolerance policies and associated punitive strategies.

Conclusions. Illicit drug use and polydrug use were majority behaviours among the festivalgoers sampled, and there were strong indications that illicit drug use was normalised at festivals. However, most drug-related experiences were positive and the experience of significant adverse effects was rare. Nevertheless, the results of this study suggest that to address potentially high levels of illicit drug use, and the risk of future drug-related harm in these settings, interventions should be improved and expanded. Priority areas include: expanding and evaluating drug-checking services; ceasing the use of drug detection dogs; targeted efforts to remove barriers to seeking medical attention; shifting to a harm reduction policy; creating more enabling festival environments for harm reduction ('risk/enabling environment' theory and 'assemblage thinking' should be considered); and channelling festivalgoer enthusiasm for harm reduction into more validated efforts of self-care.

Statement of Contributors

PhD Scholar

Jodie Grigg conceptualised and completed this research project from beginning to end. With close guidance from her supervisors, she designed the study, developed all survey instruments, and carried out recruitment of participants, data collection and data analysis, for all phases of the research. She was responsible for writing this thesis, with editorial input from her supervisors and a professional editor (see below). She was also responsible for writing both published journal articles, with input from her supervisors who are co-authors.

Supervisors

Professor Simon Lenton was the primary PhD supervisor and provided close guidance from the very beginning to the very end of this research. Professor Lenton helped design the study, provided guidance during development of survey instruments, recruitment, data collection and data analysis, and reviewed multiple thesis drafts. He also co-authored both published journal articles.

Dr Monica Barratt contributed as PhD co-supervisor and also provided close guidance from the very early planning phases to the very end of this research. Dr Barratt also helped design the study, provided guidance during development of survey instruments, recruitment, data collection and data analysis, and reviewed multiple thesis drafts. She also co-authored both published journal articles.

Professional editing

Dr Campbell Aitken provided professional editing services for this thesis in accordance with the Institute of Professional Editors' *Guidelines for editing research theses*.

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Finally, sorry to everyone in my life who I have neglected over these past five years, but thank you for your unwavering understanding, patience and support. I'm back ☺

Dedication

This thesis is dedicated to all the young Australians who never made it home from the festival.

Annabel Catt

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Jake Monohan

Jacob Langford

Nathan Tran

Joseph Pham

Diana Nguyen

Callum Brosnan

Josh Tam

Alex Ross-King

Ebony Greening

Dassarn Tarbutt

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Abbreviations

ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ALS	Advanced life support
ANT	Actor Network Theory
AOD	Alcohol and other drug
BDO	Big Day Out
BPM	beats per minute
CNS	central nervous system
DIVC	Disseminated intravascular coagulation
DMT	N, N-Dimethyltryptamine
DnB	breakbeats/drum and bass
DOHMH	Department of Health and Mental Hygiene (US)
ED	Emergency department
EDM	Electronic dance music
EDMF	Electronic dance music festival
EDRS	Ecstasy and Related Drugs Reporting System
EM	emergency medicine
EMCDDA	The European Monitoring Centre for Drugs and Drug Addiction
EMS	Emergency medical services
FA	first aid
FIFO	fly-in, fly-out
FOMO	fear of missing out

GHB	gamma-hydroxybutyric acid
HLC	Higher level of care – referring to onsite medical service models
HR	Harm reduction
HTR	Hospital transfer rate
ICU	intensive care unit
IM	Instant messaging
IQR	interquartile range
IP	internet protocol
KI	Key informant
LGA	Local government authority
LSD	Lysergic acid diethylamide
MAR	missing at random
MDMA	3,4-methylenedioxymethamphetamine
MGM	Mass gathering medicine
MI	multiple imputation
NCPE	non-cardiogenic pulmonary oedema
NDSHS	National Drug Strategy Household Survey
NPS	New psychoactive substance
NSW	New South Wales
NYE	New Year's Eve
OMF	Outdoor music festival
PLUR	peace, love, unity, and respect
PMA/PMMA	para-Methoxyamphetamine
PPR	Patient presentation rate

PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSA	public service announcement
ROA	Route of administration
SA	South Australia
TEDI	Trans European Drugs Information
THC	tetrahydrocannabinol
UK	United Kingdom
UNODC	United Nations Office on Drugs and Crime
UNSW	University of NSW
URL	uniform resource locator
US/USA	United States of America
VIC	Victoria
WA	Western Australia

Glossary

This glossary provides definitions of technical, colloquial and abbreviated terms used throughout this thesis.

Bioanalysis

Involves the identification and quantification of a drug or drug metabolite in a biological sample (e.g. urine, blood and hair) (Pandey, Pandey, Tiwari, & Tiwari, 2010).

Colour reagent testing

A legally available test in Australia which identifies substances contained in drugs. It involves taking a small scraping of a pill, or a small amount of powder/crystals (less than would fit on a pin head), and dropping it into a tube with reagent testing liquid or dropping some of the liquid onto the sample. The liquid then indicates the presence of certain chemicals in the sample by changing colour. Reagents can test for the presence of specific chemicals so multiple tests can be conducted (e.g. marquis can detect 4-Bromo-2,5-dimethoxyphenethylamine – 2C-B, while mandelin can detect para-Methoxyamphetamine – PMA). However, these tests have various critical limitations, such as inability to detect all substances and provide information on dose. Some reactions can also override others, so there is potential for illicit ecstasy manufacturers to try to trick consumers by including small, but detectable amounts of MDMA.

Dexies

Colloquial term for dexamphetamine. A pharmaceutical stimulant drug which is commonly diverted and used in the illicit 'party drug' scene.

Disseminated intravascular coagulation

The phenomenon of blood clots forming throughout the body and using up the body's clotting factors. This can lead to bleeding and contribute to organ failure. In relation to MDMA use, this condition commonly follows hyperthermia and rhabdomyolysis (Hall & Henry, 2006).

Drug-checking/pill testing

Services which forensically analyse samples of drugs volunteered by people and provide personalised feedback of results, along with education, counselling and/or referrals as appropriate (Barratt, Kowalski, Maier, & Ritter, 2018) (often referred to as a 'brief intervention'). The design of these services varies in terms of location, type of testing and delivery of results. Drug-checking services operate either onsite (at festivals or nightclubs) or offsite (in fixed locations or pop-up locations), and the type of analytic testing ranges from simple colour reagent testing to highly sophisticated

laboratory-grade analysis. They are typically run by a team of health professionals with drug expertise. While more traditionally referred to as 'pill testing', the increasing diversity in ecstasy products available on the market (e.g. capsules, crystals, powder) and the variety of other substances which can be tested (e.g. tabs/blotter paper sold as lysergic acid diethylamide – LSD), drug-checking has been adopted as a more inclusive and accurate term. While recognising there is no clear consensus on the best term (Barratt, Kowalski, et al., 2018), drug-checking is an internationally accepted term as had thus been used throughout this thesis.

Drug detection dogs

In Australia, the use of specially trained drug detection dogs as a policing strategy emerged in the early 2000s in New South Wales (NSW) (Lancaster, Hughes, & Ritter, 2016). The primary objective was to detect and prosecute persons involved in the sale of prohibited drugs (NSW Ombudsman, 2006). Since then, despite legal ambiguities (Meagher, 2009) and evidence of ineffectiveness (NSW Ombudsman, 2006), the strategy has been adopted and expanded across the country. To justify ongoing use of this strategy in the face of mounting evidence of ineffectiveness, a shifting rhetoric from 'detection' to the 'deterrent' effects of drug detection dogs has been identified (Lancaster et al., 2016).

Ecstasy

Ecstasy is a colloquial term for drugs, traditionally sold in pill form, which are meant to contain 3,4-methylenedioxymethamphetamine (MDMA), but may contain similar or entirely different substances. MDMA is an amphetamine derivative belonging to the phenethylamine family (EMCDDA, 2015). It is a central nervous system stimulant, but also has hallucinogenic properties. The different forms, effects and complicating factors of this drug are described in greater detail in *Ecstasy-related harms*. It is important to note that the terms 'ecstasy' and 'MDMA' have been used interchangeably throughout this thesis. However, throughout the life of the thesis, the use of terminology has become increasingly important as younger people may be less familiar with the term 'ecstasy' due to the shift towards non-pill forms which are more commonly referred to as 'MDMA/MD'. Thus, greater consideration of the use of terminology is important in future research and HR initiatives.

Ecstasy and related Drugs Reporting System

The EDRS (formerly the Party Drugs Initiative) is the most comprehensive monitoring system of ecstasy and related drug use in Australia. The general aim is to track consumption (e.g. patterns of use, health and harms) and market trends (e.g. price, purity and availability) which may require further investigation. The study recruits a non-representative convenience sentinel sample of people who regularly use psychostimulant drugs from all Australian capital cities (N~800 annually).

Electronic dance music

Electronic dance music (EDM) is an umbrella term for a variety of genres, including house, trance, techno and dubstep. EDM is produced primarily for playback by DJs at dance-based entertainment venues and events, such as nightclubs and music festivals. There has been an explosion in the EDM industry in recent years, and it is now recognised as the fastest-growing musical genre, with an estimated worth of 7.4 billion dollars in 2017 (Watson, 2014, 2017). EDM music festivals alone grossed over one billion dollars in 2013–14. Internationally, outdoor music festivals with a focus on EDM currently dominate the scene.

Electronic dance music event

Used to describe any event exclusively featuring EDM, such as festivals, club events and more conventional raves.

Festivalgoer

A person who attends a music festival.

Festival-type event

A term that loosely covers music events similar to festivals, such as raves, dance parties and electronic dance music events.

Harm reduction

The International Harm Reduction Association defines harm reduction as:

> policies, programmes and practices that aim to reduce the harms associated with the use of psychoactive drugs in people unable or unwilling to stop. The defining features are the focus on the prevention of harm, rather than on the prevention of drug use itself, and the focus on people who continue to use drugs. (Harm Reduction Australia, 2018)

House parties

A Dutch term for raves or festivals featuring EDM. Unlike in Australia and countries like the United Kingdom (UK) and United States (US), this term does not refer to parties at private homes.

Hyponatremia

This condition has also been called ‘water intoxication’ and involves low blood sodium. In relation to MDMA, it has been linked to drinking excessive amounts of water to counter the risk of hyperthermia. However, MDMA can trigger ADH release, causing water retention and cells in the body to swell. In extreme cases, this can lead to cerebral oedema and death (Hall & Henry, 2006).

Hyperthermia

When an individual's body temperature is elevated above normal. MDMA-related hyperthermia often involves a combination of environmental factors (e.g. warm ambient temperature), individual factors (e.g. dancing, inadequate hydration) and drug factors (the effect on thermoregulation). It is often reported alongside rhabdomyolysis, DIVC and multi-organ failure.

Moral panic

Relates to the sensationalised reporting of a social issue which can lead to a public overreaction (Hier, 2002). A consequence of moral panic is that it can lead to ill-considered and disproportionate policy responses, often focused on 'popular' solutions which tend to be punitive in nature and ineffective in addressing problems. It is believed this type of panic occurred in relation to the earlier rave scene (Hier, 2002), involving events being demonised and policies introduced which may have increased harm (e.g. the RAVE Act in the US).

Night/club event

A night/club event refers to a special music event held in a nightclub. These are typically marketed and ticketed EDM events featuring DJs and/or electronic music producers. They are distinct from festivals in their size (smaller), location (inside permanent licensed venues), duration (typically shorter) and time (night focused).

Outdoor music festival

A large event or mass gathering focused on music. Festivals can be single-day or multi-day events and commonly include camping options. They are licensed and ticketed, and are generally held in locations with temporal boundaries, including large parks, showgrounds and stadiums. They are typically daytime focused. Many festivals are annual events, or a series of events held annually, and travel to multiple interstate and international locations. They are typically multi-staged, often with tents that focus on particular genres. Some festivals focus exclusively on particular genres, such as EDM, while others feature a wider variety of music, including live acts. Most events are restricted to over 18s and marketed toward young adults. In Australia, they normally take place in the warmer months between September and May. It is common for tens of thousands of people to attend a single event. However, increasingly the industry is diversifying, with more boutique, mini and micro-festivals emerging, while more large-scale or 'mega' festivals are being discontinued. For the purpose of this study, it is important to emphasise that OMFs are distinct from what was conventionally understood as raves (see below), which are 'underground', all-night events and rarely feature music other than EDM.

Party drug

The strong association between the dance/club scene and certain drugs, such as ecstasy, amphetamines, cocaine, LSD, gamma-hydroxybutyric acid (GHB) and ketamine, led to development of terms like 'club drugs' and 'dance drugs'. However, these terms have been criticised because they can lead to false generalisations, such as drugs like ecstasy being restricted to clubs or used only for dancing. Thus, many researchers have adopted the term 'party drugs' for its wider application. Although use of the term has been contentious in Australia for apparently glamorising drugs (Drugs and Crime Prevention Committee, 2004), it has been used widely in the international literature and for this thesis is preferred to alternative terms like 'amphetamine-type stimulants' and 'psychostimulants' which also have inherent problems. For example, they lack contextual relevance and inaccurately describe the range of drugs used in recreational music settings (e.g. they exclude hallucinogens and dissociatives like LSD and ketamine). Additionally, with the shift of EDM culture from unregulated raves into licensed venues, alcohol has become part of the mix of substances used. Throughout this thesis, the terms 'drug use' and 'party drug use' are used interchangeably as needed to refer to the full range of licit and illicit drugs used in festival settings.

Pill Reports website (pillreports.net)

A website on which people can post subjective user reports and colour reagent analysis results of pills sold as ecstasy. The site acts as a global database that allows people who use ecstasy to search for reports on pills they may possess and intend to consume, based on location, pill logo and colour. Adulterated pills (i.e. pills containing substances other than MDxx; a class of drugs comprising MDMA and similar compounds, such as MDA and MDEA) are flagged on the site and warnings are provided. Pillreports is therefore intended to act as a harm reduction site, although its efficacy has been questioned, because pills may look identical but have entirely different content. Issues such as copycat batches and lack of quality control contribute to problems, as does the validity of non-sophisticated home testing (simple colour reagent testing) and subjective user reports.

Psytrance

Psytrance, short for psychedelic trance, is a sub-genre of trance that emerged in the 1990s from 'goatrance' at beach parties in Goa, India. Psychedelic drug use was a strong feature of these events. However, the term has greater meaning than a genre of music and is associated with particular values, such as self-realisation (St John, 2013).

Psytrance festivals (transformational festivals)

Contemporary psytrance festivals, also known as 'transformational festivals', have unique characteristics and are considered more counterculture/less mainstream than other festivals. They attract a specific countercultur, promote values like personal growth, community, creativity, environmentalism, self-expression and self-insight, and typically focus on the psytrance genre.

Unsurprisingly, the use of psychedelic drugs is generally considered pervasive at these events, as they synergise well with the music and are believed to aid self and social transformation (Ruane, 2015). Examples of these festivals include Boom Festival in Portugal, Burning Man in the USA and Rainbow Serpent in Australia. While these events often claim to be less commercialised, and promote principles such anti-materialism and anti-consumerism, the rhetoric does not necessarily match the reality anymore. For example, the CEO of Burning Man recently acknowledged a cultural shift towards commercialisation and materialism (e.g. on social media platforms such as Instagram), but claimed they are trying to challenge this cultural shift and return to their roots (Boucher, 2019).

Rhabdomyolysis

The process of muscles breaking down and releasing tissues into the bloodstream. A protein released in this process (myoglobin) can affect the kidney's ability to remove waste (resulting in more concentrated urine) and can ultimately cause renal failure. In relation to ecstasy use, this condition is often accompanied by and may be secondary to hyperthermia (Hall & Henry, 2006).

Rave

Raves have been described as "grassroots organized, antiestablishment and unlicensed all-night dance parties, featuring various genres of electronically produced dance music" (Kavanaugh & Anderson, 2008, p. 181). The term 'rave' has been used to reflect the culture that emerged in the late 80s/early 90s in the US and UK from techno and house music scenes. The events and culture were heavily associated with the use of illicit 'party drugs', and this led to ongoing scrutiny by law enforcement and politicians. Given these challenges, raves evolved and largely shifted into legal venues. Academics, media and law enforcement continue to use the term 'rave' in place of 'music festivals'; however, the characteristics of most contemporary OMFs (see definition above) are not consistent with the conventional understanding of raves.

Rovers

Rovers are support persons who rove/walk/wander around festival grounds looking for at-risk patrons and/or disseminating HR information and materials (e.g. water, drug information). They include medical rovers, peer-support rovers and HR support rovers.

Salutogenesis

A term relating to a focus on factors supporting health, rather than factors that cause illness/injury (pathogenesis) (Lindström & Eriksson, 2005).

Zero tolerance

The primary drug policy of festival promoters and police in relation to Australia festivals. Put simply, this policy means all illicit drugs are prohibited; the event management will typically work with police

to enforce this policy. It often involves a heavy focus on drug policing and supply control strategies including security/entry checks, high-visibility police, undercover police and drug detection dogs, leading to strip searches.

Chapter 1: Introduction

Rationale

Outdoor music festivals (OMFs) have become increasingly popular in Australia and internationally in recent decades, particularly those with a focus on electronic dance music (EDM) (Live Performance Australia, 2018; Watson, 2017). Since their emergence, these events have been consistently identified as popular contexts for alcohol and other drug use (hereafter termed 'drug use') (Martinus, McAlaney, McLaughlin, & Smith, 2010), and in recent years have been linked to over 120 drug-related deaths internationally, including 16 within Australia in the past five years alone. The nature and extent of morbidity is less well known; however, researchers have documented a wide array of long-term health sequelae, from enduring neuropsychological deficits to limb amputations (Armenian et al., 2013).

The number of recent festival deaths has increased concern about the risk of future drug-related harm at Australian festivals, but contention remains about how to respond effectively. Debate continues in Australia, with input from public health/policy advocates (Barklay, 2016; Cowdery & Wodak, 2014; Tregoning, 2015a), politicians (Barklay, 2016; Di Natale, 2016; Kontominas, 2019; Shoebridge, 2017), police (Hansen, 2017; Mullaney, 2015), legal experts (Malins, 2017; The Law Society of New South Wales, 2016), the Australian Medical Association (Australian Medical Association, 2019), musicians (Baroni, 2014; Murphy, 2015; Williams, 2018b) and mainstream and alternative media (Harris, 2016; McKinnell, 2019; McVeigh, Tilley, & McCormack, 2015; The Music, 2016; "Sniffer dogs cost," 2016). While some advocate for more punitive approaches, most recommend a shift towards evidence-based harm reduction (HR) approaches. The ongoing debate illuminates inconsistencies between existing approaches and the available evidence, but with the exception of two drug-checking trials in the Australian Capital Territory (ACT), and some contentious policing and regulatory changes in New South Wales (NSW) (Fuller, Chant, & Crawford, 2018; Loomes, 2019), few jurisdictions have made major regulatory/policy changes or trialled more progressive evidence-based interventions. However, to date there has been little research focused on drug use, drug-related harm and HR strategies at contemporary festivals to inform interventions. While a wealth of literature was published in relation to the underground rave scene of the late 1980s and early 1990s, contemporary festivals are different to raves and thus warrant specific research.

Given recent figures suggest the festival industry is continuing to expand (Live Performance Australia, 2018), and drug-related festival deaths seem to be increasing (see

Table 2.11), there is an urgent need for research which can contribute to evidence-informed responses. However, the candidate wishes to emphasise that this research is not intended to sensationalise the 'problem' of drug use at festivals, or focus on the negative elements of drug use which dominate the academic literature. Rather, the candidate wishes to take a balanced look at the reality of drug use at festivals in order to most effectively respond. This research is carried out in the belief that festivals are an important part of Australian youth culture, bringing pleasure, excitement and lasting memories to many young Australians and should be enjoyed long into the future. However, as this thesis will demonstrate, more could be done to establish safer festival environments and safer cultures of drug use.

Aims and objectives

The aims of this study were to:

- investigate the nature and extent of drug use (including alcohol, but with a focus on illicit drugs) associated with outdoor music festivals;
- assess current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and
- develop recommendations aimed at improving these strategies in Australia.

The specific objectives of the research were to:

- document the prevalence of drug use and drug use patterns and practices associated with festivals (among a sample of festivalgoers in two Australian states – Western Australia and Victoria);
- identify reasons for using drugs at festivals and associated positive effects;
- identify types and severities of adverse effects associated with using drugs at festivals;
- identify levels of access and barriers to onsite medical services and other harm reduction strategies at festivals (e.g. free water, shade);
- identify attitudes towards and outcomes related to drug policing at festivals (e.g. drug detection dogs);
- identify attitudes towards, and potential feasibility and efficacy, of alternative harm reduction strategies at festivals (e.g. drug-checking, drug amnesty bins); and
- identify correlates of illicit drug use, risky drug use practices and associated harms to help contribute to more evidence-informed responses at Australian festivals.

Significance

This project represents the largest, most comprehensive study of drug use associated with Australian music festivals. While many studies investigate club and rave culture, relatively few focus on contemporary festivals. Moreover, there are many gaps in evidence in studies of contemporary festivals. The present study directly addressed many of these gaps and is unique in its depth of documenting drug use at festivals and attempts to explain it and effectively respond. The study extends existing knowledge about the extent of drug use and polydrug use associated with festivals; deterrent, detection and iatrogenic effects of drug detection dogs; and the desirability, preferred design features and potential benefits of drug-checking. Its unique contributions to the evidence base for contemporary festivals include delineating drug use patterns and practices, knowledge of water guidelines while using MDMA, reasons for using individual drugs, positive drug experiences, and access/barriers to onsite medical services.

This study employed a mixed-methods design to provide quantitative insight into prevalence and patterns of drug use and rich qualitative insight into the lived experiences of people who use drugs at festivals and the meanings they assign to them. Thus, this study drew on the strengths of both paradigms and provides a uniquely balanced view of drug-related issues within Australian festival culture. The findings will inform context-specific policy and practice aimed at reducing drug-related harm at festivals. These findings are of value to a wide variety of stakeholders, including policymakers, drug policy advocates, event organisers, local government authorities, academics, the media and the general public, particularly festivalgoers. The significance of this research has already been recognised during candidature by requests to provide data and/or expert comment to the media, the Australian Government Department of Health, the Western Australia (WA) Department of Health and the NSW Department of Justice (see *Appendix A: Evidence of impact*). Perhaps of greatest significance, the candidate was asked to provide written and oral evidence for the 2019 NSW coronial inquest into six music festival deaths, and the evidence provided was cited throughout the coroner's report (see Grahame, 2019). Two peer-reviewed journal articles based on the research have also been published (Grigg, Barratt, & Lenton, 2018a, 2018b) and cited in the media (Henriques-Gomes, 2018; McGowan, 2019b) and other relevant academic studies (e.g. Agnew-Pauley & Hughes, 2019; Motyka & Al-Imam, 2019).

Chapter 2: Literature review

This chapter begins by broadly introducing 'party drug' use within the wider population and providing a brief overview of the risks associated with these drugs. The importance of context-specific research into drug use is then discussed, with contemporary music festivals identified as a key context for 'party drug' use among young adults. Next, a brief history of the evolution of festivals is provided to illuminate the differences between conventionally researched 'raves' and the focus of the present study. Subsequent sections of this chapter review the literature on drug use at festivals (and similar events) according to four key themes: drug use prevalence, patterns and practices; reasons for using drugs and positive effects; drug-related harms/adverse effects; and drug-related interventions. These four themes recur in the results and discussion sections of this thesis. While this is not a theory-driven study, some key theoretical frameworks are introduced, such as the 'risk/enabling environment' framework (Moore & Dietze, 2005; Rhodes, 2002, 2009), and discussed in relation to their use for understanding and responding to drug-related issues at festivals. The review concludes with a summary of the gaps and limitations in the literature and situating the evidence into a 'risk/enabling environment' framework.

Note that studies of various recreational music events were included in this review because event descriptions are sometimes ambiguous. For example, 'rave' and 'dance party' are used loosely throughout the literature and event size, location (indoor or outdoor) and level of regulation are often omitted. Studies which unambiguously investigated underground raves or nightclubs were excluded to keep the focus on contemporary festivals, but mixed samples (e.g. underground raves and contemporary festivals) were included due to the scarcity of academic literature focusing on festivals specifically. The term 'festival-type event' is used to acknowledge that the characteristics of events vary.

The literature review was conducted between September 2014 and September 2018. While no time restrictions were set on searches, the cut-off date for peer-reviewed literature was 31/09/2018. Thus, articles published after this date were not included in this review, but considered in the discussion and listed in the appendices (see *Articles which missed the cut-off date for the systematic literature review*). The cut-off date for review of media was extended into 2019 given the number of key events that occurred in 2018–19 (cut-off dates are stated in table summary titles). Importantly, a systematic review was performed for the peer-reviewed literature, but not for the grey literature or media as the high number of search results would have made the review practically unfeasible. The systematic review for peer-reviewed journal articles included searches of databases including ProQuest, Ovid (Embase,

Global Health, MEDLINE®, PsycINFO), Science Direct, Scopus, Informit DRUG, PubMed, Web of Science and Google Scholar. Scopus was also used to perform backwards and forwards searching of salient articles. The searches differed slightly according to the database search setup, but the following search terms were used (abstract and title fields): drug, substance, ecstasy, MDMA, music festival, rave, dance party, concert and music event. Wildcard and truncation symbols were used to maximise search outcomes. Email alerts were set up and final search terms saved and rerun periodically to identify new articles not detected by email alerts. Article abstracts were screened in an Excel workbook with an associated Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)-modelled flowchart which documents exclusion reasons after both abstract and full-text screening (see *Appendix C.1*). Data was then extracted from eligible full-text articles in NVivo qualitative data analysis software (QSR International Pty Ltd., 2012) and systematically coded into 'nodes' representing the four key themes (see *Systematic review article categorisation*). Grey literature was identified via searches of ProQuest dissertations and theses, TROVE, Worldcat, European Legal Database on Drugs, Informit DRUG and Google. Key media coverage was identified via searches on ProQuest Newsstand, EBSCO Alternative Press Index, Factiva and Trove digitised newspapers. Subscriptions to media services, such as WHOS Daily Media Service, were also set up. Music news and drug advocacy websites were searched and their associated Facebook pages were liked to identify new media articles posted in social media feeds.

Trends in 'party drug' use

Prevalence data

Over the past decade, prevalence data for 'party drug' use has not followed a clear trend line. Both national and international population-based data indicated a decline in the prevalence of some 'party drugs' (e.g. ecstasy[1], meth/amphetamine, hallucinogens) at the outset of data collection for this research (Australian Institute of Health and Welfare, 2016; European Monitoring Centre for Drugs and Drug Addiction, 2018; United Nations Office on Drugs and Crime, 2017). This followed a two-decade trend of increasing use, which began in the mid-1980s during the emergence of EDM and rave culture (Degenhardt, Copeland, & Dillon, 2005; Sanders, 2006). However, the most recent population-based data indicates a resurgence in many countries, with ecstasy use rising and becoming increasingly mainstream

[1]As explained in the glossary, 'ecstasy' refers to drugs which are meant to contain 3,4-methylenedioxymethamphetamine (MDMA), but are notoriously impure. While traditionally sold in pill form, the market has diversified with crystal, capsule and powder forms increasingly identified.

in recreational settings (European Monitoring Centre for Drugs and Drug Addiction, 2018). While the most recent Australian population-based survey suggests a decline in ecstasy use (Australian Institute of Health and Welfare, 2016), this data is collected every three years and is now outdated. Further, this type of population-based survey is widely understood to have methodological limitations (e.g. sampling biases, low response rates, truthfulness issues) which can lead to an underestimation of behaviours like illicit drug use (Johnson, 2014). It is also possible this decreasing trend in illicit 'party drugs' (e.g. ecstasy, meth/amphetamines, hallucinogens) may not be occurring in particular music subcultures, where rates of drug use appear considerably higher than in general population samples (Duff & Rowland, 2006; Hesse, 2012; Hughes, Moxham-Hall, Ritter, Weatherburn, & MacCoun, 2017; Lim, Hellard, Hocking, Spelman, & Aitken, 2010; Martinus et al., 2010). Additionally, the Ecstasy and Related Drugs Reporting System (EDRS, formerly the Party Drugs Initiative), which has monitored 'party drug' trends in Australia since 2003, reported upward trends in the frequency of use and perceived availability and potency of ecstasy/MDMA in recent years (e.g. Peacock et al., 2018). This led the national drug trends team to express concern about the risk of acute and long-term ecstasy-related harms (Peacock, 2018). While the EDRS recruits a purposive sentinel sample of recent users of ecstasy and related drugs, and as such the results cannot be generalised to the wider population, the strength of the project is in identifying emerging trends that warrant closer attention. Ultimately, while Australian population-based data may present a picture of declining illicit 'party drug' use, when considering a wider variety of data sources (e.g. international data trends and non-population based data), the reality is more complex.

Despite its methodological problems, the National Drug Strategy Household Survey (NDSHS) provides the best available evidence on the prevalence of 'party drug' use among the general Australian population. According to the most recent report (Australian Institute of Health and Welfare, 2016), the most common illicit drug *ever* used by Australians aged 14 years and over was cannabis (34.8%), followed by ecstasy (11.2%), hallucinogens (9.4%), cocaine (9%) and then meth/amphetamines (6.3%). Cocaine was the second most common illicit drug reportedly used *recently* (past 12 months) (2.5%), followed by ecstasy (2.2%), methamphetamine (1.4%) and hallucinogens (1%). Prevalence varied considerably among age groups, with ecstasy attracting younger users than cocaine. Rates of recent ecstasy use were highest among people in their late teens/early 20s (8% of 18–24-year-olds), and it was the most common drug of choice in the EDRS (36%) (Peacock et al., 2018). The prevalence of ecstasy use in Australia has also been consistently higher than most (if not all) countries in the United Nations, according to the available global data (United Nations Office on Drugs and Crime, 2014, 2017, 2018). However, it is possible this finding could reflect the strength

of Australian monitoring systems in comparison to other countries, rather than an accurate reflection of prevalence rates.

Irrespective of the prevalence data, the use of 'party drugs' continues to spark widespread concern about their potential for both short and long-term harm. Of particular concern recently has been the use of drugs sold as ecstasy, which have been linked to at least 18 Australian deaths in the past five years alone (see *Summary of deaths* and Bisho*p* (2017)). Given the drug's predominance in the party scene and public debate, the below section on health problems will focus on ecstasy.

Ecstasy-related harms

This section starts with a broad description of the short and long-term health effects, or potential harms and benefits, of ecstasy/MDMA use. It then outlines a range of complicating factors which warrant consideration when evaluating the risks associated with drugs sold as ecstasy. It concludes with a discussion of the risk profile of 'ecstasy'.

Short and long-term effects

3,4-methylenedioxymethamphetamine (MDMA, or ecstasy) is an amphetamine derivative belonging to the phenethylamine family (European Monitoring Centre for Drugs and Drug Addiction, 2015). It is a central nervous system (CNS) stimulant, but also has hallucinogenic properties. However, the hallucinogenic effects are considered mild and more consistent with enhanced sensory cognisance, and typically only occur at higher doses (European Monitoring Centre for Drugs and Drug Addiction, 2015). With a plasma half-life of 6–7 hours, most MDMA users experience the onset of effects within 30–60 minutes, 'peak' within 60–120 minutes, then plateau for a period of about 1–3 hours before a gradual comedown. Ecstasy was traditionally produced in tablet form, but is now increasingly sold as crystals, powder and capsules (containing powder and/or crystals) (Mounteney et al., 2018; Peacock et al., 2018). Non-tablet forms are typically perceived as purer and are therefore increasingly preferred by young Australians (Peacock et al., 2018).

A wide array of acute positive effects of ecstasy have been reported in the literature. The most common include increased energy, euphoria, empathy, emotional connectedness and enhanced confidence, communication, sociability, senses and sexuality (Baylen & Rosenberg, 2006; Brunt, Koeter, Niesink, & van den Brink, 2012; Engels & Ter Bogt, 2005; Kavanaugh & Anderson, 2008; Verheyden, Henry, & Curran, 2003). Clearly, these effects have the potential to enhance the party experience. Beyond basic physiological effects, ecstasy is believed to help open the mind to self-awareness, self-reflection and self-

actualisation (Baylen & Rosenberg, 2006; Hunt & Evans, 2008; Verheyden et al., 2003). User report longer-term positives include enhanced relationships (due to deeper bonds forged while using ecstasy), and new and more positive ways of engaging with themselves, other people and the world around them (due to the new perspectives gained while using ecstasy) (Hunt & Evans, 2008; Verheyden et al., 2003). There are also complex contextual pleasures to consider, such as corporeal experiences associated with using drugs in association with particular people and stimuli (e.g. friends, music, lighting and nature) (Duff, 2008). (Setting-related factors and positive effects are considered in greater depth later in this review (see *Theme 2: Reasons for using drugs/positive effects*).) The pleasurable effects of ecstasy are linked to pharmacological effects on two neurotransmitters: serotonin and dopamine. Specifically, MDMA stimulates their release and slows their reuptake. It is largely the strong emotional effects which set ecstasy apart from other stimulant drugs, which led to ecstasy being coined an 'empathogen' (European Monitoring Centre for Drugs and Drug Addiction, 2015).

Short and long-term harms linked to ecstasy use have also been reported in the literature. Acute adverse effects commonly linked to MDMA use include bruxism (teeth grinding or jaw clenching), tachycardia, trismus (lockjaw), nystagmus (eye wobbles), dry mouth/dehydration, shakiness, muscle aches, headache, nausea, anxiety, increased body temperature, urinary retention, mild asymptomatic hyponatremia, hypertension, insomnia, loss of appetite and comedowns (due to temporary serotonin depletion or down-regulation) (Baylen & Rosenberg, 2006; Brunt et al., 2012; Verheyden et al., 2003; Weir, 2000). Less common effects include impulsivity, unwanted perceptual disturbances, paranoia, panic, confusion and disorientation (Baylen & Rosenberg, 2006; Verheyden et al., 2003). Rare, but severe and potentially life threatening effects include hyperthermia (an elevation of body temperature) (Kiyatkin, Kim, Wakabayashi, Baumann, & Shaham, 2014; Kiyatkin & Ren, 2016; Patel, Belson, Longwater, Olson, & Miller, 2005) and hyponatraemia (a deficiency of sodium in the blood caused by water intoxication) (Cherney, Davids, & Halperin, 2002; Parr, Low, & Botterill, 1997; Walther, Blom, Van Dijken, & Hene, 2012), which are believed to be the aetiological cause of various other complications such as seizures, cerebral oedema, rhabdomyolysis ('muscle meltdown'), renal failure, liver failure, disseminated intravascular coagulation (DIVC), compartment syndrome, general multi-organ failure, cardiac arrest and death (Walter & Carraretto, 2015).

While the longer-term effects of recreational ecstasy use have only began to surface recently, and remain somewhat contentious, there is at least preliminary evidence to suggest enduring psychobiological deficits in some users, particularly when polydrug use and/or

heavy use has been involved (Doblin et al., 2014; Garg et al., 2015; Parrott, 2002, 2013a; Parrott, 2013b). The main areas thought to be affected are memory, mood, impulsivity, cognition (higher order) and sleep. Accumulating evidence from animal and neuroimaging studies suggest these deficits are linked to neurotoxicity (of the serotonin and dopamine systems); however, researchers have emphasised the heterogeneity in findings and caution that further research is required to draw causal links (Garg et al., 2015; Mueller et al., 2016; Vegting, Reneman, & Booij, 2016).

Complicating factors

There are a variety of complicating factors to consider when evaluating the risk potential of ecstasy.

The idiosyncratic nature of responses. Interestingly, plasma levels have been found to correlate poorly with toxicity. In some cases, users with low MDMA plasma levels have died, while those with high levels survived (Forsyth, 2001; Nadesan, Kumari, & Afiq, 2017; Peroutka, 2012). Similarly, recreational doses have overlapped with "lethal levels", suggesting even normal doses can be dangerous (Grange, Corbett, & Downs, 2014, p. 156). Unpredictable responses may be due to genetic predisposing factors, the inability to effectively metabolise MDMA, and/or allergy related (Aitchison et al., 2012; Armenian et al., 2013; de La Torre, Yubero-Lahoz, Pardo-Lozano, & Farré, 2012; Karlovsek, Alibegovic, & Balazic, 2005; Pardo-Lozano et al., 2011)[2]. The idiosyncratic nature of responses has made ecstasy's relative toxicity somewhat contentious in the medical community, with some suggesting ecstasy does not deserve its safe reputation, while others argue it is one of the least dangerous drugs (Karlovsek et al., 2005; Nutt, King, & Phillips, 2010; Penington, 2012; Scott, 2009; Wodak & Warhaft, 2015).

Ecstasy may not follow a linear dose-response curve (Concheiro et al., 2014; De La Torre et al., 2000; Mueller, Peters, Maurer, McCann, & Ricaurte, 2008). Put differently, when increasing the dose of MDMA, one cannot expect the concentration or effects to increase proportionately. That said, higher doses still increase risk. This pharmacokinetic complication makes dosing decisions, and predicting physiological effects, more problematic.

High rates of polydrug use. Studies have found ecstasy is commonly used with other drugs, particularly alcohol and other psychostimulants (e.g. Barrett, Gross, Garand, & Pihl, 2005;

[2]The 2019 NSW inquest into festival deaths also discussed genetics as a potential risk factor given half the deceased were of Southeast Asian background and may thus be poor metabolisers of CYP2C19 (Grahame, 2019).

Boeri, Sterk, Bahora, & Elifson, 2008; Gouzoulis-Mayfrank & Daumann, 2006; Peacock et al., 2018). Concomitant drug use can affect pharmacokinetics and make it difficult to draw direct links between ecstasy and adverse outcomes (Gouzoulis-Mayfrank & Daumann, 2006). For example, interaction effects such as potentiation can affect toxicity.

Lack of regulation/impurity issues. Given ecstasy is currently illegal in Australia, it is not subject to the same strict supply regulations as legal drugs. Thus, in the absence of sophisticated drug-checking, a person who purchases a drug sold as ecstasy cannot be confident of the active chemical compounds, or dosage of active compounds. This is problematic because higher-risk drugs such as PMA/PMMA have historically been misrepresented as 'ecstasy' and resulted in numerous fatalities in Australia and internationally (Bannerman, 2007; Caldicott et al., 2003; Degenhardt et al., 2005; Rojek, Bolechała, Kula, Maciów-Głąb, & Kłys, 2016). While chemical reagent kits can be legally purchased in Australia, these tests only provide indications of content and have various critical limitations making their utility contentious (Harper, Powell, & Pijl, 2017; Kriener et al., 2001) (discussed more in *Drug-checking* (*pill testing)*).

Shifting purity/potency trends. While Australia has historically observed low-dose ecstasy pills, there are indications that high purity/dose ecstasy is increasingly available (Australian Criminal Intelligence Commission (ACIC), 2018; "New crystal caps," 2017). Thus, high potency is now equally as concerning as impurity. This international trend is reportedly linked to increased availability of precursors needed to manufacture MDMA and more sophisticated and large-scale production (Mounteney et al., 2018). According to the EDRS, there have also been increases in the availability and consumption of ecstasy in crystal and capsule forms, which are perceived as stronger (Peacock et al., 2018). These newer forms may be stronger than pills, given crystal and powder forms can theoretically be pure and capsule packaging does not require binding agents or fillers (European Monitoring Centre for Drugs and Drug Addiction, 2016). However, the Australian ecstasy market remains unpredictable, with significant variances detected in the purity of phenethylamine[3] seizures (in 2016–17 they ranged from 0.9% to 95.9%) (ACIC, 2018). These shifting trends raise concern, because without an adequate warning system, people who use ecstasy may consume a higher dose than intended and/or place too much faith in the purity of newer crystal/capsule forms.

The growing detection of new psychoactive substances and their misrepresentation. The term 'new psychoactive substances' (NPS) has varying labels and definitions, but generally

[3] Includes MDMA, MDEA, MDA, DMA and PMA. However, the ACIC notes that most 2016–17 seizures were MDMA.

describes substances which are newly misused or newly synthesised to mimic more established illicit drugs (Dargan, 2013). NPS complicate the risk profile of ecstasy because they have been detected in pills/capsules sold as ecstasy/MDMA. While the risk of consuming a drug other than MDMA is certainly not new, the increasing detection of NPS heightens concern due to the ongoing potential for them to be misrepresented as ecstasy. This misrepresentation may occur to maximise profits, because some NPS are more readily available and can be sourced at considerably lower cost prices (Dargan, 2013). Misrepresentation is particularly concerning with respect to drug potency, onset of action and physical and psychological effects, which remain largely unknown for many NPS. For these reasons, unknowingly consuming an NPS can result in unpredictable reactions and has already been linked to drug-related deaths in Australia (Energy Control International, 2017; Evans, 2017; Morgans, 2017). The potential for manufacturers to mix MDMA with NPS to try to evade reagent testing is also a concern, making the reliability of test kits even more questionable.

Environmental factors. It is widely known that environmental factors affect the subjective drug use experience, and this is particularly true for ecstasy use. As discussed later, some of the most concerning risks related to ecstasy use are largely context-dependent (see *Importance of context-specific research*), and environmental stimuli have the capacity to amplify acute drug effects (see *Potential harms identified from laboratory studies simulating festival environments*).

Harm ranking

In the UK, an Independent Scientific Committee on Drugs, comprised of drug experts, developed a multicriteria decision analysis model to rank drugs according to their level of harm (Nutt et al., 2010). The 16 criteria included nine types of harm to the *user* (e.g. dependence, physical/psychological/social damage and mortality) and seven types of harm to *others* (e.g. crime, family problems and economic costs). Ecstasy was ranked as one of the least harmful drugs to both the user and to others. In terms of overall harm, alcohol scored the highest, followed by heroin, crack cocaine, methamphetamine, tobacco, amphetamine, cannabis, GHB, benzodiazepines, ketamine, methadone, methadrone, butane, khat, Steroids, ecstasy, LSD, buprenorphine and then mushrooms[4]. Based on this analysis, Nutt et al. (2010) concluded the existing UK drug classification system was not based on evidence of drug-related harms. Interestingly, Professor David Nutt, who led this analysis, and held an official government position in the UK, reportedly clashed with government over his remarks about

[4] The multicriteria decision analysis model was recently applied to rank drug harms in Australia (Bonomo et al., 2019). Ecstasy was again ranked as one of the least harmful drugs.

drug classification and was subsequently dismissed. Perhaps his most contentious comment was that the risk of dying from ecstasy was lower than the risk of dying from horse riding (Nutt, 2009).

The low risk profile of ecstasy is further highlighted by growing recognition of its medical benefits. For example, MDMA is currently being trialled (Phase 3) as a medicine for posttraumatic stress disorder in the US (Nutt et al., 2010), suggesting it can be used 'safely' in controlled conditions.

Ultimately, ecstasy seems to account for a low proportion of drug-related harms. However, its risk profile is complicated by factors such as impurity and idiosyncratic reactions. While fatalities due to ecstasy use are infrequent compared to those associated with other drugs (Australian Bureau of Statistics (ABS), 2017a), they attract significant media attention and public interest. Additionally, despite the lower risk profile, evidence suggests ecstasy is being used by a substantial proportion of young Australians, contributes to the overall picture of drug-related harm (although most harm is to the user), and will continue to contribute to morbidity and mortality. Thus, research aimed at reducing the risk associated with ecstasy use is needed.

Importance of context-specific research

While there is a wealth of research on young adults' drug use, comparatively little concentrates on use in specific recreational contexts. This is surprising considering drug use is commonly increased at – or even reserved for – particular events. Additionally, as mentioned previously and expanded on later, some of the most concerning acute drug-related harms (e.g. hyperthermia) are believed to be largely context-dependent (Duff, Johnston, Moore, & Goren, 2007; Kiyatkin et al., 2014; Kiyatkin & Ren, 2016; van Dijken, Blom, Hené, Boer, & Consortium, 2013). For example, body temperature is less likely to become elevated in an air-conditioned home than when dancing at an open-air summer festival. Additionally, as discussed later, experimental animal studies have found different environmental conditions (e.g. heat and sound) can potentiate acute drug effects. Thus, public health outcomes can depend largely on event planning. In recognition of the importance of context, various theoretical frameworks and new ways of thinking have emerged to help understand and examine both how harms are created within contexts (or 'assemblages') and how harms can be mitigated. These theories are discussed later in this chapter, but at this point it is enough to simply acknowledge that the importance of contextualising drug-related problems is increasingly recognised.

Music festivals as a key context for 'party drug' use

While illicit 'party drugs' are now commonly used in a variety of private and public settings, evidence suggests conventional party settings remain the most popular contexts of use in Australia (e.g. raves/festivals/nightclubs) (Australian Institute of Health and Welfare, 2016; Uporova, Karlsson, Sutherland, & Burns, 2017). Furthermore, there have been increasing indications that ecstasy use is becoming normalised in populations who attend these settings (Duff, 2005; Duff et al., 2007; Lim, Hellard, Hocking, & Aitken, 2008; Manning, 2013; Palamar et al., 2017; Sande, 2008; Wilson, Bryant, Holt, & Treloar, 2010). Theoretically, there are links between the international growth in the EDM industry (Watson, 2014, 2017) and the normalisation of ecstasy use. Indeed, involvement in EDM events has been identified as a key predictor of initiation into ecstasy use (Smirnov et al., 2013), ecstasy users commonly report that their first experiences with ecstasy occur at festival-type events (Duff et al., 2007; Lenton, Boys, & Norcross, 1997), and EDM as a musical preference has been linked to increased levels of party drug use (Duff et al., 2007; Hesse, 2012; Lim et al., 2008; Moore & Miles, 2004; Van Havere, Vanderplasschen, Lammertyn, Broekaert, & Bellis, 2011).

Why research festivals?

While drug use at festivals has been a topic at the forefront of political and public debate, and festivals have been identified as a high risk context for drug-related harm (and thus key sites for prevention and HR efforts), this review will demonstrate that there is a dearth of research focused on drug use, drug-related harms, and HR strategies specifically at these events. This was also recognised in an international literature review of drug use at underground and mainstream raves/festivals (Fernandez-Calderón, Lozano-Rojas, & Rojas-Tejada, 2013), which concluded that there was insufficient evidence available to inform interventions aimed at reducing risk at these events. Additionally, a 2017 study, which documented 96 drug-related festival deaths internationally between 1999 and 2014, recommended further research to help reduce the risk of future mortality in these settings (Turris & Lund, 2017). It seems that while many studies have investigated drug use among festivalgoers, very few have focused on drug use *within* festival settings. However, studies of festivalgoer samples have revealed significantly higher rates of lifetime/recent drug use than population-based samples (e.g. Day et al., 2018; Hesse, 2012; Lim et al., 2010). For example, Day et al. (2018) found recent (past 12 months) illicit drug use was three times higher in their sample of young (18–30 years) Australian festivalgoers than in young adults (20–29) surveyed in the NDSHS (73% vs. 28%). The differences in recent ecstasy and

cocaine use (60% vs. 7% and 34% vs. 7% respectively) were particularly striking. This discrepancy highlights why these events are key contexts for research and HR efforts.

While a rich body of literature emerged in the early 1990s in response to rave culture and its associated problems, academic interest diminished in parallel with rave culture as events increasingly moved into regulated spaces and out of the media spotlight. However, it appears many of the problems related to the earlier rave scene have resurfaced within the context of contemporary music festivals. To further highlight the need for novel research on festivals, the following section briefly describes the evolution of the industry, and in doing so delineates the characteristics of conventionally understood raves and contemporary festivals.

Outdoor music festivals

Outdoor music festivals have become a global phenomenon since the late 1960s, when the infamous Woodstock Music Festival occurred (Hutton, Ranse, Verdonk, Ullah, & Arbon, 2014; McQueen & Davies, 2012; Siokou, 2008). The past two decades in particular have seen exponential growth and evolution in the industry, with a significant rise in the number of traveling music festivals, which are often held annually at a variety of locations (Live Performance Australia, 2017; Watson, 2017). These events have also become increasingly commercialised, extensively advertised and commonly attract tens of thousands of young people (Anderton, 2011; Scott, 2014; Siokou, 2008). Over the years, different forms and genres of festivals have emerged; however, it has been proposed that contemporary dance festivals, which currently dominant the scene, largely emerged from the underground raves of the 90s, which crossed into commercial arenas as a result of political and legal crackdowns (Fernandez-Calderón et al., 2013). Thus, it is not uncommon for contemporary festivals with a focus on EDM to be referred to generally as 'raves' by researchers, law enforcement and the media, although their characteristics (e.g., large, commercial, daytime focused, licensed and ticketed) and variety of musical genres (not exclusive to EDM, often featuring live acts) are unlikely to be consistent with the conventional understanding of raves. Newer terms also commonly used to describe festivals include 'dance parties', 'electronic dance music events' (EDME), 'electronic dance music festivals' (EDMF) and 'mass gatherings'. As mentioned previously, this varied terminology is problematic because it is often used loosely in the literature to describe a range of disparate events, such as nightclub events, underground 'bush doofs'[5], warehouse parties, indoor and outdoor

[5] A 'bush doof' is an outdoor EDM event, typically located in bushlands or forest outside of large cities. These are often underground events.

festivals, and sometimes a mix of different events within a single study. While all these events have key commonalities (e.g. music and dancing), critical differences exist which warrant consideration. Further, critical differences exist between types/styles of festivals, and currently there is no universal or standardised definition of a music festival. In short, while festivals are a global phenomenon, they are not a homogenous one, particularly in terms of style, scale and the drug-using subcultures they attract.

The next section describes the evolution of raves to festivals in greater detail and draws out the key differences. Following this, a local example of the evolution of festivals in WA is provided to illuminate the diversity that exists within the industry today. This summary is provided as context because a sound understanding of the complexities of how the industry has evolved, and where it is today, is needed to effectively research and respond to issues in this field. Whilst some of this material is not strictly a 'literature review' as such (see e.g. *Diversification*), this account of the music festival context in Australia fits well conceptually within a review of academic literature on the music festival scene.

Rave origins, rise, fall and diversification

Origins

While there are varying historical accounts of the origins of raves, multiple sources indicate they originated in the UK in the late 1980s with the 'acid house' movement (Anderson & Kavanaugh, 2007; Siokou, 2002). While acid house/EDM actually originated in the USA (Chicago), it is believed the British exported the movement from Ibiza in 1987, which coincided with the first major imports of ecstasy to the UK (Cieslik & Pollock, 2017).

Originally, raves were characterised as grassroots, underground and antiestablishment events, with high levels of illicit drug use (e.g. ecstasy, LSD and GHB) (Anderson & Kavanaugh, 2007; Kavanaugh & Anderson, 2008). To understand the culture, one should consider the fact raves emerged in a conservative political period marked by social division and high unemployment rates, and these events often acted as an outlet for people seeking hedonism and a sense of community (Anderson & Kavanaugh, 2007). Rave locations were often released last minute and were often in hidden/hard-to-reach areas to avoid police. Today, rave culture is often considered a true counterculture, which had its own ethos (PLUR – peace, love, unity and respect), fashion (e.g. fluoro, sneakers, parachute pants), cultural items (e.g. glow sticks, pacifiers and lollypops), social norms and behaviours (e.g. dancing to EDM and drug use) (Anderson & Kavanaugh, 2007; Kavanaugh & Anderson, 2008).

The rave culture peaked in the summer of 1998/99, dubbed the 'second summer of love' due to its similarities with 1967 (e.g. values of hedonism, love, freedom and unity) (Cieslik & Pollock, 2017). However, the honeymoon did not last: with increasingly negative public and political attention, and significant legal and financial risks, the scene slowly shifted into commercial arenas (political events of this time are discussed later in *Moral panic and event regulation/prosecution*), and by the mid-1990s, illegal raves were almost a thing of the past. However, rave culture made way for club and festival culture. This evolution has been dubbed 'cultural regulation', where an underground movement becomes a controlled and commodified form of leisure consumption (Cieslik & Pollock, 2017).

Rise

While the underground raves of the 90s may have been more exclusive to alternative music subcultures, the events that exist today appear to have largely shifted into mainstream youth culture (Duff et al., 2007; Fernandez-Calderón et al., 2013). The shift from all-night events to daytime-focused events is likely to have broadened their appeal[6]. Other key differences between conventional raves and contemporary festivals include: (1) alcohol now being prominent in the mix of substances used – an example of the impact licensing has had on drug-using patterns. Indeed, alcohol brands often have sponsorshi*p* deals and are cleverly integrated into festivals (Carah, Brodmerkel, & Hernandez, 2014); (2) to obtain a licence, event organisers now collaborate with law enforcement, and heavy drug policing is common – a change which has significantly altered event atmosphere and drug taking practices; and (3) attendees are not necessarily music fans anymore – there is a common belief events have become less about the music and more about other elements such as fashion, novelty experiences and posts on social media (Kopotsha, 2017; Robertson, 2016). The multiplicity of differences between event types is summarised in *Table 2.1*.

[6]Indeed, festivals in WA are predominantly held on Sundays and many attend work the next day – an almost impossibility for past ravers.

Table 2.1: Characteristics of different event types

Characteristic	Conventional raves	Contemporary festivals	Licensed venues (bars, nightclubs)
Time period emerged	Peak period=late 80s to late 90s	Early 90s, but most growth in 2000s	Disco nightclubs emerged in 70s, while EDM clubs emerge in mid-80s, but most growth in 90s
Regulation status	Operate outside the law, underground	Operate within the law, event regulations	Operate within the law, venue regulations
Liquor licence	Not licensed	Occasional licence, more restrictions than nightclubs such as alcohol content, but unlimited availability. Some events also allow bring-your-own alcohol in addition to onsite purchase (e.g. Rainbow Serpent)	Permanent licence, limited restrictions on types of alcohol available (shots and energy drinks)
Location	Often isolated venues, such as abandoned warehouses and open fields	Temporal boundaries, often large parks and showgrounds In colder countries, events are also indoor (e.g. convention centres holding 50,000 people)	Permanent building, often in entertainment district
Commercial status	Non-commercial events, grassroots organised	Commercial events	Commercial business
Time of day	All night events	Typically daytime focused (commonly 12pm–10pm, although as early at 10am and as late as midnight) Exceptions: Multi-day camping festivals, particularly transformational-style events, tend to focus on both night and day New Year's Eve (NYE) events and boutique EDM festivals often run past midnight	Fixed night hours (Nightclubs often open from 8pm, while bars often open at midday. Some jurisdictions and individual clubs have lockout laws at 2pm)
Duration	Typically one night	Varies from 1 to 10 days	All year round, can attend most nights of the week
Time of year/frequency	All year round, could attend weekly	Some in winter, but a more defined festival season. In Australia, peak season is from September to May	All year round, can attend most nights of the week
Music genre/s	Exclusively EDM	Varies: festivals often feature multiple genres, including live acts – not just deejays	Varies
Subculture	Strong alternative music subculture with ethos such as PLUR, specific aesthetic, fluoro, pacifiers, glow sticks, social norms, etc.	Mixed – largely mainstream, although there are many festivals featuring alternative/more unique subcultures (e.g. Blazing Swan, Rainbow Serpent) Mainstream EDM festivals associated with 'muscle culture' (shirtless males, steroid use) Strong international trend of 'bohemian' fashion and 'post-apocalyptic/dystopia' costumes	Mixed – largely mainstream, but varies according to the venue/acts/deejays
Drug use	Ingrained drug culture with peer HR/sharing/etc. Alcohol not predominant in the mix of substances used	Less engrained drug culture, peer support and information sharing Alcohol predominant in the mix of substances used, but widely recognised to feature substantial illicit drug use	Less engrained drug culture, peer support and information sharing Alcohol predominant in the mix of substances used

Characteristic	Conventional raves	Contemporary festivals	Licensed venues (bars, nightclubs)
Level of advertising	Flyers, word of mouth, private online forums. Often 'secret' last-minute locations sent out	Most are widely advertised via digital technologies, including music news/promotion sites, online social media, etc.	Often advertised via digital technologies, including radio, online social media, etc.
When are they held	Often weekly, fortnightly or monthly	Individual festivals are typically annual, many at a variety of interstate and international locations Some boutique festivals may operate more frequently (e.g. an event series over summer)	Fixed nights, although some events operate in special-event venues only
Scale	Hundreds to thousands max	Typically tens of thousands per day, although there is an increasing trend of boutique/mini-fests. Normally always considered a 'mass gathering'	Hundreds to thousands max
Ages and income	No alcohol was served, so patrons could be under 18 years. Also, entrance fees were much lower than festivals, encouraging youth attendance	Most 18+ due to age restrictions at festivals. Also, tickets are quite expensive (from $70 for smaller, boutique festivals to over $300 for multi-day festivals) so shifted towards employed young adults	18+ due to legal requirements for venues serving alcohol

The increasing popularity of these events has given rise to what is commonly known as the 'festival season', which typically takes place in the warmer Australian months (September–May). Anecdotal evidence suggests this festival season has slowly become integrated into youth culture for many young Australians. While EDM festivals have existed internationally since the late 1980s, and the early 1990s in Australia, they experienced exponential growth in the 2000s and seemed to fuse with other festivals which had traditionally focused on rock music. In Australia, there was a steady increase from 2004 to 2015 in festival attendance (200k attendees to 1.3 million) and annual revenue (9 million to 129 million) (Live Performance Australia, 2016). However, the most recent data has fluctuated, with attendance/revenue falling in 2016, but rising significantly in 2017 (Live Performance Australia, 2017, 2018). The industry 'fall' and subsequent diversification is discussed next.

Fall

While in Australia many touring festivals operated successfully from the mid-2000s up to 2015, in recent years many have been cancelled. The significant decline observed in the attendance/revenue data reported above was allegedly due to two mega-festivals – Future Music Festival and Stereosonic – being cancelled in 2016 (Live Performance Australia, 2017). However, other mega-festivals cancelled around the same time included Soundwave and the Big Day Out, while earlier cancellations included Parklife, Good Vibrations, Summadayze, Creamfields and V Festival. A multitude of smaller 'boutique', 'mini' and

‘micro’ festivals (as small as a few hundred patrons) have emerged to replace them, and other mega-festivals have expanded across jurisdictions (e.g. Falls Festival). It is also important to note that many of the smaller festivals may not be captured in the Australian ticket and revenue data collection system, so current figures likely underrepresent the scale of the industry.

Diversification

While conventional raves had largely consistent characteristics, the characteristics of contemporary festivals vary considerably. Currently, a multiplicity of genres and styles attracts different subcultures and types of drug users. Some broad examples include indie/alternative festivals, transformational/psytrance, mainstream EDM festivals, mainstream mixed-genre festivals, boutique beach festivals, boutique bush festivals, boutique winery festivals and metropolitan pop-up festival series. While there are similarities across these festivals, the event size, musical genres, fashion, age of attendees, crowd behaviour, types of alcohol sold and types of illicit drugs used can vary considerably. *Table 2.2* gives examples in WA, and

Table 2.3 provides a timeline of festivals using a local example to help paint a general picture of the evolution of the industry. As evident in the timeline, within WA, festivals emerged in the early 90s, proliferated in the 2000s (with many mega-festivals coming to the state), and diversified in the 2010s.

Table 2.2: Some examples of festival styles in Western Australia (2018)

Festival type/style	Key features	WA example/s
Indi/alternative festivals	Often feature both up-and-coming artists and international artists Typically attract ‘hipsters’ – https://en.wikipedia.org/wiki/Hipster_(contemporary_subculture)	Laneway festival
Transformational/psytrance	Typically multi-day camping Attract multiple age groups Have principles such as self-reliance, self-expression and community	Blazing Swan
Mainstream EDM festivals	Typically 1–2 days in metropolitan locations Notorious for ‘muscle culture’ relating to shirtless males and steroid use (The Daily Telegraph, 2015)	Origin Stereosonic
Mainstream mixed-genre festivals	Typically one-day events Attract a wide range of people and ages	Groovin the Moo
Boutique beach festivals	Typically one-day events Typically feature less acts Often shorter in duration	Sets on the Beach series Castaway

Festival type/style	Key features	WA example/s
Boutique EDM bush festivals	Often involve multi-day camping Often feature more hardcore EDM subgenres	Enchanted Garden
Boutique winery festivals	Typically one-day events Typically feature less acts Attract a more subdued crowd than	Hot Dub Wine Machine Grapevine Gathering
Metropolitan pop-up/mini festival series	Annual series events Typically feature less acts Typically located in main entertainment districts	Ice Cream Factory series
Free community festivals	Typically featuring local artists Free for all ages Often promoted as being alcohol and drug free Can attract a mixed crowd, particularly younger people	SOTA, WAM
Folk festivals	Often regional locations Typically have mix of music, activities and markets Attract an older crowd and families	Nannup

Note. This table should not be considered exhaustive of all festival styles in WA in 2018. It is based largely on the candidate's local knowledge and online searches. The key features listed can also vary.

Table 2.3: Festival timeline (local WA example as at 30/08/2018)

Year	Emerged	Cancelled/discontinued OR hiatus
1990	Nannup Festival (folk)	-
1991	-	-
1992	-	-
1993	The Big Day Out (BDO, mixed genre) The Fairbridge Festival (regional camping folk, blues) Blues at Bridgetown	-
1994	-	-
1995	-	-
1996	-	-
1997	-	-
1998	-	BDO (one year hiatus)
1999	-	-
2000	-	-
2001	Breakfest (Boxing Day EDM breakbeats) Gatecrasher Summer Sound System	-
2002	Two Tribes (EDM) (launched earlier in other jurisdictions)	Gatecrasher Summer Sound System
2003	Hyperfest (AOD free, ages 12 and above)	-
2004	Good Vibrations (mixed genre) Summadayze (EDM)	-

Year	Emerged	Cancelled/discontinued OR hiatus
2005	Southbound (mixed-genre, multi-day, camping) Taste of Chaos (emo/screamo/punk) West Coast Blues 'n' Roots Parklife (first WA arm, mixed genre)	-
2006	Future Music Festival (mixed genre)	-
2007	Soundwave (punk/metal) V Festival (mixed genre) Origin (NYE EDM festival) Nevereverland (EDM)	Two Tribes discontinued
2008	Global Gathering (EDM) Stereosonic (EDM – first WA arm, launched in 2007 in VIC)	Taste of Chaos discontinued
2009	St. Jerome's Laneway Festival (first WA arm, launched in 2005)	Global Gathering discontinued Nevereverland discontinued
2010	Creamfields (EDM) Sets On The Beach (boutique beach festival runs > 4 times per summer) Groovin the Moo (mixed genre – first WA arm) Good Life (under 18s festival)	V Festival discontinued
2011	-	-
2012	-	Good Vibrations discontinued
2013	Cam*p* Doogs (regional camping, mainly EDM)	Summadayze discontinued Creamfields cancelled
2014	Blazing Swan (transformational) Listen Out Festival (mainstream mixed genre)	Parklife discontinued
2015	Castaway (boutique island beach festival – runs twice in summer)	BDO discontinued Southbound discontinued
2016	Shipwrecked (boutique beach festival) Electric gardens (boutique EDM festival) Enchanted garden (boutique EDM bush camping festival) Earthcore in the Park (transformational – first WA arm/branch off)	Soundwave discontinued Stereosonic discontinued West Coast Blues n Roots hiatus
2017	Hot Dub Wine Machine (boutique EDM winery festival) Falls Festival (first WA arm) Ice Cream Factory (summer 'micro-festival' over 14 nights)	Shipwrecked discontinued Enchanted Garden discontinued Earthcore cancelled last minute West Coast Blues n Roots hiatus
2018	Hidden Festival (boutique EDM/hi*p* ho*p* festival)	-

Note. This table may not give an exhaustive list of all WA festivals in this time period. It is based on the candidate's local knowledge and online searches. Although not stated, many of these festivals travel to multiple jurisdictions. Discontinued=did not run from this year forward (i.e. not necessarily cancelled).

It should also be noted that more recently the appeal of the rave has resurfaced, with the emergence of several organised warehouse party series, as well as smaller underground events organised by groups of friends and young deejays who post last-minute locations on private Facebook groups. The increasing diversification of the scene may reflect a growing disenchantment with mega-festivals due to perceived exploitation and commercialisation (ticket prices artificially inflated and 'weaker' line-ups) (Willsteed, 2014), as well as increased drug policing. This growing disenchantment may be contributing to a resurgence

in underground events, as well as commercial companies trying to revive the feel of raves, while still operating within the law. Indeed, festival director Daniel Arrigoni stated 'The Compound' warehouse series was "a nod to the fond (if not fuzzy) memories of the early '90s rave scene" and aimed "to rejuvenate the offering of dance music events in Perth" (Oztix, 2017). However, original ravers are unlikely to consider this warehouse revival authentic due to the numerous cultural differences and regulations (see Siokou, 2008). Perhaps unsurprisingly, Perth event organisers have struggled to get permit approvals for warehouse events, with rejections resulting in last-minute location changes to established entertainment venues (The Compound, 2017). However, despite their recent resurgence, warehouse parties did not meet the criteria of a 'music festival' for the present study.

Systematic review considerations/aims

The preceding sections demonstrate how festivals have evolved and diversified, and why this heterogeneity warrants consideration when researching and responding to drug issues at festivals. In the following systematic review, consideration is given not only to the term used to describe the event (e.g. EDME, dance party), but to its characteristics – the year it was held, its size, location and musical genre/s – to gain a more complete picture and appropriately consider and compare findings.

The following systematic review has two key purposes: (1) to synthesise existing knowledge about the festival phenomenon and drug use, accounting for the significant shifts that have occurred from earlier rave-based research; and (2) identify the gaps and limitations in the existing body of knowledge which could be addressed in the present research and future studies. As explained previously, the literature was categorised (based on study aims and reported findings) into four key themes (see *Systematic review article categorisation*).

It should also be noted that there is a wider body of literature which sits just outside the focus of this review. For example, nightclub studies are clearly concerned with similar issues/themes covered in this thesis (e.g. drug use and HR). While it would be interesting to compare and contrast findings across different recreational music settings, that is outside the scope of this research. As illuminated previously, festivals are a unique (albeit heterogeneous) phenomenon, and thus warrant concentrated attention. This is not to say the broader literature on drugs within the music scene is not useful for informing how drugs are considered and addressed in festival settings. Indeed, articles that were excluded through the PRISMA review process were used to inform the candidate's understanding of issues such as drug use patterns, pleasures and harms in recreational music settings.

Theme 1: Drug use prevalence, patterns and practices

The historical links between drug use and recreational music events have been well documented, but the prevalences, patterns and practices of drug use at contemporary festivals have not. Although the media and public/political debate have portrayed illicit drug use as a normal feature of festivals (e.g. Herald Sun, 2017; Savulescu, Rochford, & D'Hotman, 2016), a review of media coverage as part of this research found little quantitative evidence cited in support of claims. While again acknowledging festivals are heterogeneous and findings typically cannot be generalised beyond the sample investigated, collating the available evidence provides the best available indications of the prevalence of drug use at festival-type events[7]. Further, it helps identify gaps that could be addressed in future studies. While no temporal or geographical limitations were set for this review (due to the scarcity of academic literature available), the primary aim was to gain insight drug use associated with contemporary Australian festivals.

Prevalence

A variety of different sources provide evidence about illicit drug use at festivals, including cross-sectional surveys of festivalgoers, wastewater studies, on and offsite medical records of drug-related presentations, and media reports of drug-related arrests, hospitalisations and deaths. For the purposes of this review, articles pertaining to negative consequences (e.g. medical presentations) were classified within *Theme 3: Drug-related harms/negative effects*, while studies involving surveillance of use were classified within *Theme 1: Drug use prevalence, patterns and practices*.

Cross-sectional surveys

Table 2.4 summarises prevalence data extracted from eight studies which investigated drug use associated with attending festival-type events. Unfortunately these studies did not report on the same spectrum of drugs: some reported rates for individual drugs, but not overall rates of illicit drug use, and vice versa. Again, it is important to note that while many previous researchers investigated drug use among festivalgoer samples (e.g. lifetime and recent use), they did not target drug use specifically associated with festival attendance (e.g. Day et al., 2018; Fox et al., 2018; Lim et al., 2010; Mohr, Friscia, Yeakel, & Logan, 2017). Martinus et

[7] Again, the term 'festival-type events' is used to acknowledge that the characteristic of events studied vary.

al. (2010, p. 796) suggested this lack of focus on festivals is due to "commercial sensitivities" making these events "largely impenetrable" (p. 796) for researchers. Essentially, festival promoters do not want their festivals to be characterised as drug-using events, and are thus unlikely to approve access to their patrons for this purpose.

Data pertaining to overall rates of illicit drug use were reported in only two of the eight studies, both of which investigated genuine music festivals, as opposed to more ambiguous dance events. While Martinus et al. (2010, p. 805) claimed illicit drug use was "minority behaviour" (p. 805), with one-third (32%) of patrons interviewed at a Scottish festival reporting use, Hughes et al. (2017) found a clear majority (65.3%) reported illicit drug use at the last Australian festival they attended. However, in addition to geographical and temporal differences between these studies, key methodological differences warrant consideration. Specifically, Martinus et al. (2010) interviewed patrons onsite, whereas Hughes et al. (2017) surveyed festivalgoers online. Onsite recruitment has three limitations that could lead to illicit drug use being underrepresented: (1) although Martinus et al. (2010) claimed the information collected was unlikely to be considered sensitive, illicit drug use may have been under-reported due to privacy/legal concerns (e.g. patrons may have been hesitant to disclose information to a stranger about illegal activity); (2) onsite methods cannot capture drug use occurring post-interview, which again could result in underrepresentation if data collection occurred before the festival ended; and (3) onsite methods may suffer from intoxication, distraction and selection bias (e.g. systematically excluding patrons on the dance floor or intoxicated). However, a limitation to Hughes et al. (2017) online sampling method is the potential for retrospective recall bias. Furthermore, neither study reported the musical genres/styles of festivals attended, which influences the drug-using subcultures attracted (e.g. seeEngels & Ter Bogt, 2005). As shown in *Table 2.4*, Hughes and Moxham-Hall (2017) reported similar rates of illicit drug use to Hughes et al. (2017) (68.2%). However, this study involved respondents logging their festival drug use in a smartphone application over a 3-month period, and it was unclear what percentage of respondents reported illicit drug use, given they reported the percentage among responses/festival logs. Moreover, the sample was very small (n=38, logs=44).

With respect to individual drugs used, there was significant variation across the studies. While alcohol use was reported by 84–98% of patrons in studies from the past decade, it was reported by smaller proportions in earlier studies (18–52%). However, Boys et al.'s (1997) data collection occurred over 20 years ago and recruited respondents from both underground and commercial 'raves'; therefore, the marked variation likely reflects shifts in both cultural norms and availability of alcohol onsite. Excluding Hughes and Moxham-Hall

(2017), which did not report on individual illicit drugs, the most commonly used illicit drug in five out of seven studies was cannabis, with rates ranging from 17% to 65%. In the remaining two studies, drugs sold as 'ecstasy/MDMA' were most common, with rates ranging from as low as 2.6% in Hesse, Tutenges, and Schliewe (2010) Danish study to 64% in Van De Wijngaart et al. (1999) Dutch study. However, Hesse et al. (2010) surveyed festivalgoers on the train departing the Roskilde festival, which may have presented privacy issues (e.g. concern about train/police guards intercepting them while completing the questionnaire), and the festival is family-friendly. Other illicit drugs were less consistently reported on, except amphetamines, which ranged from 2.3% to 47.8% and appeared considerably more common in earlier studies (<2010).

Unfortunately, age and gender differences were not reported in most studies. However, Martinus et al. (2010) found males were almost twice as likely as females to report illicit drug use (41% vs. 22%), while 18–24-year-olds were more likely than under-18s to do so (32% vs. 20%). Future studies should investigate correlates of drug use to help inform interventions targeting festivalgoers.

Another finding worth noting is that Hesse et al. (2010) found onset and reuptake of use of some drugs was common at the festival investigated. While new onset of drugs other than cannabis and tobacco was reportedly rare (<1%), 7% of MDMA users and 9% of cocaine users reported reuptake following at least one year of abstinence. Thus, Hesse et al. (2010) identified festivals as ideal settings for preventative measures.

Overall, this synthesis highlights the limitations of the evidence regarding the prevalence of illicit drug use at festivals. It also demonstrates that festivals, and drug use associated with festivals, is not homogenous. The Australian data indicates very high rates of illicit drug use at festivals (65%) (Hughes et al., 2017), although it is important to note this study recruited a convenience sample and therefore cannot be seen as representative of the wider population of Australian festivalgoers. Additionally, drug use was not verified (e.g. via urine screening). However, most epidemiological studies of people who use drugs must rely on self-report, and participants are more likely to be honest under private conditions of anonymity (e.g. online) (Gnambs & Kaspar, 2015).

Table 2.4: Prevalences of drug use at festival-type events documented in the literature (%)

	Boys, Lenton, and Norcross (1997) *N*=83	**Van De Wijngaart et al. (1999)** *N*=764	**Barrett et al. (2005)** *N*=186	**Martinus et al. (2010)** *N*=1589	**Hesse et al. (2010)** *N*=1787	**Lajos and Zoltán (2014)** *N*=256	**Hughes et al. (2017)** *N*=2115	**Hughes and Moxham-Hall (2017)** *N*=44 festival logs
Event type & genre	Last underground or mainstream rave attended	Mainstream 'house parties' (Dutch tern for rave/festival)	Last unspecified rave attended	Unspecified music festival & genre/s	Roskilde Festival, mixed-genre, multi-day camping, family-friendly	Peninsula Music Festival, mixed-genre, other activities	Last music festival attended, genres unspecified	Music festivals attended over a 3-month period, genres unspecified
Country & data collection year	Australia, 1995	The Netherlands, 1996	Canada, 2002-2003	Scotland, 2008	Denmark, 2009	Romania, 2011	Australia, 2015	Australia, 2016
Method	Offsite, in person interview	Onsite interview (when entering and leaving)	Offsite, in person interview	Onsite interview	Survey on the train after departing the festival	Onsite interview or survey (unknown)	Online survey	Logs in a specially designed smartphone application
Any drug	91.6	90	97.3	-	-	-	-	-
Any illicit drug	-	-	-	32	-	-	65.3	68.2[c]
Alcohol	18.1	34	52.2	88	98.0	-	-	84.1[c]
Tobacco	-	75	59.1	-	69.0	-		-
Ecstasy/MDMA	31.3[a]	64	50.0	16	2.6	4.8	56	-
Cannabis	51.8	41	64.9	24	52.2	16.6	31.5	-
LSD	34.9	1	<5	6	1.3	-	13.6[b]	-
Ketamine	-	-	8.6	-	0.6	-	-	-
Amphetamines	34.9	34	47.8	8	2.3	4.8	7	-
Benzodiazepines	6.0	-	-	-	-	-	-	-
Cocaine	-	7	9.1	13	4.0	1.2	9.7	-
GHB	-	-	7.0	-	0.3	-	1.4	-
NPS	-	-	-	-	-	-	1.3	-
Inhalants	25.3	-	-	-	-	-	-	-

	Boys, Lenton, and Norcross (1997) *N*=83	Van De Wijngaart et al. (1999) *N*=764	Barrett et al. (2005) *N*=186	Martinus et al. (2010) *N*=1589	Hesse et al. (2010) *N*=1787	Lajos and Zoltán (2014) *N*=256	Hughes et al. (2017) *N*=2115	Hughes and Moxham-Hall (2017) *N*=44 festival logs
Psilocybin	-	2	-	-	1.4	-	-	-
Other drugs	2.4	-	-	4	-	-	5.9	-
Legal highs/ethno-botanical plants	-	-	-	-	-	19.8	-	-

Note. Hughes et al. (2017) reported percentages of those who had used an illicit drug. Thus, calculations were made to estimate the percentage of the total sample (percentage x 1382 / 2115).

[a]Includes 3.6% who used drugs sold as 'Smacky-E', Trippy-E' and 'Coke-E', which were claimed to be MDMA + heroin, MDMA + LSD and MDMA + cocaine, respectively.

[b]This is the proportion for hallucinogens, not just LSD.

[c]This figure relates to the percentage of responses reporting illicit drug use, not respondents. The number of respondents who made festival logs was not reported.

Wastewater studies

An emerging body of literature describes the analysis of wastewater for surveillance of illicit drug use at festivals. Wastewater studies have been said to complement more conventional epidemiological methods, such as cross-sectional surveys (Lai et al., 2013). Some advantages of this method are that it provides unobtrusive and objective surveillance of the population, as opposed to a sample of individuals. Wastewater studies can therefore avoid some subject sampling and reporting biases, ethical issues, and various other limitations/problems related to cross-sectional surveys. Of course, there are also limitations to this method, discussed below. Five wastewater studies which met the review's inclusion criteria are discussed chronologically.

The earliest study investigated illicit drug use at an annual Australian music festival over two consecutive years (2010–11) and compared the data with measurements from a nearby urban community (Lai et al., 2013). A major strength of this study was that the festival had an onsite wastewater treatment plant serving only that event (the other wastewater studies did not). The estimated prevalence ranking at the festival was "cannabis > MDMA > methamphetamine > cocaine" (p. 597), and MDMA was the only drug with higher consumption rates than in the nearby community. However, details provided about the festival (e.g. variety of musical genres, children attending) suggest it was a family-oriented event, rather than an EDM festival. Additionally, the festival ran for six days, ending on New Year's Day; given these dates cover the Christmas holiday period, rates of illicit drug use were probably elevated in the general population at that time. Thus, it would be interesting to replicate this study with an EDM festival on a date that does not clash with other celebrations/events. While Lai et al. (2013) concluded that wastewater studies are an effective method for evaluating the efficacy of supply/demand interventions at festivals, a key limitation is they cannot measure the frequency of drug use. Thus, any declines observed could reflect declines in individual drug use, rather than the number of individuals consuming drugs.

Mackuľak et al. (2014) investigated psychoactive compounds in wastewater during two large-scale music festivals in Slovakia (unknown dates). Consistent with Lai et al. (2013), the authors found a 10-fold increase in MDMA concentration during the Pohoda festival (30,000 attendees, mixed-genres, international EDM artists), but no significant increase in MDMA during the Lodenica festival (10,000 attendees, country/folk music). The authors concluded that differences in musical styles and ages attracted may have influenced consumption. However, given there were no dedicated wastewater systems for these festivals, differences also could have been influenced by extraneous factors, such as other

events occurring around the same time. The same authors later examined nicotine consumption during four different festivals in Slovakia and the Czech Republic, and again considered differences across music styles (Mackuľak et al., 2015). They found Topfest festival (featuring rock/metal genres) had the highest rates of difference (four-fold increase), followed by the Grape dance music festival (2.5-fold increase). No significant differences were identified for the country/folk festivals. Thus, they identified rock/metal and dance genres as being associated with higher levels of tobacco smoking.

The fourth wastewater study analysed influent and effluent waters in Spain during 2008 and 2009, including during a large-scale music festival (40,000 attendees, mixed-genres, indie/electronic) (Bijlsma, Serrano, Ferrer, Tormos, & Hernández, 2014). The authors assessed the impact of the festival on wastewater and the efficacy of treatment plants in eliminating illicit drugs. Bijlsma et al. (2014, p. 708) identified "notable" (p. 708) increases in illicit drug concentrations in influent and effluent waters during the festival, particularly for MDMA and cocaine. They therefore concluded that the festival resulted in more contaminants entering the aquatic system. While they believed these levels were unlikely to cause any acute harms, they noted the longer-term consequences were less clear.

The most recently published wastewater study concerned the 2016 Roskilde festival in Denmark (mixed-genre, 7-day event) (Hoegberg et al., 2018). The researchers collected 44 pooled urine samples from three urinals at main stages and youth campgrounds, a method that may have introduced sampling bias towards higher rates of use. Nevertheless, MDMA and cocaine were detected in 100% of samples, amphetamine was detected in two-thirds and ketamine in over a third. While no NPS were detected, Hoegberg et al. (2018) noted their methods may be to blame.

Overall, wastewater studies provide information about drug use at festivals which can supplement data from other surveillance methods. However, only two studies could directly link drug use to festivals, and only one was Australian. In contrast to Hughes et al. (2017) cross-sectional survey of Australian festivalgoers (Table 2.4) cannabis was the most common illicit drug detected in wastewater at the Australian festival studied (Lai et al., 2013); this likely reflects the type of festival investigated (all ages). Future studies should target festivals with dedicated wastewater treatment plants.

Patterns

Patterns of drug use at festivals were rarely explored in studies that met the inclusion criteria for this review. Findings from eligible studies were grouped into polydrug use (n=4),

points/order of consumption (*n*=2), and amounts used (*n*=3) for review. (Other studies of polydrug use exist (e.g. Hunt, Evans, Moloney, & Bailey, 2009), but most were exploratory, asking people in the EDM scene about their experiences more generally, rather than delineating event-specific patterns of polydrug use.)

Polydrug use

Only two studies investigated polydrug use as a primary objective. Over two decades ago, Boys et al. (1997) found about two-thirds (67.5%) of Australian 'rave' attendees (mainstream and underground events) reported using more than one drug (excluding tobacco) and over a quarter (28.9%) reported using more than two. More recently, Barrett et al. (2005) identified higher rates, with 80% of Canadian rave attendees using more than one drug (excluding tobacco), and 50% using more than two. Both reported a similar average number of drugs used (2.3 vs. 2.5). While not their primary objective, two other studies reported figures for illicit polydrug use (e.g. excluding alcohol). Hughes et al. (2017) reported that about half (52.6%) of all illicit drug users reported using more than one illicit drug and a quarter (24.5%) reported using more than two at the last festival attended. In contrast, Fox et al. (2018) study of drug users at two mixed-genre music festivals in Colorado found the proportion using two illicit drugs was much higher (84%). However, Fox et al. (2018) recruited participants from the medical tent, creating a selection bias towards patrons who may engage in riskier patterns of drug use. Given both of the latter studies investigated licensed contemporary festivals, polydrug use rates would been significantly higher had alcohol been included in the mix.

Overall, Hughes et al. (2017a) was the only study providing indications of polydrug use at contemporary Australian festivals. However, different drug combinations were not delineated, and the omission of alcohol is critical given it is now a key drug of interest. Future studies should include alcohol in polydrug use analyses and delineate different drug combinations, particularly those which may pose greater health risk. It is also worth noting that while Martinus et al. (2010) did not report rates of polydrug use, they mentioned that, among their sample of festivalgoers, illicit drug users did not avoid alcohol use. They therefore concluded polydrug use was a concern in festival settings.

Table 2.5: Polydrug use at festival-type events as documented in the literature

Drug	**Boys et al. (1997)** ***N*=83**	**Barrett et al. (2005)** ***N*=186**	**Hughes et al. (2017)** ***N*=2115**	**Fox et al. (2018)** ***N*=171**
Event type & genre	Last underground or mainstream rave attended	Last unspecified rave attended	Last music festival attended, genres unspecified	Music festivals (attending at the time)

Drug	Boys et al. (1997) *N*=83	Barrett et al. (2005) *N*=186	Hughes et al. (2017) *N*=2115	Fox et al. (2018) *N*=171
Country & data collection year	Australia, 1995	Canada, 2002–03	Australia, 2015	Colorado, 2015–16
Method	Offsite, in person interview	Offsite, in person interview	Online survey	Onsite qualitative interviews
Used two or more drugs (excl. tobacco)	67.5%	80%	52.6% (28.1+24.5)[a]	84%[a]
Used three or more drugs (excl. tobacco)	28.9%	50%	24.5%[a]	-
Average number of drugs used	2.3 (range=1–7)	2.5 (range=0–7, *SD*=1.2)	-	-

[a]These figures were among those who reported illicit drug use. Had alcohol been included, the rates would likely have been significantly higher.

Points/order of consumption

Boys et al. (1997) and Barrett et al. (2005) considered the chronology or sequencing of consumption in relation to the last 'rave' attended. Boys et al. (1997) found almost two-thirds reported using a drug (including alcohol) before arriving at the rave (64%), 71% used a drug during and 41% used after. Boys et al. (1997) also identified patterns related to classes of drugs. For example, amphetamines were reportedly used more before and during raves, ecstasy was used more during, cannabis and alcohol were used more before and after, and tranquilisers/benzodiazepines were (unsurprisingly) used more after. Boys et al. (1997) reported:

> *...people attending raves in Perth are combining their drugs and some are also using the drug alcohol. These findings contrast with those polydrug-related messages which exist, notably to avoid mixing drugs, especially with alcohol.* (p. 233)

Despite the low prevalence of alcohol use in this sample (18%), Boys et al. (1997) expressed concern that warnings about mixing alcohol and other drugs were not being heeded by some.

Barrett et al. (2005) did not report on consumption before/during/after raves, but discussed sequencing/order of administration more broadly. However, the only reliable polydrug sequence they identified was that alcohol preceded the use of other drugs. They speculated that using alcohol first may have increased the probability of polydrug use, presumably due to lowered inhibitions. Another possibility discussed was that alcohol may be used first for practical reasons, given it was commonly prohibited or restricted at raves and was less easily disguised than drugs like pills, powders or tabs. Nevertheless, Barrett et al. (2005) expressed concern about increased toxicity when alcohol is combined with CNS stimulants, and potentiation when combined with other CNS depressants.

Amounts used

The reviewed studies provide little data on drug quantities used at festival-type events. As shown in *Table 2.6*, Van De Wijngaart et al. (1999) reported that respondents in the Netherlands used a median of two ecstasy pills at 'house parties'[1], although females, older users and those with a preference for 'softer' styles of EDM reportedly used smaller amounts. On the other hand, Barrett et al. (2005) found Canadian respondents used an average of only one pill at their last rave. However, Barrett et al. (2005) did not define 'rave'; if the sample included nightclub events, which are typically shorter in duration and not necessarily considered a 'special event', this could account for the lower quantity of use observed. It should also be noted that sample sizes were not reported for either study, and low response rates could have affected the reliability of results. Additionally, the number of pills consumed does not provide information about milligrams of MDMA consumed, and there may be differences in ecstasy purity between countries. The third study targeted plasma concentrations among MDMA users before, during and after an Australian dance party, but also recorded the number of ecstasy pills used (Irvine et al., 2006). The points at which plasma measurements were taken – the night before, the midpoint (4pm) and the end (10pm) – suggest this was a contemporary festival. Irvine et al. (2006) reported that an average of 2.5 pills were used, although it should be noted the sample was small (n=27) and the nature of the study could have attracted more dedicated ecstasy users. Thus, overall, no studies identified for this review provided a clear indication of amounts used at contemporary Australian festivals. While recognising problems with self-report data, a better understanding of amounts used is needed to help inform HR messages regarding dosing.

Table 2.6: Amounts of drugs used at festival-type events as documented in the literature

Drug	Van De Wijngaart et al. (1999) Total *N*=764, but did not report n for ecstasy dosage Median	Barrett et al. (2005) Total *N*=186, but did not report n's for drug dosages Mean (SD)	Irvine et al. (2006) *N*=27 Mean (SD)
Event type & genre	Mainstream 'house parties' (Dutch tern for rave/festival)	Last unspecified rave attended	Large-scale 'dance party'
Country & data collection year	The Netherlands, 1996	Canada, 2002–03	Australia, unknown data collection year
Method	Onsite interview (when entering and leaving)	Offsite, in person interview	MDMA users completed physiological testing and surveys before, during after the event
Alcohol	-	6.4 (5.8) drinks	-
Ecstasy/MDMA	2 pills[a]	1.1 (0.6) pills	2.5 (1.4) pills

[1]A Dutch term for raves or festivals featuring EDM.

Drug	Van De Wijngaart et al. (1999) Total *N*=764, but did not report n for ecstasy dosage Median	Barrett et al. (2005) Total *N*=186, but did not report n's for drug dosages Mean (SD)	Irvine et al. (2006) *N*=27 Mean (SD)
Cannabis	-	1.4 (1.2) grams	-
Ketamine	-	0.4 (0.2) grams	-
Amphetamines	-	1.1 (0.4) pills	-
Cocaine	-	0.6 (0.9) grams	-
GHB	-	1.7 (1.0) uses	-

Note. Barrett et al. (2005) reported particularly low usage rates for GHB, cocaine and ketamine use (each <10%), thus the number reporting on dosages was also likely low (n<20).
[a]It was unclear whether this was the median number of pills respondents used on typical occasions or at the event where respondents were recruited.

Practices

Studies which investigated drug-related practices were mainly concerned with how certain behaviours affected health risk. Studies which met the criteria fit into four categories: obtaining and supplying drugs (n=4), drug driving (n=3), protective practices (n=1) and festival campsite practices (n=1).

Obtaining and supplying

Lenton and Davidson (1999) and Van De Wijngaart et al. (1999) discussed obtaining and supplying drugs in relation to Australian raves (underground and mainstream) and Dutch house parties. Both studies identified that purchasing drugs before the event, from friends or acquaintances, was common. Van De Wijngaart et al. (1999) collected quantitative data, and found 68% obtained drugs from friends or acquaintances and most transactions took place before the event. In contrast, Lenton and Davidson (1999) collected qualitative data and found only 12% of participants mentioned obtaining their drugs on the day, and identified three reasons for pre-event purchasing: to secure their supply, avoid premium onsite prices, and avoid police detection. The latter reason is interesting given festivalgoers are now more likely to purchase onsite to avoid detection at festival gates (discussed below). Lenton and Davidson (1999) also said that two-fifths of participants discussed supply activities, although they did not report whether the remaining sample denied supplying drugs or simply did not discuss it. Nevertheless, they observed that most supply activities could be described as what is now broadly termed 'social supply', which encompasses forms of supply involving little or no monetary gain within social networks (Lenton, Grigg, Scott, & Barratt, 2016; Moyle, Coomber, & Lowther, 2013). Overall, Lenton and Davidson (1999) concluded that raves were not primary locations for drug transactions.

More recently, Hughes et al. (2017) found almost a quarter of respondents (22.5%) supplied illicit drugs in some form at the last Australian festival attended (primarily ecstasy, followed by cannabis). While Hughes et al. (2017) did not investigate drug sourcing, they concluded that drug policing at festival perimeters could increase supply/demand inside the event as festivalgoers try to avoid police detection, and increased risk to consumers purchasing inside (e.g. heightened risk of misrepresented drugs and no prior experience/peer reviews). However, this finding was based on hypothetical policing vignettes, rather than actual behavioural responses to drug policing.

While obtaining/supplying practices were not a primary focus of Fox et al. (2018) study of US festivalgoers, they did investigate ease of access. However, it was unclear whether they asked about perceived or actual access, and access onsite or before the festival. Nevertheless, they reported all drug classes were easily accessible. On a scale of 1–5 (1=very easy; 5=very difficult), the median perception of ease of access for MDMA, cocaine and ketamine was rated 2, while LSD and magic mushrooms were described as even easier to access (*Mdn*=1). Some respondents claimed drugs were easier to obtain within the festival than outside. Fox et al. (2018) found that the vast majority (81%) obtained their primary drug from a friend, relative or trusted source, again suggesting most patrons utilised 'social supply' (Lenton et al., 2016; Moyle et al., 2013).

Lastly, Barratt, Bruno, Ezard, and Ritter (2018) found that, among 723 psychostimulant users, 67% mostly/always obtained their drugs in advance, while only 12% always/mostly obtained onsite. However, the sample included Australians who had recently attended entertainment venues and/or festivals. Given the distinct policing differences between nightclubs, bars and festivals, it would have been more valuable to examine each venue separately.

Ultimately, no recent studies specifically investigated where festivalgoers obtain their drugs (onsite/offsite) and why[2]; what proportion personally smuggle drugs into festivals and their methods for smuggling; or availability at the event. Given the risks associated with trying to smuggle drugs into festivals (e.g. 'panic consumption', internal concealment) and onsite drug sourcing (e.g. drug misrepresentation), future research into festival-related drug procurement and supply practices is urgently needed.

[2]Although broad observations from an ethnographic study on obtaining/supplying are discussed later in *Campsite practices*.

Drug driving

Three studies investigated drug driving as a risk practice associated with attending festival-type events. Lenton and Davidson's (1999) key findings were that a significant minority reported driving a motor vehicle with someone affected by drugs to/from the last rave they attended (45% sober; 30% OK to drive, but not sober; 12% affected), and there were varying levels of care/consideration about this. The authors advised against police road blocks and car searches on the way to events, which they thought could encourage drug driving (because people may consume their drugs early to avoid detection, also known as 'pre-loading'). However, the introduction of roadside drug testing after this study (in 2007) may discourage driver pre-loading (Woolley & Baldock, 2009).

Duff and Rowland (2006) conducted a study on the prevalence and reasons for drug driving among Australian club and rave-goers (not defined as commercial or underground) to help inform prevention efforts. This study was partly conducted in response to Victorian statistics indicating that illicit drugs accounted for more road deaths than alcohol. Duff and Rowland (2006) found higher odds of drug driving after a rave than after leaving other settings, and that most drove for convenience or lack of alternative options. They suggested expanding countermeasures, particularly in non-metropolitan settings, such as providing better public transport options and increasing awareness of drug-driving risks.

In the US, Furr-Holden, Voas, Kelley-Baker, and Miller (2006) conducted a study of people entering and leaving unspecified EDME. They found most respondents (62%) who planned to drive after the event had used a drug (including alcohol; verified via bioanalysis), and that respondents were more concerned about driving under the influence of alcohol than other drugs. They recommended developing drug-driving interventions in these settings.

No recent studies have investigated drug driving associated with contemporary Australian festivals. It would be interesting to examine the current prevalence of this practice, given metropolitan festival tickets commonly include transport on city trains and sometimes free or low-cost shuttle services. Such research could help determine whether more preventative efforts/countermeasures are needed.

Protective practices

Only two studies reported festivalgoers' protective practices. Van De Wijngaart et al. (1999) asked people exiting a Dutch house party about any precautions they had taken. They found almost half (46%) drank water at some point during the event, 86% had eaten a meal on the day and 96% had slept the night before (sleep duration/quality was unknown). Additionally,

more than a quarter reported having pills tested (sophisticated drug-checking was, and still is, available in Amsterdam).

More recently, Martinus et al. (2010) surveyed over 1500 people at a festival in Scotland with the intention of assessing the potential for promoting "normative protective practices" (p. 795). Most festivalgoers sampled reported bringing sunscreen and water with them, eating before drinking alcohol, remaining with/looking out for their friends, and having their friends' phone numbers on hand. A substantial minority also bought condoms with them, avoided mixing drugs with alcohol and paced their drinks. However, Martinus et al. (2010) did not report the proportions of alcohol or illicit drug users who reported these practices, or describe the festival style or duration. Knowledge of whether it was a one-day or multi-day camping festival is important for the interpretation of this data. For example, it is easier to bring water and sunscreen in camping gear than a small bag typically permitted at one-day festivals. Nevertheless, Martinus et al. (2010) noted that these practices could help inform a social norms intervention utilising new technologies to encourage protective practices among festivalgoers.

Unfortunately, no studies provided indications of enthusiasm for and engagement in protective practices among Australia festivalgoers. Given the increasing numbers of recent festival deaths (documented later in *Media coverage of drug-related festival fatalities*), understanding the nature and extent of both protective and risk practices is critical for informing educational and HR measures.

Campsite practices

Dilkes-Frayne (2016) investigated drug use patterns and practices at festivals using ethnographic methods. Specifically, she examined socio-spatial relations and drug use within Australian festival campsites. While her analysis was focused on the mediating role of the campsite, she identified various practices that take place within these settings. Campsites were described as spaces where festivalgoers can discuss drugs and protective practices. They were also identified as spaces where there were opportunities to try new drugs, reportedly facilitated by easy access to both drugs and experienced drug users who could provide advice and assistance. In one example, participants collectively discussed the ideal dosage for a festivalgoer using LSD for the first time. These experiences were noted to facilitate shared experience and trust. This contrasts to Hesse et al. (2010), who reported that new uptake of drug use (besides tobacco and cannabis) was extremely rare in their sample. Consistent with earlier findings relating to obtaining drugs, Dilkes-Frayne (2016) reported a preference for purchasing drugs pre-festival from a trusted source so they could test/research

the drugs and avoid paying an onsite premium. However, she explained that pre-event purchasing was not always possible, and in these cases drugs were easy to source from within the campsite which benefited from an open, "porous" layout with privacy (p. 30).

More broadly, Dilkes-Frayne (2016) discussed patterns of drug use across a festival day. She explained how longer-acting drugs (e.g. LSD and MDMA) would often be consumed earlier in the day at the campsite, while amyl nitrite was often used on the dance floor. It was also common to return to cam*p* to consume drugs/re-dose, which meant they could avoid keeping drugs on their person and could engage in practices requiring privacy (e.g. snorting lines). Participants also reported returning to cam*p* when feeling anxious and/or desiring personal time. Alcohol, cannabis and tobacco were identified as key campsite socialising drugs which brought people together, particularly to wind down during the evening. Overall, this study highlighted how campsites created a space to store drugs, take drugs, socialise, rest and recuperate. The findings also indirectly suggest differences in drug use patterns and practices at one-day festivals without camping. Dilkes-Frayne (2016) identified various risk factors related to campsites and implications for festival planning (discussed later in *Interventions considering socio-spatial relations*).

Theoretical frameworks for understanding drug experiences in the festival context

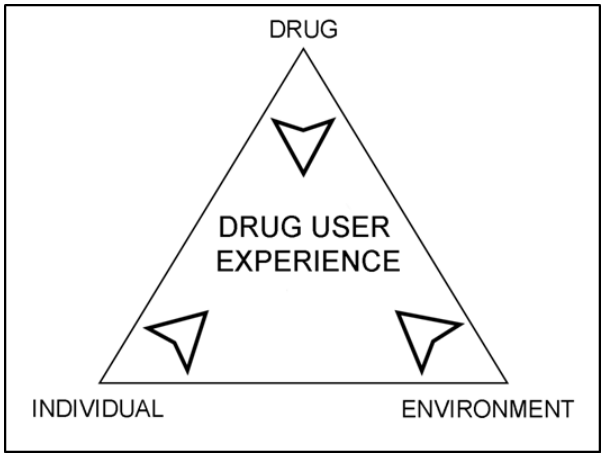
Before reviewing the literature on positive effects, drug-related harms and interventions, three theoretical frameworks are discussed with respect to how they can act as a lens for interpreting the literature and how they were utilised throughout this research. These theories, or approaches to thinking, were applied to help understand how drug use experiences unfold, and how harms are both created and mitigated within specific contexts.

Zinberg's interaction model

Zinberg's interaction model (Zinberg, 1984) is one of the earliest and most widely used models for considering the interplay of factors that form drug experiences. The model states that in order to understand the subjective drug use experience, it is critical to look beyond the basic pharmacological properties of the drug itself (drug) and consider the influence of the individual's psychological mindset and physiological makeup (set) and the wider social/environmental context (setting). Essentially, the drug use experience, and resultant harms and benefits, are viewed as product of these three interacting components. This model is commonly depicted as a triangle (see *Figure 2.1*). This triangle can be used a simple lens

for considering drug-related harms at festivals, which commonly involve a complex interaction of drug, set and setting factors[3].

Figure 2.1: Zinberg's interaction model (1983)



While Zinberg's model is still used today, often as a simple, initial starting point for understanding drug experiences (Australian Government Department of Health, 2004), the value and application of the model within the drugs field has been critiqued. For example, Moore (1993) argued that the 'setting' component has been oversimplified to "the immediate social situation in which drug use occurred" (p. 413). In this simplified formulation, Zinberg's model fails to sufficiently account for complexities of social and cultural change. In response to the public health movement towards environmental change for reducing drug harm, new models sought to better account for and consider the 'environment' (e.g. Rhodes, 2002).

Rhode's risk environment, adapted to enabling environment

Rhodes' (2002) 'risk environment' theory emerged almost two decades after Zinberg (1984) and again considers interacting elements within contexts. However, Rhode's framework is concerned with how different physical, social, economic and political factors, at varying macro, meso and micro levels, might interact to increase risk (Rhodes, 2002, 2009; Rhodes et al., 2006; Rhodes, Singer, Bourgois, Friedman, & Strathdee, 2005). A key feature is the emphasis on the environment's influence on harm, and therefore altering the environment to reduce risk, rather than focusing on altering individual behaviour. The risk environment framework has been said to be underutilised in the context of Australian prevention and HR

[3]The candidate used the interaction model to help illustrate festival risk factors in a recent teen-focused article for *The Conversation* (Grigg, 2019).

initiatives (Duff et al., 2007). Drawing on this framework, Moore and Dietze (2005) conceptualised the idea of 'enabling environments', which centres around creating an environment conducive for HR, which may involve removing environmental barriers or implementing additional interventions. This framework highlights the need for change to occur at an environmental level, in order to allow, or 'enable', change to occur at an individual level. Combining these perspectives forms a 'risk/enabling-environment framework' (Moore & Dietze, 2005).

There are, however, some recognised limitations to the risk/enabling environment model. Problems include the inability to "delineate causal pathways" between environmental factors and drug-related harms, the rigid dichotomy of levels (micro/macro) and the endless array of factors which could be considered (p. 193). However, as Rhodes (2009) asserted, it provides "a generative framework into which empirical and theoretical work might give primacy to context" (p. 193). In the research described in this thesis, it was useful to view festivals as a specific 'risk/enabling environment'. *Table 2.7* below, drawn from Rhodes (2009), provides a simple and practical model in which to situate risk factors for drug-related harms at festivals and consider interventions which may counteract risk. At the end of this chapter, the table is updated with evidence/insights from this review, and it is updated again in the Discussion with new evidence/insights from the current research.

Table 2.7: The 'risk/enabling environment' framework: Examples relating to drug-related harms/deaths at festivals (blank template)

	Micro-environment (event level)	**Macro-environment**
Physical Drug-related risk Intervention		
Social Drug-related risk Intervention		
Economic Drug-related risk Intervention		
Policy Drug-related risk Intervention		

Note. This table is drawn from Rhodes (2009) and was originally applied to HIV/drug injecting.

Drug assemblages

Lastly, the application of 'assemblage thinking' to drug problems has been gaining momentum in recent years (Dilkes-Frayne, 2016; Duff, 2010, 2012, 2014, 2016b). This model, or way of thinking, is distinct from the previous two models in that while Zinberg (1984) and Rhodes (2002, 2009) simplify and situate factors into neat frameworks, assemblage thinking instead works with the complexity of individual events. While assemblage thinking is an evolving field, and to an extent requires one to reject previous understandings of how harm is produced, an attempt is made to provide a basic introduction to assemblage thinking and how it represents a new and useful way of examining drug-related experiences at festivals.

It should first be pointed out that assemblage thinking was touched on earlier when discussing Dilkes-Frayne's work on 'tracing the event' and socio-spatial relations of drugs in festival campsites (Dilkes-Frayne, 2014, 2016). While not explicitly framed as assemblage thinking by the author, the principles described (drawing on Actor Network Theory – ANT) are largely consistent. Indeed, ANT has even been called the "empirical sister-in-arms of the more philosophical assemblage thinking" and both are said to be at the "forefront of a paradigm shift" (Müller, 2015, p. 27). A defining element of assemblage thinking is that it shifts the focus from "who acts" to "what occurs", which has been described as a drawing together of "social, affective and material forces and entities" (Duff, 2016a, p. 17). While other frameworks may struggle to account for how macro factors actually mediate drug use in real life situations, termed the "action at a distance" problem (Latour, 2005, p. 219), this method emphasises "real conditions" in which drug experiences unfold (Duff, 2016a, p. 17). Notions of micro/proximal and macro/distal are dismissed, as are ontological dyads of individuals and contexts. In this way of thinking, one cannot simplify festivals to a single social context, because reified social contexts simply do not exist. Instead, the assemblage becomes the focus or discrete unit of analysis, arguably allowing each entity within the assemblage to be given its due consideration. This type of thinking can therefore provide a lens for understanding why a similar set of actions/things sometimes assemble in ways that decrease harm, while at other times assemble in ways that increase harm. Additionally, this method provides an alternative view of onus or blame when it comes to drug-related problems. For example, rather than blaming a structure (e.g. zero tolerance) or subject (e.g. the festivalgoer), the focus shifts to the problematic assemblage. Duff (2016a) suggested this way of thinking clashes with ontological views of personal/individual responsibility, explaining how a desire to take drugs can arguably be partly "a function of drugs themselves" (p. 19).

Assemblage thinking emerged in response to problems and a lack of progression with existing models. Specifically, Duff (2016a) alleged risk environment researchers had not made significant progress in delineating how environments can be enabled to act differently. However, a criticism of ANT/assemblage thinking is the risk of "describing endless chains of associations without ever arriving at an explanation for the reasons and differences in network formation processes" (Müller, 2015, p. 30). For the purposes of the current research, it was useful to draw on assemblage thinking to consider how drug-related experiences (good and bad) unfold in real conditions. However, the 'risk/enabling environment' can also provide a practical framework in which to situate risk/protective factors and has also not yet been applied to music festivals, which arguably include important structural factors exerting force on festival experiences. To help address some of the criticisms of risk/enabling environment (e.g. temporality, space, 'top-down approach', limiting agency, etc.), assemblage thinking was considered when interpreting findings. Assemblage thinking also has utility for tracing/hypothesising festival experiences/'events' to identify positive and negative assemblages, which can inform HR efforts. Thus, assemblages form part of the qualitative analysis reported in this thesis (see *Negative assemblages*).

Theme 2: Reasons for using drugs/positive effects

As mentioned earlier, an imbalance in academic attention between the positive and negative elements of drug use has been noted by many researchers in the field (e.g. Anderson & Kavanaugh, 2007; Engels & ter Bogt, 2004; Fernandez-Calderón et al., 2013; Hunt & Evans, 2008; Parker, Aldridge, & Measham, 1998). Many have criticised this imbalance and described a dichotomy between epidemiological studies, which typically view drugs as problematic and harmful, and sociocultural studies, which have explored pleasure (e.g. Anderson & Kavanaugh, 2007; Hunt & Evans, 2008). Clearly, this problematising also extends to political and media domains, in which drugs are primarily portrayed as a significant public health problem. Duff (2008) also noted that pleasures associated with drugs are rarely raised in drug policy debates. This focus on problems is certainly true when it comes to illicit drug use at music festivals. However, ignoring the fundamental element of pleasure and the reasons why young people use drugs likely comes with consequences. For example, Hunt and Evans (2008) have argued that, for interventions to be effective, drugs cannot simply be portrayed as dangerous with no associated benefits, because this will not resonate with lived experiences. However, to accurately acknowledge pleasures and motivations in future interventions, there must first be an understanding of what they are from the perspective of the population of interest. Thus, this section synthesises the available

evidence on reasons for using drugs and positive effects within the context of attending festival-type events.

Reasons for using drugs

Only four studies that met the review criteria explored reasons/motivations for using drugs in festival-type settings. The earliest study (Lenton & Davidson, 1999) did not specifically ask respondents why they used drugs in these settings, but did ask their views on the relationship between raves and drugs. The authors reported that a small proportion (21%, *n*=17) qualitatively described why they thought drugs were important. Three main themes were identified: the synergy between drugs, music and lighting, increased energy for dancing and staying awake, and enhanced solidarity/social connection. A small proportion of respondents claimed they would not attend raves without drugs.

Secondly, Engels and Ter Bogt (2005) investigated motivations, positives and negatives associated with ecstasy use among dance party attendees in the Netherlands (*n*=372). The authors developed a "hierarchy of motives" (p. 1489), starting with energy and followed by euphoria, enhanced social interaction, sexiness, coping and self-insight. Using drugs for conformist reasons was reportedly rare. While they recruited respondents from three different event styles, 'club/mellow' (900 attendees), 'mainstream' (30,000 attendees) and 'hardcore' (6000 attendees), the hierarchy was the same for all events. Overall, the authors concluded that respondents experienced MDMA as "a great drug" (p. 1498), with minorities reporting negative experiences.

The third study did not explicitly investigate the reasons for using drugs. Dilkes-Frayne (2014) drew on ANT to 'trace' the event of a young man who used MDMA at an Australian festival. Through this process, a multifaceted collective of motivations was captured for this individual at this event. A unique element to this study was that it considered the festival lead-up and how various elements assembled. The subject's past festival experiences mediated his decisions to use MDMA. For example, he recalled negative past experiences with alcohol at festivals, including wasting time (queuing for cash/drink tokens/drinks) and paying onsite premiums. Moreover, alcohol had not delivered the desired effects and led to headaches. In contrast, he recalled positive experiences with MDMA at festivals, including good synergistic effects between MDMA and EDM music. Other more proximal actors included having a trusted MDMA capsule saved from a previous bulk purchase – without this convenient 'stash', he may not have used MDMA due to distrust of onsite sellers; and no post-festival commitments which could be compromised by a comedown. This study employed a novel research method, but in doing so illuminated a more convoluted and

peripheral set of reasons beyond the commonly cited physiological effects. A better understanding of the whole spectrum of mediating factors and reasons why drug use occurs, beyond a desire for psychoactive effects, would be useful in informing future HR efforts. However, it should again be emphasised that Dilkes-Frayne (2014) focused on one person's experience. Other festivalgoers' behaviours may be mediated by different past experiences (e.g. fear of detection at the gates, leading to onsite purchasing).

The authors of the most recent reviewed study (Fox et al., 2018) qualitatively asked 171 attendees at two US festivals why they used the illicit drug reportedly used on the day. However, they did not seem to specifically ask about motives for using at the festival, which should be considered when interpreting the data. Nevertheless, a quarter reported using drugs "to have fun" and "because they were at a festival". The latter supports notions of 'normalisation' of illicit drugs at festivals. Other reasons included "for escape" (17%), "positive stimulation" (16%) and "to enhance sex" (24%). Hallucinogens were discussed separately and were reportedly used for philosophical or spiritual reasons (30%) and to bond with fellow users (14%). While Fox et al. (2018) believed participants provided "contextual responses" (p. 5) for using, the data does not permit an in-depth understanding of their reasons for using drugs at festivals.

Positive effects

Only three studies reported positive drug effects experienced by festivalgoers. Firstly, Engels and Ter Bogt (2005) reported that MDMA users at a mainstream dance festival reported a mean of about four positive effects, but did not report data on individual effects.

Secondly, after Dilkes-Frayne (2014) traced the lead-up to the festival (which illuminated reasons for deciding to use drugs), she traced the subject's time at the festival, capturing a highly context-specific account of positive effects. First, the subject explained how he was able to inconspicuously and conveniently consume his MDMA capsule on a grassy embankment at the festival. His ability to administer the drug in comfort meant his positive 'set' was not disturbed. Then, the mediating role of the festival environment was illuminated. For example, the subject explained how he realised he was "coming up" when he altered his position/perception on the grass and realised he was "peaking" while entering a music tent. Essentially, positive effects were closely linked to his surroundings/shifting stimuli and physical movements. Dilkes-Frayne (2014) explained how close proximity to others in the tent, combined with the effects of MDMA, meant he was able to connect with those around him in ways he could not normally, which was reportedly intensified when

entering the mosh pit[4]. The subject reported feeling less inhibited and talking more openly/emotionally with a friend. This reportedly helped deepen their bond – a positive effect he believed extended beyond the festival. Overall, this analysis identified a variety of physical, psychological and social positives attributed to using MDMA in this environment. Dilkes-Frayne (2014) concluded that this type of events analysis, which identifies the complexities of how drug experiences unfold (in this case positively), could help inform HR efforts.

Thirdly, Fox et al. (2018) qualitatively asked festivalgoers about the favourable characteristics of drugs participants were using at the festival. However, these characteristics may not have been festival specific. Nevertheless, Fox et al. (2018) explained how positive characteristics varied between drug classes. Minorities of respondents related effects of "love, emotional intimacy, and communion" to drugs with known empathogen properties (26% of MDMA, MDA, LSD or 2C-x drug users), while 26% of tryptamine users described "entheogenic" effects involving "heightened spiritual or psychological awareness" (p. 4). While not discussed by the authors, the methods employed raise questions about the richness of data yielded from these onsite interviews. Firstly, given subjects were recruited from the medical tent, it is possible health issues impaired their capacity to engage properly. They may have also been eager to return to the festival after spending time receiving medical attention. Secondly, the authors relied on notetaking, rather than digital recording, suggesting data may have been missed. Other reported effects included reduced social inhibitions (13.5%), increased stimulation/energy (15%), enhanced creativity/focus (3.5%), and therapeutic and synergistic effects (7% and 1% respectively). Actual effects reported (non-drug specific and not necessarily festival-specific) included euphoria (30%) enhanced senses (30%), feeling aware (7%) and enhanced emotions (16%). Thus, this study explored positive drug characteristics quite broadly.

In summary, the candidate found no quantitative studies on the positive effects associated with using drugs at contemporary festivals, and the qualitative data either lacked contextual consideration or involved one subject's festival experience (albeit in considerable depth). This review therefore highlights a clear ga*p* in research which should be addressed in future quantitative and qualitative enquiries. Qualitative methods are needed to understand the complexities of pleasure and sensory experiences involved in drug use. For example, Duff (2008, p. 385) cautioned against focusing entirely on functional explanations (e.g. increased energy) and emphasised the importance of social context/contextual pleasure, such

[4]A term used to describe the area in front of the stage at concerts where people are dancing, or jumping, in very close proximity to each other.

as the "corporeal experience of space" (p. 385), in gaining a deeper understanding of drug-related behaviour. An example provided was the 'feeling' experienced in response to electronic music in a nightclub. This is an important consideration for festivals, where there are clearly important contextual elements, such as thousands of excited people, loud music, heavy bass and laser light shows. Essentially, when trying to understand the reasons for drug use at festivals, it is important to take a holistic and expansive approach, incorporating both the commonly cited physiological effects and the contextual elements of use. Lastly, given different patterns of drug use were identified before/during/after events, the reasons for using drugs at different time points should be considered in future studies. This information could help inform interventions targeted to different phases of festivals.

Theme 3: Drug-related harms/negative effects

Various sources provide evidence of drug-related harms or adverse effects experienced by festivalgoers. They include cross-sectional surveys, physiological testing (e.g. for indications of neurotoxicity), onsite medical service data, case studies of festivalgoers who have presented to emergency departments (EDs), negative physiological effects experienced by animals in laboratory conditions mimicking festival-type environments, and media coverage of deaths and hospitalisations. However, these sources have inherent limitations. For example, case studies provide information about unique or extreme cases (usually deaths) published predominantly to increase awareness in the medical community, but they do not capture the complete range of harms. Onsite medical data provides information about adverse effects that festivalgoers have sought help for, but provides no information about those who self-treat or go direct to an ED. Cross-sectional surveys can obtain information about adverse effects that are not captured by the former two methods, but are subject to self-report and retrospective recall problems, and cannot capture deaths. Media reports can provide timely information about drug-related deaths, hospitalisations and arrests, but are often criticised for being sensationalised and inaccurate (e.g. Cox, 2016). Thus, all sources of information about harms should be considered along with their relative limitations. This section reviews information from these sources in the peer-reviewed literature, and drug-related deaths in the media coverage, to generate a more complete picture of adverse effects associated with music festivals.

Harms identified from onsite surveys/studies

Studies which fell into this category involved onsite surveys accompanied by physiological testing for indicators of adverse drug effects (n=2) and onsite cross-sectional surveys (n=3).

The earliest study involving physiological testing was conducted in South Australia (SA). Irvine et al. (2006) measured MDMA plasma concentrations in 27 young adults who reported using ecstasy at an unspecified dance party. Samples were collected both the night before and directly after the event. They found five participants (19%) had concentrations of MDMA that were considered "toxic to lethal by forensic laboratory guidelines" (p. 428), associated with neurotoxicity in primate studies, and comparable to patients tested in EDs, but these participants did not present with any medical complaints, suggesting tolerance. The authors explained that the proportion with lethal concentrations could have been higher had testing had been conducted more often during the day (to capture plasma concentration peaks). Additionally, they noted that self-reported drug use/dosage did not correspond with drug concentrations, purportedly suggesting varying participant pharmacokinetics. However, numerous uncontrolled factors also could have influenced the results (e.g. ecstasy purity/potency, physical exertion). Nevertheless, Irvine et al. (2006) concluded that MDMA plasma concentration cannot accurately predict drug complications and cautioned against relying on self-report data for understanding drug exposure. Their results also showed some MDMA users are at risk of serotonin neurotoxicity.

In Amsterdam, van Dijken et al. (2013) collected plasma sodium concentrations from 63 MDMA users (and 44 control subjects) at the 2010 'Awakenings' EDM festival in response to concern about severe cases of hyponatremia leading to death. Based on urinalysis, they found 27% of female and 3% of male MDMA users were experiencing mild, asymptomatic hyponatremia at the event; this was unrelated to body mass index, fluid intake or the number of pills consumed. However, van Dijken et al. (2013) did not report whether sodium concentrations were correlated with milligrams of MDMA consumed (although this could not be determined unless pharmaceutically manufactured doses were administered). Additionally, they did not report whether fluid intake measures differentiated between hypotonic and isotonic fluids, which one would expect to be an important distinction given the impact on sodium levels. Other factors the authors did not study, and which may have played a role, included key behaviours in the days preceding blood sampling (e.g. drug use, physical exertion, food and water intake), menstrual cycle stage (see Allott & Redman, 2007; Liechti, Gamma, & Vollenweider, 2001; Simmler, Hysek, & Liechti, 2011), and polydrug use at the event. Nevertheless, they concluded that, consistent with other studies, females were at greater risk of developing hyponatremia. They suggested increasing awareness of this condition, and strategies to prevent it, among both MDMA users and medical personnel. Interestingly, they noted that sodium levels in most sports drinks are insufficient and that broths/soups would be more effective. However, recognising the low likelihood of establishing soup stalls at festivals, van Dijken et al. (2013, p. 2282) suggested designing

‘protocols’ to help MDMA users regulate hypotonic fluids, while consuming isotonic fluids and food.

The following studies involved cross-sectional onsite surveys without any accompanying physiological testing. Van De Wijngaart et al. (1999) collected data about negative health effects at the beginning and end of 10 Dutch dance parties (*n*=764). The authors reported that 19% of respondents felt unwell at the end of the event. Half reported muscle-related problems, while other complaints included headaches, dizziness, tingling, nausea and abdominal pain (percentages not reported). However, these data were reported for all respondents (not just drug users), and only 36% attributed these effects to drug use. Moreover, almost a third dropped out of the post-event survey, which, although not acknowledged by the authors, may have been for systematic reasons (e.g. feeling unwell). In addition, negative effects were not linked to individual drugs or drug combinations. While perceived severity was not mentioned, the authors reported that first aid visits were rare and mainly related to psychological problems associated with pills (e.g. anxiety). However, respondents may have sought medical attention after leaving the events. Among the 1121 partygoers surveyed at the start of the events, substantial proportions reported at least occasional insomnia (53%), exhaustion (61%), muscle aches (64%), listlessness (61%), appetite loss (60%) and dysphoric mood (55%) following previously attended events. Additionally, over time, some respondents reported experiencing weight loss (43%), concentration problems (40%), depression (32%) and hearing problems (31%). However, the proportion who used drugs and attributed these consequences to drugs was not reported.

Martinus et al. (2010) conducted quantitative interviews with 1589 festivalgoers about negative drug effects at a festival in Scotland. The authors noted that among those reporting drug use (including alcohol), a minority reported negative consequences (percentage not stated). The most commonly reported negative effects were vomiting and heatstroke (each 10%), followed by unsafe sex and fighting (each 6%) and collapsing (4%). However, effects were not linked to specific drugs, and there were far more alcohol users than illicit drug users (88% vs. 32%). Additionally, Martinus et al. (2010) did not report when respondents were surveyed; if during the event, they would not have captured negative effects experienced later (when they are perhaps more likely to occur). Likewise, onsite surveys cannot capture medical complications after leaving the festival. It is also likely patrons feeling unwell were less likely to partake in the survey, and there may have been self-report issues for those who did partake (e.g. intoxication, distraction). Future studies should employ alternative methods to avoid the limitations of onsite surveys. To help inform

future HR efforts, it would also be worthwhile to match adverse effects to individual drugs and investigate the perceived severity of negative effects.

The most recent onsite study involved qualitative interviews with US festivalgoers about unfavourable characteristics of the drugs they were using (Fox et al., 2018). Again, this study did not specify whether questions were festival-specific. According to Fox et al. (2018, p. 5), self-reported negative characteristics of MDMA included 'disorientation, disconnection' (33%), problems regulating temperature and bruxism (each 9%), and bad thoughts in the day/s following (13%). Unsurprisingly, some LSD users described unwanted psychiatric effects such as "neurotic loops, thought fractals… psychosis, delusions, flashbacks" (14%) (p. 5). Lastly, two-thirds of cocaine users reported comedowns, nausea and potential addictive properties. Other common complaints were financial cost and insomnia (7%). Fox et al. (2018) also asked about actual negative effects experienced, but again did not specify them as festival specific. Nevertheless, effects reported by MDMA and LSD users included exacerbating negative emotions (8%), problems with body temperature (12%) and bruxism (10%). Many also reported anxiety. As discussed earlier, despite being a qualitative study, Fox et al. (2018) provides little contextual depth to improve understanding of these negative characteristics and inform more context-specific interventions.

In summary, all observational studies identified were conducted onsite and suffered from sampling and methodological issues. Additionally, the existing evidence is constrained in terms of the number of studies (n=5), focus (lacking festival and drug specificity) and depth (lacking richness and contextual depth). Further, no studies have been conducted in Australia for over a decade. Thus, more research is needed, ideally employing offsite methods to avoid the onsite problems mentioned above, such as systematic sampling biases and inability to capture post-festival problems.

Harms identified from onsite medical/mass gathering medicine

This section reviews 21 studies from the 'mass gathering medicine' (MGM) literature. A strength of these studies is that they are less subjective than surveys based on self-reporting. MGM literature also captures more significant adverse effects requiring medical attention. Importantly, while these studies documented adverse drug-related outcomes occurring at festivals (via presentations to onsite medical stations), they were primarily concerned with examining and predicting the optimal level of medical care/resources required at future events. Thus, this literature fits into two themes (adverse outcomes and interventions), but is covered within harms because the findings are inextricably linked.

Unsurprisingly, this field has burgeoned in recent years (Marsan & Friedman, 2017), in response to the growth in EDM festivals (Watson, 2014, 2015, 2016) and the increasing number of drug-related deaths linked to these events internationally (Turris & Lund, 2017). Additionally, from a medical planning perspective, these events are particularly concerning given they combine multiple risk factors (e.g. warm ambient temperature, prolonged physical exertion, large mobile crowds and illicit drug use) and legislative guidance is generally limited (FitzGibbon et al., 2017; Friedman et al., 2016; Hutton et al., 2014; Turris & Lund, 2017). In response to safety concerns and the burden on local emergency health services (EMS), some festivals have made shifts from first-aid only models (FA) to higher levels of care (HLC) (Marsan & Friedman, 2017), and experts are increasingly documenting the nature and extent of patient presentations and comparing different types of models to provide a greater evidence-base for medical planning (Turris & Lund, 2017). This section therefore aims to: (1) summarise the number and type of drug-related presentations; and (2) identify recommendations made to reduce patient presentation rates (PPR), hospital/ambulance transfer rates (HTR/ATR) and general morbidity/mortality.

Before describing drug presentations, there are a few considerations to note upfront. Firstly, many of these studies were retrospective, which is problematic when patient records focus entirely on presenting symptoms (e.g. heatstroke), rather than diagnoses or contributing factors (e.g. ecstasy use). Put differently, data on drug consumption was not always collected systematically, although this was difficult to confirm because data collection items were rarely reported. Nevertheless, in some studies, the only drug-related presentations captured were unequivocal overdoses or cases with a high level of clinical suspicion. Secondly, bioanalysis was extremely rare, so drug consumption was almost never confirmed. Thirdly, the criteria for inclusion in the PPR varied between studies. Some studies included self-care and/or minor first aid cases, others did not. The variety in patient presentation documentation makes the interpretation of these studies challenging and probably contributes to the variation seen in the data. Nevertheless, these studies provide the best available indications of the nature and extent of medical presentations at festivals.

Patient presentation rates

As evident in Table 2.8, PPRs ranged from 1.4 per 1000 attendees at an unspecified three-day EDMF (Friedman et al., 2016) to 29.7 at a two-day EDMF (FitzGibbon et al., 2017). Both festivals were held in the USA in 2014 in similar ambient temperatures (23–32°C and 25–30°C respectively). Friedman et al. (2016, p. 81) claimed they reduced their PPR significantly by "anticipating the expected environmental and toxicological influences on attendees based on data from the same EDMF in 2013" (p. 81). However, they did not

specify how that reduced the PPR, or how the environmental conditions and drugs circulating varied from the 2013 event. The stark difference in the PPR could be due to differences in patient inclusion criteria and service availability. Of the 14 studies where PPRs were reported or easily calculated (based on the total attendance), the mean was approximately 10 patients per 1000 festival attendees[5].

Table 2.8: Summary of patient presentation rates identified in the MGM literature

	Reference/study	Event details (attendees)	*n* (PPR) /1000	AOD *n* (%)	Illicit drugs *n* (%)	*n* (HTR)
1.	James, Calendrillo, and Schnoll (1975)***	1973 4-day Summer Jam US (~600,000)	~8000 (13.3)	-	-	~60 helicopter transfers
2.	Osler, Shapiro, and Shapiro (1975)***	1973 unspecified festival US (~35,000)	241 (6.9)[b]	24 (10)	-	-
3.	Chapman, Carmichael, and Goode (1982)***	1980 Heat Wave Canada (30,000)	502 (16.7)[a]	- (<10)	-	14 (~0.5)
4.	Yates, Hazell, and Schweder (2001)**	1999 4-day Sweetwaters New Zealand (~25,000)	217 (9)a	28 (12.9)	12 (5.5)	37 (~1.5)
5.	Van Sassenbroeck et al. (2003)***	2001 I love techno Belgium (37,000)	246 (6.65)[a]	60 (24.4)	51 (20.7)	18e / 35 (~0.5)[e] (~0.9)
6.	Krul et al. (2011)*	1997–2008 249 raves The Netherlands (3,793,500)	27,897 (7.4)[a]	10,100 (36.2)	7804 (28)	262 (~0.7)
7.	Krul and Girbes (2011)*	2000–08 202 raves The Netherlands (~3mil)	22,604 (~7.5)[a]	7436 (32.9)	GHB=771 (3.4)	GHB=43 (5.6)
8.	Dutch and Austin (2012)***	2010–11 24 festivals Australia (-)	520a (-)	-	GHB=61 (11.7)	GHB=21 (34)
9.	Krul, Sanou, Swart, and Girbes (2012)*	2006–10 raves The Netherlands (-)	7,089 (8-12)[b]	- (27.4)	- (9.6)	158 (-)
10.	Archer, Beaumont, May, Dargan, and Wood (2012)***	Unspecified OMF UK (~>100,000)	109 (~10.9)	28 (26)	- -	4 (~0.04)[e]
11.	Stagelund, Jans, Nielsen, Jans, and Wildgaard (2014)***	2012 10-day Roskilde Festival Denmark (>130,000)	3473 (19)[a]	112 (3.2)	-	238 (1.8)
12.	Hutton et al. (2014)**	2010 26 Festivals Australia (-)	4950 (-)[b]	- (15)	260 (5.3)	environmental=71
13.	Lund and Turris (2015)***	2-day indoor EDMF Canada (20,301)	70 (3.5)[a]	55 (79)	-	11 (0.54)
14.	Friedman et al. (2016)*	2014 3-day EDMF US (58,000)	84 (1.4)[a]	50 (59.5)	34 (40.5)	6 (0.10)

[5]Figures from Krul and Girbes (2011) were excluded because they drew on the same data as Krul, Blankers, and Girbes (2011).

	Reference/study	Event details (attendees)	*n* (PPR) /1000	AOD *n* (%)	Illicit drugs *n* (%)	*n* (HTR)
15.	Munn, Lund, Golby, and Turris (2016)***	2014 Shambhala Music Festival (67,120 over 7 days)	1393 (20.8)	-	-	13 (0.194)
16.	FitzGibbon et al. (2017)***	2014 Moonrise US (30,500)	908 (29.8)[ad]	-	-	26 (0.8)
17.	FitzGibbon et al. (2017)***	2014 Sweetlife US (14,000)	20 (1.4)[a]	-	-	9 (0.6)
18.	FitzGibbon et al. (2017)***	2014 Mad Decent Block Party US (10,000)	32 (3.2)[a]	-	-	21 (2.1)
19.	Calle et al. (2017)***	2013 I Love Techno Belgium (30,000 indoor)	265 (8.8)[a]	89 (33.5)		38 (1.27)
20.	Calle et al. (2017)***	2014 I Love Techno Belgium (26,000 indoor)	222 (8.5)[a]	71 (32)		31 (1.19)
21.	Luther et al. (2018)***	2016 unspecified festival Canberra, Australia (23,008)	292 (12.7)	18 (6)	15 (5)	3 (0.01)[c]

Note. This summary table does not provide all study details or statistics provided in the original articles. Some calculations were made to determine the PPR/1000 and/or percent of drug-related presentations based on the total number of presentations.
*Systematically asked about drug use **Did not systematically ask. ***Unclear if systematically asked.
[a]Those who did not require medical evaluation were excluded (e.g. self-treatment, basic first-aid).
[b]Those who did not require medical evaluation were included (e.g. self-treatment, basic first-aid).
[c]The rate of patients transferred by ambulance.
[d]Originally reported as day 1 & day 2. The total number of encounters was calculated by combining attendance and averaging the rate.
[e]Transfer rate for drug-related cases only.
-=unknown/not reported.

Percentage of presentations that were drug-related

As evident in *Table 2.8*, the proportion of presentations that were drug-related also varied significantly, from 3.2% at the 2012 Roskilde Festival in Denmark (Stagelund et al., 2014) to 79% at an unspecified two-day EDMF in Canada (Lund & Turris, 2015). However, Stagelund et al. (2014) reported that a significant proportion of presentations at Roskilde involved basic first aid issues which developed over the 10-day camping festival (e.g. cuts/bites/infections). Thus, drug-related cases were likely diluted. In contrast, Lund and Turris (2015) collected data at an indoor temperature-controlled festival, which likely minimised the number of basic first aid problems. It is also unclear whether Stagelund et al. (2014) systematically collected data on patient drug consumption or simply recorded presenting symptoms, while it appears Lund and Turris (2015) did, although this is not stated explicitly. Additionally, differences between the festivals in terms of age (all ages at Roskilde vs. >18 in Canada) and musical styles (mixed genre vs. EDM) probably also influenced the types of presentations observed. The only Australian study to meet the review criteria retrospectively analysed data from 26 festivals in 2010 and reported that 15% of

cases were drug-related (Hutton et al., 2014). However, patients seemed to be classified according to their presenting symptoms, probably underrepresenting drug-related cases. Nevertheless, Hutton et al. (2014) concluded that drug-related presentations were the most concerning and accounted for most hospital transfers.

Drugs implicated in presentations

Unfortunately, the breakdown of individual drugs implicated in drug-related presentations was rarely reported in the reviewed studies. However, four studies reported more alcohol-related than illicit-drug related presentations (Calle et al., 2017; Krul et al., 2012; Luther et al., 2018; Yates et al., 2001), and four the reverse (Friedman et al., 2016; Hutton et al., 2014; Krul et al., 2011; Van Sassenbroeck et al., 2003). Drugs sold as 'ecstasy/MDMA' were implicated most often (Friedman et al., 2016; Krul et al., 2011; Krul et al., 2012), although one rock festival in New Zealand found cannabis-presentations were most common. While the above studies relied on self-reported drug consumption, Calle et al. (2017) performed bioanalysis on patients given IV fluids/medications at a large-scale EDMF in Belgium (66%, n=106). Toxicology revealed alcohol was most prevalent (92%, 43% alcohol only), followed by MDMA (34%), tetrahydrocannabinol (THC – the primary active ingredient in cannabis) (30%), cocaine (7.5%), amphetamines (2.8%) and then GHB (0.9%).

Presentations involving GHB, a CNS depressant, received special attention in this literature. While GHB was not as frequently implicated in presentations as other drugs, it was considered a drug of concern given it can induce a dangerous mix of adverse effects (e.g. altered consciousness and vomiting), and overdoses commonly occur in clusters which can overwhelm services. Two studies specifically investigated GHB-related presentations. Dutch and Austin (2012) reported that almost 12% of all presentations in their analysis of 24 Australian studies involved GHB, often combined with ecstasy (21%), alcohol (13%) or methamphetamine (11%). In contrast, Krul and Girbes (2011) reported that only 3.4% of all presentations in their data from Dutch raves were GHB-related. Krul and Girbes (2011) also noted that GHB was commonly used with other drugs (67%), including ecstasy (25%), alcohol (16%) and cannabis (8%).

Overall, this review found there was a tendency to report drug-related presentations as a whole, rather than as drug specific (e.g. MDMA-related). However, consistent with other fields of literature reviewed, ecstasy and cannabis use were most commonly implicated. Further indications of drugs used by patients arose in descriptions of the medical conditions observed.

Types of drug-related presentations/medical conditions/symptoms

Unfortunately, as evident in Table 2.9 (an extended summary of MGM studies), only five studies delineated the types of drug-related conditions observed.

The earliest study involved the 2001 'I Love Techno' festival in Belgium. Van Sassenbroeck et al. (2003) reported that among 60 drug-related cases, symptoms included vomiting/abdominal pain (25%), anxiety/agitation, coma, fainting, inebriety/alcohol (each 15%), convulsions (8%), chest pain (3%) and muscle cramps (2%). Furthermore, 30% of drug-related cases required hospital transfer. In the Netherlands, Krul et al. (2011) reported the most common ecstasy-related problems were feeling unwell/fainting (53%), nausea (25%), dizziness (18%) and vomiting (11%). However, only 5% of drug-related cases were considered serious and less than 1% were life-threatening. Life-threatening cases involved excited delirium (n=4), circulatory or respiratory insufficiency, hyperthermia and severe trauma (each n=3). Krul et al. (2011) also reported that patients with drug-related presentations stayed at the medical service longer than those without (20 vs. 10 minutes). Lastly, Calle et al. (2017) reported that among 160 patients who presented to medical services at the 2013 and 2014 Belgium 'I Love Techno' festivals, symptoms included coma (6%), agitation/anxiety (23%), convulsions (4%), syncope (12%), vomiting/abdominal pain (14%), chest pain/palpitations (3%), inebriety (33%), headache (4%) and hallucinations (<1%).

Among GHB-specific studies, Krul and Girbes (2011) reported Dutch cases involved altered consciousness (56%), hypothermia (22%), vomiting (18%), disorientation (9%) and agitation (2%). They also noted that GHB patients stayed longer than other drug-related presentations (45 vs. 20 minutes). Similarly, Dutch and Austin (2012) reported that GHB presentations at Australian festivals involved altered consciousness (89%), hypotension (44%), hypothermia (21%), agitation (20%), vomiting (15%), bradycardia (13%) and seizures (2%). The difference between the agitation rates reported by Krul and Girbes (2011) and Dutch and Austin (2012) (20% vs. 2% respectively) is interesting and may reflect differences in data collection.

While other studies did not systematically describe drug-related presentations, some described problematic cases requiring hospital transfer. For example, Archer et al. (2012) explained that two of four transfers for drug toxicity at a UK festival were related to GHB-induced "neurological depression" (p. 360) and could have been avoided had the medical service closed later, while the third patient had overused 'poppers' (amyl nitrite) and had symptoms of methaemoglobinaemia (rapid breathing, skin discolouration), and the fourth was presenting with signs of serotonin syndrome after reportedly consuming a gram of

MDMA. Lund and Turris (2015, p. 276) described 11 transfers for drug toxicity at a Canadian EDMF. However, descriptions were vaguer; they included alcohol intoxication (*n*=5), GHB/MDMA-related airway problems (*n*=1), polydrug use and not waking (*n*=2), bruxism and not waking (*n*=2) and unspecified airway issues (*n*=1). Lastly, while not specific to hospital transfers, Krul et al. (2012) reported 10 moderate psychological cases (0.1%) involving excited delirium (*n*=6), psychotic delusions (*n*=3) and severe anxiety (*n*=1), and characterised both life-threatening cases as drug-related.

Hospital transfer rates and recommended levels of care

Hospital transfer rates ranged from 0.01 (per 1000) at an unspecified Australian festival in 2016 to 2.1 at a 2014 EDM festival in the US. As evident in *Table 2.8*, in 10 of 17 festivals studied, the HTR was below 1.0; most authors credited this to onsite HLC models (i.e. care beyond first aid, generally multidisciplinary teams headed by emergency medicine (EM) physicians). For example, Lund and Turris (2015) reported a 72.5% reduction in transfers from a Canadian EDMF due to the presence of an onsite HLC team, Archer et al. (2012) reported a 75% reduction at a UK festival, and Dutch and Austin (2012) reported a 64% reduction in GHB-related transfers at Australian festivals. However, different HLC models probably influenced HTRs. For example, services with more resources/better staff composition are less likely to get overwhelmed, and those with more experienced EM physicians may have greater confidence in managing patients onsite.

Unsurprisingly, HLC models were strongly recommended, occasionally accompanied by suggestions about staff composition, and in one case, collaborative HR support (Munn et al., 2016). However, most authors concluded that further research was needed to help predict the optimal level of resources required. Interestingly, only one study reported testing the accuracy of existing predictive models, and this was done retrospectively. FitzGibbon et al. (2017) found two models, Arbon (Arbon, Bridgewater, & Smith, 2001) and Hartman (2009), failed to adequately predict the PPR and level of resources required at three EDM festivals, and thus highlighted the importance of expanding the evidence base to help inform predictive models and guidelines. Overall, these studies highlighted the importance of improving and better predicting patient care at festivals, and reducing the impact on local EMS (by reducing transfers, thus avoiding ambulance delays and waiting times in EDs), while also remaining cost effective (so the medical response does not become financially unfeasible or push ticket prices too high). However, importantly, some authors noted the importance of not compromising or delaying medical care by trying to treat patients onsite who ultimately require hospital transfer (e.g. Archer et al., 2012). An extended summary of these studies is provided in *Table 2.9* below.

Table 2.9: Extended summary of MGM literature statistics and recommendations for festivals

	Study details	Event details	Level of care	n (PPR/ 1000)	Patient age & gender	AOD n (%)	Alcohol n (%)	Illicit drugs n (%)	Conditions n (%)	Interventions n (%)	n (HTR/ 1000)	Recommendations
James et al. (1975)	R1*** [#] lab onsite tested drugs circulating & blood/ urine/gastric for OD patients	1973 Summer Jam rock festival 4 days NY, US ~600,000	Not described, but appeared to be an HLC model with a toxicology lab and helicopters to transport patients	Incomplete records as service was overwhelmed ~8000 (13.3)	Incomplete records as service was overwhelmed	Incomplete records as service was overwhelmed	Incomplete records as service was overwhelmed	Incomplete records as service was overwhelmed	Incomplete records as service was overwhelmed, but 51 of the hospital transfers were for: Drug overdoses 10	-	~60 helicopter transfers	Onsite toxicology lab can be valuable for confirming drugs in circulation and helping inform clinical management of overdose patients (if no close local option). Toxicology can be effective under most primitive conditions and still produce reliable results. Physicians should be aware of drug trends & be able to predict problems. Pre-event training critical. Consultation with local toxicologist could help inform planning. Proper medical care should be a basic human right, despite moral issues with these events. Post-festival held a symposium about MGM at festivals to develop guidelines.
Osler et al. (1975)	R2***	1973 Rock festival US ~35,000	5 physicians 1 medex 3 nurses 2 psychiatric social workers Multiple ancillary (no onsite ambulance or helicopter, despite attempts)	241 (6.9)[b]	78% male	24 (10)[b]	-	- (LSD, ice, mescaline, THC, Quaaludes & barbiturates main drugs)	Medical 39 (16) Minor surgical 161 (66) Major surgical 17 (8) Drug & alcohol 24 (10)	Benzodiazepines 1 Quiet interpersonal approach & placebos Vital signs & neurological assessment performed frequently	0 (0)[e]	Minimum of two physicians with additional staff at all times. Medical staff should not work long shifts. Physicians should have EM, surgical & drug expertise. Need to consider medical licence issues (legal risks for those interstate). Consider "talk down" approach & placebo in place of drugs.
Chapman et al. (1982)	R2***	1980 Heat Wave rock festival Canada ~30,000 Temp in day>28°C Temp at night<12°C	HLC model: 9 physicians 10 nurses (12-hr shifts) 3 paramedics + first aid post elsewhere manned	502 (16.7)[a]	Mean age=21.9	(<10)	-	-	Minor medical: Headache 226 Vomiting/diarrhoea 39 Hay fever 22 Alcohol/drug abuse 14 Sunstroke/dehydration 11 Menstrual complaints 10 Otolaryngologic 5 Miscellaneous 8	Interventions performed not reported, but provide list of medications/equipment should have onsite.	14 (2.8) 5 (1)[e]	Guidelines should include recommendations about facilities, supplies and equipment, transportation and communications, staffing and procedures. Liaison needed with promoters, police, ambulance officials and local hospitals.

			by St. John Ambulance + 30 roving staff + 2 ambulances & helicopters						Major problems: AOD-related 8 Asthma 4 Assaults 3 Sunstroke/dehydration 2 Seizure 2 Soft tissue hematoma 1 Abdominal pain 2			Nonmedical ancillary staff/rovers encouraged. Medical service should be open several hours before & after event. Police should not patrol medical area. Medical staff should be trained in EM & drug-related issues.
Yates et al. (2001)	P1**	1999 Sweetwaters 4-day Festival New Zealand ~25,000	10-20 FA 8 ambulance officers 1 paramedic 5-7 nurses 0-1 doctor /per shift (mainly volunteers)	2231 (89)[b] 217 (9)[a]	Mean age=25 53% male	28 (12.9)[a]	16 (7.4)[a]	12 (5.5)[a]	Lacerations (16.1) Intoxication (12.9) Local infections (11.5) Soft tissue injuries (9.2) Possible fracture (6.9) Eye irritation (6.2) Sprain (5.5) Localised allergy (5.1) Burn (4.1) Abdominal pain (3.7) Headache (3.2) Musculoskeletal injury (2.8) Sunburn (2.8)	-	37 (1.5) 8 (0.8)[c]	Onsite physician reduced HTR significantly. They note the lack of standardisation in data collection making comparisons difficult. Some include self-treatment/basic first aid in PPR, for AOD rates some rely on information volunteered/clinical suspicion and rarely ever urine/blood tested. Thus, AOD rates likely underrepresented in studies
Van Sassenbroeck et al. (2003)	P1*** # blood test if life-threatening	2001 I Love Techno indoor night festival Belgium 37,000 temp <21°C	HLC 3 executives 1 doctor 6 nurses 35 first aiders 2 social workers (experienced in MGM) + 2 hospital-based second-tier services 4 EM physicians 4 EM nurses (Experienced in prehospital/ALS) + 3 ambulances	246 (6.65)[a]	-	60 (24.4)	9 (3.4)	51 (20.7)	Drug-related conditions: Muscle cramps 1 (2) Chest pain 2 (3) Headache 2 (3) Convulsions 5 (8) Inebriety/alcohol 9 (15) Syncope 9 (15) Coma 9 (15) Agitation/anxiety 9 (15) Vomiting/abdominal pain 14 (25)	Not drug specific?: Diazepam (10 mg ampoule) 10 Lormetazepam (1 mg tablet) 1 Alizapride (50 mg ampoule) 4 Minor analgesic (orally) >40 Antacid 3 Salbutamol (inhaler) 1 Fentanyl (0.5 mg/10 ml ampoule) 1 Intravenous fluids (1l) 31	17 (0.5)	Preventative measures Onsite medical
Krul et al. (2011)	P1*	1997-2008 249 raves The Netherlands 3,793,500	nurses paramedics physicians all with special rave & drug training	27,897[a] (7.34)	Mean age=22.3 52.4% male	10,100 (36.2)[a]	2296 (8.2)[a]	7804 (28)[a] inc alcohol mix	Substance-related problems: medical (80) traumatic (9) psychological (4) miscellaneous (7)	-	262	Harm and risk reduction policy Specially trained medical staff for both minor and serious incidents Study replication in other countries More research on adverse effects and underlying mechanism (e.g. GHB

									16 serious life-threatening: excited delirium 4 circulatory insufficiency 3 respiratory insufficiency 3 hyperthermia 3 severe trauma 3			and airways, MDMA-induced hyponatremia) While GHB infrequently used, highest risk drug (and cocaine), but most presentations ecstasy & alcohol
Krul and Girbes (2011)	P1* GHB-specific	Which 9 years? 202 raves The Netherlands ~3,000,00	nurses paramedics physicians all with special rave & drug training	22,604[a]	GHB users mean age=25.7 66.4% male	(32.9)	-	GHB=77 1 (3.4)	For GHB users: altered consciousness (56.0) unwellness (34.5) low body temp (22.2) vomiting (17.5) disorientation (8.7) dizziness (7.1). cramps and agitation (both 2.0) trauma (1.4) anxiety, gastric pain, high body temp & psychotic delusion (all 0.8) stomach ache (0.4) (23.6% serious, 1 severe, no deaths)	-	GHB= 43 (5.5)	Where GHB may be used, specially trained HLC team with nurses & physicians recommended. Staff should be trained to recognise GHB use & prevent secondary problems. Common symptoms=altered consciousness, vomiting, and hypothermia. With correct training/resources, most do not need transferring to hospital. Other countries should replicate, although difficult to compare due to legislation & medical service differences.
Dutch and Austin (2012)	R1*** GHB-specific	2010-2011 24 festivals Australia	St. John Ambulance medical assistance teams (unspecified mix, but a HLC model)	520[a] 4262[b]	GHB users median age=22 64% male	-	-	GHB=61 (11.7)[a]	GHB-related conditions: Hypotension (44) Hypothermia (21) Agitation (20) Hypotension & Bradycardia (18) Vomiting (15) Bradycardia (13) Seizures (2) Hypoglycemia (0)	GHB interventions: IV fluid (62) Metoclopramide (30) Midazolam (20) Oropharyngeal Airway (13) Atropine (13) Endotracheal intubation (3)	GHB= 21 (39)	Could extend medical service operation to avoid transfers related to lack of sobering up time. Avoided 40 ambulance transfers. Thus, onsite HLC can reduce impact on local health care system which is already strained. Managing onsite is good for patrons, promoters (avoiding media backlash) & the wider community. More research on impacts of medical teams.
Krul et al. (2012)	P2*	2006-2010 Unspecified raves The Netherlands	nurses paramedics physicians	7,089 (8-12)[b]	Mean age=23.9 49.9% male, 49.7% female	(27.4)	(17.8)	ecstasy (11.6) GHB (3.3)	Not all drug-related: mild trauma (56.1) mild medical (35) mild miscellaneous (4.1) moderate medical (1.6) mild psych (1.2) moderate trauma (0.4) moderate psych (0.1) severe medical 1 (<1) severe miscellaneous 1 (<1)	Not reported, but do describe types of interventions that should be prepared for	158 (2.2) (0.7)[c]	Team of 6 every 10,000: 50% first aiders & 50% nurses, but additional event training + physician every 10,000 + ambulance team every 15,000 Team should include: 2 trained in advanced-life support & 1 mental health care nurse per 15000 Protocols for common presentations, registering, surveillance & disaster management

Archer et al. (2012)	P2***	large OMF ~>100,000 UK	6 specialist physicians 10-15 volunteer nurses and/or paramedics	109 (unknowns)	Mean age=26.1 60% female	28 (26) 16 females	-	-	Only reported for transferred patients: GHB depressed CNS (50) Nitrous oxide – methaemoglobinaemia Ecstasy – serotonin syndrome	-	4	Should consider physician-led EMS to reduce HTR and local burden (75% with ARC>1 were treated onsite due to HLC)
Stagelund et al. (2014)	P1***	2012 Roskilde Festival Denmark 10 days >130,000	4 FA towers 3 FA stations (2 with nurses & doctors) 5 initial treatment areas behind stages (with 2 doctors & 4 nurses) 24hr care available ambulance	10,630 (72)[b] (19)[a]	-	112 (3.2)[a]	-	-	Top 10 illnesses/injuries: Infection (20.1) Pain (19.4) Wounds (12.0) Sprains (5.4) Blunt trauma (4.5) Nursing need (4.3) Allergic reaction (3.3) Intoxication (3.2) Fracture (3.0) Psychiatry (1.4)	Who finalised treatment: 6919 FA volunteers 2115 doctor 877 FA extra skills 234 nurses 17 paramedics	238 (1.8)	Suggest a national/international database for documenting presentations. More data needs to be collected for festival comparisons
Hutton et al. (2014)	R1**	2010 26 Festivals Australia	St. John Ambulance volunteers – unknown number or mix of medical staff	4950	Mean age=21.3 62% female	539 (15)[b]	250 (5.1)[b] alcohol only	260 (5.3)[b] drug & alcohol/drug	Environment category conditions: Sunburn 39 Heat exhaustion 146 Heat stroke 23 Hypothermia 6 Envenomation 40 Alcohol related 250 Substance related 135 Substance and alcohol related 125	-	For environment category: 71 (9.1) (most for AOD)	Future research should consider total festival demographics so can better understand patient demographics. More research on AOD prevention/HR
Lund and Turris (2015)	P2*** (indications may have asked about AOD though)	201 indoor EDMF 2 days Canada 20,301 Temp=4-5°C (	HLC 4-5 Physicians 5-9 nurses 22-24 first aiders 8-15 multidisciplinary learners paramedics on stand-by with 3 ambulance/s	83 (4.09)[a]	Mean Age=19.1 69% female	55 (79)	-	-	Only reported for transferred patients: Alcohol intoxication 5 Tachycardia, agitation 1 Bruxism – not waking 1 unspecified airway issues – 1 GHB/MDMA – airway issues 1 polysubstance use – not waking 2	Medications reported: Anti-nausea 14 painkillers 2 benzodiazepine 1	11 (0.54)[c] 4 due to end of event	Replication with a control group. Onsite HLC teams to treat/monitor mild-moderate level patients could reduce ATR and the impact on EDs (72.5% reduction here). Further research on optimal mix of staff. Further consideration of issues related to non-transport decisions. Robust cost-analysis Implement HR strategies & design safer events

Friedman et al. (2016)	P1*	2014 3-day EDMF US 58,000 HI 23-32	2 EM physicians 4 nurses 86 EDM providers	84 (1.45)[a]	Mean age=23 51% male	50 (60)[a]	-	34 (40)[a] (64 – abnormal vitals)	Diaphoetic/mydriatic (13) Hyperthermic (5) Tachycardic (40) Altered mental state (20)	IV saline (10) Anti-nausea (7) Benzodiazepine (4) Albuterol (2) Painkillers (2) Intubation (1) Nothing (80)	6 (0.10)	Physician-led EMS (HLC) IAPs medical station/staff easily identified free drinking water easy access points for ambulances appropriately resourced
(Munn et al., 2016)	P***	2014 Shambhala Canada 67,120 attendees over 7 days	HLC Multi-disciplinary staff of 161 Each 12-hr shift: 1 ED physician 3 ED nurses 3 paramedics 3 first aiders 1 office assistant	1393 (20.8)	53% male 81% ≤30 years	-	-	-	-	No patents required intubation	13 (0.194)	HLC model blended with HR services, such as a "Sanctuary" space where people can cool down, hydrate, get non-medical support, referral to other services, drug-checking, etc. Recommended further research to examine benefit of HR in reducing PPR, acuity of patients and burden on local services.
FitzGibbon et al. (2017)	R2***	2014 EDMFs Moonrise 30,500 SweetLife 14,000 MDBB 10,000 US Temp=25-30	Moonrise had physician/s	908 (29.8) 20 (1.4) 32 (3.2)	-	-	-	-	-	-	10 (0.7) 16 (0.9) 9 (0.6) 21 (2.1)	Improved intelligence/models for predicting level of care/resources at EDM festivals involving MDMA use. More standardized, systematic medical responses & data collection to build evidence base & inform guidelines
Calle et al. (2017)	P1***	2013 I Love Techno Belgium 30,000 (indoor)	Belgium Red Cross personnel supported by: 5 ED physicians 6 ED nurses 6 standby ambulances	265 (8.83) [a]	-	89 (30)	N/A (although report toxicology for 106 suspected drug cases)	N/A (although report toxicology for 106 suspected drug cases)	For drug-related cases: Coma 7 (8) Agitation/Anxiety 29 (33) Convulsions 6 (7) Syncope 9 (10) Vomiting/Abdom 13 (15) Chest Pain/Pal*p* 4 (4.5) Inebriety 29 (33) Headache 2 (2) Hallucinations 0 (0)	-	38 (1.27)	Onsite Advanced Life Support. Medical teams to avoid transfers. "…data from research projects performed during a particular event are useful, but only when combined with repetitive and wide-ranging surveys on drug use, a continuous program for in-depth chemical analysis on seized materials, and a nation-wide network of Emergency Medical Services, hospitals, and coroners collecting clinical and toxicological data." Prevention efforts – education and warnings to festivalgoers, collaboration between organisers and police to control supply, early detection of intoxicated people, properly resourced medical service onsite.
Calle et al. (2017)	P1***	2014 I Love Techno Belgium 30,000 (indoor)	Belgium Red Cross personnel supported by: 5 ED physicians 6 ED nurses 6 standby ambulances	222 (8.54) [a]	-	71 (23)	N/A (although report toxicology for 106 suspected drug cases)	N/A (although report toxicology for 106 suspected drug cases)	For drug-related cases: Coma 3 (4) Agitation/Anxiety 17 (24) Convulsions 1 (1.4) Syncope 10 (14) Vomiting/Abdo 10 (14) Chest Pain/Palpi 1 (1.4) Inebriety 23 (32) Headache 5 (7) Hallucinations 1 (1.4)	one bradypnoeic patient was intubated endotracheally 1 (1.4)	31 (1.19)	

												Pill testing "matter of political/ethical debate"
Luther et al. (2018)	R2***	2016 Unspecified music festival Australia 23,008 (outdoor)	Staff composition not described. However, authors note featured an integrates first aid and medical service, trained first aid volunteers, ambulance officers and youth health workers	12.7	58% female	11%	6%	5%	-	-	3 (0.01)	Suggest having drug-checking services and other opportunistic health/HR education services. Also suggest "multiagency initiative aimed minimizing substance abuse harm should be a mainstay of event health planning." (p. 224)

Note. This summary table does not provide all the study details, statistics, conditions or recommendations provided in the original articles. Some calculations were made to determine the PPR/1000.
Abbreviations: P=prospective study, R=retrospective study, 1=primary objective about describing presentations, 2=primary objective about medical planning, HI=heat index, EM=emergency medicine
*Systematically asked about drug use **Did not systematically ask. ***Unclear if systematically asked [#]Urine/blood testing performed.
[a]Those who did not require medical evaluation were excluded (e.g. self-treatment, sometimes basic first aid).
[b]Those who did not require medical evaluation were included (e.g. self-treatment, basic first aid).
[c]The rate of patients transferred by ambulance (i.e. excludes those transferred to the ED by other vehicles).
[d]Originally was reported as day 1 & day 2. Calculated the total by combining attendance and averaging the rate.
[e]Transfer rate for drug-related cases only.
-=unknown/not reported.

Other MGM studies/findings

Two MGM articles were not summarised above because they did not examine a festival-based medical service. They are considered separately below.

In 2012, McQueen and Davies (2012) reviewed the MGM literature in response to the increasing popularity of festivals, but perceived lack of literature and legislation to guide medical planning. They cautioned against predictive models based on attendance numbers, noting that attendance rates do not necessarily correlate with patient rates. Additionally, the heterogeneity of festivals was noted as a challenge for predictive modelling (or indeed, as previously stated, when considering any intervention in these settings). McQueen and Davies (2012) also expressed concern about a perceived lack of clinical governance in the UK (e.g. staff qualifications, medical equipment) and noted that Australian guidelines were equally vague. They recommended clearer governance on medical standards. However, they also concluded that planning for every medical consequence may not be the best use of resources because severe cases were "extremely rare" (p. 71), and thus recommended improving the evidence base (with prospective studies) to help predict medical needs. That said, this review was published over five years ago, since when numerous severe (often fatal) medical cases have been reported in the media and MGM literature (Turris & Lund, 2017). Thus, it is conceivable the authors would no longer draw the same conclusions about severe cases being "extremely rare".

Grange et al. (2014) described a medical plan specifically for large-scale EDM festivals based on their experience of providing medical services at leading US festivals, including Coachella and Electric Daisy Carnival. They outlined a three-tiered HLC model, including minor first aid (treated by medical rovers or one of the multiple first aid stations, mild to moderate cases (treated at the medical centre staffed with nurses and physicians), and severe cases (sent direct to onsite medical or hospital as required). They suggested planning to care for 25–50 patients per 10,000 (i.e. 2.5-5.0 PPR/1000) and recommend having most staff trained at the level of advanced life support (ALS) or higher. (Note that this level of planning may have been inadequate for the majority of festivals summarised in *Table 2.8*, which had higher PPRs.) Grange et al. (2014) also emphasised that while reducing transfers and local burden is important, care should not be compromised and staff/patient ratios should be adhered to. Other recommendations included catering to the population (trauma is rare at EDMFs, unlike traditional rock festivals) and staffing based on event size. They described mini and full-sized ambulances with easy egress as critical, particularly for transferring patients with cardiac problems, altered consciousness or hyperthermia. They also recommended a range of general preventative measures (e.g. drinking water, water misters).

Interestingly, while most studies emphasised the high risk profile of EDMFs, Grange et al. (2014, p. 162) concluded that EDM festivals are actually "relatively safe when compared to other large mass gatherings such as rock concerts and marathons" (p. 162).

A finding not covered elsewhere, but worth discussing, comes from the earliest MGM paper identified in this review. James et al. (1975) reported that a trailer-based toxicology laboratory was established as part of the onsite medical service for the 1973 Summer Jam Rock Festival (New York, ~600,000 attendees). The toxicologists utilised thin-layer chromatography to test drugs circulating at the festival, as well as those found on patients, to inform clinical treatment. They found 75% of drugs tested were misrepresented, including 2C-B capsules sold as mescaline. James et al. (1975, p. 81) concluded that onsite laboratories can operate effectively and produce accurate results even "under the most primitive conditions" (p. 81).

Conclusions drawn from the MGM literature

Firstly, the proportion of drug-related presentations was almost certainly underrepresented in studies in which data collection focused on presenting symptoms. Thus, prospective studies should systematically collect data on individual drug/s consumed, and other potential contributing factors, to provide greater insight into the influence of drugs, individual (e.g. inadequate water intake) and environmental (e.g. heat index) factors on presentations. While recognising the difficulties in determining the relative contribution of factors, for the purpose of medical and event planning, it would be helpful to at least document beyond the basic presenting symptoms, or simple classification of drug toxicity/overdose, to a more detailed diagnosis and/or consideration of contributing factors. The time and resources such reporting could take means detailed documentation or diagnosis is likely only for severe cases.

Secondly, toxicology was uncommon so drug use was rarely confirmed. While implementing onsite laboratories at contemporary festivals requires resources, as demonstrated by James et al. (1975), being able to identify drugs consumed is critical for clinical management of severe cases. Additionally, this data could be valuable for later analysis of patient data. Thus, forensic testing should ideally be performed for drugs found on/submitted by patients and bioanalysis should be performed (to inform clinical management).

Thirdly, the evidence reviewed here suggests a need to review clinical governance, including mandating HLC teams at large-scale festivals to improve pre-hospital care and reduce the burden on local health care systems. However, the optimal level of resources remains unclear and existing predictive models may be inaccurate. While recognising that

extrapolating MGM data is problematic, developing a national minimum dataset for onsite providers which feeds into a national deidentified database should be considered for informing predictive modelling/clinical governance. Ultimately, the literature reviewed suggests there is a need to establish more consistent standards of care, which are capable of ongoing evaluation and improvement.

Fourthly, GHB use was identified as having various clinical implications. For example, GHB-affected patients are likely to need to stay at the medical service longer than other patients. Thus, to reduce hospital transfers, some festivals may want to consider extending service operating times. Discussion with relevant services/stakeholders in advance about local GHB trends may be worthwhile. Staff should also be trained in preventing secondary symptoms like hypothermia. Likewise, given hyperthermia was identified as a key concern at festivals, improved regulation of onsite cooling equipment and clinical management could improve pre-hospital care and patient outcomes.

Lastly, given the absence of demographic data for all festival attendees, it was not possible to determine whether the gender differences reported (e.g. more males presenting with heatstroke (Martinus et al., 2010)) reflected genuine population phenomena. Collaboration with organisers and/or ticketing outlets to collect basic demographic data, such as age and gender (already obtained by most ticketing outlets), could help with the interpretation of gender differences.

Overall, the MGM literature is useful for understanding the nature and extent of significant drug-related medical problems that can occur at festivals. It informs the types of environmental interventions needed at festivals and educational interventions or campaigns. This review was also critical for informing the candidate's understanding of onsite medical services, which are clearly one of the most important HR interventions at festivals. While it was beyond the scope of this study to perform any type of collaborative MGM research, this review helped inform data collection tools (e.g. types of questions to ask key informants (KIs)), interpretation of data and is considered further in the discussion and final recommendations.

Harms identified from offsite medical care (hospital ED case studies)

While the preceding section provided a broader, largely quantitative look at patient presentations at festivals, hospital case studies provide a richer, more qualitative look at complex medical cases involving drugs. Nine case studies were identified for this review,

and the primary drug implicated was MDMA. A multiplicity of medical complications were reported, including hyperthermia, hyponatremia, hypotension, hyperkalaemia (high potassium), pulmonary oedema, cerebral oedema, spontaneous pneumomediastinum, DIVC, rhabdomyolysis, liver and kidney failure/injury (conditions described below). Some presentations resulted in death, and some survivors were left with permanent physical and/or neurological sequelae (summarised in *Table 2.10*).

Table 2.10: Drug-related deaths or permanent/enduring disabilities identified in case reports of festivalgoers

	Case report	Age/ Gender	Event details	Drug/s identified	Clinical features (body temperature reading)	Cause of death/outcome	Contributing factors reported	Recommendations
Death	Parr et al. (1997)	15 F	Unspecified dance party, Australia	MDMA (unclear if toxicology performed)	Respiratory arrest, hyponatremia and cerebral oedema	Hypoxic encephalopathy after respiratory arrest following acute water intoxication secondary to ingestion of MDMA	Drank large amounts of waters based on recommendations at the time to counter hyperthermia	Revised recommendations to moderate water consumption
	Cherney et al. (2002)	20 F	Unspecified dance party, South Africa	MDMA	Grand mal seizure, severe hyponatremia and cerebral oedema	Not reported	Drank large amounts of water to counter dehydration and dancing at a rave	If even mild symptoms of hyponatremia, urgent therapy should be considered (hypertonic saline)
	Karlovsek et al. (2005)	21 M	Unspecified rave, Slovenia	MDMA	Tachycardia, hyperthermia, hypotension, rhabdomyolysis, metabolic acidosis, DIVC, cerebral and pulmonary oedema, shock, hepatic and renal failure	Not reported	High blood concentration (3.2 mg/L=~20 pills), environment	More research on human effects, ED physicians trained to promptly recognise MDMA symptoms
	Armenian et al. (2013)	25 M	Indoor festival, 16,000 people, US	MDMA	Hyperthermia (39°C), hypotension, cardiac arrest, cerebral edema, rhabdomyolysis	Terminal anoxic encephalopathy and acute MDMA intoxication	High ambient temperature at the venue and vigorous dancing, hyperthermic for too long, potentially high-dose pills	Rapid cooling
	Armenian et al. (2013)	23 M	Indoor festival, 16,000 people, US	MDMA, MDA	Hyperthermia (43°C), hypotension, seizure, rhabdomyolysis	Multiple system failure due to sequelae of MDMA intoxication.		
	Ridpath et al. (2014)	-	EDM festival, US Un-named	-	-	-	-	-
	Ridpath et al. (2014)	-	EDM festival, US un-named	-	-	-	-	-

	Case report	Age/ Gender	Event details	Drug/s identified	Clinical features (body temperature reading)	Cause of death/outcome	Contributing factors reported	Recommendations
	Nadesan et al. (2017)	25 M	Outdoor music festival, Malaysia	MDMA (blood & urine)	Hyperthermia, severe pulmonary oedema, DIVC	Heat stroke aggravated by MDMA	Severe weather conditions, physical exertion at the event & drug use Temperature =29.5-34.2, humidity=50-80%). No rain and low wind.	Immediate cooling and support of organ-system function. Pre-hospital treatment important (cooling, rapid transfer to hospital). Festival organisers should employ HR strategies to keep patrons cool
	Nadesan et al. (2017)	21 F	Outdoor music festival, Malaysia	MDMA (blood serum)	Hyperthermia (38.9°C), DIVC, rhabdomyolysis	Heat stroke aggravated by MDMA	Severe weather conditions, physical exertion at the event & drug use Temperature =29.5–34.2°C, humidity=50–80%). No rain and low wind.	Immediate cooling and support of organ-system function. Pre-hospital treatment important (cooling, rapid transfer to hospital). Festival organisers should employ HR strategies to keep patrons cool Rapid cooling
	Nadesan et al. (2017)	22 M	Outdoor music festival, Malaysia	MDMA (blood) & ketamine (urine)	Hyperthermia (41.4°C), DIVC	Heat stroke aggravated by MDMA and Ketamine		
Long-term morbidity	Armenian et al. (2013)	34 F	Indoor festival, 16,000 people, US	No test, but reported MDMA use	Hyperthermia (42.9°C), hypotension, seizure, cardiac arrest, rhabdomyolysis	Survived with unspecified long-term morbidity	High ambient temperature at the venue and vigorous dancing, hyperthermic for too long, potentially high dose pills	Rapid cooling
	Armenian et al. (2013)	21 F	Indoor festival, 16,000 people, US	No test, but reported MDMA use	Hyperthermia (41.8°C), hypotension, seizure, rhabdomyolysis, PNA, compartment syndrome	Survived with bilateral amputation below the knee		
	Armenian et al. (2013)	20 M	Indoor festival, 16,000 people, US	No test, but reported MDMA use	Hyperthermia (41.2°C), hypotension, seizure, rhabdomyolysis, compartment syndrome	Survived with severe cognitive deficits and persistent critical illness neuropathy		
	Armenian et al. (2013)	19 F	Indoor festival, 16,000 people, US	MDMA, MDA	Hyperthermia (41.5°C), hypotension, seizure, PNA, rhabdomyolysis	Survived with mild cognitive deficits		

Note. This summary table does not include all patient characteristics, clinical features or recommendations that were included in the original case studies. For full details and/or for interpretation of cases, it is important to refer to the original articles. - Details were not provided in the article.

The two earliest studies involved the deaths of two young females at raves following ecstasy use (a 15–year-old in Australia – Parr et al. (1997), and a 20–year-old in South Africa – Cherney et al. (2002)). In both cases the deceased reportedly drank excessive amounts of water, a practice apparently promoted by health campaigns at the time to counter MDMA-induced hyperthermia. Before being transferred to hospital, one experienced vomiting which escalated to twitches, confusion and collapse, while the other reported feeling unwell and suffered a seizure. Both were diagnosed with hyponatremia and cerebral oedema. In the Australian case, the cause of death reported by the coroner was "hypoxic encephalopathy after respiratory arrest following acute water intoxication secondary to ingestion of MDMA" (p. 135). However, Parr et al. (1997) highlighted the difficulty in delineating the path leading to the girl's death, suggesting numerous drug, individual and environmental factors could have contributed. Citing low general awareness of MDMA-associated hyponatremia, compared to MDMA-induced hyperthermia, Parr et al. (1997) suggested revising water consumption recommendations. Similarly, Cherney et al. (2002) suggested increasing awareness of hyponatremia and warning people not to drink large amounts of water. Cherney et al. (2002) also recommended ecstasy users be alert to friends experiencing impaired consciousness, which could signal hyponatremia, and to seek immediate medical attention, rather than encouraging them to rest, sleep and/or drink water (as was done in both cases here). However, while not considered by the authors, it may be difficult for young people to differentiate between a dee*p* euphoric state (commonly desired by ecstasy users) and more serious altered consciousness. Thus, more nuanced advice may be needed.

More recently, Karlovsek et al. (2005) reported the case of a 21–year-old man who died after consuming at least 20 ecstasy pills (estimated by toxicology) at an unspecified rave in Slovenia. Clinical features included tachycardia, hyperthermia, hypotension, rhabdomyolysis, metabolic acidosis, DIVC, cerebral and pulmonary oedema, shock and hepatic and renal failure. Karlovsek et al. (2005, p. 78) concluded that despite medical efforts, which involved "intensive cooling" (p. 78), death was probably unavoidable based on the concentration of MDMA in his blood (3.2 mg/L) and the environment in which the ecstasy was consumed (a crowded rave). The authors expressed concern about increasing use of ecstasy accompanied by a common perception that it is safe. While this case involved excessive use, they emphasised the idiosyncratic nature of responses to ecstasy (e.g. not a linear dose–response relationship) and cautioned that one pill can prove fatal, particularly for poor metabolisers. Karlovsek et al. (2005) suggested ED physicians be on alert for the presenting symptoms of MDMA intoxication.

Mascola, Dassey, Fogleman, Paulozzi, and Reed (2010) described a case series involving 18 MDMA-related presentations following attendance at a single unspecified music festival in Los Angeles on NYE (45,000 attendees). The patients ranged from 16 to 34 years of age, nine were female, 10 had used alcohol and five had used other illicit drugs (thus 13/18 involved polydrug use). Fortunately, only three needed to be admitted, and only one to the intensive care unit (ICU). Clinical features for the festivalgoer admitted to the ICU included seizures, rhabdomyolysis, liver failure and kidney failure requiring haemodialysis. This patient spent one month in hospital and required ongoing outpatient treatment. Ultimately, overdose was blamed over contaminants for this cluster of presentations given: the ecstasy tablets reportedly used differed; one tablet tested contained MDMA and caffeine; urine tests did not reveal known contaminants; and symptoms were consistent with other MDMA 'overdoses'. However, the authors also recognised limitations, such as their toxicology method being non-specific for MDMA (a urine test for amphetamines), only one tablet being available for testing and four patients not submitting urine samples. Additionally, the authors did not consider the heat index and other potentially contributing factors (e.g. water intake) which could have led to diagnoses more consistent with MDMA-associated hyperthermia or hyponatremia than 'overdose'. Nevertheless, they made HR recommendations, including increasing risk perception to decrease use, implementing "culturally appropriate" HR strategies at festivals (p. 632), using ED and EMS records to identify/investigate clusters of drug-related emergencies and encourage better reporting of clusters, and greater collaboration of sectors (e.g. EMS, police, drug agencies) to identify drug trends and develop multidisciplinary HR plans.

Armenian et al. (2013) reported a case series involving 12 young adults (19–35 years, 5 women) who presented to EDs after using MDMA at an indoor festival in the USA (~16,000 people attended). Most experienced "altered mental status, hyperthermia (10/12), seizures, tachycardia, rhabdomyolysis (12/12), hypotension, and DIVC (5/12)" (p. 255). Two patients died and four suffered serious long-term morbidity. All hypotensive patients either died or had permanent disability, and those with the most severe/prolonged hyperthermia reportedly had the worst outcomes. Surprisingly, one deceased patient did not have his temperature recorded until 47 minutes after arrival, delaying application of cooling methods. Nevertheless, the coroner reported the causes of death as "multiple system failure due to sequelae of MDMA intoxication" and "terminal anoxic encephalopathy and acute MDMA intoxication" (p. 253). Long-term health sequelae included mild to severe cognitive impairment, neuropathy, and compartment syndrome resulting in bilateral amputation below the knee. The authors emphasised that toxicology suggested MDMA was the "sole intoxicant" (p. 255); however, three patients with severe morbidity did not have serum tests.

Importantly, a capsule confiscated by police at the festival was reported to contain 270mg of MDMA (normal dose ~100mg). It was concluded that hyperthermia, delayed cooling efforts, inadequate cooling methods, the possibility of high-potency pills and persistent hypoxia (one patient) likely contributed to the poor outcomes. Armenian et al. (2013) emphasised the importance of rapid cooling. They noted that while genetic testing was not performed on these patients (to identity the polymorphism 'CYP2D6' that may predispose humans to problems metabolising MDMA), it should be considered in future. While the evidence appears mixed on the clinical relevance of CYP2D6 (e.g. Aitchison et al., 2012; de La Torre et al., 2012), routine genetic testing for severe cases could help confirm/deny whether it is indeed a risk factor.

Similar to Armenian et al. (2013), Ridpath et al. (2014) reported a case series involving 22 young adults (16–29 years, 59% female) who presented to EDs after attending an outdoor EDMF in the US (~40,000 attendees/day). The ambient temperature was reportedly 29–32°C. Two-fifths of cases (9/22) were considered severe, and two died. Most patients (95%) reported using a drug and 55% had used a "synthetic club drug" (p. 1195). Toxicology revealed that one of the deceased had consumed MDMA, while the other had consumed both MDMA and methylone (a substituted cathinone); however, it was unclear whether methylone was consumed intentionally or misrepresented as MDMA. Clinical features included hyperthermia (4/22), hyponatremia (5/18), acute kidney injury (4/17), rhabdomyolysis (7/7) and tachycardia (14/22). Ridpath et al. (2014) did not report the causes of death, contributing factors or instances of long-term morbidity. However, they noted that in response to recent mass overdoses and lack of hospital data related to festivalgoers, the Department of Health and Mental Hygiene (DOHMH) set up surveillance protocols whereby festival organisers were now required to routinely report medical statistics (first aid presentations and hospital transfers) to the DOHMH. Additionally, the DOHMH developed guidelines for future festivals, including age restrictions (>18), banning mixed energy and alcohol beverages, free water provision, roving support, unspecified hyperthermia countermeasures and HR message promotion. Ridpath et al. (2014) concluded that further research is needed to identify factors contributing to harm in these contexts.

Clause, Coche, Hantson, and Jacquet (2014) reported the case of a young man who presented with subcutaneous emphysema (air/gas in tissues below skin causing swelling) and pneumomediastinum (abnormal presence of air/gas in the chest cavity causing pain/breathing discomfort) after attending an unspecified Belgian 'rave' at which he consumed two ecstasy tablets. The authors reported that while presentations for ecstasy-related pneumomediastinum were rare, reports had been increasing. They hypothesised that the

condition is more likely a consequence of behavioural rather than physiological factors associated with using MDMA in these settings. While the patient was discharged after four days, Clause et al. (2014) concluded that ED physicians should be aware of this complication.

In Western Australia, on NYE 2013, 10 patients (median age=20) presented to an ED after taking a "small number" of blue lightning bolt pills sold as 'ecstasy' (McCutcheon, Oosthuizen, Hoggett, & Fatovich, 2015, p. 543). Eight patients had attended the Origin music festival nearby (mixed-genre, mega-festival). Clinical features included agitated delirium, hyperthermia, tachycardia, emotional lability, clonus and seizure. Several patients had reportedly engaged in dangerous behaviours, such as climbing light poles and walking in traffic. One required intubation and was admitted to the ICU, and five required heavy sedation. Bioanalysis of blood detected methamphetamine in two samples only, raising suspicion of undetected NPS. They concluded more research was needed on NPS to help inform users, emergency physicians and best practice guidelines for bioanalysis of NPS. They also recommended public warnings be issued immediately following ED presentations like this, and urged media to stop inaccurately reporting all adverse outcomes as 'overdoses', which can give an impression normal doses are safe.

More recently, Nadesan et al. (2017) reported a case series involving 12 festivalgoers who presented to a Malaysian ED in 2014. One was dead on arrival, while two died in hospital. The two who died in hospital presented with hyperthermia; one had been vomiting, twitching and seizing, while the other experienced breathing problems and was found unconscious at the festival. The survivors reportedly experienced similar, but milder symptoms. The post-mortem revealed the deceased had suffered DIVC and the cause of death was ruled to be "heatstroke aggravated by MDMA use" (Nadesan et al. (2017) p. 2). Interestingly, toxicology revealed the survivors had actually consumed opioids, ketamine, benzodiazepines or no drugs at all. While Nadesan et al. (2017, p. 2) acknowledged MDMA use may have heightened risk to the deceased, they stressed the weather was "humid, hazy and high ambient temperature" (p. 2) and patients had engaged in prolonged physical activity. Additionally, they noted that drug serum levels were very low (below recreational dosages). They thus argued that these deaths may have occurred even in the absence of drug use. However, they also noted idiosyncrasies surrounding MDMA-associated deaths and dose responses (some deceased have low drug serum levels, while some survivors have high serum levels). Ultimately, consistent with other studies, the authors highlighted the importance of rapid cooling and organ support, and recommended onsite medical services be

properly resourced for managing hyperthermia. Additionally, they urged festival organisers to implement preventative cooling strategies.

The most recent case study involved a 19–year-old man who spent five days in hospital after consuming ecstasy, cannabis and alcohol at an EDM festival in the US (Haaland, Warman, Pushkar, Likourezos, & Friedman, 2017). He reportedly presented to onsite medical in an alert but overexcited state, but was transferred after becoming disoriented, agitated and experiencing respiratory distress. Clinical features included respiratory failure, isolated non-cardiogenic pulmonary oedema (NCPE), acute respiratory distress syndrome and rhabdomyolysis. There were no indications of long-term morbidity. Haaland et al. (2017) believed the interesting point of this case was the absence of hyperthermia and dysfunction of other organs, suggesting MDMA was the sole cause. They therefore concluded that the medical field should recognise NCPE as another potential adverse reaction to MDMA.

The most recent case series involved 28 patients who presented to a university hospital during a three-day EDM festival in Chicago (Chhabra, Gimbar, Walla, & Thompson, 2017). Most cases (25/28) involved self-reported substance use (ethanol=18/30, ecstasy/MDMA=13/30, cannabis=8/30); no bioanalytical confirmation was reported. Three patients were admitted – one to the ICU with "severe agitation" and two to an intermediate unit with "altered mental status and rhabdomyolysis" (p. 436), presumably related to MDMA use. There were no reported deaths. The authors concluded that patients from the festival stayed longer than other patients and those admitted required significant resources.

Overall, the above studies identified numerous health complications of drug use (predominantly ecstasy use) at festival-type events. While acknowledging severe outcomes are rare, several authors cautioned against underestimating ecstasy/MDMA as a 'safe' drug (e.g. Karlovsek et al., 2005; Parr et al., 1997). Authors emphasised the idiosyncratic/unpredictable nature of physiological responses, which are further complicated by 'ecstasy' being notoriously impure. The authors also consistently identified the context of use (warm ambient temperatures, dancing) as contributing to adverse outcomes (e.g. Nadesan et al., 2017). Increased awareness among event organisers and the medical community of both common and rare drug-related complications documented in case studies, including how to prevent and treat them, could improve future health outcomes. A systematic review of case studies (such as this, but routinely updated) could benefit event health services and wider EMS ahead of festival seasons. However, the review of the medical literature informed the candidate's understanding of high-risk conditions causing hospitalisation and death among festivalgoers, and key physical symptoms (e.g. increased

temperature and heart rate) and risk factors (e.g. prolonged dancing, inadequate hydration) to investigate. These case reports also signal the types of individual, environmental, and drug-related risk factors which could be targeted in HR efforts.

Potential harms identified from laboratory studies simulating festival environments

Six studies investigated negative physiological effects of MDMA use in laboratory conditions mimicking festival-type environments. While acknowledging the obvious limitations of laboratory animal studies (e.g. extrapolating findings to humans), a strength is that they allow researchers to control aspects of the drug, set and setting. This ability to manipulate independent variables allows researchers to isolate/identify factors which may contribute to the risk of drug-related harm in festival-type settings. Thus, while these harms are only theoretical, they can be considered alongside actual evidence of harm discussed previously. It should also be noted that many other animal studies have examined similar issues; however, this review only captured articles which explicitly stated an intention to simulate elements of festival-type environments. Of these, three were concerned with body temperature/hyperthermia and three with cognitive impairment/neurotoxicity. These topics are considered separately, followed by a discussion of the collective limitations and implications.

The three studies concerned with MDMA-induced hyperthermia examined the contributions of elements of festival-type environments to elevated body temperature (e.g. ambient temperature, social interaction, music and dancing). In 2002, Carvalho et al. (2002) examined the effect of ambient temperature on MDMA-induced hyperthermia and liver damage in mice. They identified hyperthermia as being dose dependent (dosages injected were 5, 10 or 20mg/kg). They also found that while 40% died when it was warm (30°C, 20 mg/kg), 10% died at normal temperature (20°C, 20 mg/kg), suggesting risk exists even in cool environments. While 20mg/kg may seem like an excessive/unrealistic dose for humans (recommended recreational dose is about 1.6mg/kg), interspecies dose comparisons are complicated by different rates of drug elimination (humans rates are slower) (Mueller et al., 2009). Based on the direction of findings, Carvalho et al. (2002) concluded that high ambient temperature significantly contributes to elevated body temperature and also increases liver damage (via hyperthermia) following MDMA use. Gilpin et al. (2011) studied the influence of locomotor activity on MDMA-induced hyperthermia in rats (at 10mg/kg). They used an activity wheel to replicate voluntary dancing, and found running on the wheel did not consistently contribute to MDMA-induced hyperthermia. Thermoregulatory responses varied

between subjects, with some rats reaching lethal levels of hyperthermia. Gilpin et al. (2011) therefore concluded that there could be a link between locomotor activity and lethal hyperthermia for some individuals. However, the ambient temperature was controlled at 22°C, which does not simulate most real-life festival dance floors/mosh pits, and there could be interaction effects between activity and heat. Most recently, Kiyatkin et al. (2014) examined the contribution of both ambient temperature and social stimulus to MDMA-induced hyperthermia (29°C, with rats of the opposite sex). The authors found moderate, non-toxic doses of MDMA-caused 100% fatal hyperthermia under experimental conditions, but unlike in Carvalho et al. (2002), there were no deaths in the control group. They also identified peripheral vasoconstriction as a critical mechanism preventing heat dissipation, concluding that MDMA use can be highly dangerous in some environments and that cooling approaches targeting 'cutaneous vasoconstriction' could be effective in counteracting hyperthermia.

Studies concerned with MDMA neurotoxicity also examined the potential contributions of factors and behaviours common in festival-type environments. Iannone et al. (2006) investigated the effect of 95-decibel white noise (to simulate loud sound exposure at raves) on the electrocortical toxicity of MDMA in rats. They found relatively low doses of MDMA in the absence of noise exposure reduced electrocortical power (i.e. activity in the brain's cerebral cortex), but recovered when exposure was removed. However, white noise potentiated the effects of MDMA, leading to a more prolonged reduction in power. Thus, this study suggests loud music played at festivals could potentiate MDMA effects and cause some cognitive dysfunction in the days following. Erives, Lau, and Monks (2008) investigated the effect of multiple drug redosing (reflective of how MDMA is often used in real life) on serotonergic neurotoxicity. They found neurotoxic metabolites accumulated after redosing (20mg/kg per dose) due to slow elimination rates, suggesting redosing contributes to neurotoxicity. Most recently, Busceti et al. (2015) exposed mice to a variety of stimuli (termed 'stressors') common at festivals, including crowding (both sexes), bright lights and EDM for 14 hours, with and without MDMA (12.5mg/kg). They found evidence of temporary hippocampal impairment from environmental stressors alone, and noted that, if this finding translated to raves, it could contribute to medical problems and cause cognitive dysfunction in the days following (e.g. compromised spatial memory). Busceti et al. (2015) results were consistent with other evidence suggesting environmental factors/stressors can amplify the effects of MDMA.

While experimental animal studies provide some interesting data about the potentiating effects of the environment, there are critical limitations to consider. First, the

involuntary nature of animal experiments and lack of reward is not reflective of human life. The fact subjects (rodents) could not withdraw when stimuli were overwhelming may have caused psychological stress and contributed to the hyperarousal observed. Secondly, most studies examined the effect of individual stimuli, but ignored other common festival stimuli (e.g. they only manipulated sound or ambient temperature). It is possible the interaction of stimuli produces potentiating effects. Thirdly, the subjects were rodents, so the results cannot be reliably translated to humans. While Busceti et al. (2015, p. 266) claimed that "12.5mg/kg in mice roughly correspond[s] to 50mg of MDMA in humans, which is below the dose of ecstasy typically taken by drug abusers" (p. 266), the validity of dose scaling between humans and animals has been questioned (Green, Mechan, Elliott, O'Shea, & Colado, 2003). Fourthly, these studies did not account for polydrug use, which is common at festivals (see *Patterns*). Notwithstanding these limitations, accumulating evidence from animal studies suggests that stimulating environmental factors at festivals can amplify the physiological effects of MDMA. While this might be desirable for festivalgoers, it may also increase the risk of short and long-term harm by triggering hyperarousal. Potential harms identified in these animal studies were acute hyperthermia and neurotoxicity, leading to impaired cognitive functioning and mood which may persist beyond use. The findings could be interpreted as supporting the implementation of cooling strategies and noise controls, and encouraging protective practices (e.g. taking breaks/hydrating, wearing ear plugs, reducing dose/redosing). Future animal research into both the combined and isolated effects of festival stimuli, as well as polydrug use, would increase the relevance of this literature. More consistent dosages administered across studies may also aid comparisons between studies and draw better overall inferences. Of course, experimental human studies in real-life festival settings would also be of great benefit.

Media coverage of drug-related festival fatalities

Mortality associated with music festivals has not been documented systematically by governments or health care providers in Australia. Thus, to investigate the number of drug-related deaths that have occurred in association with these events, deaths identified in the news media were documented in *Table 2.11*. The inclusion criteria were that the event was named (to confirm it was a festival, rather than a concert or nightclub event), the fatality was linked to drug use associated with a festival, and enough information was provided to avoid duplication. Although the media coverage often lacked detail, attempts were made to document the country, age and gender of the person concerned and the key details of each death (e.g. clinical features, cause of death and toxicology results). However, toxicology and the coroner's cause of death were rarely reported. Unsurprisingly, there was a tendency for

many impassioned media reports in the days following deaths, but failure to provide follow-up coverage on critical details (e.g. the cause of death), which hampered this analysis. The candidate's attempts to locate coroner reports in archives were generally unsuccessful, as were requests for non-archived records. Media reports citing official sources (e.g. coroner and toxicology reports) are flagged in *Table 2.11*; however, even when 'official' details are reported, caution is advised because media cannot be considered an accurate source of information. Nevertheless, at present, media coverage represents the best source of information.

The lack of documentation was further illustrated during the writing of this thesis when the Commonwealth Government Department of Health contacted Professor Steve Allsop, former director of the National Drug Research Institute, with a request for any available data on festival deaths. Table 2.11, compiled by the candidate as part of her research was provided, which was included in Senate Hansard as a written response to a Senate Estimates Question on Notice. A table documenting evidence of impact is available in the appendices (*see Evidence of impact).*

Table 2.11: Media reports of drug-related deaths at music festivals internationally (as at 10/11/2019)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
1.	1994	England	Glastonbury	-	23 M	Unspecified "overdose"	Unknown		(Jury, 1994)
2.	2004	Tennessee, USA	Bonnaroo	Amber Lynn Stevens	22 F	Ketamine, diazepam, oxycodone, marijuana and cocaine	Mixed drug toxicity		(Associated Press, 2004)
3.	2004	Tennessee, USA	Bonnaroo	Brandon Taylor	20 M	Cocaine, oxycodone and alprazolam	Mixed drug toxicity		(Associated Press, 2004)
4.	2006	California, USA	Nocturnal Wonderland	Joshua Johnson	18 M	Ecstasy use, seizure, hyperthermia (~42°C) Coroner ruled ecstasy toxicity	Ecstasy toxicity/hyperthermia	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
5.	2007	Loch Ness, Scotland	Rockness	Paul Litterick	39 M	Found deceased in his car after a heroin overdose	Heroin overdose		(Mcardle, 2012)
6.	2007	Los Angelis, USA	Monster Massive	Michelle Yuenshan Lee	20 F	Collapsed, seizures, hyperthermia (~42°C) Coroner ruled multiple drug toxicity, citing ecstasy and amphetamines	Mixed stimulant toxicity/hyperthermia	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
7.	2007	Sydney, Australia	Good Vibrations	Annabel Catt	20 F	PMA capsules misrepresentation as ecstasy	PMA toxicity/drug misrepresentation/hyperthermia		(Bannerman, 2007; Danks, 2009)
8.	2008	Scotland	Rockness	Ryan Munro	18 M	Found unconscious near stage – reported overdose but could not find confirmation	Unknown		(Mcardle, 2012)
9.	2008	Los Angeles, USA	Together as One	William On	23 M	Seizures, hyperthermia (~42°C) Coroner ruled ecstasy intoxication, hyperthermia and multiple organ failure	Ecstasy toxicity/hyperthermia	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
10.	2008	California, USA	Coachella	Benjamin Muller	21 M	Found unconscious camping nearby Autopsy reports methamphetamine, oxycodone, opiates and cannabis use and died of multiple drug toxicity	Mixed drug toxicity		(Fiegener, 2008)
11.	2008	California, USA	Monster Massive	Michael Phuc Nguyen	23 M	Found face down and unresponsive Coroner ruled multiple drug toxicity – ecstasy and methamphetamine.	Mixed stimulant toxicity	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
12.	2009	Cumbria, England	Kendall Calling	Katie Jones	20 F	MDMA use, three times dose to cause toxic effects, suffered fits, multiple organ failure	Ecstasy toxicity		(Savill, 2009)
13.	2009	USA	Nocturnal	John Cramer	23 M	Seizure-like activity, hyperthermia (~42°C) and heart failure Coroner ruled ecstasy toxicity	Ecstasy toxicity/hyperthermia	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
14.	2009	Perth, Australia	Big Day Out	Gemma Thoms	17 F	Panicked in response to drug dog threat and swallowed remainder of pills, 3 ecstasy tablets in total, seizure, hyperthermia, inadequate onsite medical contributed	Ecstasy toxicity/hyperthermia		(Australian Associated Press, 2013; Mulligan, 2013)
15.	2010	USA	Together as One	Daniel Cyriaco	24 M	Found unresponsive at home after the festival by a friend. Coroner ruled multiple drug intoxication – ecstasy, cocaine and heroin	Mixed drug toxicity	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
16.	2010	California, USA	Pop2010	Anthony Mata	23 M	Coroner confirmed only MDMA in system	Ecstasy toxicity	Y	(The Associated Press, 2010)
17.	2010	California, USA	Pop2010	Trung Nguyen	25 M	Suspected ecstasy overdose	Ecstasy toxicity		(The Associated Press, 2010)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
18.	2010	Tennessee, USA	Bonnaroo	David Matthew Sloane	29 M	Hyperthermia (>42°C) reported as cause of death in most reports, but festival companion reported heavy MDMA use	Ecstasy toxicity/hyperthermia		(Blake, 2010; Kornhaber, 2011)
19.	2010	Los Angelis, USA	Electric Daisy	Sasha Rodriguez	15 F	Ecstasy use, respiratory arrest, shocked lungs, brain damage Coroner ruled ecstasy intoxication and resulting failure to receive oxygen to the brain	Ecstasy toxicity	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
20.	2010	Dallas, USA	Electric Daisy	Jesse Morales	22 M	Collapsed, hyperthermia (~42°C), amphetamine use Medical examiner ruled amphetamine toxicity	Amphetamine toxicity	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
21.	2011	Dallas, USA	Electric Daisy	Andrew James Graf	19 M	Seizures, cardiac arrest Medical examiner ruled amphetamine toxicity, cited ecstasy use	Ecstasy and/or amphetamine toxicity	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
22.	2011	Dallas, USA	Electric Daisy	Kyle Haigis	22 M	Irrational behaviour – jumped out of car and was hit by a truck Toxicology revealed hallucinogen use – 5MEO-dipt (foxy)	Other – Possible drug-induced psychosis	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
23.	2011	USA	Boomtown	Deborah Jeffery	45 F	Ecstasy-induced heart attack, cocaine detected too	Mixed stimulant toxicity	Y?	(kale, 2016; Streatfield, 2012)
24.	2011	London, England	Alexandra Palace Rave	Lloyd Jones	21 M	MDMA powder, multiple organ failure Toxicology revealed MDMA, caffeine, possibly amphetamines	Ecstasy toxicity	Y	(Cheston, 2012)
25.	2011	London, England	Alexandra Palace Rave	Richard Baker	22 M	Post-mortem revealed multiple organ failure, high concentration of MDMA in system	Ecstasy toxicity	Y	(Cheston, 2012)
26.	2012	Texas, USA	Nocturnal Wonderland	Gregory Fitcher	32 M	Seizure and stopped breathing. Coroner ruled mixed drug toxicity – several drugs in his system that have effects similar to those of ecstasy	Mixed stimulant toxicity	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
27.	2012	Hawaii, USA	Kapolei Rave	Rachel Clute	19 F	Brain hypoxia due to toxic effects of MDMA and methamphetamine	Mixed stimulant toxicity	Y?	(Star-Advertiser Staff, 2012)
28.	2012	Loch Ness, England	Rockness	Alex Heriot	19 M	Benzo fury – was a legal high at the time	Benzo fury toxicity		(Mathieson, 2012)
29.	2012	Las Vegas, USA	Electric Daisy	Emily McCaughan	22 F	Paranoid delusions so returned to hotel alone and squeezed out window Coroner said ecstasy, methamphetamine and GHB in her system	Other – drug-induced psychosis/climbed out hotel window	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
30.	2012	Las Vegas, USA	Electric Daisy	Olivier Hennessy	31 M	Staggered into traffic and hit by truck Blood-alcohol level of 0.19%, cannabis and hydrocodone in system	Other – intoxication and hit by truck	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
31.	2012	Michigan, USA	Electric Forest	Michael Benway, Jr.	37 M	Found dead at his campsite Coroner ruled heart inflammation & oxycodone and amphetamine toxicity	Mixed drug toxicity	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
32.	2012	Rhode Island, USA	Identity	Connor Brandon	19 M	Cardiac arrest caused by ecstasy, amphetamines and cannabis	Mixed drug toxicity	Y?	(Matos & Sampson, 2012)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
33.	2012	Rhode Island, USA	Identity	Dominic Impelizzieri	27 M	Cardiac arrest due to multiple drug toxicity (drugs not specified)	Mixed drug toxicity	Y?	(Matos & Sampson, 2012)
34.	2012	England	V Festival	Timothy Brockhurst	22 M	Found unconscious in his tent. Toxicology revealed he had taken a fatal dose of PMA and 4-MEC. Traces of alcohol and cannabis in his system. Verdict was overdose	Mixed drug toxicity/drug misrepresentation	Y	(Shropshire Star News, 2013)
35.	2012	AK, USA	Voodoo Festival	Clayton Otwell	21 M	Accepted free dose administered by person met there. One drop of 25-I-nbome in nose, seizure in 30 minutes and never regained consciousness	25-I toxicity		(Martin, 2012)
36.	2012	Victoria, Australia	Rainbow Serpent	Daniel Buccianti	34 M	Potential drug misrepresentation, mixed drug toxicity, including unspecified hallucinogen–found deceased in his tent Could not locate coroner cause of death or toxicology	Mixed drug toxicity/drug misrepresentation (unconfirmed?)		(Choahan, 2012)
37.	2012	Canada	Shambhala	Mitchell Joseph Fleischacker	23 M	Polydrug use – diazepam, cocaine, MDMA and GHB Coroner ruled "pulmonary failure as a result of illicit and prescription drug toxicity"	Mixed drug toxicity	Y	(Star, 2013)
38.	2012	New York, USA	Cam*p* Bisco	William P. Graumann	29 M	Was slurring words and struggling to walk Found unresponsive in his tent with hydrocodone, Xanax and cannabis Toxicology and coroner cause of death not reported	Unknown		(McCarty, 2012)
39.	2013	Florida, USA	Ultra	Anthony Cassano	20 M	Acted erratically, multiple organ failure Medical examiner ruled it acute methylone toxicity, but also had cannabis in system	Methylone toxicity	Y	(Miller, 2014a, 2014b)
40.	2013	Rhode Island, USA	Life in Color	Kostika Fushi	18 M	Found dead on sidewalk – suggested he was unable to get into the festival. Cause of death was hypothermia, with alcohol being a contributing factor	Other – alcohol-related accident	Y	(Khal, 2013)
41.	2013	USA	Governors Island Rave	Matthew Rybarczyk	20 M	Methylone, likely sold as MDMA	Methylone toxicity/drug representation possible		(Boyle, 2013)
42.	2013	USA	Paradiso Festival	Patrick Witkowski	21 M	Multiple system organ failure from hyperthermia (43°C) and methamphetamine intoxication. Purchased as MDMA.	Methamphetamine toxicity/hyperthermia/drug misrepresentation	Y?	(Kruse, 2014)
43.	2013	USA	Electric Zoo	Olivia Rotondo	20 F	Used 'molly', seizured Medical examiner ruled MDMA overdose combined with hyperthermia	Ecstasy toxicity/hyperthermia	Y	(Sachs, 2013)
44.	2013	USA	Electric Zoo	Jeffrey Russ	23 M	Medical examiner ruled MDMA overdose combined with hyperthermia	Ecstasy toxicity/hyperthermia	Y	(Sachs, 2013)
45.	2013	USA	Nocturnal Wonderland	Arrel Cochon	22 M	Collapsed and seizure Coroner's officials said sequelae anoxic brain injury as a result of multiple-drug use. Toxicology revealed ecstasy and methamphetamine	Mixed stimulant toxicity	Y	(Romero, 2013)
46.	2013	England	Brownstock	Jonathon Graham	33 M	5-EAPB (Benzo Fury) was a legal high at the time	Benzo fury toxicity		("Fsetival-goer died," 2014)
47.	2013	England	Boomtown	Ellie Rowe	18 F	Ketamine and alcohol use, found unconscious in tent by friend who also fell asleep Coroner ruled alcohol and ketamine toxicity	Mixed depressant toxicity	Y	(Press Association, 2014)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
48.	2013	Sydney, Australia	Defqon.1	James Munro	23 M	Took 3 ecstasy pills (bought on Silk Road) due to fear of drug dog detection, fitted, cardiac arrest, hyperthermia (42°C), organ failure, DIVC Could not locate coroner's cause of death or toxicology	Ecstasy toxicity/hyperthermia		(Partridge & Ralston, 2013; Whitehead, 2013)
49.	2014	London, England	Illegal Rave	Rio Andrew	15 M	Thought had consumed ketamine, but was ecstasy Coroner ruled multiple organ failure due to MDMA toxicity	Ecstasy toxicity	Y	(Wheatstone, 2016)
50.	2014	Florida, USA	Ultra	Adonis Escoto	21 M	Friends took him to car near event to recover, but found him unconscious in the car later Medical examiner ruled alpha-PV*P* toxicity	Alpha-PV*P* toxicity	Y	(Miller, 2014b)
51.	2014	Canada	Veld electric	Willard Amurao	22 F	Convulsing, flailing violently, cardiac arrest Autopsy revealed he had taken MDMA	Ecstasy toxicity	Y	(Karstens-Smit & Verstraten, 2014; McKeon, 2015)
52.	2014	Canada	Veld electric	Annie Truong-Le	20 F	Fell unconscious at the festival Autopsy revealed he had taken MDMA	Ecstasy toxicity	Y	(Karstens-Smit & Verstraten, 2014; McKeon, 2015)
53.	2014	Canada	Boonstock	Lynn Tolocka	24 F	Seizures, low blood pressure, cardiac arrest Toxicology revealed alcohol and MDMA levels linked to death	Ecstasy toxicity	Y	(Gaffney, 2016)
54.	2014	USA	Coachella	Kimchi Truong	24 F	Sought help at medical tent, but later collapsed Coroner ruled overdose, but toxicology not reported	Unknown	Y	(Farberov, 2014; Trew, 2014)
55.	2014	Las Vegas, USA	Electric Daisy	Anthony Anaya	25 M	Found unconscious in his hotel room Coroner ruled alcohol, ecstasy and cocaine toxicity	Mixed stimulant toxicity	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
56.	2014	Las Vegas, USA	Electric Daisy	Montgomery Tsang	24 M	Acute MDMA toxicity, cardiac enlargement	Ecstasy toxicity		(Lin & Hamilton, 2017; Lin & Parker, 2016)
57.	2014	USA	Electric Forest	Brian Alan Brockette	20 M	Ecstasy toxicity	Ecstasy toxicity		(Lin & Hamilton, 2017; Lin & Parker, 2016)
58.	2014	Canada	Escapade		19 F	Believed to have taken ecstasy pills in humid weather, but further details on death and person not reported	Ecstasy toxicity		(Shaamini, 2014)
59.	2014	USA	Sun God	Ricardo Ambriz	20 M	According to autopsy & toxicology tests, overdosed on 5-APB (Benzo fury). Also drank alcohol, started acting strange and rambling before collapsing in dorm room	Benzo fury toxicity	Y	(Perry, 2014)
60.	2014	USA	BoomTown	Lisa Williamson	31 F	Took one gram of ecstasy, acted strangely and then hung herself in a festival toilet cubicle Pathologist said died of hanging, but MDMA altered state of mind (partner said heat/drugs contributed)	Other – suicide while in an altered state of mind (MDMA)	Y	("BoomTown Fair," 2014)
61.	2014	Los Angeles, USA	Hard Summer	Emily Tran	19 F	Seizures, ecstasy toxicity	Ecstasy toxicity		(Lin & Hamilton, 2017; Lin & Parker, 2016)
62.	2014	USA	Mad Decent Block Party	Tyler Viscardi	20 M	Family believed drugged with water containing MDMA Official cause of death could not be located	Ecstasy toxicity		(George & Anderson, 2014; Hellgren, 2014)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
63.	2014	USA	Mad Decent Block Party	Daniel Anders	17 M	Dispatch reported molly overdose, altered mental status Official cause of death could not be located	Ecstasy toxicity		(George & Anderson, 2014; Hellgren, 2014)
64.	2014	Malaysia	Future Music	Kamal Zekry Kamal Basha	22 M	Originally reported as methamphetamine overdose Post mortem doctor reported low concentrations of MDMA, but cause of death hyperthermia	Ecstasy toxicity/hyperthermia	Y	(Cheng, 2015)
65.	2014	Malaysia	Future Music	Victor Wong E Hern	26 M	Originally reported as methamphetamine overdose Post mortem doctor reported low concentrations of MDMA, but cause of death hyperthermia	Ecstasy toxicity/hyperthermia	Y	(Cheng, 2015)
66.	2014	Malaysia	Future Music	Sabreena Kamaruddin	21 F	Originally reported as methamphetamine overdose Post mortem doctor reported low concentrations of MDMA, but cause of death hyperthermia	Ecstasy toxicity/hyperthermia	Y	(Cheng, 2015)
67.	2014	Malaysia	Future Music	M. Suresh	28 M	Originally reported as methamphetamine overdose Post mortem doctor reported low concentrations of MDMA, but cause of death hyperthermia	Ecstasy toxicity/hyperthermia	Y	(Cheng, 2015)
68.	2014	Malaysia	Future Music	Syazana Sohaime	23 F	Originally reported as methamphetamine overdose Post mortem doctor reported low concentrations of MDMA, but cause of death hyperthermia	Ecstasy toxicity/hyperthermia	Y	(Cheng, 2015)
69.	2014	Malaysia	Future Music	Nor Faizza Mohd Wazir	27 F	Originally reported as methamphetamine overdose Post-mortem doctor reported low concentrations of MDMA, but cause of death hyperthermia	Ecstasy toxicity/hyperthermia	Y	(Cheng, 2015)
70.	2014	Indonesia	A State of Trance	Chua Wen Hu	27 M	Collapsed with seizures Reported as overdose, but cannot locate official cause of death	Unknown		(Hoe Pei, 2014)
71.	2014	Indonesia	A State of Trance	Ricky Maahir Muhammad	18 M	Reported as overdose, but cannot locate official cause of death	Unknown		(Hoe Pei, 2014)
72.	2014	Indonesia	A State of Trance	Isti Rahmawati	19 F	Reported as overdose, but cannot locate official cause of death	Unknown		(Hoe Pei, 2014)
73.	2014	England	Glastonbury	Jack Crabtree	26 M	Adverse reaction to ketamine	Ketamine toxicity		(Davidson, 2014)
74.	2014	USA	Austin City Limits	Jessica Mary Hunter	21 F	Seizure, cardiac arrest, hyperthermia and brain haemorrhaging after ecstasy use	Ecstasy toxicity/hyperthermia		(Warren, 2014)
75.	2014	Sydney, Australia	Harbourlife	Georgina Bartter	19 F	1.5 ecstasy pills, shivering, convulsing/seizure before multiple organ failure and cardiac arrest No toxicology reported	Ecstasy toxicity		(Noble, 2014)
76.	2014	NSW, Australia	Falls Festival	Nathaniel Guymer	26 M	Found deceased at campsite by friends, one ecstasy tablet Could not locate post-mortem details	Ecstasy toxicity		(White, 2015)
77.	2014	Goa, India	Supersonic	Isha Mantri	27 F	Delirium, unknown overdose	Unknown		("Mumbai woman died," 2014)
78.	2015	Sydney, Australia	A State of Trance	Tolga Toksoz	19 M	Ecstasy, competition to see who could swallow most pills	Ecstasy toxicity		(McClellan, 2015)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
79.	2015	USA	Beyond Wonderland	John Hoang Dinh Vo	22 M	Cardiac arrest, possible seizure, cause of death MDMA toxicity	Ecstasy toxicity		(Lin & Hamilton, 2017; Lin & Parker, 2016)
80.	2015	USA	Hard Summer	Tracy Nguyen	18 F	Seizure, ecstasy use	Ecstasy toxicity		(Lin & Hamilton, 2017; Lin & Parker, 2016)
81.	2015	USA	Hard Summer	Katie Dix	19 F	Multiple drug intoxication, found unresponsive	Mixed drug toxicity		(Lin & Hamilton, 2017; Lin & Parker, 2016)
82.	2015	USA	Electric Daisy Carnival	Nicholas Austin Tom	24 M	Ecstasy use	Ecstasy toxicity		(Lin & Hamilton, 2017; Lin & Parker, 2016)
83.	2015	England	Kendal Calling	Christian Pay	18 M	Ecstasy pills contained PMA, went into cardiac arrest	PMA toxicity/Drug misrepresentation		(Arnold, 2018)
84.	2015	Sydney, Australia	Defqon.1	Nigel Pauljevic	26 M	Cannot locate toxicology details or coroner's cause of death. However, 2018 media reports died after taking ecstasy	Ecstasy toxicity		(Barlass & Smith, 2018)
85.	2015	NSW, Australia	Dragon Dreaming	Anneke Vo	23 F	Respiratory arrest, separated from friends and found next morning unconscious. Death cause could not be located, but sister said drug-related	Unknown		(Begley & Arlington, 2015)
86.	2015	Sydney, Australia	Stereosonic	Sylvia Choi	25 F	Ecstasy, MDMA in water and alcohol	Ecstasy toxicity		(Begley & Arlington, 2015)
87.	2015	Adelaide, Australia	Stereosonic	Stefan Woodward	19 M	Ecstasy pills, suspected bad pills, red dollar signs? Tried to seek help, friends called him "weak" so he abandoned the first aid line	Ecstasy toxicity/possible drug misrepresentation		(Tonedeaf, 2015)
88.	2016	USA	Electric Daisy	Kenani Kaimuloa	20 F	Ecstasy and cocaine, hyperthermia (~43°C), convolutions, heart stopped Coroner ruled ecstasy and cocaine intoxication, with heat stress contributing	Mixed stimulant toxicity/hyperthermia	Y	(Lin & Hamilton, 2017; Lin & Parker, 2016)
89.	2016	Florida, USA	Sunset	Alex Haynes	22 M	Toxicology revealed MDMA, lorazepam & midazolam Autopsy report ruled direct result of "ecstasy abuse"	Ecstasy toxicity	Y	(Bein, 2016; Lotan, 2016)
90.	2016	Florida, USA	Sunset	Katie Bermudez	21 F	High temperature, tachycardia & brain swelling Toxicology revealed MDMA & non-fatal amounts of caffeine Autopsy report direct result of "ecstasy abuse"	Ecstasy toxicity/hyperthermia	Y	(Bein, 2016; Lotan, 2016)
91.	2016	California, USA	Hard Summer	Derek Lee	22 M	1 pill, seizure, ecstasy-induced hyperthermia (~40.5°C) Coroner ruled acute MDMA toxicity	Ecstasy toxicity/hyperthermia	Y	(Lin & Hamilton, 2017; Lin, 2016)
92.	2016	California, USA	Hard Summer	Alyssa Dominguez	21 F	Ecstasy-induced hyperthermia Coroner ruled acute MDMA toxicity	Ecstasy toxicity/hyperthermia	Y	(Lin & Hamilton, 2017; Lin, 2016)
93.	2016	California, USA	Hard Summer	Roxanne Ngo	22 F	Hyperthermia (40°C) seizure, cardiac arrest Coroner ruled acute MDMA toxicity	Ecstasy toxicity/hyperthermia	Y	(Lin & Hamilton, 2017; Lin, 2016)
94.	2016	England	T in the Park	Jim or James Richardson	29 M	Found dead in nearby field Pathologist presumed drug-related	Unknown	Y	(Bugler, 2016)
95.	2016	England	T in the Park	Megan Bell	17 F	Unknown Pathologist presumed drug-related	Unknown	Y	(Bugler, 2016)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
96.	2016	England	T in the Park	Peter McCallum	17 M	Found dead in tent Pathologist presumed drug-related	Unknown	Y	(Bugler, 2016; Christison, 2016)
97.	2016	England	Boomtown	Livvy Christopher	18 F	Found dead in tent by boyfriend Coroner – fatal levels of MDMA and etizolam (but had also used alcohol, cocaine and ketamine)	Mixed drug toxicity	Y	(Harper, 2016)
98.	2016	England	Creamfields	Joseph Sheppard	26 M	Took molly then a pill from a stranger. Found face down in tent Toxicology revealed ecstasy and cocaine likely to result in cardiac toxicity/ fatal drug toxicity possible Inquest ruled drug toxicity	Mixed stimulant toxicity	Y	(Clay, 2017)
99.	2016	Michigan, USA	Lakes of Fire	Matthew Vo	29 M	Cocaine, alcohol, cannabis and ketamine use Autopsy reported cause of death accidental drowning, but multiple substances contributed (tried to cool off)	Other – accidental drowning caused by mixed drug toxicity	Y	(Moore, 2016a)
100.	2016	Michigan, USA	Electric Forest	Michael John Stephenson	22 M	Acute cocaine, methamphetamine and ketamine toxicity	Mixed drug toxicity		(Moore, 2016b)
101.	2016	Queensland, Australia	The yewbunye rave	Jake Monahan	26 M	Cardiac arrest from suspected misrepresented NPS – psychotic behaviour	NPS/drug misrepresentation		(Elder, 2016; Johnson, Addie, & Huffadine, 2017)
102.	2016	Tennessee, USA	Bonnaroo	Casey Young	22 M	Hit by two vehicles trying to cross the road with drugs and alcohol in system	Other – drug-related road accident		(Goldstein, 2016)
103.	2016	USA	Cam*p* Bisco	Heather Bynum	24 F	Consumed unspecified drug at the 2012 event, had a seizure and stopped breathing, at hospital had a heart attack, liver failure and coma. Survived for another 3.5 years, but died in 2016 According to death certificate, died from acute respiratory failure caused by original illness	Unknown	Y	(Williams, 2016a)
104.	2017	Victoria, Australia	Rainbow Serpent	Jacob Langford	22 M	Drank amyl nitrate (poppers), instead of inhaling and went into cardiac arrest. The coroner confirmed this, but noted he used alcohol, MDMA, MDA, ketamine, temazepam, oxazepam, atropine, cocaine, diazepam and Xanax in the hours before his death (16 substances in bloodstream). Ruled “multidrug toxicity”	Other – amyl nitrate misuse/wrong ROA / mixed-drug toxicity	Y	(Murphy, 2017; Williams, 2018c)
105.	2017	Sydney, Australia	Knockout Games of Destiny	Nathan Tran	18 M	Exhibiting late signs of serotonin syndrome (arms trashing) before police escorted him to medical services where he was hypotensive and hyperthermic. At hospital he had respiratory issues and his temperature was 41ºC. Autopsy found MDMA toxicity as the cause of death, but traces of PMA were also detected in his blood	Ecstasy toxicity/drug misrepresentation	Y	(Graham, 2019; Grahame, 2019)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
106.	2017	England	May's music extravaganza	Calum Hull	21 M	Took fatal dose of ecstasy on the bus on the way (hidden in paracetamol capsules), seizure on the bus, had 3 heart attacks and died Coroner recorded as misadventure and pathologist said concentration of MDMA was above toxic levels	Ecstasy toxicity	Y	(Sims, 2017)
107.	2017	USA	Lollapalooza	Haimish Mawson	21 M	Found dead in his hotel room, suspected overdose but toxicology not reported	Unknown		(Australian Associated Press, 2017)
108.	2017	England	Bestival	Louella Mitchie	25 F	Found dead in wooded area on the edge of the festival where drugs were allegedly being sold Family believe she took an illegal substance before her death, but coroner's cause of death and toxicology have not been reported yet	Unknown		(Evans, Aspinall, & Kitching, 2017)
109.	2017	London, England	Elrow Town	Amy Vigus	20 F	Became violently sick and fitted. Went to the medical tent and returned to the festival. Parents found her unresponsive in bed the next day Post mortem concluded death was hypoxic brain injury due to toxic effects of MDMA ingestion	Ecstasy toxicity	Y	("Amy Vigus," 2017)
110.	2018	Hampshire, England	Mutiny Festival	Georgia Jones	18 F	Cardiac arrest, fitting for 50 minutes and multi-organ failure after taking two double strength MDMA tablets: silver audis. Pathologist reported Georgia had "extremely high" levels of MDMA in her body. Inquest confirmed accidental death from MDMA, but cannot locate coroner's exact ruling	Ecstasy toxicity	Y	(Cotterill, 2018; Mitchell, 2018)
111.	2018	Hampshire, England	Mutiny Festival	Tommy Cowan	20 M	Two seizures, hyperthermia (41.2), tachycardia, cerebral oedema, rhabdomyolysis and renal failure after consuming at least two double-strength MDMA tablets: silver audis. High blood level, but pathology adds potential allergic reaction to adulterant as well. Coroner ruled "MDMA intoxication"	Ecstasy toxicity/hyperthermia/other (possible allergy to adulterant)	Y	(Cotterill, 2018)
112.	2018	Sydney, Australia	Defqon.1	Joseph Pham	23 M	The inquest report states that Joseph took at least 3–4 pills and no other substances were detected besides MDMA. Paramedics note he was hyperthermic (39.5ºC) and he was in cardiac arrest when he arrived at hospital. Official cause of death reported was MDMA toxicity	Ecstasy toxicity/hyperthermia	Y	(Grahame, 2019)
113.	2018	Sydney, Australia	Defqon.1	Diana Nguyen	21 F	The inquest report states Diana had at least one cap, followed by one pill. She became hot and unwell, which proceeded to trismus and twitching. In the ambulance she was hyperthermic (39.5 ºC) and went into cardiac arrest. Official cause of death reported was MDMA toxicity	Ecstasy toxicity/hyperthermia	Y	(Costin, 2019; Grahame, 2019; Pitt, 2018)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
114.	2018	Hanoi, Vietnam	Tri*p* to the Moon			"The victims, all Vietnamese and between the age of 18 and 30, tested positive for an unspecified drug. This led to local authorities scrambling to trace the substance and lead officials to ban all Electronic Dance Music festivals in the capital"	suspected overdose		(Di, 2019; Wallis, 2019)
115.	2018	Hanoi, Vietnam	Tri*p* to the Moon	-	-	-	suspected overdose		(Di, 2019; Wallis, 2019)
116.	2018	Hanoi, Vietnam	Tri*p* to the Moon	-	-	-	suspected overdose		(Di, 2019; Wallis, 2019)
117.	2018	Hanoi, Vietnam	Tri*p* to the Moon	-	-	-	suspected overdose		(Di, 2019; Wallis, 2019)
118.	2018	Hanoi, Vietnam	Tri*p* to the Moon	-	-	-	suspected overdose		(Di, 2019; Wallis, 2019)
119.	2018	Hanoi, Vietnam	Tri*p* to the Moon	-	-	-	suspected overdose		(Di, 2019; Wallis, 2019)
120.	2018	Hanoi, Vietnam	Tri*p* to the Moon	-	-	-	suspected overdose		(Di, 2019; Wallis, 2019)
121.	2018	Sydney, Australia	Knockout Games of Destiny	Callum Brosnan	19 M	The inquest report states Callum took 6–9 caps. After the event on the way to the train station he became unwell, experiencing seizure-like symptoms and vomiting. At hospital he was found to be hyperthermic (41.9°C), had hyponatremia, multi-organ failure and suffered cardiac arrest. Official cause of death was reported as mixed-drug toxicity	Mixed-stimulant toxicity/hyperthermia	Y	(Grahame, 2019)
122.	2018	Sydney, Australia	Lost Paradise	Josh Tam	22 M	The inquest report states Josh had been drinking vodka and setting up camp in 40 ºC conditions. He had also used MDMA crystal of unknown quantity. He was observed sweating before being found lying unconscious. Onsite medical report a temperature of 43.4ºC. Official cause of death was MDMA complications, despite other drugs being detected	Ecstasy toxicity/hyperthermia	Y	(Grahame, 2019)
123.	2019	Sydney, Australia	FOMO festival	Alex Ross-King	19 F	The inquest report states Alex declined breakfast and pre-loaded on vodka before arriving. On the bus she reportedly took three-quarters of a cap, but panicked and consumed the remainder of her caps (2) when learning of drug dogs. Inside the event she separated from her friends, became unwell and hot (33C day). When escorted to onsite medical she had signs of serotonin syndrome. At hospital she had a temperature of 42 ºC and went into cardiac arrest. Cause of death was reported to be MDMA toxicity	Ecstasy toxicity/hyperthermia	Y	(Grahame, 2019)

	Year	Location	Music Festival	Name	Age/Gender	Drug/s involved & reported details (body temperature recorded)	Category/secondary category	Coroner / toxicology / inquest reported	References
124.	2019	Queensland, Australia	Rabbits Eat Lettuce	Ebony Greening	22 F	Found dead in their tent at the festival campsite. Toxicology found potentially lethal concentration of MDMA, also detected ice, ketamine, heroin, Temazepam and MDA	Mixed-drug toxicity	Y	(Scott, 2019)
125.	2019	Queensland, Australia	Rabbits Eat Lettuce	Dassarn Tarbutt	24 M	Found dead in their tent at the festival campsite. Investigating as drug overdoses. Toxicology found potentially lethal concentration of MDMA, also detected ice, ketamine, heroin, Temazepam and MDA	Mixed-drug toxicity	Y	(Scott, 2019)

Note. The details in this table are predominantly drawn from media reports, not official records of deaths. The exception to this is the 2019 NSW coroner's report for the inquest into the death of six patrons of NSW music festivals. As evident in the table, numerous reports made no reference to the medical examiner, coroner's report, toxicology or pathologist. Therefore, details surrounding the deaths and the category assigned cannot be considered reliable. Even cases where reference was made to an official source cannot be considered reliable given the potential for misreporting in the media. Ultimately, this table is not an official or exhaustive record of drug-related deaths associated with festivals; it is a review of media reports documenting deaths undertaken to inform the candidate's understanding of the extent and nature of festival deaths in the absence of official records. Findings from this review were used in the development of survey instruments dealing with negative experiences, risk and protective practices and access/barriers to help or HR.

Table 2.12: Media reports of deaths with drug use not reported, but unable to be ruled out (as at 10/11/2019)

	Year	Location	Music Festival	Name	Age	Reported details	References
1.	2011	Tennessee, USA	Bonnaroo	Christopher William Yoder	24 M	Hyperthermia Could not locate coroner's cause of death or toxicology	(Stebner, 2011)
2.	2011	Tennessee, USA	Bonnaroo	Beth Myers	32 F	Heat-related, toxicology not yet confirmed	(Kavnar, 2017)
3.	2014	Canada	Pemberton	Nick Phongsavath	21 M	Found unresponsive in his tent. Cause of death and toxicology not reported	(Baker, Mojtahedi, & Meiszner, 2014)
4.	2015	USA	Paradiso	Vivek Pandher	22 M	Found unresponsive. Catatonic, hyperthermia, brain hypoxia, but toxicology not reported	(Tost, 2015)
5.	2015	England	T in the Park	Andrew West	26 M	Found deceased in the campsite portable toilet Treated as unexplained, coroner report and toxicology not reported	(Butcher, 2015)
6.	2017	England	Reading	Matthew Jones	17 M	On the last night was found dead in his tent (with a bag over head) by friends. Toxicology not yet reported.	("Reading festival death," 2017)

Summary of deaths

In total, 125 drug-related festival deaths were identified between 1994 and July 2019[1]. In a further six fatalities drugs were not implicated, but this cannot be ruled out given the cause of death was not reported (see *Table 2.12*). The geographical breakdown of deaths was: USA (*n*=61); Australia (*n*=21); England (*n*=19; Vietnam (*n*=7); Canada (*n*=5); Malaysia (*n*=6); Indonesia (*n*=3); Scotland (*n*=2); and India (*n*=1). However, the process was undoubtedly biased towards Western media, particularly Australian. Two-thirds of drug-related festival fatalities were male (64%, missing=7) and the median age was 22 (All deaths: interquartile range (IQR=20–24, range=15–45; Australian deaths: median=22, IQR=19–25, range=17–34). Deaths were categorised based on the reported cause of death/toxicology. Excluding those cases in which the individual drug/s involved were not reported (often simply reported as 'overdoses', 18%, *n*=23), the most common drug toxicity category was ecstasy/MDMA (54%, *n*=55), followed by mixed drugs (a combination of stimulant, depressant and/or hallucinogenic drugs (16%, *n*=16), mixed stimulants (>1 illicit stimulant) (9%, *n*=9), NPS (8%, *n*=8; 6-APB/benzo fury[2], *n*=3; methylone, *n*=2; alpha-PVP[3], *n*=1) and then PMA and meth/amphetamine (each 2%, *n*=2). There were also individual cases of mixed depressant, heroin and ketamine toxicity, and seven cases (7%) were classified as 'other'. Most 'other' cases involved behavioural incidents while intoxicated. In some cases it was unclear whether death was pre-meditated or accidental, although all deaths appeared strongly related to the deceased's altered state of mind. For example, reports included one female climbing out her hotel window after suffering from paranoid delusions (MDMA, methamphetamine and GHB detected in her system), a male, agitated after taking 'foxy' (a psychedelic tryptamine; 5-MeO-DiPT), jumping out of a car and being hit by a truck, another male being found floating in a lake with a cocktail of drugs in his system, and a female being found hanging in a portable toilet after arguing with her partner and taking MDMA.

Patterns in festival deaths

While reviewing the media coverage, some noteworthy patterns emerged. Firstly, while the details surrounding deaths were often scarce, at least 30 cases (24%) reportedly involved hyperthermia and nine drug misrepresentation (listed in *Table 2.11* as secondary categories). It is important to emphasise, however, that media reports may significantly underrepresent the prevalences of these issues. Secondly, at least 29 of the deceased were reportedly found

[1]While the cut-off date for the wider literature review was September 2018, the cut-off for media was extended due to a cluster of deaths in the 2018/19 Australian festival season.
[2]6-APB (6-(2-aminopropyl)benzofuran) is a novel empathogen.
[3]α-Pyrrolidinopentiophenone (also known as α-PVP, prolintanone, gravel, flakka and bath salts) is a cathinone which has been linked to hospitalisations and deaths (Wright & Harris, 2016).

by friends, security or fellow festivalgoers either dead, unresponsive or unconscious, and many more were reportedly separated from friends before their deaths. Thus, a substantial proportion appeared to be alone when they became critically unwell. The most common locations patrons were found deceased were campsite tents or cars, although some were found in other areas of festival grounds or in hotel rooms or public locations near festivals. In multiple cases, the deceased reportedly informed their friend/s they were feeling unwell so were heading to a private area to recover. Similarly, in at least three cases, the deceased and their friends and/or partner tried to 'sleep it off'. The frequency of these cases has implications for HR. While in Australia, broad messages such as 'look out for your mates' are often promoted, this review suggests more specific, instructional messages are needed. These could include advising friends to stick together (e.g. at least in pairs), and attend medical or formal chill-out zones rather than private out-of-sight locations (even though this may be the preference when feeling anxious and unwell) and discourage trying to 'sleep it off'. Additionally, there may be merit in having support rovers patrol campsites to identify and assist at-risk patrons. Thirdly, in Australia, most deaths were reported to occur at EDM festivals (71%)[4], particularly those featuring more 'hardcore' dance genres (62%), suggesting they should perhaps be treated as higher risk events during event planning.

Limitations of media reports

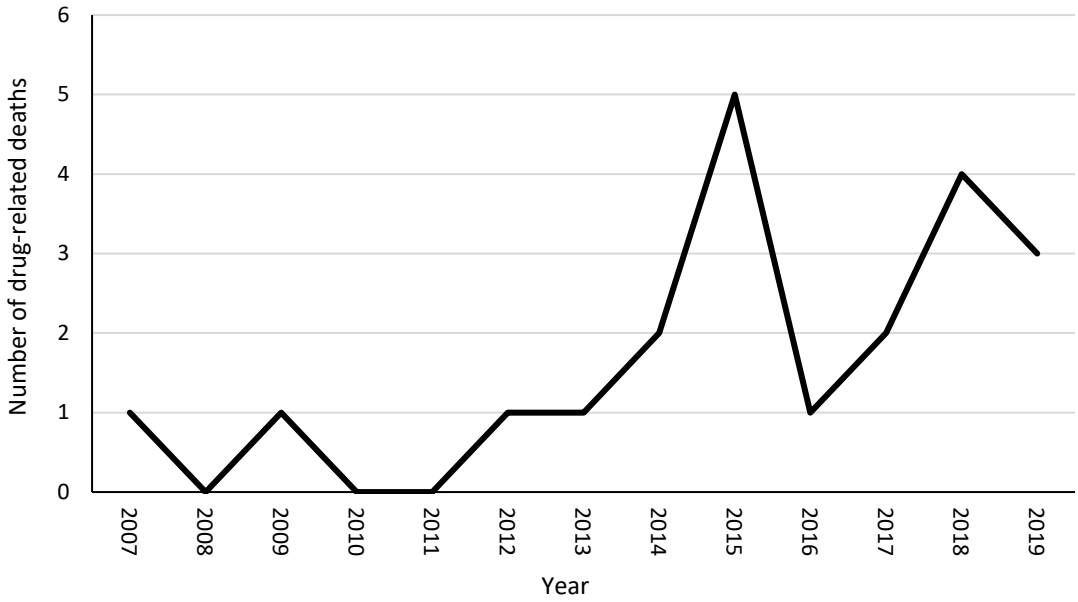
It is critical to note that this review was highly unlikely to capture every festival death worldwide due to few search terms and bias towards Western media, the likelihood some deaths were unreported, because online news may be ephemeral (Turris & Lund, 2017, p. 61), and some deaths may not have been linked to festivals. Thus, while *Table 2.11* provides some insight, true festival mortality remains unknown. Moreover, morbidity is even less likely to be reported. However, the earlier review of hospital case studies suggests severe morbidities do occur as a result of drug use at festivals, with instances of severe enduring cognitive deficits and limb amputations, even if these are rare. In addition to systematically documenting medical presentations at or related to festivals, efforts should also be made to systematically document and describe drug-related deaths. This would allow more accurate quantification of deaths and expand the evidence-base to further inform medical and HR planning.

[4]Festival genres were only examined for Australian deaths due to the large number of international festivals listed in *Table 2.11*. Thus, it is unknown whether most international deaths also occurred at EDM festivals.

Interpreting the increasing rate of reported deaths

While the frequency of drug-related deaths associated with festivals has been increasing in recent years (see *Figure 2.2*), interpreting the reasons for this observation is challenging. Multiple factors could play a role, including increased frequency of festivals, increased prevalence of drug use at festivals, riskier patterns of drug use (increased policing may influence patterns), illicit drug market changes (e.g. increased NPS use, NPS misrepresentation, and higher purity ecstasy), greater media attention to festivals, and again, the possibility earlier deaths were not captured due to uniform resource locators (URLs) going 'dark'. Thus, it cannot be concluded that festivals themselves are becoming more dangerous.

Figure 2.2: Line graph of drug-related deaths associated with Australian festivals (according to media reports)



Note. The first Australian drug-related festival death identified in the media search was in 2007. However, this search may not have captured all drug-related deaths.

Risk factors identified in media reports

In addition to quantifying festival deaths, this review of media coverage illuminated various risk factors that may have contributed to the deaths listed in *Table 2.11*:

- warm weather/humidity and inadequate cooling methods/management;
- isolation (from friends or public view);
- underestimating illness (thinking they can sleep it off);
- hesitance to seek help (and friends discouraging each other);

- inadequate medical services (first aid only, no personnel with drug-specific training, inadequate resources, understaffing);
- policing (leading to pre-loading and panic consumption);
- obtaining drugs onsite without peer reports or past experience (leading to purchase of misrepresented drugs and misjudgement of dose); and
- hardcore EDM genres (based on the festivals people attended before dying).

The information gained in this process helped inform the survey instrument for this research, specifically relating to sections on negative effects/experiences, risk/protective practices, access/barriers to help or HR, and experiences with police. These risk factors were also included in the risk/enabling framework at the end of this review.

This media review also illuminates some concerns about the reporting of festival deaths in the media. Deaths are commonly described as overdoses by default, before toxicology or coroner's reports are available. As revealed in the earlier review of case studies, deaths do not necessarily involve excess drug consumption. Instead, they are often caused by conditions such as hyperthermia or hyponatremia (secondary to MDMA use), or consumption of misrepresented drugs or contaminants. This inaccurate media reporting has not gone unnoticed. In recent years, HR groups, media watch groups and even forensic pathologists have criticised mainstream media outlets and the police for a tendency to inaccurately report all drug-related fatalities as overdoses (Cox, 2016; Jarvis, 2015a; McCutcheon et al., 2015; Nadesan et al., 2017; Sferios & Wooldridge, 2014). It has been argued that misrepresenting all deaths as overdoses is harmful because it inadvertently suggests standard doses are safe, when in fact, these risks exist when using normal doses. Further, this inaccurate reporting obscures key opportunities to raise awareness about risks.

Other attempts to quantify festival deaths

Turris and Lund (2017) investigated mortality (not exclusive to drugs) associated with festivals and suggested a method for systematically detecting and reporting deaths. They identified 96 drug-related deaths from the academic and grey literature, and recommended developing a centralised, prospective dataset of mortality and morbidity which could provide a clear picture of harm and help inform medical planning, HR and legislation. While Turris and Lund (2017) approach was not utilised for this review, deaths listed in *Table 2.11* were cross-referenced with their reference list; no new cases were detected. Future studies wishing to estimate or systematically document deaths may benefit from employing their method.

Theme 4: Management of drug-related issues/interventions

Political and legal factors are important macro influences for understanding drug use, drug-related harm and management of drug use at festivals. Policy appears to have been shaped by, and in turn shaped, the evolution of raves and festivals, and the nature of HR initiatives at such events. In 1985, Australia adopted 'harm minimisation' as its national drug policy, which included interventions aimed at reducing drug-related harm without necessarily reducing drug use per se, which was generally viewed as progressive given the prevailing 'war on drugs' climate (Wellbourne-Wood, 1999). Importantly, the first iteration of Australia's harm minimisation policy did not involve the three pillars known today as harm reduction, supply reduction and demand reduction. Ryder, Walker, and Salmon (2006) explained that these categories were introduced in the 1990s to help unite polarised parties (e.g. those who sought to reduce/eliminate drug use could work under supply control and demand reduction, while those who sought to reduce harms could work under harm reduction).

While harm minimisation has had some success, it has also received criticism (Miller, 2001; Wellbourne-Wood, 1999). One key problem identified with the policy is incompatibility with a zero-tolerance attitude towards illicit drug use among policymakers (Wellbourne-Wood, 1999). The conservative Howard government was responsible for shifting the focus from harm minimisation to zero tolerance with their 'tough on drugs' policy and statements (Lancaster & Ritter, 2014). While acknowledging HR approaches did and can operate under more conservative governments (Lenton, 2002), zero tolerance contributes to drug-related harm, particularly through focus on punitive measures which limit the capacity for HR efforts. Contemporary festivals operate within the law, so organisers typically promote a zero tolerance policy, supported by law enforcement and supply control strategies. While this focus on policing has been criticised as being inconsistent with a harm minimisation approach and the evidence base (Hickey, McIlwraith, Bruno, Matthews, & Alati, 2012; Tovey, 2009), many festivals also implement a variety of valuable HR strategies (e.g., first aid services). Additionally, in response to drug-related problems encountered in the earlier rave scene (e.g. deaths), government regulatory guidelines for planning public events were produced. Further, HR and drug policy advocate groups have emerged which aim to provide timely, accessible and accurate information to festivalgoers. Ultimately, however, recent deaths, the contentious nature of public and political discussion and the likelihood that drug-related harms will continue to occur at festivals mean that greater consideration of the efficacy of current strategies is needed.

This review identified 20 peer-reviewed studies investigating drug interventions or regulations in festival settings, which were grouped into seven categories and are discussed in the sections below. Supplementary literature which did not meet the criteria for this review is also considered secondary, and two forms of grey literature are considered last – government guidelines and media coverage of policy discourses and responses.

Intervention frameworks drawn from MGM

In the MGM section, the primary focus of papers was on describing patient presentations to help predict optimal medical care at festivals. Recommendations beyond the medical service to the wider event design were extremely rare and minimal. However, three groups of researchers expressed a belief that more holistic approaches to event safety could improve health outcomes, and two drew on frameworks from within the medical field to produce new insights and recommendations for festival planning.

Extending on their earlier work, Hutton, Savage, Ranse, Finnell, and Kub (2015) used their dataset of 26 Australian festivals to identify risk factors associated with medical presentations at festivals. The authors used Haddon's Matrix (Haddon Jr, 1970) to examine the risk factors and develop recommendations for reducing harm. This matrix was based on the public health model (drug, set and setting), but also considered pre- and post-event contributing factors. Pre-event risk factors included AOD use, inadequate planning (e.g. not dressing appropriately for the conditions, rushing to the event and not eating) and queuing in warm weather (>30°C). Factors identified during the event included alcohol availability, purchasing multiple drinks at once, lack of shade and water, moshing, dancing, moving between stages (long distances/crowds) and medical service availability. Post-event factors included water and medical service availability. Interestingly, several factors one might have expected in the matrix were absent, such as drug policing at the event, supply of drugs inside the festival and long queues for toilets and drinks (potentially discouraging hydration and encouraging illicit drug use). Future iterations should integrate these factors into the matrix. Nevertheless, Hutton et al. (2015) developed various useful recommendations for interventions targeted at different phases of the event. Pre-event recommendations included encouraging festivalgoers to plan ahead via festival websites and during ticket purchase/collection. Event recommendations included signage options for health promotion, roving volunteers and chill-out zones which promote HR and disseminate resources (e.g. information, water, snacks, sunscreen). Lastly, post-event recommendations included utilising social media to promote normative health messages and receive feedback on the event design. Ultimately, Haddon's matrix highlights the importance of targeting all stages of an event and could be used in the future to help identify and mitigate risks.

Lund and Turris (2017) drew on the 'chain of survival' concept (used for managing cardiac arrest) to develop a framework for "describing, understanding and planning" (p. 442) the collaboration of key players involved in festival safety. This framework was proposed in response to a perceived disconnect between sectors, which the authors suggested can result in underutilised resources (due to overlap) and/or inadequate resources (e.g. assuming local EMS will suffice). Six links in the chain were identified: event organisers, police/security, festival health (e.g. peer-support services), onsite medical, ambulance services and offsite medical (e.g. hospitals). The first three were identified as having a proactive/preventative role and the last three a reactive role. Lund and Turris (2017, p. 441) also articulated the different "domains of responsibility" (p. 441) for each link, and the areas of research each link could contribute to, with the aim of working towards more consistent, collaborative and evidence-based event planning. They emphasised the importance of coordination from the initial phases of planning right through to post-event debriefing/reporting. Ultimately, 'chain of survival' adaptation could help connect and coordinate key stakeholders who may otherwise operate in "silos" (p. 438). For example, this model could help improve linkages between services (e.g. transfers from peer support to medical services), ensure optimal coverage of resources and facilitate/encourage collaboration in research aimed at establishing more consistency in festival planning.

These two papers propose different planning models, both of which may help improve public health outcomes at festivals. While one focuses on considering and mitigating risk factors, the other is focused on improving collaboration and optimal coverage of resources, and could be used in conjunction. Such holistic planning models are not mentioned in existing jurisdictional guidelines, and it is unknown whether event organisers use them. The potential benefit and workability of these frameworks should be considered by those involved in event regulation/planning.

Drug-checking (pill testing)

Drug-checking has received increasing attention as an intervention for reducing the risk of drug-related harm at Australian festivals. While advocates have argued that these services have operated successfully in European countries for more than 20 years, compelling empirical evidence is scarce. In this review, five peer-reviewed studies were identified as investigating drug-checking interventions within festival settings – two involving reagent testing only and one involving thin-layer chromatography. Additional supplementary literature that did not meet the criteria for the systematic review is also considered.

Firstly, in addition to reporting the medical outcomes of their health and wellbeing zone at the 2014 Shambhala festival in Canada, Munn et al. (2016) reported outcomes of their integrated ANKORS drug-checking service. They reported that 2,786 pills were checked during the 5-day festival; however, the technology was limited to reagent testing kits. The efficacy of these kits has been criticised for a variety of reasons, including that they can only provide indications of content, cannot detect all compounds, interpretation is subjective (and often unclear), and they cannot provide information on dose (Harper et al., 2017; Kriener et al., 2001). However, even the most advanced testing methods have limitations relating to dose. For example, it cannot be assumed that another tablet from the same batch is identical given the lack of quality control; there are also risks related to copycat batches[5]. Likewise, in cases where tablet scrapings are submitted, it cannot be assumed the content is uniformly spread. Nevertheless, Munn et al. (2016) found that 30% of drugs tested were inconsistent with expected content, and 7% of drugs tested were discarded to the service. Munn et al. (2016) described and advocated for blended medical and HR services which respond to incidents in a multidisciplinary manner (i.e. with HR, medical and security staff).

In the US, Saleemi, Pennybaker, Wooldridge, and Johnson (2017) analysed data collected by DanceSafe, an HR organisation, at multi-day festivals between 2010 and 2015. The authors aimed to investigate the purity of drugs marketed as a form of MDMA, the widespread belief that drugs marketed as 'molly' (a colloquial term for powder forms of MDMA) are purer than drugs marketed as 'ecstasy' (typically pill forms of MDMA), and the impact of test results on drug-taking behaviour. Their analysis revealed that 60% of 529 drug samples (from 38 US states) tested positive for MDMA/MDA. In contrast to popular belief, no significant difference in purity was identified between drugs marketed as either molly or ecstasy. However, only 37 samples were categorised as ecstasy, so this study should be replicated with larger samples. Moreover, while 'molly' is not a common term in Australia, non-pill forms (crystals, powders and capsules) are widely considered purer by ecstasy users (Peacock et al., 2018). Thus, it would be worthwhile comparing the content/purity of different forms used/marketed in Australia to inform potential users about health risks.

Saleemi et al. (2017) reported the most common adulterants detected by DanceSafe were methamphetamine, methylone and other cathinones; only a few samples contained PMA. However, a significant and self-noted limitation to DanceSafe's drug-checking service is that the technology was (and still is) limited to reagent testing. Thus, limitations discussed

[5]Ecstasy tablets manufactured to look identical to other ecstasy tablets which have a good reputation, but may have entirely different content to the original tablets.

previously apply here too. In terms of behaviour change, only 26% of those who received a negative result for MDMA indicated intent to consume it anyway. However, less than a third were actually asked about their intent, despite this being part of the protocol. While missing data was likely a consequence of conflicting time demands, it raises questions about reliability and selection bias. Additionally, unless respondents discarded the drug in an amnesty/disposal bin (which was not reported), they may have provided an answer they believed was favourable (e.g. to avoid perceived judgment or support the credibility/legitimacy of these services). Employing anonymous, self-completion data collection methods may encourage more truthful responses in future. The risk of unfavourable test results leading to adulterated drugs being sold on (and thus simply transferring the risk) also warrants consideration. Providing an optional disposal bin could encourage festivalgoers to remove potentially dangerous drugs from the market. Disposed drugs could then undergo more sophisticated analysis to assess the accuracy of onsite colorimetric methods. Overall, Saleemi et al. (2017) provided evidence that many drugs marketed as MDMA did not contain MDMA, and when festivalgoers were confronted with this information, it significantly decreased reported intent to use the drug. The authors also recommended legislation to legally protect these services based on this purportedly proven HR impact.

Martins et al. (2017) discussed drug-checking results for 245 LSD samples at the 2014 Boom Festival in Portugal (transformational, 40,000 attendees). Their onsite laboratory featured simple reagent screening, followed by three systems of thin-layer chromatography. To confirm onsite results, some samples were also tested offsite using gas chromatography–mass spectrometry. The authors reported only two-thirds contained LSD only, a quarter contained a different psychedelic of the DOx or 25x-NBOMe family, 3% contained unknown psychoactive content and 8% had no detectable psychoactive content. Given the high-risk profile of DOx and 25x-NBOMe, the service issued alerts, encouraging more patrons to seek testing and education. Encouragingly, three-quarters of patrons who received an unexpected result reported intent not to use the drug, while others reported intent to use less (13%), not mix drugs (30%) and research the drug (8%). However, the researchers only matched pre/post questionnaires in 45% of cases, meaning there was significant missing data. Nevertheless, Martins et al. (2017) demonstrated the capacity of onsite drug-checking to deter potentially high-risk drug use. They concluded that future research would benefit from follow-up to determine actual rather than intended behavioural responses.

The fourth study investigated intended – rather than actual – behaviour related to drug-checking. Day et al. (2018) surveyed 642 young Australian festivalgoers onsite about

their beliefs and perceived behaviour related to onsite drug-checking. Most respondents (86%) agreed (somewhat or a lot) that onsite drug-checking should be free to festivalgoers, and very similar proportions agreed drug-checking could help reduce harm and should be coupled with HR education. However, roughly two-thirds also agreed the service may be used by suppliers for quality control. While filtering poor quality/misrepresented drugs out of the market by any means could be viewed as a positive outcome, the authors expressed concern that test results could also be used for promotional purposes (e.g. advertising high potency). To counteract this risk, they explained how some international services employ ratio approaches (as cited in Day et al., 2018; Erowid, 2017). Among those with a history of illicit drug use (73.4%, *n*=471), roughly half expressed concern about drug content, most made attempts at least occasionally to source information about drug content (62.8%) and most said they would be somewhat or highly likely to access a service (33% and 54% respectively). Day et al. (2018) also noted that males were significantly more likely to report intent to access drug-checking than females (61% vs. 48%). About three-quarters reported sourcing information about drug content from friends (79%), over a third reported searching websites (36%); only 6% reported using a testing kit.

In regards to perceived responses to drug-checking results, most of Day et al. (2018) participants claimed they would not consume the drug if it contained methamphetamine (65%), ketamine (58%), DXM (59%), 2C-B (57%), DOB (59%), DOI (59%), methylone (59%), butylone (59%), naphyrone (59%), opiates (53%) or PMA (58%). However, the homogeneity of responses across different drugs raises questions about whether each drug was considered properly (were respondents rushing so they could return to the festival?). Nevertheless, Day et al. (2018) concluded that their findings are evidence of the potential for positive behaviour change. However, given many participants were uncertain about how they would respond, the authors recommended greater general education and education when receiving drug-checking results. While they also recommended further research comparing the "feasibility and practicality" (p. 6) of onsite reagent testing versus laboratory-grade testing, one questions the necessity for this in 2018 when laboratory-grade services have operated successfully onsite overseas for decades (Barratt, Kowalski, et al., 2018). Thus, reagent testing should only be considered as a last resort. Indeed, the EMCDDA recommends onsite reagent testing only be used in combination with pill identification lists (pills which have already been tested by laboratory-grade equipment) (Kriener et al., 2001).

Lastly, Barratt, Bruno, et al. (2018) investigated how best to design a drug-checking service in Australia to ensure it would be feasible and utilised by festival and clubgoers. Among a sample of 851 psychostimulant and/or hallucinogen users, they found most would

access onsite drug-checking services (94%) and fixed-site services (85%). However, results suggested the service would need to be granted legal amnesty, provide individualised feedback and be relatively low cost to appeal to most. While only a third reported willingness to submit a whole pill for testing, it is possible participants lacked awareness about the benefits of doing so. Greater education on the ability to obtain quantitative dose information (albeit with cautioning about batch variability), increased awareness about market trends (e.g. dangerous high-dose pills), and suggesting social groups/networks pool money to submit a whole pill, may increase willingness to submit a whole pill. Barratt, Bruno, et al. (2018) concluded drug-checking should include a brief intervention, termed "integrated drug-checking" (p. 234), and be linked with other onsite services (e.g. peer support and medical).

Peer-reviewed literature which did not meet the criteria

While not entirely festival specific, two other studies are worth considering. Firstly, Hungerbuehler, Buecheli, and Schaub (2011) analysed questionnaire data completed by 1376 people (2055 drug samples) who had accessed an onsite (unspecified events) or fixed-site drug-checking in Zurich. They found onsite services appealed more to novel, inexperienced users, while offsite services appealed to older, experienced users. Drug-checking combined with education/consultation reportedly did not deter access to the service. Moreover, access to the service reportedly did not increase or encourage use. However, this claim was based on there being no observable increases in frequency of use among people accessing the service across years. The authors did not – and perhaps could not – determine how many people initiated use in relation to the availability of these services. Nevertheless, they concluded that holistic drug-checking services which consider the heterogeneity of users are important HR measures.

Secondly, Johnston et al. (2006) investigated the influence of drug-checking results on drug-taking decisions among a sample of regular ecstasy users in Australia (questions included as part of the EDRS). Results indicated that, among those who reported previous use of reagent testing kits (22%, n=178), more than three-quarters (76%) would not consume their drugs if the results indicated unknown content, 57% would not consume them if ketamine was detected and 15% would not if amphetamines were detected. Consistent with other studies reviewed, the authors concluded drug-checking could deter use of particularly dangerous drugs.

Grey literature

Sage (2016) summarised data collected by the ANKORS drug-checking service at the 2015 Shambhala festival in Canada (67,000 attendees over 7 days). This service uses reagent testing, so the limitations discussed previously apply. Sage (2016) reported 16% of test results were inconsistent with the marketed content, but only 13% of people confronted with this result disposed of their drug immediately at the service. However, 36% discarded their drugs when results indicated unknown content, and an even higher proportion discarded their drugs when confronted with particularly dangerous substances (e.g. PMA/PMMA, NBOMe and 2C-drugs). These findings purportedly indicated festivalgoers' desire to make informed decisions to protect their safety. Festivalgoers also expressed a desire for expansion and increased sophistication of these services, as did the author. Overall, Sage (2016) concluded drug-checking services should comprise one part of a holistic HR service and noted the potential for results to inform a drug early warning system. While the disposal rate at the service may seem low, it probably underrepresents the true rate, because festivalgoers may prefer to first process the information, research online, return to suppliers and/or discard the drugs themselves. Again, the risk of unwanted drugs being supplied to potentially more vulnerable festivalgoers warrants consideration.

In 2001, the EMCDDA published a report on onsite pill testing within the European Union (Kriener et al., 2001). These interventions had been operating for up to a decade in some countries (e.g. DIMS in the Netherlands (Brunt & Niesink, 2011)). The report discussed the goals of these services, organisation/operational factors, legal frameworks, analytical testing procedures and available evaluation data. Drug-checking was described as an important tool within a wider drug strategy which provides opportunities for HR (warning consumers and health professionals about content and dose), prevention (engaging hard-to-reach populations in discussion/counselling) and monitoring and research (collecting data which allows monitoring of drugs and consumers). The EMCDDA described varying legal frameworks within which these services operate. They noted that while only in the Netherlands was testing part of drug policy', other countries still managed to successfully carry out testing, albeit with some legal uncertainty. Political support, cooperation/special agreements with police and emphasis on research value were identified as key factors for success. In terms of methods, it was recommended colour reagent testing only be used in combination with pill identification lists (database of pills tested by sophisticated laboratory methods). Ultimately, transportable chromatography was recommended as an important investment given the rapid, reliable quantitative and qualitative data this method can produce. Where budget constraints exist, they advised teaming up with existing services with

the required expertise and equipment. In regard to evaluation data, they concluded that there was insufficient empirical evidence available to inform policymakers, but added there was no evidence that testing encourages use. In spite of limited empirical support, Kriener et al. (2001, p. 60) ultimately concluded these interventions "have to be part of a global strategy for prevention and harm reduction in recreational settings" (p. 60).

Other grey literature

Two other publications produced internationally are also worth noting. For example, the Trans European Drugs Information (TEDI) workgroup (2011) produced a factsheet on drug-checking in Europe which addressed many questions/concerns commonly raised in the debate about this intervention, such as 'do authorities encourage drug use when they support drug-checking?' This factsheet could be a very useful resource to provide to policymakers or politicians currently opposed to drug-checking. Secondly, in the US, Sage and Michelow (2016) produced a comprehensive how-to-guide for drug-checking at festivals, although this is based on colorimetric testing.

Drug detection dogs (sniffer dogs)

Before reviewing the literature on drug detection dogs, some historical context on this strategy in Australia is provided (see also Grigg et al. (2018b)). The use of specially trained dogs as an Australian policing strategy emerged in the early 2000s in NSW (Lancaster, Hughes, & Ritter, 2017). The primary objective was to detect and prosecute persons involved in the sale of prohibited drugs (NSW Ombudsman, 2006). Since then, despite legal ambiguities (Meagher, 2009) and evidence of ineffectiveness (NSW Ombudsman, 2006), the strategy has been expanded across the country. The continued use of drug dogs has raised questions about the evidence base for existing approaches to illicit drugs policing in Australia. To justify ongoing use of this strategy in the face of mounting evidence of ineffectiveness, a shift in rhetoric from 'detection' to 'deterrent' has been identified (Lancaster et al., 2017). However, this justification is also problematic given little evidence shows dogs are an effective deterrent, while growing evidence suggests they contribute to negative public health outcomes in settings such as outdoor music festivals (Hickey et al., 2012; Hughes et al., 2017; NSW Ombudsman, 2006). Although only one study fit the selection criteria for this review, additional literature (that is not festival specific and/or not peer reviewed) also provides indications of the efficacy and impacts of this strategy in festival settings.

Hughes et al. (2017) investigated the impacts of policing strategies on types of drug offending among Australian festivalgoers using hypothetical policing vignettes. Their findings suggested drug dogs were more effective than other policing strategies in terms of deterring drug use and possession, reducing use by 10.2% and possession by 15.7%. However, the results suggested the strategy would likely have a negligible impact on drug supply and could increase buying of drugs inside festival grounds, in contravention to the intervention's original aims (NSW Ombudsman, 2006). The authors noted that this potential unintended response could have various deleterious effects, such as increasing risk to consumers who opt to obtain drugs inside the festival, and displacing criminal activity by increasing supply and demand for drugs inside events. The authors also found the apparent deterrent effect of drug policing was further reduced among respondents with a previous police history, suggesting normalising police encounters decreases the likelihood of deterrence. Overall, this study suggested a more complicated picture of the impact of drug policing than earlier studies (discussed next), but ultimately challenged police claims regarding the efficacy of this intervention as a deterrent. However, while hypothetical vignettes are proven predictors of offending behaviour (as cited in Hughes et al., 2017; Pogarsky, 2009), the limitation remains that this research investigated intended rather than actual behaviour. Additionally, it did not consider the type of drugs, or quantity of drugs, consumed or sold. Hughes et al. (2017) explained that if festivalgoers reduce the quantity of drugs consumed, there may be a restrictive deterrent effect (which has implications for decreasing harm); however, if they switch to more dangerous drugs perceived to be less detectable (e.g. from cannabis to NPS), this could increase harm. These gaps in the evidence were addressed in the design of the questionnaire for the current research.

Non-festival-specific peer-reviewed articles

Two additional papers, which provide indications of drug dog efficacy, came from questions asked as part of the EDRS survey. Eighty-nine per cent of Dunn and Degenhardt's (2009) research participants were not dissuaded from using drugs when made aware drug dogs would be operating at an event. Rather, they took precautions to avoid detection (e.g. hid their drugs better, pre-loaded instead), and some reported hasty drug consumption when sighting dogs to avoid detection. While this study was limited by a small sample size, in 2012 researchers presented findings from a larger EDRS sample (n=2127 over a three-year period) which they claimed supported their initial findings (Hickey et al., 2012). This study noted that despite increasing visibility of drug dogs over the period, respondents continued to carry illicit drugs in public, purportedly demonstrating a limited deterrent effect.

Grey literature

One of the first major sources of evidence in Australia to undermine the use of drug detection dogs and fuel ongoing debate was a NSW Ombudsman's review (NSW Ombudsman, 2006). The main conclusions after two years of monitoring were that drug detection dogs were ineffective at addressing the primary objective of detecting and prosecuting illicit drug suppliers, evidenced by a 74% false positive rate and less than 1% of positive indications resulting in successful prosecution. They also concluded there was no evidence to suggest this policing strategy had a deterrent effect, decreased drug-related crime or provided any other positive public health outcomes. However, the Ombudsman did identify negative public health outcomes, concluding that this strategy may inadvertently cause harm by increasing risky drug use practices. This review therefore cast doubt on whether drug detection dogs were consistent with a harm minimisation approach, which has formed the basis of Australia's National Drug Strategy since 1985 (Ministerial Council on Drug Strategy, 2011).

Overall, the evidence reviewed here suggests that, when evaluating the efficacy of this intervention at festivals, any deterrent effect on drug use should be considered in conjunction with its numerous other deleterious impacts (e.g. impacts on supply and demand and risky drug use practices). Future research investigating actual behavioural responses to the expected presence and sighting of drug dogs at festivals would extend the evidence base on this intervention, and these gaps were addressed in the current study. The current policy setting for this intervention is discussed in greater detail later in this review (*Media coverage of festivals/policy discourses*).

Crisis intervention/psychedelic support services

While festivals are designed to stimulate the senses, loud music, bright lights and circus-like visuals and atmospheres can easily become overwhelming and provoke anxiety in some patrons. The aim of crisis intervention services (or psychedelic support services) is to provide a safe, supportive and calming space for people experiencing adverse psychological experiences from psychoactive drugs, predominantly psychedelics (Carvalho et al., 2014; Ruane, 2015; Ruane, 2018). Specially trained staff (often volunteer mental health professionals), commonly known as 'tri*p* sitters' or 'carers', support the festivalgoer through the experience and thus reduce the burden on medical services which may not have the expertise or resources (without chemical sedation) to manage psychedelic crises, which can last many hours. Ideally, an integrated medical team would determine the appropriateness of tri*p* sitting versus formal medical treatment, although this is rarely the case. Crisis services

are more common at transformational EDM festivals which attract a specific counterculture (less mainstream), promote values like personal growth, community, creativity, environmentalism, self-expression and self-insight, and typically focus on the genre 'psytrance'. Unsurprisingly, the use of psychedelic drugs is generally considered pervasive at these events, because they synergise well with the music and are believed to aid self- and social transformation (Ruane, 2015). Three identified studies consider this intervention.

Carvalho et al. (2014) presented an evaluation of the Kosmicare project at the biennial Boom Festival in Portugal (transformational, 25,000 attendees). This evaluation involved 176 participants and aimed to shift the project into an evidence-based intervention. While Kosmicare's primary objective at this event was crisis intervention, it also offered information, a chill-out space and drug-checking (thin-layer chromatography). The 24-hour service featured a large multilinguistic and multidisciplinary team (~70 people), including psychologists, a psychiatrist, a nurse and a range of sitters and support staff with varying levels of expertise. The most common drug festivalgoers believed they consumed was LSD (53%), followed by MDMA and alcohol (each 19%), amphetamines (14%) and cannabis (12.5%). Rarer drugs included cocaine, ketamine and 2-CB (each 5%). However, these data relied on self-report, and it is possible drugs were misrepresented, adulterated or not disclosed due to perceived stigma. Carvalho et al. (2014) found a statistically significant difference between pre and post-intervention symptoms (according to a mental state evaluation), purportedly indicative of intervention success in resolving crises. However, there were various limitations to this evaluation. For example, missing data resulted in a small sample for pre-post comparisons (n=54). Additionally, 10 of these cases were 'non-crisis' (e.g. just wanted a rest) and a further four were not drug-related. There was no clear explanation for the missing data, except that much of it "relied on sitters' feedback" (p. 97). Long-term impact of the intervention involved an even smaller sample and was thus unreliable. Finally, one could argue that festivalgoer crises could have resolved between pre-post evaluations without intervention. Overall, this evaluation provide limited or preliminary evidence that the crisis intervention was successful. While recognising data collection can be challenging in crisis situations, the extent of missing data is problematic and should be addressed in future evaluations to eliminate systematic bias (e.g. more problematic or unresolved cases). Toxicological testing should also be considered to confirm substance use, particularly when the technology is already available onsite (as it was here).

While Carvalho et al. (2014) provided examples of negative drug-related effects (in this case, psychological), their primary focus was on intervention design/efficacy. Additionally, it could be argued that psychedelic crises/difficulties are not necessarily

negative consequences, given they are often considered part of the process and ultimately valuable for self-insight and personal growth (Carvalho et al., 2014, p. 95). However, this only applies if the crisis is resolved and "integrated" (p. 95) (i.e. processed/internalised, typically with an enduring positive impact), rather than if the person develops prolonged mental health sequelae (e.g. psychosis). In this study, seven drug-related cases (13%) were reportedly unresolved and can thus be considered negative outcomes.

The second paper discussed the discrepancies between psychedelic ideology and HR as it is known today (political, medicalised), based on the author's experiences volunteering at three organisations (Kosmicare, UK and Portugal, and Zendo Project, USA), and how these conflicting discourses can detrimentally affect the operation, efficacy and authenticity of crisis intervention services. Ruane (2015) questioned whether mainstream HR was an appropriate fit for these expanding and increasingly officially recognised services. The critical point is that, from a psychedelic perspective, drug use is a productive and potentially life-enhancing experience, not just problematic behaviour requiring control. Thus, while HR framing can provide some legitimacy given its growing international recognition, ultimately this paradigm is inconsistent with psychedelic ideology. Ruane (2015) also discussed evolving design features (resulting from formalisation) which can diminish service approachability and efficacy. She noted services previously favoured 'porous' layouts which cautious patrons could comfortably wander into; however, such designs hindered evaluation and monitoring, and services thus began to control access more stringently. While recognising evaluations can add credibility and improve care, Ruane (2015) was concerned that this formalisation could be viewed as a shift towards the medical model and everything from which these festivals are intended to facilitate escape (e.g. bureaucracy, control). This shift could therefore compromise care and trust – qualities these services aim to embody.

More recently, the same author published an article on the role of 'psychonauts' (drug enthusiasts who consume drugs in a scientific/experimental manner) at transformational festivals. Drawing on the same research, Ruane (2015) considered the efficacy of three types of psychonaut interventions: peer support in crisis intervention services, mentoring, and dealing "good-quality, tested and carefully measured drugs" (p. 338) to counter risk from dodgy dealers. She claimed psychonauts' experience/expertise meant they were commonly perceived as competent, empathic and thus more trustworthy than other workers (e.g. medicos), but identified their lack of formal expertise, growing NPS and polydrug use, and drug policing as barriers to their efficacy. Ruane (2018) ultimately questioned psychonauts' capacity to operate as a practical HR intervention, instead highlighting their efficacy as a "reassuring discursive strategy" (p. 337).

Overall, the extant literature suggests onsite crisis services support festivalgoers and unburden medical services. However, based on the articles reviewed here, there is little evidence to inform best practice and service framing needs further consideration. Specifically, services should reflect on how to stay in tune with the culture while maximising credibility (within the political climate) and exposure (permission to operate at festivals). While the scale of Kosmicare's service may only be warranted at large transformational festivals, having trained mental health professionals with unique drug expertise within the medical unit and/or peer support service could be beneficial at more mainstream events. Given the growing number of psychedelic NPS being detected and misrepresented as drugs like MDMA (which has resulted in recent deaths (Energy Control International, 2017)), extra caution should be exercised when making distinctions between psychological and medical situations. Clear guidance/protocols on when patrons should be diverted to more formal medical evaluation could combat the risk of misjudging the type of care required. Finally, situating the crisis service close to the medical service, with clear lines of communication/coordination set up in advance of the event to aid the referral process – or integrating them into a single health care system – would be ideal.

Individual behaviour change approaches

Only one identified study specifically considered individual behaviour change interventions within festival contexts. Wiedermann, Niggli, and Frick (2014) investigated whether drug-related health risks are trivialised within a context known to feature significant drug use (festivals). Three hundred and seventy-six festivalgoers were surveyed at the 2009 OpenAir St. Gallen festival (mixed genre) about drug use prevalence at the festival and health risks associated with alcohol, tobacco, cannabis, cocaine and heroin. They reversed the order of these questions (split ballot) to examine whether having considered prevalence rates influenced their perception of harm. Consistent with their hypothesis, they found when festivalgoers had "cognitive accessibility" (p. 323) to peer behaviour (prevalence estimates), there was a significant reduction in perceived health risk/harm for cannabis, alcohol and tobacco, but not cocaine or heroin. Wiedermann et al. (2014) claimed future prevention efforts would benefit from considering/challenging this 'lemming-effect'. Ultimately, this research seems to support notions of 'situational disinhibition/willingness' at festivals and 'if everyone else is doing it, it can't be that bad'. However, surprisingly, the authors did not collect data on ecstasy/MDMA. Thus, to better consider the potential efficacy of challenging the 'lemming-effect' in a social norms approach, future research should investigate whether Wiedermann et al. (2014) findings are replicated for MDMA.

Interventions considering socio-spatial relations

Two articles identified in this review considered the value of socio-spatial relations for informing interventions at festivals. As discussed earlier, Dilkes-Frayne (2014) first examined a single drug use event to complement existing research into contexts, which she claimed inadequately capture complexity such as spatial and temporal aspects. While Dilkes-Frayne (2014) did not offer any specific recommendations for interventions, she highlighted how an events approach can be useful in reconceiving contextual influences and informing HR initiatives. Like the risk/enabling environment framework, an event analysis moves beyond a focus on individual behaviour change. Specifically, tracing drug use events could help identify positive and problematic assemblages, and was thus utilised as an analytic approach in the current research.

In a later paper, Dilkes-Frayne (2016) claimed that her ethnographic research at Victorian festivals illuminated important temporal, social and spatial aspects of festival campsites which mediate drug use, and should thus be considered in efforts to mitigate drug-related harms. She explained the value of considering when and how people travel across the festival to inform when and how to implement interventions. Specific recommendations included implementing HR both adjacent to festival stages (for those wishing to avoid isolation/group separation) and at campsites (for those wishing to escape stimulation), making campsites more habitable (e.g. more shade) and an optimal distance from the main site (to avoid long, tiring walks in the sun and to minimise the risk of group separation), providing offline HR given drugs are commonly obtained/used in the campsite (e.g. expand peer support, offline pill warnings), ensuring future drug-checking trials include a station within the campsite (given drugs are commonly obtained/used at camp), and, lastly, having rovers disseminate information/HR materials throughout campsites earlier in the day when groups are gathered around and preparing for the day ahead. Ultimately, Dilkes-Frayne (2016) advocated approaches that involve altering the environment to enable festivalgoers, substances and spaces to come together in a way that can reduce, rather than increase, harm. Again, the value of this field of theory is considered throughout this thesis.

Moral panic and event regulation/prosecution

The review identified seven articles addressing the regulation of raves/festival-type events. Perhaps unsurprisingly, there was a heavy focus on the moral aspects which have influenced regulation. For the purposes of this section, moral panic relates to the sensationalised reporting of a social issue which can lead to a public over-reaction (Hier, 2002). A consequence of moral panic is that it can trigger ill-considered and disproportionate policy

responses, often focused on 'popular' solutions which tend to be punitive in nature and ineffective at addressing the potential problems. Reviewing this literature produced new insights into the current regulatory status of festival-type events in Australia and elsewhere, and cautionary lessons from responses to earlier problems in the rave scene.

Australia

Almost 20 years ago, Luckman (2000) aimed to broadly conceptualise the regulation of dance parties in Australia and examine existing government regulation using an ANT framework. She noted that government responses involved the development of state guidelines/codes of practice and specifically funded HR programs. At the time, there were only three state regulatory documents (WA, 1995; SA, 1996; and NSW, 1998), which (Luckman claimed) were released during a period of moral panic surrounding the death of 15–year-old Anna Wood. Interestingly, the death of another young woman in 1991 attracted relatively little attention, and was largely reported within a context of inevitability and delinquency due to her lower socioeconomic status. In contrast, Anna's death attracted outrage, sympathy and extensive media coverage, which placed pressure on state governments to act. The apparent difference between the two deaths was that Anna did not fit the drug-using stereotype, leading to widespread concern this could happen to any 'good' family. One can detect similarities in media responses to contemporary festival deaths. For example, the media coverage of Georgina Bartter's death included consistent references to her prestigious private school education and calls for HR interventions to prevent similar tragedies (e.g. Mullany, 2014). Luckman (2000) identified social class as a significant factor shaping regulation in Australia, with ecstasy use being viewed as a white, middle-class consumer behaviour, albeit an atypical one.

Luckman (2000) also commented on how criminalising underground raves helped build a highly profitable dance party industry. Government guidelines provided a greater level of legitimacy for events and there was a shift towards the term 'dance party' to provide distance from the drug-fuelled, demonised reputation of raves. However, Luckman explained how guidelines favoured those operating in a commercial capacity, and that smaller-scale, non-commercial events continued to operate outside the law in more remote areas, where community complaints and policing were less a concern (e.g. 'bush doofs'). Mapping the regulation of raves in the late 1990s revealed factors that shaped the regulation and evolution of these events (from underground events to mainstream mega-festivals), media discourses (from demonised raves to more legitimate recreational events) and portrayals of ecstasy users (from delinquents to 'normal' middle-class people). Thus, despite the hysteria and crackdowns on venues surrounding Anna Wood's death, Luckman (2000) concluded that

positives emerged in the form of regulatory guidelines which obligated organisers to implement HR, as well as greater awareness of risk and emphasis on education. However, while not mentioned by the author, it is widely known that hard-line 'just say no' approaches were advocated strongly after Anna's death (Tregoning, 2015c), and the actual cause of her death (hypoxic encephalopathy following hyponatremia) was largely clouded by the hysteria, which resulted in missed opportunities for education. In learning from these events, greater awareness, consideration and caution should be placed on the factors that may influence policy responses (e.g. moral panic, social class and media reporting). The power of the media should not be underestimated and should be steered towards positively influencing policy based on evidence.

The USA

Other countries also experienced moral panic after ecstasy-related deaths (e.g. Leah Betts (1995, UK), Allen Ho (1999, Canada) and Jillian Kirkland (1998, USA). However, some government responses have been characterised as more detrimental than the Australian response. The primary policy response discussed in US-based papers is the highly contentious Illicit Drug Anti-Proliferation Act of 2003 (commonly known as the 'RAVE Act', used hereafter), which passed Congress as a result of political pressure following the death of 17-year-old Jillian Kirkland at a rave in 1998 (Anderson, 2014). The Act prohibits "an individual from knowingly opening, maintaining, managing, controlling, renting, leasing, making available for use, or profiting from any place for the purpose of manufacturing, distributing, or using any controlled substance, and for other purposes" (p. 50). Four papers which consider the enduring consequences of this Act are discussed below.

Dore (2002) provides an example of how this ill-considered policy response could inadvertently increase harm. Dore discussed the 2001 State Palace Theatre case, where two venue managers and a rave promoter were indicted under the 'Crack House Statute' (of which the RAVE Act was an extension). The indictment was based on the presence of paraphernalia (pacifiers, glow sticks), allegedly indicative of knowledge of drug use at the event, and resulted from undercover investigations following the death of Jillian Kirkland, who attended a rave at this venue. Given the case never went to trial (due to a guilty plea), the policy was not actually tested. Dore (2002) noted a particularly concerning element of the sentence was the condition to stop providing "chill rooms" (air-conditioned areas) alleged to encourage/facilitate drug use, a recommendation which could arguably increase the risk of hyperthermia to everyone in the venue (p. 1591). The conditions were lifted after the American Civil Liberties Union argued they were unconstitutional; nonetheless, this case highlights how hasty legal responses can inadvertently increase risk of harm. Dore (2002)

proposed approaches which do not suppress the 'innocent' side of the culture and rather encourage greater cooperation between law enforcement, patrons and industry to make events safer.

Glover (2003) examined three different policies for regulating raves: prohibition, tolerance and HR. Like Dore (2002), he cautioned against ill-considered and reactive responses to drug-related deaths aimed at eliminating rave culture altogether. He believed existing responses were largely driven by moral panic and argued that limiting young people's liberty with prohibition was unlikely to be considered legitimate by those it was intended to affect, and would thus be ineffective. However, he claimed tolerance was also inappropriate because it was ineffective in addressing the problem – it merely accepted it. Acknowledging that ecstasy use would continue, he concluded that HR was the best approach. Moreover, his personal view was that young people should be able to engage in leisure activities that pose no harm to the public, and believed approaches which do not "impose" (p. 323), but educate, would be wise.

Levy (2004) similarly argued that government power and the 'war on drugs' had been used to suppress the rave/EDM community. She argued that: the RAVE Act was "unconstitutional" (p. 1253) (that it violated the First Amendment); unfairly targeted rave culture, rather than directly addressing ecstasy use; and (3) would inadvertently increase drug-related problems. Therefore, Levy (2004) also proposed shifting to a HR focus.

Most recently, Anderson (2014) reflected on the failed war on drugs, the RAVE Act and recent 'molly' deaths. Like Levy, she argued that the RAVE Act had inadvertently increased harms because event organisers became scared of implementing HR strategies which could be construed as awareness of drug consumption at events. She noted that items associated with rave culture (e.g. glow sticks and lollypops) could be considered evidence of drug use (which has resulted in bizarre and growing lists of prohibited items at contemporary festivals (Staff, 2015)). However, while cultural items can theoretically be used as evidence (and as documented by Dore (2002), have indeed led to indictments and large fines), Anderson (2014) claimed drug support services are more likely to result in criminal prosecution. Consequently, HR groups are commonly rejected from operating at festivals in the US. Additionally, according to media reports, HR groups (e.g. DanceSafe and Bunk Police) have been shut down at festivals and had their testing equipment confiscated (Carbines, 2015a; Meadow, 2015b).

Ultimately, Anderson (2014) argued that the 2003 act placed US promoters in a difficult position, where they must try and balance the legal risk to themselves and the health

risk to their attendees. She concluded that while the war on drugs is now widely considered a failure, resulting in reform across various areas (e.g. cannabis laws), the RAVE act remains. She encouraged shifts towards HR, sector collaboration and decriminalisation for personal use. While no such Act exists in Australia, similarities exist in that to stay on the right side of the law, festival organisers promote a zero tolerance policy and avoid strategies which could be seen as 'condoning' drug use (Tregoning, 2015b; Williams, 2016c). Additionally, consistent with comments by Anderson (2014), Australian festival websites can be somewhat contradictory by promoting zero tolerance, while also advising that police will not be contacted for drug users seeking help (e.g. Secret Sounds, 2017). Thus, there is a discrepancy between what festival organisers are legally obliged to promote and what they may perceive to be the safest approach for attendees, resulting in the need to maintain a delicate balance. Thus, while zero tolerance policies and HR strategies can and do co-exist, the message becomes complicated and can confuse both festival organisers and festivalgoers. Shifting to a clearer HR drug policy could thus have benefits (e.g. greater capacity to implement HR, less hesitance for festivalgoers to seek help), although some will argue such a shift could condone drug use. Future research should directly explore the pros and cons of these opposing policies from the perspectives of both festivalgoers and key stakeholders.

Canada

Hier (2002) examined a period of moral panic following three ecstasy-related deaths in 1999. He specifically looked at the construction of and responses to moral panic, which involved "moral entrepreneurs" (p. 36) seeking to permanently ban raves from public venues. In this case, moral panic was purportedly a political strategy aimed at banning events to avoid liability issues. While moral entrepreneurs succeeded in enforcing a temporary ban, organisations representing the rave community managed to successfully subvert the dominant discourse and reverse the ban by working with alternative media outlets to promote an alternative discourse (which involved warning about the risks related to pushing the scene underground). They also warned that over-regulating events, such as mandating high police/attendee ratios, could significantly raise the cost of running events, pushing promoters to operate outside the law. Ultimately, this article suggested dominant discourses in mainstream media could be subverted by drawing on the increasing multiplicity of media outlets.

Italy

Cohen (2012) presented a viewpoint on drug policy at festivals in response to the prosecution of the Rototom Sunsplash reggae festival. The Italian version of the festival was

banned in 2011 and the organisers were prosecuted for allegedly "facilitating the use of illicit drugs" (cannabis) (p. 209). In preceding years, the author had attended the festival as a visiting lecturer (from the University of Amsterdam) and subsequently presented at a conference held by a drug policy advocacy group to defend the event. Cohen (2012) compared existing drug policies across the world to "voodoo religion" (p. 209) to illustrate his belief about the backwards nature of dominant policy approaches. He highlighted how, like voodoo, views on different types of drugs and interventions vary between cultures and across time. He criticised approaches in numerous countries, suggesting policymakers have essentially been given free rein to address drug problems without adequate evidence backing, noting this approach would be inconceivable in areas such as medicine. He referred to the 'war on drugs' as a type of religion where those in power can essentially pick which drug is 'evil'. He tried to illuminate inconsistencies in beliefs by explaining that when 'evil' drugs like heroin are used in pharmaceutical contexts (morphine) they can be seen as having positive effects, while no positives can be acknowledged in an illicit context. Overall, Cohen (2012) strongly disagreed with approaches which allowed policymakers to act without evidence.

Conclusions/cautionary lessons

The preceding sections reveal various lessons about policy responses to problems at festival-type events. For example, they highlight how and why hysteria/moral panic can occur (e.g. through sensationalised media coverage/discourses, social class influence), how moral panic can lead to political pressure, but also be part of a political agenda, how moral panic can lead to ill-considered policies that affect the capacity to implement HR and thus increase risk, and how alternative media can counteract mainstream media discourses and successfully subvert reactive policy responses (e.g. banning events and over-regulating). There were also more general critiques about existing approaches to drug policy, which were described as often being (blindly) moralistic rather than realistic, and also inconsistent across countries, cultures and time. These inconsistencies are apparent in the current Australian debate, with some arguing sophisticated onsite drug-checking is not realistic, yet it is widely known such initiatives have been operating in European countries for decades. Ultimately, this review highlights the need to question existing approaches, consider factors that have and may continue to influence responses, and draw on experiences across time and space to critique and inform current approaches.

Government guidelines

Government guidelines are the key regulatory documents for Australian festivals. A brief textual and table summary of the WA and Victorian guidelines are provided first (*Table 2.13*), followed by some general insights, comparisons and critiques[6].

Western Australia

Guidelines for concerts, events and organised gatherings is a comprehensive instructional document spanning 154 pages (WA Department of Health & WA Environmental Health Directorate, 2009). It was developed by the Environmental Health Directorate in consultation with industry, law enforcement, local government and the WA Mental Health Commission (formerly the Drug and Alcohol Office). While not a legislative document, it refers to relevant legislation throughout, and the author states it should be treated as a best practice document. It has five parts: background information and how to use the resource; roles and responsibilities of organisers and stakeholders at five different event phases (pre-event, load-in, event, load-out, post-event); guidelines on 11 different areas; over 30 support tools, such as medical resource planning guides; and important forms, including the event application.

Victoria

The Victorian guidelines, titled *Code of practice for running safer music festivals and events*, provide general best practice advice for planning events and span 43 pages (Victorian Government Department of Health & Mental Health and Drugs Division, 2013). The document was published by the Victorian Government Department of Health, Mental Health and Drugs Division, in consultation with a multidisciplinary working group with expertise in event planning, drug use, policing, medical care and peer support. The authors state the code is intended to help minimise risk of negative public health outcomes and litigation. It has four major sections: planning, preparation and management; public health and safety; HR and education; and legal issues. It also contains an events checklist and list of contact details.

Table 2.13: Government guidelines for festivals (WA and Victoria)

Category	Item	WA Guidelines for concerts, events and organised gatherings (2009) (154 pages)	VIC Code of practice for running safer music festivals and events (2013) (43 pages)
Key approvals/legal issues	Local government authority (LGA)	First step (contact LGA)	First step (contact LGA)
	Public buildings (legislation cited)	EM submits to LGA (The Health Act 1911)	(The Building Act 1993, Vic)

[6]This section focuses on these two jurisdictions in line with the overall scope of the research.

Category	Item	WA **Guidelines for concerts, events and organised gatherings (2009) (154 pages)**	VIC **Code of practice for running safer music festivals and events (2013) (43 pages)**
	Planning approval	EM submits to LGA (may be required by LGA, no legislation cited)	
	Liquor licence	EM submits to LG & the Department of Racing, Gaming & Liquor (Liquor Control Act 1988)	Submits to Responsible Alcohol Victoria (Liquor Control Reform Act 1998, Vic)
	Noise Regulation	EM submits to LGA (Environmental Protection (Noise) Regulations 1997: noise regulation 18)	Submits to The Environment Protection Authority (EPA) (no legislation cited)
	Application for food and drink outlets	EM submits to LGA (Food Act 2008)	Submits to LGA (Food Act 1984)
	Camping approvals	EM submits to LGA (no legislation cited)	Provides some pre-event considerations, but no mention of approvals.
	Approval of Temporary Structures	EM submits to LGA (covered under The Health Act 1911)	(Covered under The Building Act 1993, Vic)
	State forests and fire safety	-	Department of Sustainability and Environment
Plans	Risk Management	>5000 people (AS/NZS 4360) EM submits to LGA	
	Emergency Plan	>5000 people (AS 3745) and med-high risk events EM submits to LGA	Submits to State Emergency Services
	Crowd Control	Provider submits to EM	
	Medical Plan	Providers submits to EM	
Tools	Medical risk classification	Submit to the Disaster Preparedness and Management Unit	
	Public Health Event Risk classification	Submit to Public.Events@health.wa.gov.au.	
AOD advice	Section name	Drug-related issues (separate section for alcohol-related issues)	Harm Reduction & Education
	Background/intro	Encourages preventing & reducing harm, but also highlights the law: Knowingly permitting premises to be used for the purpose of using a prohibited drug or prohibited plants is an offence under Section 5(1) of the Misuse of Drugs Act 1981	Acknowledges drug use occurs and while not condoned, needs to be managed. States the Victorian Government supports a harm reduction approach and does not mention legislation issues
	Specific advice	Promote peer support Adequate and accessible free water Ensure adequate ventilation Prevent overcrowding Chill out space with first aider Educate on dehydration, overheating and what to do for overdose Provide staff with event/drug training/information	Invite peer education groups (DanceWize) Techniques to reduce risk of dehydration and hyperthermia Provide a chill out or cool down area Drink spiking prevention Health promotion on drug risks and day after survival advice Needle and syringe disposal

Category	Item	WA **Guidelines for concerts, events and organised gatherings (2009) (154 pages)**	VIC **Code of practice for running safer music festivals and events (2013) (43 pages)**
	Drug policy advice	Encourages to develop a policy, supported by a range of strategies, but does not advise what that policy should be	Recommends developing policies for dealing with drug issues, but this is covered under 1.7.3. Conditions of entering and remaining at an event within 1.7 Security and crowd control. Does not advise what the policy should be
	General HR recommendations	References the Industry Code of Practice recommendations which includes various HR environmental strategies, including: ➢ Accessible water free to patrons ➢ Ensure adequate ventilation ➢ Prevent overcrowding in venues and at events ➢ Provide a chill-out room or space at larger venues ➢ At large events provide peer support in chill-out spaces for patrons. Ensure at least one first aid trained staff member is on the premises ➢ Inform patrons about the importance of issues such as dehydration, water, overheating and what to do in an overdose situation ➢ Provide patrons with information about their rights and responsibilities relating to key drug issues ➢ Provide staff with information on risk management (including alcohol and other drug risk management) and identifying affected persons' signs and symptoms ➢ Promote peer support and integrate this into venues where appropriate ➢ Support key staff members to attend training on event and risk management (including alcohol and other drug risk management) ➢ Separate guideline regarding needles & syringes	Provides AOD HR advice on the following key areas: ➢ Peer education and peer-based service providers ➢ Dehydration and elevated body temperature (strategies to reduce risk) ➢ Chill out or cool down area ➢ Drink spiking ➢ Health promotion messages (AOD messages recommended) ➢ Needle and syringe disposal advice
First aid guidelines	Legislation cited	×	×
	Medical risk assessment	Yes, two phase risk assessment – Medical Risk Classification (MRC) + The Public Health Event Risk Classification	Advises that large events >3000 should get local EMS to conduct formal health risk assessment
	Plan required	Risk assessment determines resources required which then gets compared with the medical resource planner (data based on previous festivals)	Advises large events should get EMS to develop response plan
	Resources recommended	Yes, table for planning/resources required based on level of medical risk score (low-extreme)	Broad guide based on number of attendees only – notes "desirable to supplement onsite health services with additional onsite paramedic cover" for large events. Also states may be appropriate for doctors and/or nurses at large events
	Rovers recommended	×	✓

Category	Item	WA **Guidelines for concerts, events and organised gatherings (2009) (154 pages)**	VIC **Code of practice for running safer music festivals and events (2013) (43 pages)**
	Medical documentation recommended	Yes, basic medical report must be provided to EM and DoH within 7 days (basic table provided)	Yes, but no table provided – simply says should document the number of people and conditions for future planning
	Qualifications advice	Mentions current first aid qualifications from an accredited training provider that comply with the Australian Qualifications Training Framework (AQTF)	Advice was to have a recognised certificate in first aid from approved organisations
	Drug training/expertise advice	×	×
	Cooling equipment recommended	×	×
Water advice	Legislation cited	Yes (Liquor Control Act 1988)	✓
	Recommends signage for guidelines for water intake	No, but recommends urine dehydration signage	Yes, but only to sip, not gulp
	Free cups advised	×	✓
	Recommends allowing sealed bottles to be bought in	Yes (and if have to wait in line for extended period should be able to bring in unsealed)	×

Note. This table should not be treated as an official or comprehensive comparison of the WA and Victorian jurisdictional guidelines. To guide event planning, and/or for information on specific guideline areas, refer to the original documents.

Insights, comparisons, critiques

The two documents are very different in terms of the structure, level of instruction, length and legislation referenced., but address similar issues (e.g. use of public buildings, noise, liquor, food and water). The WA guidelines are more comprehensive and instructional, but their length (154 pages) may deter their use given the amount to read and the complexity of the information presented (e.g. multiple risk assessments and supporting tools). Additionally, one wonders whether the many requirements outlined in this document are carried out or enforced.

While the WA document provides far more comprehensive instructions on medical planning, including two separate risk classifications to inform resources planning, this does not necessarily make the advice superior to the Victorian code. The inquest into the death of Gemma Geraldine Thoms identified significant problems related to the medical advice in the 2009 WA guidelines (Mulligan, 2013), and detailed various outstanding issues related to festival medical planning in WA. The coroner stated:

256. I note that by adopting a strict application of the relevant calculation the Big Day Out 2009 and the Big Day Out 2013 would have been medium risk events which did not call for a dedicated medical centre or the location of paramedics at the Showground.

257. In my view the 2009 Guidelines should be improved so as to insure that events of the nature of the Big Day Out are ranked as high risk events…

The coroner's first recommendation was:

I recommend that the Director General of Health consider revising the current Guidelines for Concerts, Events and Organised Gatherings 2009, so that organisers of future similar large-scale public events are required to provide the standard of medical care achieved at the 2013 Big Day Out.

Despite this recommendation, no revised version of the guidelines had been published by November 2019, over five years after the coroner's recommendation. Thus, large-scale festivals could still be classified medium risk and therefore lack (according to the WA event guidelines) onsite paramedics or medical services. This oversight should be considered by the Environmental Health Directorate, which is responsible for publishing the guidelines.

The second series of outstanding issues highlighted in the report involved regulation of paramedics.

259. This case highlights the fact that there is no definition as to what a paramedic is under Western Australian law.

260. In my opinion, there needs to be a State based definition as to what a paramedic is, so that organisers of events such as the Big Day Out, together with the general public, can have confidence in the abilities of those who are protecting their medical interests at large scale public events.

The coroner made the following final recommendation:

I recommend that the Director General of Health consider creating a definition of 'paramedic' and that he considers a form of registration that will ensure that only appropriately qualified people are entitled to use the

title of paramedic and to be able to practise in Western Australia as a paramedic.

No definition of 'paramedic' or registration scheme for paramedics was ever established in WA. However, a national registration scheme was rolled out in December 2018 under the Health Practitioner Regulation National Law (Paramedics Australasia, 2019).

The WA guidelines have the capacity to cause more harm than good if events' risk is underestimated. It seems risk level is reduced substantially with proximity to tertiary hospitals. However, if ambulance services become overwhelmed, onsite pre-hospital care becomes even more critical. Moreover, the MGM literature suggested appropriately resourced pre-hospital care can significantly influence public health outcomes. However, as evident in Table 2.13, there is no legislation governing medical standards, so it is unclear how much benefit revising the guidelines would have if they do not need to be legally adhered to. Other issues the candidate identified in the WA document were the lack of guidance, regulation and legislation on medical equipment required onsite. The MGM literature reviewed previously highlights the importance of onsite cooling equipment for pre-hospital treatment of hyperthermia (a leading cause of festival deaths), yet neither the WA or Victorian document recommended this. Lastly, neither document explicitly stated a need for emergency drug expertise among medical staff.

The Victorian guidelines are particularly vague in terms of medical planning. They advise that large events (>3000 patrons) should work with local EMS to conduct a formal health risk assessment and develop a response plan, yet provide very rudimentary guidance on first aid personnel based on the number of attendees, and simply suggest considering supplementing first aid with doctors/nurses and onsite paramedics for larger events. Essentially, the advice is to get advice on the level of care required. While recognising the code acts as a starting point for planning, given the critical role of medical services, more specific clinical governance (ideally guided by legislation) could improve standards of care.

The guidelines cover similar topics when addressing drug-related issues. For example, both encourage peer-support services, basic techniques for reducing risk of hyperthermia (e.g. ventilation, water, chill-out space) and provision of drug information. However, the WA guidelines encourage staff training on drug-related issues, while the Victorian guidelines do not. Additionally, while the Victorian guidelines open by emphasising the government supports an HR approach and drug use is expected, the WA guidelines open the drug section by highlighting the law (p. 69), which could set a different tone to organisers (e.g. to promote zero tolerance):

Knowingly permitting premises to be used for the purpose of using a prohibited drug or prohibited plants is an offence (*Section 5*(*1) of the Misuse of Drugs Act 1981).*

Conclusions

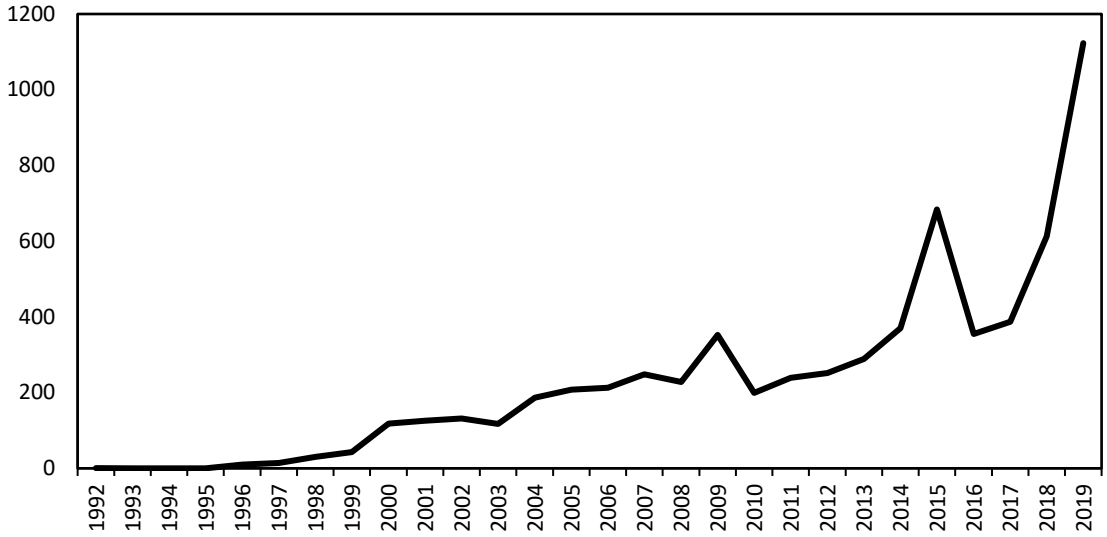
Overall, based on this broad consideration of the guidelines, both documents could be significantly improved. The emphasis on the law in the WA guidelines encourages a zero tolerance policy and could discourage organisers from implementing HR measures. Additionally, neither guidelines explicitly mention rovers, water guidelines when using MDMA, environmental design issues, drug-checking, drug amnesty bins or drug detection dogs. Clear advice on these issues should be provided in revisions. Problems were also identified with the existing medical guidance. As it stands, the current advice is unlikely to produce consistent standards of medical care across festivals. While there are noted problems with predictive medical models (discussed in the MGM sections) they may be a more efficacious alternative to the current advice. While beyond the scope of the jurisdictional guidelines, as stated in previous sections, developing a deidentified national database of patient records to inform predictive modelling and advice could help improve medical planning. One also wonders whether new legislation should be considered to increase adherence, given the key role onsite medical services play in public health outcomes. However, the review of regulation studies highlighted the importance of not over-regulating and pushing the scene underground. It is also noteworthy that neither document recommends any holistic festival planning framework, such as those discussed in *section 2.6.2*. Lastly, each document has strengths and weaknesses in terms of the content covered and overall ease of interpretation. While recognising there are important jurisdictional differences (e.g. legislation, stakeholders and geography), having a single set of national guidelines would improve consistency in the standard of care. It could also benefit the industry by making event planning clearer and easier for organisers of festivals which often run in multiple jurisdictions.

Media coverage of festivals/policy discourses

This section begins with a description of media trends related to festival-type events in Australia and internationally. Following this, a brief summary of the key events and policy discourses/responses covered by the Australian media is provided, accompanied by a timeline.

Media coverage of festivals has been on a strong upward trend, both in Australia and internationally (see *Figure 2.3* and *Figure 2.4*). In a computer-automated content analysis using Factiva (a global news database), the candidate found that Australian news publications increased in frequency from a single media article in 1992 to 1123 articles in the first half of 2019 alone. As evident in Figure 2.3, there were three clear peaks in 2009, 2015 and 2019. Based on the automated keywords for 2009, the peak appeared partly reflective of Gemma Thom's death at the Big Day Out, resulting in debate about drug detection dogs and a drug amnesty bin trial in WA. Keywords from 2015 suggest the peak largely reflected the eight Australian drug-related festival deaths that occurred within 13 months (Nov 2014 – Dec 2015), dozens of non-fatal overdoses and debate about drug policy responses. Lastly, the most recent peak largely reflects seven drug-related festival deaths that occurred in the 2018–19 festival season, the resultant debate and the NSW inquest into these deaths. Note that this database neglects a multitude of niche and micro media sources. Unfortunately, music news outlets such as Inthemix, MusicFeeds, Your EDM and MixMag, which often present alternative discourses to mainstream press, are not listed on library databases. Thus, as noted in the introductory description of this literature review, for the purpose of gaining a more complete picture of policy discourses (to help inform this thesis and to document in the timeline: *Table 2.14*), additional searches were conducted on alternative media outlet websites and their Facebook pages were followed (allowing quick alerts to articles posted). Based on the automated keywords for all Australian publications, the dominant issues covered were deaths/causes of deaths/inquests, overdoses/hospitalisations, drug supply at festivals, arrests/drug charges, debate about policy responses and interventions (particularly drug detection dogs and pill testing), and music festivals as a public health problem. Overall, the prevailing tone of media coverage could be described as problem/solution-focused and generally clustered around festival deaths.

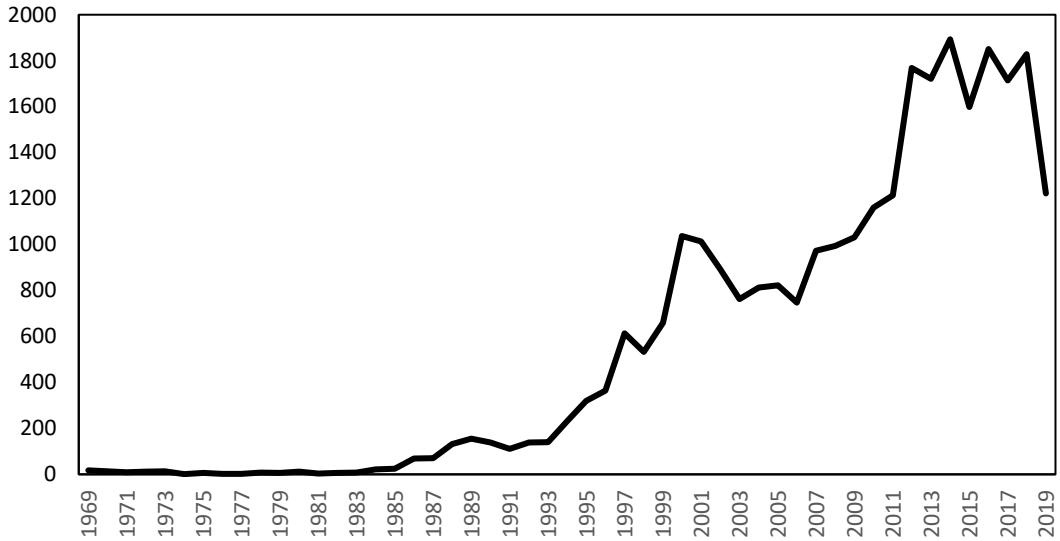
Figure 2.3: Factiva news publication dates with Australia region filter as at 1/08/2019: (drug* OR ecstasy OR MDMA) AND ("festival*" OR rave* OR concert OR "music event*" OR "dance event*" OR "dance part*") NOT ("rave reviews")



Note. Despite the high peak in 2019, the search only included the first seven months of the year. Thus, the peak is likely to become much steeper at the end of 2019.
Automated keywords=music festival, sniffer dog, drug offence, drug supply, illicit drug, ecstasy pill, drug detection dog, drug-dog operation, hallucinogenic drug, dance festival.

For comparative purposes, *Figure 2.3* presents the frequency of international news publications by year, with Australia filtered out. Of note is that in contrast to Figure 2.3 (Australia), international publications dated back to 1969 (due to coverage of Woodstock and the Palm Beach festival) and began increasing steadily from about 1993, when police seized 45,000 pounds worth of drugs at Glastonbury in the UK. In addition to issues with effectively archiving all print media, the lack of Australian publications before the 1990s may also reflect a lack of industry, with the first major music festival (the Big Day Out) not being held until 1992. However, smaller festivals like Livid were held from 1989 (Fitzsimons, 2014) and raves were also running in Australia from the late 1980s. The location with the most media publications captured in the international search was the UK, followed by the US, Europe, India and then Canada.

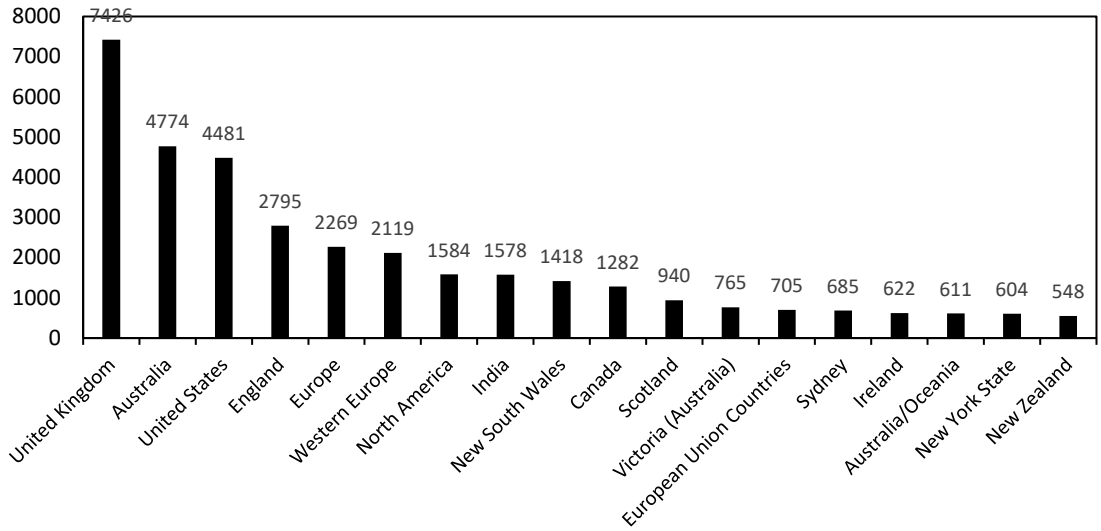
Figure 2.4: Factiva news publication dates with Australia region excluded as at 1/08/2019 – (drug* OR ecstasy OR MDMA) AND ("festival*" OR rave* OR concert OR "music event*" OR "dance event*" OR "dance part*") NOT ("rave reviews")



Note. The database search only included the first seven months of the 2019. Thus, the decline seen should not be interpreted as a genuine trend of declining media coverage.
Automated keywords=music festival, drug addict, drug abuse, downtrodden lyric, drug use, lethal dose, party drug, tour bus, young woman, illicit drug

Interestingly, when removing all region filters, Australia returned the second-highest document count (see Figure 2.5). This media analysis acts as a further indicator of the topical and contentious nature of festivals and drugs in Australia and internationally.

Figure 2.5: Factiva news publication count per region as at 12/04/2019 – (drug* OR ecstasy OR MDMA) AND ("festival*" OR rave* OR concert OR "music event*" OR "dance event*" OR "dance part*") NOT ("rave reviews")



Note. Regions with <500 results were excluded from the figure.

Timeline of key events/policy discourses

Table 2.14 chronologically documents key events and policy discourses covered in the Australian mainstream, micro and niche media. Given the multiplicity of media sources operating today, and the difficulty in identifying and describing the thousands of articles that must exist on this subject (more than 1500 salient articles were imported into the Endnote referencing library for this review alone), this timeline should not be considered exhaustive. However, it identifies the pivotal events and issues that have been recurrently debated and documented. While not identified within the media coverage, state regulatory guideline release dates are included in the timeline to help situate them/their relevance within the wider context of festival-related events. Key events are summarised to provide a snapshot of the current Australian situation (and are referenced in *Table 2.14* below). In combination with the preceding literature review, this overview provides further context for the research.

Although festival deaths have occurred annually since 2012, as discussed previously, clusters of drug-related deaths have occurred in a few seasons. The most recent 2018–19 festival year was the worst on record, with seven drug-related deaths. While 21 Australian drug-related festival deaths are trivial in comparison to the hundreds of Australians who die from benzodiazepines, heroin or other opioids each year (663, 361 and 550 respectively in 2016) (ABS, 2017a), these deaths triggered widespread media coverage and debate about strategies via mainstream media outlets, including newspapers, radio (e.g. numerous episodes of Triple J's Hack program) and TV news/feature programs (e.g. breakfast programs, *Four Corners*), as well as extensive coverage on more micro/niche media outlets (e.g. Inthemix) and more academically-inclined media outlets like *The Conversation*. It should be noted that many 'near misses' were not documented in the timeline due to their high frequency and few available details. However, a 2017 mass overdose, in which 22 people from a single festival were hospitalised, mainly due to GHB use, should be acknowledged, because it illustrates points made previously regarding GHB occurring in clusters and being a drug of concern for EMS.

As evident in *Table 2.14*, drug-checking has been advocated heavily in recent years, including via petitions, backing from the ACT government, the Australian Medical Association and the former Australian Federal Police Commissioner Mick Palmer, and a Senate motion. Nevertheless, drug-checking trials have only occurred in Canberra (at the 2018 and 2019 Groovin The Moo festivals). Before these trials, some advocates of the strategy initially expressed willingness to operate outside of the law and privately fund drug-checking, but following legal threats opted to disseminate legal colour reagent testing kits. Some drug experts have also admitted to going 'rogue' and running secret testing stations

(using reagent testing kits) at festivals, reportedly detecting and deterring the use of dangerous substances, such as PMA. Drug-checking as an HR intervention continues to be advocated by professionals from a range of sectors, but is still met with political opposition across most Australian jurisdictions. As at July 2019, the ACT remains the only government which has granted approval and officially trialled an intervention with sophisticated laboratory equipment (run by Pill Testing Australia, formerly Safety Testing Advisory Service at Festivals and Events; STA-SAFE). Following a report by STA-SAFE (which contained recommendations and outlined the apparent success of the 2018 trial), the ACT government expressed an intention to expand the intervention to other festivals. While the report recommended the federal government take a leading role in expanding the intervention across the country, at the time of writing, no further action had been taken at the federal or state government level. However, a push for more trials continues, with a fundraiser held by STA-SAFE to help it operate at more ACT festivals, and The Loo*p* (a non-profit organisation that tests drugs at festivals and nightclubs in the UK) training Australian teams to test at festivals in Melbourne, Sydney and Brisbane if/when they receive government approval.

In terms of policing, despite drug detection dogs being directly linked to three festival deaths, hospitalisations, continued widespread opposition, accumulating evidence of iatrogenic effects and a Greens motion to cease their use passing the Senate, they continue to operate at festivals across the country. Additionally, police spokespeople often quoted in the media continue to claim dogs have a strong deterrent ability, deny they contribute to deaths, claim they save lives and are part of a harm minimisation approach. In Victoria there have even been reports of intentions to push for legislative change to grant police greater powers to stop and search festivalgoers. In response to continued use of this strategy, HR groups and alternative media have disseminated information to festivalgoers about their legal rights and what to do if they are stopped by police. Two anti-drug dog campaigns were set up (Unharm's 'Ditch the Dogs'; Greens NSW's 'Sniff Off'), and legal experts are increasingly stationing themselves onsite at festivals to provide free legal advice and advertise their services. Like drug-checking, at the time of writing, drug dogs as a policing strategy continues to be hotly debated. Media may have illuminated inconsistencies with the evidence about this strategy, but the debate has "culminated in a policy impasse" (Hughes et al., 2017, p. 92) in much of the country. Indeed, there have been no indications this strategy will be ceased in any Australian jurisdictions. However, in a positive step, drug amnesty bins were implemented at the 2018 Perth 'Origin' festival to give patrons an alternative to 'panic consumption' when sighting dogs.

Overall, despite the mainstream Australian media continuing its sensationalised and inaccurate reporting (coded in pink in *Table 2.14*), media coverage has allowed significant opportunity for expert comment. This has improved public and political debate, and increased awareness about the problems with existing approaches (e.g. drug dogs) and potential benefits of alternative approaches (e.g. drug-checking). Clearly, from the snapshot provided in *Table 2.14*, while the debate may not have translated to progressive policy changes yet (elsewhere than the ACT), ongoing efforts seem to be slowly shifting perceptions (evident from surveys showing majority support among Australian politicians and the public (Essential Research (2018)). However, new regulatory changes introduced in NSW are concerning and go against the cautionary lessons discussed previously (see *Moral panic and event regulation/prosecution*). The tougher regulations, including user-pays mandatory policing, have reportedly resulted in numerous festival cancellations and could push the NSW scene underground. There are also concerns heavier policing could result in more harm in upcoming festival seasons. Ongoing tracking of media coverage could help researchers follow the direction of policy discourses and responses, identify when researchers need to work with media to subvert negative discourses by providing evidence and expert comment, and identify the factors that contribute to positive policy change.

Table 2.14: Timeline of key events/policy discourses related to Australian music festivals (as at 10/11/2019)

Year	Date/s	Event	Example media citations
1995	Oct 24	Anna Wood, 15, dies from hyponatremia after taking ecstasy at a Sydney rave. While not a festival death, this is a hallmark event which shaped events to follow so warrants acknowledgement	(Tregoning, 2015c)
1995	Oct	After Anna Wood's death, there is a period of moral panic and crackdowns on venues. However, her death also raises awareness about ecstasy use and regulatory guidelines for events are subsequently released in several jurisdictions. (Anna's father, Tony Wood, has since strongly advocated for zero tolerance, a war on drugs and 'just say no' approaches, receiving criticism from drug policy advocates)	(Tregoning, 2015c)
1995	Nov	First WA regulatory guidelines released (Operational Guidelines for Rave Parties, Concerts and Large Public Events)	(Luckman, 2000)
1996	Dec	First SA regulatory guidelines released (Operational Guidelines for Dance Parties in South Australia)	(Luckman, 2000)
1998	Apr	First NSW regulatory guidelines released (New South Wales Code of Practice for Dance Parties and Guidelines for the Conduct of Dance Parties)	(New South Wales Government, 1998)
2004		First VIC regulatory guidelines released (Code of Practice for Running Safer Dance parties)	
2007	Feb 17	Annabelle Catt, 20, dies at the Sydney Good Vibrations festival after taking PMA misrepresented as ecstasy	(Bannerman, 2007)
2007	Feb 17	NSW premier, Morris Iemma, criticises police for not warning public immediately of 'bad batch' of PMA causing Annabelle Catt's death. Police deny knowledge and use opportunity to reinforce message that people take drugs at their own risk	(Bannerman, 2007)

Year	Date/s	Event	Example media citations
2007	Mar 5	7:30 report: The story of Annabelle Catt Annabelle's parents, police and Dr David Caldicott are interviewed. Interview highlights problems with police forensic analysis not being released to warn public. David Caldicott gives the Australian early warning systems a 4/10	(Bannerman, 2007)
2007	Sep 19	Public and media outrage over popular TV show 'Summer heights high' storyline initially believed to be mocking Annabelle Catt's death Chris Lilley apologised, but explained production ended before Annabelle's death. The show's song about the ecstasy death titled 'naughty girl' reached number 1 in the Aria charts	(Tadros, 2007)
2009	Feb 2	Gemma Thoms, 17, dies from ecstasy-induced hyperthermia after attending the WA Big Day Out. Temperatures reached 36°C	(Guest, 2009; The Daily Telegraph, 2009)
2009	Feb	Policing with drug detection dogs was identified as a contributing factor to Gemma Thom's death (panic consumption) Her death ignites media debate about policing strategies NSW Greens MP Sylvia Hale reports she had repeatedly warned governments about this type of death. The Youth Affairs Council of Western Australia claims police are using the wrong approach Police Commissioner denies any responsibility and says death won't deter police crackdowns Premiere Colin Barnett backs police and claims dogs are part of a harm minimisation approach	(Guest, 2009; "Sniffer dogs blamed," 2009)
2009	Feb	In response to Gemma Thom's death, drug amnesty bins are trialled at the WA Rock It festival in what was believed to be an Australian first While the response was extremely poor, the trial was extended to the V festival, but the response was again very poor	("Drug trial to continue," 2009)
2009	Dec	WA updated its regulatory guidelines (Guidelines for concerts, events and organised gatherings)	(WA Department of Health & WA Environmental Health Directorate, 2009)
2012	Jan	Daniel Buccianti, 34, dies after taking drugs (misrepresented?) at Rainbow Serpent festival	(Buccianti, 2016; Choahan, 2012)
2013	Jan 21-Mar 8	Inquest reveals events leading up to Gemma Thoms' death. The coroner rules her death as accidental, but notes inadequate festival medical response contributed The record of investigation is released on March 8th. The coroner recommends revising the 2009 WA guidelines to improve medical standards (currently inadequate as events like BDO considered medium risk) and recommends regulation of paramedics in WA	(Campbell, 2013; Mulligan, 2013)
2013	-	VIC update their regulatory guidelines (Code of practice for running safer music festivals and events)	(Victorian Government Department of Health & Mental Health and Drugs Division, 2013)
2013	Sep 14	James Munro, 23, dies after taking three ecstasy at the Defqon.1 festival in Sydney. He was reported to have a 42°C temperature	(Pedestrian, 2013)
2013	Oct 14	ABC TV 7:30 report: James Munro's father, Stephen Munro, speaks publicly Munro reports James took all his ecstasy before entering due to concern about drug dogs at the gates. He adds the drugs were purchased from Silk Road. He states that his son used ecstasy recreationally for social enjoyment and did not drink or smoke. This death reignites debate/calls to stop drug dogs	(Whitehead, 2013)

Year	Date/s	Event	Example media citations
2014	Jul 14	Art vs Science's Dan McNamee emails his local member appealing for a trial year without the use of drug dogs. He claims to have observed adverse consequences of the strategy, such as panic consumption. He posted the transcript of the email on Facebook	(Levin, 2014)
2014	July 17-24	Ahead of the Byron Bay Splendour in The Grass festival, the Greens Party disseminate anti-drug dog flyers around Byron Bay Town. Splendour organisers also release a guide on legal rights/what to do if stopped by police	(Jarvis, 2015c)
2014	Sep 14	Unharm writes to acting police commander of the Penrith Local Area Command calling for a different policing approach (involving no drug dogs) at this year's Defqon.1 festival after James Munro died from a panic-based overdose at the 2013 event Police crime manager responded by denying police contributed to the death and will continue their operation to reduce the risk of harm	(Tregoning, 2014a, 2014c)
2014	Oct	NSW Greens MP David Shoebridge starts the Sniff Off campaign. The Facebook page had ~36,000 followers in Jan 2018 and routinely warns the public of drug dog locations	(Jarvis, 2015b)
2014	Nov 8	Georgina Bartter, 19, dies at HarbourLife in Sydney after taking 1.5 pills of ecstasy No toxicology or coroner findings reported, but claims of allergic reaction, despite alleged previous use. Significant media coverage of this case	(Begley & Arlington, 2015)
2014	Nov	Georgina Bartter's death reignites debate for pill testing References to Victorian of the Year, Professor David Penington, who proposed a system where people over the age of 16 could sign up to a national register and would then be allowed to purchase cannabis or ecstasy from an approved government supplier Professor Alison Ritter of the University of NSW (UNSW) publishes an article on The Conversation listing the reasons Australia should trial pill testing	(Hatfield, 2014; Ritter, 2016)
2014	Dec 31	Nathaniel Guymer, 26, dies at Falls Festival in Byron Bay, allegedly after taking one pill NSW Department of Justice states there will be a coronial inquest, but no date is set	(Moskovitch, 2014; White, 2015)
2015	Feb 6-7	Tolga Toksoz, 19, died after taking ecstasy at A State of Trance festival in Sydney. He reportedly took an excessive number of pills because he and his friends were competing to see who could take the most	(McClellan, 2015)
2015	Feb 6-7	At A State of Trance festival, a 22–year-old man was rushed to hospital after accidentally swallowing a large number of pills after hiding them in his mouth when he saw drug detection dogs	(McClellan, 2015)
2015	May 27	NSW Greens announce plan to introduce bill to stop drug dogs operating at festivals. They are joined on the day by Australian producer Paul Mac and Dan McNamee of Art vs Science	(Carbines, 2015b)
2015	Jun 26	Rebecca Hannibal convicted for drug dealing for supplying ecstasy to close friend who died, Georgina Bartter. Significant media coverage of her court hearing	(Begley & Arlington, 2015)
2015	July 15	Caitlin Hughes, a drug researcher/policy expert from the National Drug and Alcohol Research Centre tells SMH that new research suggests drug dogs can encourage use of drugs other than cannabis and can increase use before arriving. She suggests alternative safer policing approaches Geoff Munro, national policy manager for the Australian Drug Foundation, also reports concern about panic overdoses leading to hospitalisations. He says he would support other measures to keep festivalgoers safe	(Bochenski, 2014)
2015	Aug 29	Matthew Forti, who supplied Rebecca Hannibal with the pills that killed Georgina Bartter, got a 12-month jail sentence (later reduced to 9 months on appeal)	(Hall, 2015)
2015	Sep 19	Nigel Pauljevic, 26, dies at the Defqon.1 Festival in Sydney	(Levy, 2015)
2015	Oct 25	Anneke Vo, 23, dies at the Dragon Dreaming festival in NSW She was found unconscious on the grounds after leaving her friends the night before after feeling unwell	(Begley & Arlington, 2015)

Year	Date/s	Event	Example media citations
2015	Nov 29	Sylvia Choi, 25, a pharmacist, dies at the Stereosonic festival in Sydney after taking ecstasy	(Begley & Arlington, 2015)
2015	Nov 29-Dec 6	After a police tip-off, three WA police officers tested positive for ecstasy and methamphetamine after attending the WA Stereosonic festival. They got a "telling off", but were not charged because they were not found in possession A week later a 26–year-old female police officer was arrested on drugs charges at the Brisbane arm. She subsequently resigned and had to face court	("Brisbane Stereosonic," 2015; Turner, 2015)
2015	Dec 2	Rainbow Serpent director Tim Harvey says new tactics like pill testing are needed as existing strategies like drug dogs are not working. Harvey claims hesitance over legislative change is preventing action/progress	(Dobbin, 2015)
2015	Dec 5	Stefan Woodard, 19, dies after taking drugs sold as ecstasy at Stereosonic in Adelaide Suspected bad batch of pills, but toxicology not reported. Tried to seek medical attention, but friends called him "weak" and he abandoned the first aid line	(Begley & Arlington, 2015)
2015	Dec 9	Music Feeds poll found 83% of people who voted over a 2-day period (n=10,164) were in favour of drug-checking	(Williams, 2015)
2015	-	Adriana Buccianti, who initially blamed Rainbow Serpent for her son's death, changes her view and begins advocating for pill testing. She joins forces with Unharm and starts a petition which receives ~39,000 signatures and is sent to the NSW and Victorian premiers	(Williams, 2016b)
2016	Jan 2	NSW government threatens to shut down music festivals over drug use. Premier Mike Baird threatens overhaul on festival permits and to shut down events which don't comply	(Harris, 2015; Williams, 2016c)
2016	Jan 5	Drug policy advocates warn shutting festivals down will come with consequences (e.g. will push underground) and criticise approach as being "based in the regressive ideology of prohibition"	(Visentin, 2016)
2016	Jan 8	EDM.com calls out media for "dishonest and dangerous" coverage of ecstasy incidents which are not technically overdoses. They argue this misinformation hinders HR and may create false illusion normal doses are safe	(Cox, 2016)
2016	Feb 15	ABC TV program 'Four Corners' features episode titled 'Dying to Dance' where they speak to young Australian drug users and legal, medical and drug experts. Experts claim current approaches are wrong and should consider more radical approaches. Former Australian Federal Police commissioner Mick Palmer says he supports pill testing. Former NSW director of public prosecutions Nicholas Cowdery said searches may cause more harm than good. Despite expert views, Troy Grant reaffirms pill testing will not happen on his watch	(Ferguson, 2016)
2016	Feb 28	Two drug experts (Dr Alex Wodak and Dr David Caldicott) express willingness to operate pill testing outside of the law in NSW to try and save lives. Alex Wodak announces privately funded trial will go ahead in Sydney with or without blessing	(Williams, 2016d)
2016	Feb 29	John Wall from Fuzzy tells Triple J on Hack "it's tricky because all our events are run on government land"	(Pentreath, 2016)
2016	Mar 1	Stereosonic/Totem OneLove announces official support for pill-testing	(Pentreath, 2016)
2016	Mar 2	Parliamentary Drug Summit resulted in 'Canberra Declaration' calling for drug use to be treated as a health issue and: – Drug-checking at Australian music festivals; – A ban on random sniffer dogs searches at festivals and in public; – The decriminalisation of personal drug use; – Making publicly available the information that police hold about dodgy street drugs; – And re-routing some of the $1 billion spent each year on drug law enforcement towards harm reduction and treatment services	(Caldicott, 2016; Mack, 2016)
2016	Mar 2	NSW deputy premiere Troy Grant expressed continued opposition to pill testing and claims drug experts planning to operate pill testing outside the law could face manslaughter charges	(Gill, 2017)

Year	Date/s	Event	Example media citations
2016	May 6	The Law Society of New South Wales provide comment on proposed Greens Bill in response to request from Jenny Leong. They note "The Law Society is of the view that the use of drug detection dogs represents an intrusion of personal privacy and is tantamount to a warrantless search" and "The Law Society considers the drug detection dog program to be an unnecessary intrusion into the rights of the citizens of NSW to go about their daily lives without interruption"	(The Law Society of New South Wales, 2016)
2016	Sep 5	Greens motion passed the Senate, advocating "working with state and territory governments to cease the use of drug sniffer dogs at festivals and urgently introduce trials of pill testing for the upcoming festivals season"	(Levin, 2016)
2016	Sep 12	UNSW drug researchers and Unharm drug policy advocates continue to back pill testing as evidence suggests an ecstasy resurgence	(Adams-Dzierzba & Bell, 2016)
2016	Sep 22	Unharm in collaboration with Adriana Buccianti launch 'Tests not arrests – Adriana's call to action' video on YouTube which advocates for pill testing. This video is also published in media articles	(Williams, 2016b)
2016	Nov 20	In response to legal threats by NSW Premier Mike Baird, rather than trial sophisticated pill testing, HR advocates decide to distribute legal reagent testing kits during Sydney's festival season	(Duff, 2016c)
2016	Dec 5	Tone Deaf music news media ask Australian media to stop their sensationalised headlines, inaccurate reporting and non-event media coverage about festivals which perpetuate stigma and undermine HR efforts	(Moskovitch, 2016)
2016	Dec 31	Jake Monahan, 26, dies after taking pills at a NYE bush doof-style festival on QLD/NSW border Suspected drug misrepresentation/NPS due to psychotic behaviour. Jake's friend was also critical	(Elder, 2016)
2016	Dec	After Jake Monahan's death at, police claim bush doofs are only about drugs (not music) and they need help from the public to shut them down	(Elder, 2016)
2017	Jan	Over 300 festivalgoers had their pills tested at a secret testing station (approved by the event organisers) headed by Dr Stephen Bright at a Victorian festival in January. Some test results identified pills containing PMA	(Powell, 2017)
2017	Jan 26	Jacob Langford, 22, dies at the Rainbow Serpent festival in Victoria after swallowing, rather than sniffing amyl nitrate	(Francis, 2017)
2017	Feb 2-8	Following the death of Jacob Langford, police call for Rainbow Serpent to be shortened, call the event an "extreme" safety risk and claim organisers need to take more responsibility for the impact on the community. Jacob's parents also blame the event, alleging it was too long and food/drinks were unaffordable Director Tim Harvey disputes this criticism, claiming the length allows people to recover before driving home and argues there is ample free water and affordable food. Other alternative media outlets also defend the event and suggest HR interventions like pill testing should be allowed	(Francis, 2017; John, 2017a; "Rainbow serpent organisers," 2017)
2017	Feb 12	ABC's Media Watch criticises inaccurate and sensationalised media coverage of Rainbow Serpent which claimed event was "marred by drugs and violence". Media watch claims this type of reporting perpetuates stigma and hinders HR opportunities	(Bright & Williams, 2017)
2017	Feb 19	22 festivalgoers hospitalised after taking drugs (mainly GHB/polydrug use) at the Electric Parade music festival in Melbourne	(Tran & Groom, 2017)
2017	Feb	Following mass overdose at Electric Parade, renewed calls for pill testing	(Tran & Groom, 2017)
2017	Feb 19-22	Victorian Police Chief Commissioner claims quick and safe onsite drug testing is not practical Dr David Caldicott disputes claims and explains why in an article published on The Conversation website (notes Australia already has the equipment and has been successful in other countries)	(Caldicott, 2017; "GHB suspected," 2017)
2017	Mar 6	After a Sydney festival, police claim increasing number of females are hiding drugs internally and warns that drug dogs will still detect them and they will be charged. However, they do not explain how Police also express general concern about pre-loading and lengths people are going to conceal	(Hansen, 2017)

Year	Date/s	Event	Example media citations
2017	Apr 26	ACT Government rejects Harm Reduction Australia's drug-checking proposal for the Canberra Groovin The Moo festival, claiming the proposal needed more work and would not be possible in 2017	(Sibthorpe, 2017a)
2017	May 5	After the ACT's rejection of the proposal to run sophisticated testing, drug policy advocates decide to distribute legal colour reagent testing kits at Groovin The Moo in Canberra. They give a contact number on their Facebook page for those wishing to access a kit at the event	(Sibthorpe, 2017b)
2017	Jun 26	Victorian Police Minister, Lisa Neville, reveals (via The Herald Sun) her intention to drive legislative change to grant police more powers to stop and search festivalgoers in rural Victoria. This move and the method of delivery receives criticism and opposition from Harm Reduction Australia	(Jolly, 2017)
2017	Sep 14	After 1000 people sign a petition supporting pill testing, and the ACT health minister Meegan Fitzharris reveals a working group found considerable evidence of its efficacy, ACT reveal decision on a pill-testing trial has been pegged for November 2017	(Burgess, 2017a)
2017	Sep 21	Police live-stream a video warning Victorian Listen Out festival attendees they will be "resourced extensively", "out in force", "with PAD dogs" and "have plain clothes police" at the festival and in surrounding areas. The 6-minute video emphasised that drugs are illegal and festivalgoers risk prosecution and health problems Ambulance Victoria representative also spoke briefly and warned about weather, advised to drink water, to look out for yourself and your mates and warned they are "rolling the dice" if they take drugs. Did not address legal implications when seeking help for drug-related problems	(John, 2017b)
2017	Sep 22	ACT government approves free pill-testing at the Spilt Milk festival. Safety Testing and Advisory Service at Festivals and Events (STA-Safe) intend to test drugs, warn about the risks and provide an amnesty bin if they wish to dispose their drugs	(Burgess, 2017b)
2017	Oct 12 - Nov 25	Kicks Entertainment announces on Triple J HACK program that it won't be implementing pill-testing at Spilt Milk, alleging STA-Safe had not provided the necessary documentation. However, STA-Safe dispute this claim. Various parties make accusations (Morton, 2018). It is unclear why was the trial was cancelled, but there are suspicions of federal intervention. In response to the cancellation, there are reports of increased supply of homemade reagent testing kits circulating	(Dale, 2017{Fettes, 2017 #2267)6}
2017	Oct 19	NSW Greens party continue to criticise the use of drug detection dogs at festivals on the basis of cost and efficacy. They note that only 1.7% of those searched in the preceding 12 months were charged with a drug supply offence and the program costs ~ $9mil annually to maintain. NSW police minister says the government "makes no apology for using drug detection dogs to send a message to the community…" and "drug dogs have a strong deterrence factor"	(McGowan, 2017)
2018	Mar 22	Groovin the Moo pill-testing trial, on university land owned by ACT government, approved; set to be first Australian festival to trial the intervention	(Scott, 2018)
2018	Apr 29	Safety Testing Advisory Service at Festival and Events (STA-SAFE) run the first legal official trial of drug-checking using laboratory grade equipment at Groovin The Moo festival in Canberra 128 participants, 85 samples tested, 50% pure MDMA, 50% other, 2 potentially deadly samples of N-Ethylpentylone (ephylone) attributed to multiple deaths worldwide ACT Health Minister Meegan Fitzharris claimed "This trial is a breakthrough for harm reduction" ACT Police detective acting superintendent Rohan Smith reported they would not police the area and supported drug-checking as a harm minimisation strategy	(Morton, 2018; Sullivan, 2018)

Year	Date/s	Event	Example media citations
2018	June 20	STA-Safe release a report on the April drug-checking trial 125 people visited, 85 drug samples were provided, but only 83 had valid results 42 of 70 pills believed to contain MDMA actually did, and 32 were high purity 2 suspected cocaine samples actually contained cocaine, and one sample was quite pure 45% of patrons who used the service were ≤20 years old and males were twice as likely to test Only 5 patrons discarded their drugs at the site, but other discarded drugs were found nearby 58% intended to still use the drugs, 42% would alter their use, 12% would use less and 18% said they would not use the drugs The trial was estimated to cost $34,000 Six recommendations were made, including encouraging the federal government to take the lead in expanding the intervention across the country at festivals and at fixed locations, all levels of government collaborating to develop a national evaluation framework and early warning system	(Brown, 2018; Bushnell, 2018; The STA-SAFE consortium, 2018)
2018	Aug	A $100,000 fundraiser was launched to help support the roll out of pill testing programs at more Australian music festivals, following the GTM trial	(Williams, 2018a)
2018	Sep 15	Joseph Pham (23) and x (21) die at the Defqon.1 festival Sydney from alleged 'overdoses', three others critical Reports toxicology was being fast-tracked ~700 sought medical attention, 13 treated at one hospital	(Koslowski, 2018)
2018	Sep 15	Reports Defqon.1 again promoted a zero-tolerance policy which was heavily policed with drug dogs, 180 uniformed and undercover police, and 20 detectives on standby Two 17-year-old females were allegedly caught carrying 120 caps internally, 335 drug searches, 69 found in possession and 10 supply charges (MDMA, GHB)	(Koslowski, 2018; The Herald, 2018)
2018	Sep 16	Following Defqon.1 there is significant media coverage, public and political debate and renewed calls for drug-checking Key figures like David Caldicott, Alex Wodak and David Shoebridge continue to advocate for evidence-based policy, including drug-checking	(The Herald, 2018; Williams, 2018d; Wolfe, 2018)
2018	Sep 16	Local detectives formed a new police strike force, dubbed Highworth, to investigate the deaths at Defqon.1 2018 NSW Premier, Gladys Berejiklian, vowed to ban Defqon.1 festival and expressed opposition to drug-checking The minister for Western Sydney Sport announced "The Sydney International Regatta Centre will not be hosting Defqon.1 into the future.	(Koslowski, 2018; Ritchie & Calvert, 2018; The Herald, 2018)
2018	Sep 17	Media reports that Joseph Pham posted about fear of drug dogs on social media in the weeks preceding Defqon.1	(Poposki & Chain, 2018)
2018	Sep	Drug panel created in NSW to provide recommendations on improving festival safety. However, NSW Premier stated that even if the three experts recommend drug-checking, they still will not allow it. Thus, they are criticised by experts such as Alex Wodak for setting this up if they don't intend on listening to the advice. The expert panel is also questioned given it involved 3 people, only one from health and two from government and law enforcement. If it's about safety, should ideally be expert panel of health experts. The music industry asks to sit on the panel	(Australian Associated Press, 2018; Higgins, 2018)
2018	Sep	New research (findings from this PhD project) published in the International Journal for Drug Policy provides further evidence that dogs as a policing strategy at festivals is ineffective and contributed to risky drug use practices	(Carbines, 2018; Henriques-Gomes, 2018)
2018	Sep 24	A group of over 60 Australian festivals, musicians, health specialists and industry figures issued an open letter urging New South Wales Premier, Gladys Berejiklian, to begin an "open dialogue" instead of shutting down music events, following deaths at the Defqon.1 music festival in Sydney	(Williams, 2018b)

Year	Date/s	Event	Example media citations
2018	Sep 27	The Australian Medical Association calls for pill testing trials. Dr Bartone said "innovative approaches, under controlled circumstances, are needed to prevent future tragedies"	(Hawthorne, 2018)
2018	Oct	The NSW Expert Panel Report on "keeping people safe at music festivals" is released. The recommendations focus on 1. Improving regulations and licensing; 2. Improving HR programs and messaging; and 3. Increasing criminal penalties for drug-related supply offence, including a new offence for supply causing death These recommendations receive backlash for the focus on punitive responses, and complete lack of willingness to consider the evidence for drug-checking. The report explained that pill testing is "outside the terms of reference. In tasking the Panel, the Premier made clear that the NSW Government has no tolerance for illegal drugs and pill testing is not within the terms of reference"	(Fuller et al., 2018; Moloney, 2018)
2018	Nov	Laws passed in November in NSW which mean drug dealers can be jailed for up to 20 years for supplying drugs that cause someone to die	(Clun, 2018)
2018	Dec 8	Callum Brosnan, 19, dies of a suspected 'overdose' after attending the Knockout Games of Destiny (dubbed the southern hemisphere's biggest indoor dance music festival, featuring 'hardstyle' music). 16 others were taken to hospital (suspected 'overdoses') A dedicated strike force, codenamed Ruben, is established to investigate the circumstances surrounding the death	(Clun, 2018; Nguyen & Tatham, 2018)
2018	Dec 10	At Knockout Games of Destiny, an 18-year-old girl is allegedly found with almost 400 MDMA caps that were "internally concealed"	(Deutrom & Graham, 2018)
2018	Dec	NSW Premier Gladys Berejiklian states the Government has no plans to change its ban on pill testing, claiming it condones use. However, advocates refute this citing a new report from the UK led by Fiona Measham who claimed those opposing these services fundamentally misunderstand how they work. She adds many discard they drugs when confronted with undesirable results.	(Nguyen & Tatham, 2018)
2018	Dec 11	On Studio 10, popular Australian TV presenter, Osher Gunsberg, criticises officials and takes on a panel of older TV presenters who claim pill testing won't save lives. Osher claims drug use is inevitable and people need to recognise pill testing has been proven as a successful intervention. He receives mixed support on social media, with many refusing to consider the evidence and re-evaluate their stance	(Mack, 2018)
2018	Dec 11	The NSW Police Force increases its crackdown on festivals. After forcing the Bohemian Beatfreaks festival to relocate to Queensland after first failing to shut it down, but then trying to charge unfeasible costs for police saturation, it now wants "the unappealable right to shut festivals down". Greens Politicians and legal institutes express concern that this could set a "devastating precedent"	(Gregoire, 2018)
2018	Dec 18	A survey of over 1000 politicians, run by Essential Research, found most Australians across political divides support pill-testing. However, the NSW Government remains opposed	(Essential Research, 2018)
2018	Dec 29	Josh Tam, 22, dies from a suspected overdose at the Lost Paradise music festival in Sydney (11,000 attendees), two others hospitalised from adverse effects related to consumption of unknown substances	(Deutrom, 2019)
2018	Dec 31	Unnamed, 20, dies at Beyond the Valley NYE festival in regional Victoria from a suspected overdose	(Ruane, 2018)
2018	Dec 31	NSW Opposition leader, Michael Daley, shifts stance and states Labor would consider drug-checking at music festivals as part of its commitment to holding a drug summit if elected in March. However, NSW Premier Gladys Berejiklian continues to refuse to consider the evidence	(2018)
2018-2019	Dec-Jan	Five deaths in late 2018 spark renewed debate about drug-checking and managing drug-related issues at festivals. Key figures advocate for change, including Harm Reduction Victoria, Dr David Caldicott, former premier Bob Carr and doctor-turned-federal MP Kerryn Phelps. Stephen Bright, a leading drug researcher at a Perth University, advocates for a pill testing trial in the state, but the WA Police Minister explains that pill testing is not being considered in WA	(Deutrom & Graham, 2018; Shields, 2019)
2018	Dec 31	Following several deaths in recent months, drug amnesty bins are used at Perth NYE festival, Origin Fields. However, drug detection dogs and heavy policing remain in place	(McNeill, 2018)

Year	Date/s	Event	Example media citations
2019	Jan 12	Alex Ross-King, 19, dies after attending the FOMO music festival in Sydney.	(Khalil, 2019)
2019	Jan 14	The cluster of high-profile deaths fuels the ongoing debate on drug-checking. In an on-air interview, Morning show host, David Koch, criticises NSW Premier, Gladys Berejiklian, for rejecting calls and refusing to listen to the evidence Debate opens wider comments on prohibition, with the former Premier of Queensland expressing support for legalising and regulating drugs	(Khalil & Fernando, 2019; Kohlbacher, 2019)
2019	Jan 15	NSW Coroner announces public hearing on Jan 22 in response to recent cluster of high-profile music festival deaths	(Thompson, 2019)
2019	Jan 17	Australian students launch national campaign #beheardnotharmed urging MPs to allow drug-checking The parents of Alex Ross-King request a meeting with NSW Premier to exchange views on pill testing and urge her to allow	(Clun, 2019; Henriques-Gomes, 2019)
2019	Jan 17	Two young men (20 and 23) are arrested on drug charges following the death of Alex Ross-King	(Wolfe, 2019)
2019	Jan 23	Australian Medical Students' Association joins the Australian Medical Association, the Royal Australian College of Physicians, the National Australian Pharmacy Students' Association, in advocating for new approaches to drug policy, including pill testing	(Australian Medical Students' Association, 2019)
2019	Jan 20	SPS 'Insight' 2019 Episode 1: 'The Pill Gamble' discusses ecstasy use and pill testing with young drug users, victim's parents and experts (e.g. Paul Dillon, David Caldicott, Fiona Measham)	(Special Broadcasting Service, 2019)
2019	Mar 1	NSW launches new festival regulations involving special festival licencing and user-pays mandatory police Subsequent media coverage report criticism of these changes deemed a "war on festivals", noting they have pushed several festival organisers to cancel and/or relocate their events to other jurisdictions	(Loomes, 2019)
2019	Apr 22	Young couple found dead in their tent at the Rabbits Eat Lettuce festival in Queensland Media coverage later in 2019 report that toxicology revealed potentially lethal concentrations of MDMA, in addition to ice, ketamine, heroin and temazepam	(Scott, 2019)
2019	Apr 28-29	Pill Testing Australia (formerly STA-SAFE) launches second drug-checking trial at the 2019 Groovin the Moo festival in Canberra Media coverage following the event reports the service potentially saved seven lives by deterring the use of a high-risk stimulant linked to deaths: n-ethylpentylone	(Martin, 2019)
2019	July 8-19	NSW Music Festival Deaths Inquest – first hearing dates	(Grahame, 2019)
2019	September 10-20	NSW Music Festival Deaths Inquest – second hearing dates	(Grahame, 2019)
2019	November 8	NSW Music Festival Deaths Inquest – report/recommendations released	(Grahame, 2019)

Note. Colour coding=drug-related festival deaths/mass overdoses (grey); festival regulation (green); pill testing/drug-checking (purple); TV programs/features (blue); drug policing/drug detection dogs (yellow); prosecutions (orange); media criticisms/call outs (pink); major policy/parliament events (aqua).

Summary of the literature and implications for future work

Prevalence, patterns and practices

This literature review illuminates the available evidence on the extent of drug use at contemporary festivals. While many researchers have studied drug use among people who *attend* festivals, very few have examined drug use occurring *at* festivals, probably due to commercial sensitivities. The limited available evidence is also largely outdated, sometimes with ambiguous description of events, methodological problems, and lacking data on overall rates of illicit drug use and/or rates for individual drugs. Only one Australian study provided indications of illicit drug use prevalence at contemporary festivals (Hughes et al., 2017), and while not generalisable, pointed to very high rates (e.g. majority behaviour). Future research on the prevalence of a wider spectrum of drug use and overall rates of illicit drug use, that is not limited by onsite sampling problems, would extend the literature. While recognising the importance of not further stigmatising festivals, understanding the true extent of drug use associated with festivals is crucial for informing responses. Indeed, if illicit drug use has become normalised, policymakers need to re-evaluate current approaches. Thus, the issue of normalisation of illicit drug use at festivals also warrants further investigation. To quote what drug policy advocates have been saying internationally for many years now, "let's get frank about drug use and prevent future music festival tragedies" (Jones, 2013b).

The review showed that evidence about patterns and practices of drug use is even more limited. The only contemporary Australian study reported rates for concomitant illicit drug use only (Hughes et al., 2017). Given alcohol is now a key drug of interest (in part due to the shift towards licensed events), and evidence suggests concomitant alcohol use exacerbates risk (Hernández-López et al., 2002; Mikula, Kozlowska, & Wiercinska-Drapalo, 2009), future studies should include alcohol in polydrug use analyses. Moreover, it would be worthwhile delineating different types of drug combinations, particularly those which pose greater risk. In addition to polydrug use, future research should look at patterns of drug use before, during and after festivals to inform the timing of interventions and what drugs should be targeted. Lastly, only a few outdated international studies examined quantities used. While recognising limitations to self-report data (e.g. recall bias and poor correlation to drug exposure), increased awareness about perceived dosages/quantities being used could at least provide a gauge for informing HR advice.

Only a couple of studies considered different drug-using practices at *contemporary* Australian festivals, and this was limited to drug supply and campsite practices. While Hughes et al. (2017) found drug supply at festivals was very common in their sample, they did not investigate onsite drug sourcing, which could provide further indications of the impacts of current deterrent/detection strategies. Future research should thus consider both obtaining and supplying practices, including the reasons for purchasing drugs onsite. With the exception of Dilkes-Frayne (2016) identifying campsites as important spaces for obtaining drugs, using drugs and sharing drug information, there has been no research on the types of protective and risk practices of Australian festivalgoers. Future research in this area is urgently needed to help inform education/HR initiatives.

The review of prevalence, patterns and practices also highlighted how investigating the correlates of drug use could inform interventions. As Dilkes-Frayne (2014) showed, multi-day festival campsites have socio-spatial elements which can mediate drug use patterns and practices. Additionally, the durations and locations of multi-day festivals may lend themselves to certain types of drugs, such as substances with longer durations of effect and substances which enhance perception of the natural surroundings (e.g. psychedelics). The media review also identified EDM festivals as being associated with more deaths than other festival types. Other correlates which should be examined include gender and jurisdiction. While there is very little consideration of gender/sex differences in the literature reviewed herein, wider drug literature has consistently identified gender as an important determinant of drug use patterns/practices and health effects/outcomes (e.g. Allott & Redman, 2007; Becker, McClellan, & Reed, 2017; Engels & Ter Bogt, 2005; Simmler et al., 2011). Jurisdiction should be considered given the differences between government guidelines for festivals, which could affect drug use patterns and associated harms. Moreover, the EDRS national monitoring system has consistently identified differences in drug trends between jurisdictions (Peacock et al., 2018). Clearly, being aware and informed by local drug trends is critical for informing interventions.

Reasons for using/positive effects

Despite the existence of an extensive literature on the motivations and pleasures associated with drug use in recreational music settings, this review highlighted a clear ga*p* in festival-specific research. This is problematic because festivals are key sites for drug use, with unique features. Surprisingly, there have been no quantitative studies of the reasons for using drugs and positive effects associated with using drugs at contemporary festivals, and the extant qualitative data either lack contextual consideration or are limited to one person. Thus, this review further illustrates the widespread imbalance in academic attention to the positives

and negatives of drug use. As explained previously, continuing to ignore this fundamental element of drug use (pleasure/fun), perhaps for fear of condoning or encouraging use, will hinder HR efforts due to a failure to resonate with lived experiences. Ultimately, future research and responses will benefit from listening to young people's experiences, recognising they have agency and using their input to inform interventions aimed at helping them. Both quantitative and qualitative methods are needed to gain depth of understanding, as well as perspective.

Negative/adverse effects

A wealth of evidence on negative/adverse drug-related effects linked to festivals was identified. However, the bulk of evidence came from the MGM literature and case studies of extreme health outcomes (e.g. deaths). Overall, the MGM literature shows that a high proportion of presentations to onsite medical facilities were drug-related, and an even higher proportion of serious presentations were drug-related. Reviewing this literature illuminated the potential benefits of better regulation and standardised data collection to aid interpretation of MGM data. Despite limitations, the evidence clearly demonstrates that HLC models reduce the burden on local EMS and may improve pre-hospital care, with the condition that there are no delays in hospital treatment. GHB overdoses were identified as being particularly problematic in terms of burdening EMS. While it was beyond the scope of this study to conduct MGM research (e.g. a partnering with medical providers to prospectively study of onsite presentations involving drug use), the candidate investigated festivalgoer experiences with and attitudes towards onsite medical services, and interviewed KIs about the regulation of these events, to produce data to consider alongside the findings from the MGM literature.

The review of case studies revealed consistency in the types of clinical features recorded. Hyponatremia and hyperthermia were two primary conditions documented, and they acted as the etiological cause for many other complications reported (e.g. rhabdomyolysis). The predominance of these conditions highlights the importance of increased user awareness and collaborative environmental approaches to minimise risk. Again, investigating awareness of water intake guidelines and engagement in strategies to reduce hyperthermia risk could extend this literature. The review also showed that many festival deaths are not documented in the medical literature or systematically reported anywhere. A better understanding of the aetiology of deaths, through systematic documentation and analysis, could considerably enhance ability to manage future cases and tailor education and HR efforts. While it was beyond the scope of the present study to clarify the aetiology of festival deaths, perceived contributing factors to adverse drug-related events

at festivals were investigated and risk factors explored (informed by themes identified in this review).

As explained previously, deaths and hospitalisations do not provide a complete picture of harm. However, to date no researchers have undertaken a broad-based investigation of adverse drug-related outcomes at contemporary Australian festivals. Investigating more frequent but less severe outcomes which do not result in hospitalisation and/or death would paint a more complete picture of harm and inform opportunities for early intervention.

Lastly, the two studies involving physiological testing warrant consideration. van Dijken et al. (2013) detection of high rates of hyponatremia among female festivalgoers further highlights the need to investigate knowledge and behaviour related to hydration. Secondly, Irvine et al. (2006) raised concern about festivalgoers using MDMA at levels which place them at risk of serotonin neurotoxicity. While again recognising limitations of self-report data, this further highlights the need for a greater understanding of quantities being consumed in these settings to inform dosage education.

Interventions

Interventions for managing drug-related issues at festivals were considered last in this review. In addition to reviewing the evidence for individual interventions (e.g. drug-checking), and broader approaches to interventions (e.g. holistic models and socio-spatial relations), historical accounts of rave regulation were reviewed and government guidelines were critiqued. It is important to again emphasise that while there is a wider body of literature on interventions, this review focused on festival-specific studies.

Holistic planning frameworks, drawn from MGM, were discussed first (e.g. 'chain of survival'). While it was beyond the scope of this research to thoroughly assess the utility of these models, it is important for the candidate and those involved in event regulation to know such models exist. The utility of holistic models in event planning is considered further alongside research findings in the discussion.

Drug-checking was considered second. While the literature on this intervention has grown in recent years, few peer-reviewed articles report outcomes within festival settings, and most studies involved simple reagent testing. Nevertheless, studies from the US, Canada and Portugal found a substantial proportion of drugs tested at festivals did not contain the marketed content, and sometimes contained drugs with much higher risk potential. This information resulted in drugs being discarded, decreased intent to use them and intent to use

more cautiously. In Australia, Day et al. (2018) found favourable attitudes towards drug-checking among festivalgoers sampled, and a belief it would influence their behaviour. While these studies alone indicate the utility of drug-checking at festivals, gaps in the evidence base remain. Specifically, more detail on behavioural responses to drug-checking results, beyond simply using or not using drugs, would be beneficial. For example: Would festivalgoers still consider using the drugs? Would they use less? Would they warn their friends? Would they inform their suppliers? A clearer understanding of the full range of responses is crucial to inform the design of testing services, enhance the benefits and counteract adverse responses. Also lacking in the literature was an understanding of why some festivalgoers were less concerned about drug content: did they trust their suppliers? Did they trust their previous experiences? This information could inform HR messages, including raising awareness about batch variability and debunking misconceptions which may lead to a false sense of security.

Only one festival-specific study investigated drug detection dogs (Hughes et al., 2017). The findings suggested drug dogs have some deterrent effect on usage, but raised concern about the potential for drug policing to increase demand and supply of drugs within festivals, meaning they may simply displace criminal activity and actually increase associated harms. However, this study left many questions unanswered. For example, would respondents have used smaller amounts of drugs (restrictive deterrent effect)? Would they have switched to more harmful drugs perceived as less likely to be detected? Thus, a better understanding of the full range of responses to this intervention is needed. Additionally, Hughes et al. (2017) investigated intended rather than actual behaviour. Thus, evidence on actual behavioural responses would extend the literature. Additionally, despite drug dog sightings being linked to festival deaths, no researchers have investigated behavioural responses to them at festivals: do people really panic and swallow their drugs? How common is this?

This review did not identify any studies investigating festivalgoer attitudes and experiences with HR initiatives at festivals, such as onsite medical services, underlining the lack of festivalgoer voice in the evidence base. Given the earlier review of media coverage on festival deaths found very few reports of patrons seeking medical attention before falling critically unwell, it is crucial to better understand barriers to seeking help so they can be removed. Likewise, the perceived availability of preventative measures such as free water, affordable food and shade is important in determining whether current efforts, and perhaps current regulation/legislation/guidelines, are adequate or could be improved.

The present study aimed to fill the gaps in the literature noted above and contribute to the evidence base for informing festival policy decisions and planning. Throughout the results chapter, clear research questions will be outlined (within the four recurrent themes) which directly address these gaps in evidence.

To conclude this literature review, evidence/insights have been situated into a generative 'risk/enabling environment' framework (see *Table 2.15*). As noted previously, this process is useful in terms of providing a snapshot of potential risk factors, considering potential macro-level influences and considering potential interventions/environmental responses for reducing the risk of future drug-related harm in these settings. Again, the utility of 'risk/enabling environment' theory is further considered in the final discussion and recommendations (where an updated version of *Table 2.15* will incorporate evidence/insights from the present study).

Table 2.15: The 'risk/enabling environment' framework: Examples relating to drug-related harms/deaths at festivals (drawn from the literature reviewed)

	Micro-environment (event level)	**Macro-environment**
Physical Risks	Warm summer weather (> risk of hyperthermia, potentiate drug effects) Not dressing appropriately for conditions Lack of shade and other preventative cooling measures (> risk of hyperthermia) Long queues with no shade Overcrowding (> risk of hyperthermia, difficulty navigating to safety) Loud music/noise (can potentiate drug effects) Music genre/tempo/beats per minute (BPM) (can encourage fast paced dancing, > risk of hyperthermia) Lack of music genre variation (no downtime if always fast BPM) Queues for medical services (can discourage help seeking) Poor consideration of socio-spatial issues during event planning, such as long walks between main site and camp, lack of shade and HR in campsites Lack of private space to administer drugs (rushed/guessed dosages – issue for crystals) Lack of transport to/from the festival (encourages drug driving) Laser light shows, circus like visuals (can overstimulate vulnerable, e.g. those on psychedelics)	Australian climate Shifting trends in ecstasy purity/potency/forms (high purity widely available now, > risk of overdose) Increasing detection of NPS (ongoing risk of NPS being misrepresented as drugs like ecstasy and LSD) Dark net markets (> access and variability in purity/potency – could have >200mg ecstasy pills from Europe in WA now)

	Micro-environment (event level)	Macro-environment
Interventions	Multiple shaded areas where festivalgoers can escape sun (venues with natural shade are ideal, otherwise artificial shade must be created) Ventilation Noise controls/regulations Quiet areas to escape loud noise (e.g. chill-out zones) Ability to exit loud, crowded areas (e.g. tents/pavilions need multiple exits) Provision of ear plugs as a HR resource Consideration of tempo when planning the line-up (mix up the tempo) Private waiting booths at onsite medical services Socio-spatial approach to event planning, such as location of HR, making campsites more habitable (create an enabling environment for HR)	
Social Risks	Australian culture – normalisation of illicit drug use among festival populations Festivals becoming mainstream (more novice users) Situational disinhibition (excess use > risk of harm) Peer norms – 'double dropping' and drug use games/competitions ('hardcore' culture) Friends discouraging others to seek help / 'don't be a pussy' attitude Not sticking together / culture of separation Onsite drug dealing (> risk of being sold dodgy drugs) Spread of misinformation on cause of deaths ('overdose' assumes normal dose safe) Lack of peer norms (e.g. water guidelines) – different to the earlier rave culture / less engrained HR culture Using psychedelics at festivals without adequate knowledge or support (can cause psychedelic crises in settings like festivals)	Australian culture – wider societal normalisation International scene – dominance of EDM which has historical links with illicit drug use International culture – normalisation of drug use in dance music culture (e.g. references to 'molly' in popular music lyrical) Commercialisation of festivals–shifted into mainstream Stress/pressure for Gen Y – need for escapism Increasing leisure behaviour Media and moral panic (leading to reactive responses to deaths e.g. increased policing)
Interventions	Social norms approaches to individual behaviour change Peer-based interventions and rovers disseminating information Onsite drug-checking with warnings (safety net for onside dealing) Onsite psychedelic support services (appropriate for transformational festivals)	Mass media and social marketing of harm reduction
Economic Risks		Wider economy – cashed-up fly-in, fly-out (FIFO) workers (WA mainly) with high disposable income to spend on alcohol and other drugs Uncertain economic times (need for escape/fun)

	Micro-environment **(event level)**	**Macro-environment**
Interventions		
Policy **Risks**	Zero-tolerance drug policies (limit capacity for HR, > risky drug use practices, resistance to drug-checking) Onsite drug policing with drug detection dogs (linked to panic consumption deaths and risky practices, displaces criminal activity onsite, riskier onsite purchases) Contradictory/confusing drug policy on festival websites Stopping and searching for drugs of vehicles on way to venue (criminalisation harms, pre-loading) Lack of legislative guidance for onsite medical – higher level of care (HLC) models not mandated (lack of consistency of case, poorer pre-hospital care, reduced public health outcomes) No systematic documentation or minimum dataset for medical providers (reduced planning capacity, reduced ability to promote key HR to prevent deaths)	Drug laws – wider conservative political climate limiting capacity for progressive approaches (e.g. drug-checking) Australian sniffer dog operation expansion Reactive policy responses which inadvertently increase risk Lack of national registration for paramedics (addressed in 2018)
Interventions	Improve government guidelines (more guidance of environmental/HR and medical planning–consider workability of national guidelines since events often multi-state) Better medical regulation – mandate HLC models at large-scale festivals (improved standards/consistency of care=better pre-hospital care and public health outcomes) Establish a national minimum dataset for MGM medical providers (national database to inform planning) Systematically document drug-related festival deaths – use information to inform medical planning / HR	National monitoring/warning systems (e.g. DIMS in the Netherlands) Decriminalising illicit drug use OR Legalising and regulating illicit drug use (= no risk of consuming something unknown, dosage information, no risk of arrest, etc.)

Note. This table is adapted from Rhodes (2009) table relating to HIV and injecting drug use.

Chapter 3: Methodology

This chapter describes the methodology used in this thesis. Firstly, an argument is presented for the use of mixed methods. Secondly, the methods of data collection and analysis are described, including a breakdown of how data sources were synthesised. Thirdly, some caveats to the data are outlined.

Mixed methods

This research employed a mixed-methods approach, framed by an overarching paradigm of pragmatism, which has been described as a "philosophical partner" for mixed methods and the "third wave" of research paradigms (Johnson & Onwuegbuzie, 2004, pp. 16-17). Pragmatism highlights the importance of overcoming notions of incompatibility between qualitative and quantitative methods, and promotes methodological pluralism, whereby researchers draw on the strengths of both paradigms to achieve the best possible practical outcomes (Johnson & Onwuegbuzie, 2004; Morgan, 2007). While 'paradigm wars' may continue amongst purists who remain dogmatic in their views, the advantages of mixed-methods approaches are increasingly recognised (Brannen, 2009; Johnson & Onwuegbuzie, 2004; Leech & Onwuegbuzie, 2010; Morgan, 2007). Brannen (2009) suggested the growth in mixed-methods research reflects a shift towards a preference for meeting more strategic policy needs, rather than following theoretically driven research questions bounded within strict disciplines. Likewise, Jha (2008), who advocated viewing quantitative or qualitative as more of an "interactive continuum" (p. 15) of methods, believed that the best paradigm is one that serves to answer the research question.

Some key rationales for employing mixed methods include the ability to *triangulate* (converge findings to corroborate them); *complementarity* (e.g. qualitative methods can be used to elaborate on quantitative findings/gain depth of understanding); *development* (using findings from one method to inform another method); and *initiation* (to help identify contradictory findings) (Johnson & Onwuegbuzie, 2004). However, critiques of mixed methods also warrant consideration. Mixed-methods studies can be more costly and time-consuming than mono-method studies, and it can be difficult for an early-career researcher (or PhD candidate) to carry out mixed-methods research well, given such studies ideally draw on a multidisciplinary team with expertise in quantitative and qualitative methodology. In addition, there can be confusion about what is actually being mixed – paradigms? Types of data? Types of logic?, and of course, some purists maintain that quantitative and

qualitative methods are incompatible. However, as Onwuegbuzie and Leech (2005) suggested, there are numerous misconceptions about mono-method research, such as the belief quantitative research is purely positivist or objective, when in fact subjective decisions are made throughout the process, such as when selecting measures and survey instruments. Additionally, mono-methods are commonly mixed, given statistics are often used in qualitative studies and text is commonly used in quantitative studies. Onwuegbuzie and Leech (2005) argued that this problem/confusion could be partly addressed by shifting the focus towards interpretation of data, rather than the types of data (words or numbers).

Ultimately, for the present study, a pragmatic mixed-methods approach was deemed appropriate because it allowed an eclectic selection of methods which suited the research objectives. As Onwuegbuzie and Leech (2005, p. 337) stated, "pragmatists ascribe to the philosophy that the research question should drive the method(s) used" (p. 337). Thus, a three-phase sequential exploratory research design was established which comprised of qualitative in-depth interviews, followed by a quantitative online questionnaire, followed by qualitative interviews (qual → QUANT → qual). The in-depth interviews in phase 1 served several purposes: triangulation, complementarity and instrument development. In relation to development, despite the candidate being a seasoned festivalgoer, they did not know all the questions that could be posed to festivalgoers in the quantitative questionnaire, or all the response options that should be provided. Thus, phase 1 was used to help develop the methods in phase 2, as well complement, explain and expand results of phase 2. Phase 3 also helped the candidate to explain the results of phase 2 (the primary aim was interpretative insights to be considered for the discussion). Thus, the quantitative questionnaire in phase 2 was the core data source, while the qualitative components were complementary.

Data collection

This section describes the methods used for each phase of data collection and provides justification for using each method.

Phase 1: Qualitative pre-survey interviews

The first phase of data collection involved qualitative semi-structured interviews with festivalgoers and KIs in order to get local perspectives on problems and responses – which, as previously stated, were of interest in their own right and to inform the development of the online questionnaire in Phase 2. Data collection occurred in two Australian states: Western Australia and Victoria. These sites were selected for three reasons: they have numerous

popular festivals and have consistently encountered drug-related problems (e.g., drug arrests and hospitalisations) in this context; the candidate and her supervisor were located in Perth and the candidate's co-supervisor was located in Victoria, which assisted with recruitment efforts and understanding of the local scene; and researching two jurisdictions provided better representation of Australia and the ability to contrast data across jurisdictions. Phase 1 (or 'pre-survey') interviews took place between December 2015 and January 2016.

Festivalgoer interviews

It was originally anticipated that approximately eight festivalgoers would be interviewed from each site, depending on the richness of data obtained. Ultimately, 11 participants were recruited from the WA site because early interviews did not generate the richness required, and nine were recruited from Victoria. Participants were required to meet the following three selection criteria: ≥16 years old; a regular festivalgoer (attended ≥6 music festivals in their lifetime and ≥3 in the past year); and a resident in their state for ≥12 months preceding the interview. A quota was also used to ensure at least 75% of the sample had used an illicit party drug (i.e. not alcohol) at a festival in the preceding six months. This quota was implemented because the interview contained questions that directly applied to illicit drug use experiences, which was critical to help inform the online questionnaire (Phase 2). Given the small number of participants required for this phase, no paid advertising was needed. Instead, a purposive sampling strategy was employed, involving posts on a drug study online forum (www.bluelight.org), and flyers at universities and music stores. All Phase 1 participants were recruited via flyers or snowballing (see *Appendix D.3*), and all were screened and provided with an information and consent form via email (see *Appendix D.4*). Participants were emailed a $25 e-gift card per interview (for iTunes, Woolworths Group or JB Hi-Fi) as reimbursement for their time and contribution of expertise. Given the interviews were lengthy (1.5–3 hours), it is unlikely this reimbursement acted as an incentive to take part or led to participants completing the interview with false data/experiences.

Synchronous instant messaging (IM) (a type of online chat which offers real-time text transmission) was employed to conduct festivalgoer interviews. This method was selected for several reasons. It was expected participants would accept it due to the importance of online chat in their everyday lives (e.g. Facebook chat and smartphone applications like Snapchat and WhatsApp) (ABS, 2017b, 2018). It was expected this method would be time and cost-effective, because transcription of interviews would not be required and it would avoid interstate travel or phone calls. Finally, it was thought participants would be more willing to respond to questions of a sensitive nature, or conversely, not feel obligated to respond to questions they felt uncomfortable with, due to the detachment of IM

interviewing relative to face-to-face methods. While the potential for various practical challenges was acknowledged in the proposal, such as maintaining attention, appropriate timing and the limited context to build rapport and legitimacy, it was believed these could be mitigated given adequate preparation and communication with participants. This view was supported by Barratt (2012), who demonstrated that online interviewing was an effective way of engaging young party drug users in research. If the target sample did not accept this method, or if the interviews did not yield the richness of data required, alternative methods were available, such as telephone and Skype (online video chat software), but proved unnecessary. However, the procedural and privacy issues of IM interviewing warrant consideration, and are discussed below.

Selecting an IM provider

This first and most critical step for setting up Phase 1 interviews proved more challenging than anticipated. It required gaining a better understanding of the digital world, particularly issues related to data retention, privacy policies, metadata and encryption. Pure Chat was the initial preferred provider as it offered unique and desirable features, such as simple development of a customised project webpage for private IM interviews. This would have avoided the need for participants to download software, register or set up an account, or have any technological expertise – they would simply copy the URL into their browser and be prompted to start the chat. However, the candidate soon found that the privacy policies of Pure Chat, and a variety of similar commercial IM providers, posed unacceptable risks related to data being retained on servers, sharing of information with third parties and rights to change privacy policies at any point. Thus, the candidate searched for alternative providers/IM options which offered anonymity. After trialling and testing multiple options, the list was narrowed down to Pidgin, Tor messenger, Richochet and Wickr Me (a complete list of issues considered is provided in *Table 3.1*). Wickr Me (formerly Wickr; https://wickr.com/products/personal/) was selected as the preferred IM provider because it was free, quick and easy to download the application on smartphones or computer devices; no email addresses or real names were required to sign up; and it provided anonymous and secure messaging (military-grade encryption, no internet protocol (IP) addresses or metadata collected). Importantly, this meant interviews could not be tracked, intercepted or monitored, and the data would be 'forensically wiped' from devices once expired. While this IM method had some drawbacks (small lag in transmission, inability to save the chat as a transcript, and the need to provide instructions to ensure messages did not self-destruct after 24 hours), the positives (ease in downloading the ap*p* and the availability to participate via mobile phone) outweighed them. Since transcripts could not be saved, each individual message had to be copied and pasted into a Microsoft Word document before importing and analysing in NVivo

qualitative data analysis software (QSR International Pty Ltd., 2012). While this process was less time-consuming than transcribing an audio-recorded interview, IM interviews took longer than the anticipated one hour initially expected for face-to-face or telephone interviews. The reason seemed to be that, despite advising participants not to worry about spelling and grammar, it often took several minutes for them to construct their responses. However, it should be noted participants were advised in advance to take their time responding, and this lack of pressure may have added to the quality of the data because participants were able to properly consider and construct their responses in the privacy of their own homes (or their preferred locations).

Minor problems encountered during interviews were the time lag; while minimal (typically a few seconds), it sometimes interrupted and lengthened the interviews. Connections were lost on multiple occasions; while it was generally regained quickly and no data was lost (confirmed in advance when selecting the provider), this affected the flow of the interview on a few occasions. These problems notwithstanding, participants provided very positive feedback when asked how they perceived the experience of downloading the software and being interviewed via Wickr.

Table 3.1: Considerations when selecting an IM provider (as at December 2015)

Questions to consider	Pure Chat	Pidgin	Tor messenger	Ricochet	Wickr
Are all messages secure?			✓	✓	✓
No data retained on servers?				✓	✓
Nobody in the middle? No servers – safe by default				✓	
No data shared with third parties?		✓	✓	✓	✓
No metadata collected?				✓	✓
No existing account required for 3rd party software?	✓			✓	✓
No need to register and login?	✓				
No OTR plug-in required? Safe by default, not by setup			✓	✓	✓
Can chat transcripts be saved?	✓	✓	✓		
What happens if/when internet connection is lost? Is data retained?	✓	✓	✓	✓	✓
No transmission delay?					
Could the interview take place on smartphones?					✓
Is it free to use?		✓	✓	✓	✓

The festivalgoer IM interview schedule

The IM interview schedule was semi-structured and developed so the interviewer could copy/paste questions directly into the IM chat box. This made the interviews quicker and easier to conduct, but made the interview schedule more detailed than a standard schedule (*Appendix D.5).* The level of detail at times made it difficult to navigate, but this became easier as the interviews progressed. The schedule had 15 sections: introductions; information and consent; demographics; festival history; general drug use; drug use at the last festival attended; positives/motivations for drug use; negative experiences/adverse drug-related effects; access and barriers to onsite medical; availability of HR; protective practices; attitudes towards festival policies and practices; other comments; experience with the IM interview; and interview close/information on next phases.

Key informant interviews

Key informants were experts from five sectors: health (on and offsite medical services), regulation (government), law enforcement and security (onsite drug policing), the music industry (event organisers/promoters), and HR (organisations and drug advocacy groups). KIs were recruited via internet searches, snowballing and consultation with colleagues within the candidate's professional networks. While the study's focus was Western Australian and Victorian festivals, some KI from other jurisdictions were included due to their national relevance (e.g. they travelled to festivals across the country, including WA and/or Victoria). The candidate made direct contact via email or telephone. Three methods for conducting the interview were offered: face-to-face interviews (at the Perth site only), a telephone interview (n=7), or an online survey version of the interview (n=22). Consequently, excerpts throughout the results are drawn from both interview transcripts (typically conversational) and from a dataset of survey responses (typically more structured). Verbal consent was obtained to digitally record all telephone interviews for later transcription. The online survey alternative was developed using Qualtrics Survey Software (Qualtrics, 2016) and a unique link was generated and emailed directly to each potential participant.

All KIs were asked to indicate their preferred level of identification and acknowledgement for their contribution to this project (three options were provided). Some KIs indicated a preference to be personally identified alongside any interview excerpts (as either representing their agency/organisation or speaking their personal views), whereas others opted for complete anonymity. Therefore, different levels of identification have been used throughout the qualitative results sections in this thesis. Note that an asterisk next to

identifying details acts as a disclaimer that KI were not participating as an authorised spokesperson for their agency/organisation.

The KI interview schedule and survey

The KI interview schedule and online questionnaire followed a similar structure to the festivalgoer schedule. However, instead of asking about personal drug experiences, it asked them to comment on festivalgoer drug use they had observed while working in their field. There were also four additional modules with questions specific to KI from government/regulation, on/offsite medical services, the music industry and law enforcement. These modules were designed to gain additional insight and understanding into each sector's role at festivals, as well their opinions on various issues within their sector. For example, a law enforcement module asked about the objectives of policing at festivals, the types of policing strategies deployed (e.g. undercover, mounted police, drug dogs), while health professionals were asked how they determined the level of onsite resources, whether medical personnel received any festival-specific training, etc. A printout of the online questionnaire acted as the interview schedule for the telephone interviews (see *Appendix D.7*).

Analysis of qualitative data

The first step in qualitative data analysis was to import the data into NVivo 10 (QSR International Pty Ltd., 2012). Non-survey-based data (i.e. IM interviews and telephone interviews) were transcribed within Microsoft Word 2016 to allow simple import and automatic coding of sections and questions in NVivo according to the inbuilt Word styles.

Inductive thematic analysis techniques were then used to examine the themes within the qualitative data. Responses for each question were initially coded into an extensive number of categories or sub-themes (nodes in NVivo) before carefully identifying and merging the existing nodes into broader themes. These themes and sub-themes were then used to inform the questions and response options in Phase 2 ('the online festivalgoer survey').

It is important to acknowledge the possibility of biases in this 'inductive' process, including: availability heuristic bias and confirmation bias (Onwuegbuzie & Leech, 2007). The former relates to 'mental shortcuts', in which easy-to-recall examples may influence coding or analysis decisions, while the latter relates to a tendency to seek out or favour information which supports or validates one's existing beliefs. These biases could have been introduced by the candidate's lived experiences of attending festivals (e.g. observations of negative impacts of drug detection dogs on drug-using practices) and recall of media

coverage of festivals (e.g. festival deaths linked to drug policing). Because this was a PhD project, the candidate was the only coder. Four strategies were employed to minimise bias:

- questions were worded carefully to avoid introducing bias (e.g. open questions);
- reflexivity, during analysis/interpretation (Roulston & Shelton, 2015) – the candidate approached the analysis with awareness of potential biases and consistently sought alternative explanations;
- Phases 1 and 3 involved interviews with KIs from various sectors (e.g. law enforcement and industry) who were likely to have inherent and contrasting biases. Given the qualitative analysis was performed after KI interviews, the candidate had a variety of views to recall and consider as alternative explanations; and
- as noted later in methods (see *Synthesising data sources*), the legitimacy of data was assessed using the Qualitative Legitimation Model (Onwuegbuzie & Leech, 2007).

Additionally, Phase 3 interviews were primarily designed to seek a variety of different views to help with the interpretation of data. Hence, extensive efforts were made to achieve neutrality, but the possibility of biases in data analysis and interpretation needs to be acknowledged.

Phase 2: Quantitative online survey

The online festivalgoer questionnaire

The quantitative online questionnaire was developed using Qualtrics Survey Software (Qualtrics, 2016). Responses were anonymised in survey preferences to ensure no personal information, such as I*P* addresses, was collected. The module structure was as follows:

- information and consent form;
- key demographics and eligibility screening;
- festival history;
- general drug use;
- drug use at festivals (ever and the last festival attended);
- obtaining and supplying drugs (associated with the last festival attended);
- reasons for using drugs (associated with the last festival attended);
- positive and negative drug-related effects (associated with the last festival attended);
- access and barriers to support services (associated with the last festival attended);
- protective and risk practices (associated with the last festival attended);

- experience with police and drug detection dogs (associated with the last festival attended);
- attitudes towards drug policies; and
- remaining demographics.

A variety of Qualtrics survey functions were utilised to optimise the questionnaire, particularly in relation to time to complete it and reliability of the data. For example, branch logic was applied so 'blocks' (modules) were only displayed to those who met certain conditions (e.g. the block addressing drug effects was only displayed to those reporting drug use associated with the last festival). Likewise, display and skip logic was applied within blocks so participants were only prompted to complete questions applicable to them. The 'piped text' function was also used to embed previous responses into questions to improve data reliability and validity. For example, much of the questionnaire was focused on the last festival the participant attended. Thus, at the start of the questionnaire, participants were asked to name the festival last attended, then each question specifically prompted the participant to respond in relation to that festival (e.g. at the last festival you attended – [festival name] – which drugs did you use?). These functions made the questionnaire as quick and easy to complete as possible, which was critical for such a comprehensive document. To help minimise participant drop-out, and to make the experience more enjoyable, the questionnaire was designed with vibrant festival colours and images. Piloting confirmed that participants perceived the questionnaire as visually appealing and easy to complete. The survey took a median of 23 minutes to complete (IQR=16–33, range=9–23366[1]). A portable document format version of the survey is available in *Appendix D.9*.

Recruitment and screening

The primary method of recruitment was paid Facebook advertising (which ran between May–July 2016), targeting populations based on their demographic characteristics and affiliation with Australian music festivals and music media outlets (see *Table 3.2*). Multiple styles of music festivals were targeted to capture the heterogeneity of festivals and associated drug-using subcultures. The advertising budget was split evenly between jurisdictions. Advertisements invited participants to participate in an online festivalgoer survey, and stated that they could enter a prize draw for a $500 JB Hi-Fi (a home entertainment/electronics store) e-gift card after submitting their responses (see *Appendix D.8* for advertisement artwork). While they had to provide an email address to enter the prize draw, the survey was designed so it was not possible to link personal email addresses to individual survey

[1]The survey was designed so participants could save and continue later. Hence, participants may have completed the survey over weeks, resulting in the high maximum completion time.

responses. No reimbursement or other incentive was offered for taking part. Music news and promotion websites, including Music Feeds, Beat Magazine, Inthemix, Tone Deaf and AAA Backstage, wrote articles promoting the survey[2], which received shares on Facebook.

Table 3.2: Facebook advertisement targeting strategy (for the online festivalgoer questionnaire)

Field	Target
Demographic characteristics	Aged 16–40 Resides in WA or VIC
Interest categories (festivals)	Groovin the Moo Origin Southbound Laneway Stereosonic Falls Splendour in the Grass Rainbow Serpent Earthcore Listen Out Strawberry Fields Golden Plains Blazing Swan UNIFY
Interest categories (music media outlets)	VICE Pilerates

Note. Advertisements and the targeting strategy were developed in consultation with Curtin University Marketing as per official university protocols. The Facebook advert was managed by Curtin's media buying partner/digital agency, OMD.

As evident in Table 3.3, festivalgoers were recruited primarily via paid online Facebook advertising, followed by snowballing and music news articles (each 5%).

Table 3.3: Recruitment source for the online festivalgoer questionnaire (%)

Source (%)	WA (*n*=976)	VIC (*n*=988)	Total (*n*=1964)
Paid Facebook ads	91.7	85.6	88.6
Snowballing	4.3	5.0	4.6
Music news articles	2.5	7.1	4.8
Other	1.5	2.3	2.0

Note. Missing=3.

The online festivalgoer survey ran for seven weeks (May–July 2016) and received 3529 responses. After deleting ineligible cases and other cases deemed invalid (see *Table 3.4* for the complete screening process), the final sample had 1967 responses. However, based on filtering processes tailored to individual topics, subsamples were used in many analyses. Throughout the results, uppercase N denotes the full sample (*n*=1967), while lowercase 'n'

[2]The candidate contacted inthemix to promote the survey after other music news media outlets had already published articles promoting the survey (without any request/prompt from the candidate).

denotes a subsample. The eligibility criteria were being aged ≥16 years old, residing in the current jurisdiction (Western Australia or Victoria) for ≥12 months, and attendance at ≥1 outdoor music festival in the preceding 12 months.

Table 3.4: Data cleaning steps to establish the final festivalgoer sample

Steps		*n* excluded	Remaining sample
1.	All records	0	3529
2.	Ineligible records (did not meet the selection criteria)	593	2936
3.	Duplicate cases	0	2936
4.	Selected the trap/red herring response option (i.e. fake festival)[a], or the festival the participant reported last attending could not be verified	14	2922
5.	Less than 50% of core questions answered (questions displayed to everyone)	955	1967
6.	Completed in <5 minutes (and thus deemed invalid)	0	1967

[a]A 'trap/red herring' response option (Summer Gardens Festival) was added to the question asking which festival survey participants last attended. This was used as a 'cleaning flag' to closely screen the response and determine whether it was valid (responses which appeared disengaged or disingenuous were filtered out).

Data cleaning & preparations

After establishing the final sample, further cleaning was performed to establish the final dataset. Variables and value labels which had exported unfavourably from Qualtrics (e.g. too long, not consistent naming conventions) were renamed. Qualitative responses entered into 'other (please specify)' fields were explored and recoded into existing categories where appropriate, and popular new responses were recoded into new categories. Outliers were identified via box plots (data outside the upper and lower fences) and dealt with on a case-by-case basis (trimmed if extreme and suspected to be a data entry error and/or if they affected assumptions, but not results); and various data transformations were performed (*Table 3.5*).

Table 3.5: Data preparations/transformations for the online festivalgoer data

Topic	Recode/transformation details	Reason for recoding
Investigating correlates	Recoded certain variables for individual drugs used in association with the last festival into drug categories (e.g. hallucinogens grouped, speed and crystal methamphetamine grouped)	To make a small number of meaningful drug types to investigate correlates. Additionally, some participants may not have been able to differentiate between speed and crystal methamphetamine, or may picked speed over methamphetamine to avoid stigma

Topic	Recode/transformation details	Reason for recoding
Comparing samples	Recoded certain variables for individual drugs used in association with the last festival into drug categories which match Hughes et al. (2017) categories (e.g. individual hallucinogens such as LSD and magic mushrooms were recoded into a category of hallucinogens)	To compare drug use prevalence and polydrug use with another Australian study (Hughes et al., 2017) to help shed some light on how representative the current findings may be of the wider population of Australian festivalgoers
Examining polydrug use combinations	Variables for drugs used at the last festival were recoded into new variables according to the "drugs wheel" (Adley, 2018). This model was developed in response to increasing detection/use of NPS which did not fit into pre-existing drug categories. This continually evolving drugs wheel aims to better capture and classify the full spectrum of drugs on the market within one simple model	To create a smaller, but more meaningful number of categories when examining polydrug use combinations
Examining alcohol risk	The continuous variable for the median number of drinks used across a one-day festival was recoded into a new binary variable according to the NHMRC alcohol guideline (National Health and Medical Research Council, 2018): Healthy men and women should drink no more than four standard drinks (reduced risk ≤ 4, risky 4>).	To determine the proportions drinking at levels which may increase the risk of alcohol-related injury on a single occasion of alcohol use

Data analysis

All data were analysed using SPSS Statistics 23 for Windows (IBM Corp., 2015). In addition to descriptive statistics, bivariable and multivariable analyses were performed to investigate correlates of various key behaviours, outcomes and attitudes of interest (e.g. illicit drug use, risk and protective practices, adverse effects and attitudes towards strategies). The level of analysis was determined based on the level of topic importance (discussed further below).

Multivariable analyses

In recognition that many drug-related issues/outcomes are complex and dependent on more than one variable (e.g. gender), multivariable analyses were performed to investigate the unique contributions of variables. Variables included in multivariable analyses were selected on the basis of the literature review and/or had theoretical backing. Key correlates included in the analyses throughout the results varied according to relevance in relation to the dependent variable under investigation. However, the main candidate variables were:

- age – younger people's developing brains are at greater risk of neurotoxicity (Jacobsen, Mencl, Pugh, Skudlarski, & Krystal, 2004; Winters & Arria, 2011). Other

factors such as lower incomes, being newer to the scene and being underage (to drink alcohol and/or attend some festivals) may also influence some drug-related decisions;

- gender – biological differences may heighten health risks for females (Liechti et al., 2001; Simmler et al., 2011). Additionally, studies in this field have identified gender differences in relation to patterns of drug use, and noted gender as an important predictor of use (e.g. Engels & Ter Bogt, 2005);
- jurisdiction – Australian drug monitoring systems have consistently identified jurisdictional differences relating to drug consumption, price, purity and availability (Peacock et al., 2018; Stafford & Breen, 2017). Awareness of potential state differences could help inform local interventions;
- ecstasy form/s consumed – disparate perceptions of the purity/potency of different forms (Peacock et al., 2018; Saleemi et al., 2017; Stafford & Breen, 2017) may influence dosing decisions. Additionally, some forms favour certain routes of administration (e.g. snorting), which can influence associated effects/harms;
- frequency of ecstasy use – perceived experience and tolerance may influence drug-using practices (e.g. dosing);
- frequency of festival attendance –indicates involvement in the scene and level of awareness about how festivals operate (e.g. level of policing, onsite support available, etc.);
- preferred musical genre – a preference for EDM at festivals has been associated with higher levels of drug use (e.g. Duff et al., 2007; Lim et al., 2008); and ;
- the type of festival attended – the different characteristics of multi-day festivals and one-day festivals may drive patterns of use and associated harms (e.g. influence of duration and camping).

Issues identified as being of greater interest were examined using multivariable logistic regression. Priority issues were determined based on the review of the literature, the public and political debate during candidature, and consultation with stakeholders and supervisors. Examples of key priority areas included practices likely to increase the risk of experiencing acute drug-related harms (e.g. polydrug use and lack of awareness of water guidelines). Bivariable and multivariable logistic regressions determined unique predictors/correlates. Candidate variables in multivariable regression models included demographic or drug use variables with bivariable tests of association with dependent variables yielding $p<0.25$ (Hosmer & Lemeshow, 2000).

Multiple imputation (MI) had to be applied in some multivariable analyses because one candidate variable – 'frequency of general ecstasy use' – had substantial missing data (22%, *n*=439). Missing data for this variable were deemed missing at random because they were most likely related to respondents not realising they had to scroll right when completing the survey via mobile phone. Thus, where applicable, both MI and complete case analyses were completed. The MI function within SPSS was used to generate imputed datasets corresponding to the percentage of missing cases (Manly & Wells, 2015). In these cases, differences between the MI model and complete case model were discussed in the results and the complete case model was included in the appendices.

Bivariable analyses

For other results, bivariable analyses were performed according to the variable/s most appropriate for the topic under investigation (e.g. gender). To analyse categorical variables, the Pearson's chi-square test was used, and for continuous variables, t-tests (dichotomous independent variables) and analysis of variance (multichotomous independent variables) were used. For 2x2 designs, statistical assumptions included that the observations were independent and that all expected counts were 10 or greater. If any expected counts were less than 10, but greater than five, Yates' correction for continuity was applied. If any expected counts were less than five, the Fisher exact test was used.

Sample size

It should be noted that given the exploratory nature of the project, and the number of unknowns (e.g., expected effect sizes), conducting an a priori power analysis to calculate a sample size was not appropriate. Instead, drawing on the experience of other surveys in this field (e.g., Lim et al., 2008), the minimum required sample was assumed to be 600 participants, and was therefore exceeded with 1967 in the final festivalgoer sample.

Phase 3: Qualitative post-survey interviews

When obtaining informed consent in Phase 1, participants were asked if they would be willing to be contacted for involvement in post-survey interviews. Again, the aim of this phase was to get festivalgoers' and KIs' personal reflections and interpretations of preliminary survey findings and discuss their implications for future HR initiatives. If participants were willing, contact details were obtained and kept securely until Phase 3. All contact details were kept separately from the interview transcripts so participants' responses could not be linked to them. The methods for conducting interviews were the same as those described in Phase 1. However, at the completion of interviews, data were deidentified for all

festivalgoers and for KIs who nominated this option. This involved deletion of all email correspondence and electronic records. Phase 3 interviews ran between September and November 2016.

The interview schedules and online survey

While the Phase 1 festivalgoer interviews were conducted entirely via IM, because Phase 3 involved obtaining feedback on preliminary findings from Phase 2, all participants were sent a unique link to a mostly qualitative online questionnaire (which displayed results and asked questions about them). Participants (festivalgoers) could complete the questionnaire online or view it first and then discuss their responses over IM. The Phase 3 ('post-survey') IM interview or questionnaire for festivalgoers was structured as follows:

- information and consent;
- background questions/demographics;
- survey findings for drug use at the last festival;
- obtaining and supplying drugs;
- reasons for using drugs;
- drug-related harms;
- protective and risk behaviours;
- HR strategies;
- drug detection dogs;
- drug-checking;
- support for other drug policies; and
- other comments/close.

The questionnaire was designed to be vibrant and engaging (see *Appendix D.11*). The basic interview schedule/survey structure was the same for KIs, but with additional questions relating to government (question on plans for regulatory changes), law enforcement (question on intent to review policing strategies/policies) and industry (question on changing industry culture) (see *Appendix D.13*). Participant information and consent forms are shown in *Appendix D: Data collection materials*.

Synthesising data sources

Collation, analysis and interpretation of data was guided by a mixed-method research process model outlined in Johnson and Onwuegbuzie (2004). While the function of each method/phase was described earlier (see *Mixed methods*), the overall model followed is

summarised in *Table 3.6*. These steps did not always unfold sequentially. For example, data legitimation strategies were employed throughout the project, particularly in developing data collection materials.

Table 3.6: Mixed-methods research process model

Stage	Used	Involves	Step/s taken for the qual data	Step/s taken for the quant data
Data reduction	✓	Reducing dimensionality	Reduced the data via coding into themes ('nodes') within NVivo (used to develo*p* Phase 2 methods)	Statistical analyses (e.g. frequencies, cross-tabulations, regression analyses)
Data display	✓	Visualisation of the data	Created matrices within NVivo (to easily determine percentages/'strength' of each theme for interpreting and reporting)	Tables and charts are automatically computed in SPSS outputs
Data transformation	✓	Qualitising and quantitising	Interpreted and converted coded themes (and matrices) into narrative	Converted data into easy-to-interpret tables and figures
Data comparison	✓	Comparing qual and quant data	Data collection measures (questionnaires, interview schedules) were designed/structured with matching modules (i.e. covered the same topics), after transforming the data, data for each topic was compared across measures (triangulation)	
Data integration	✓	Qual and quant integrated into a coherent whole	This step was essentially the write up phases of this thesis (the results and discussion). This was the point where qualitative data was used to help complement, explain and expand the quantitative data.	
Data legitimation	✓	Assessing validity of qual and quant data, and resultant interpretations	As discussed earlier in methods (see Analysis of qualitative data), steps were taken prior to data collection, during data collection and during analysis/interpretation to address potential biases and data creditability. The process of assessing legitimation was informed by Onwuegbuzie and Leech (2007) 'qualitative legitimation model' and methods for increasing legitimation. Strategies included triangulating data, interviewing key informants from a range of sectors likely to have contrasting biases, comparing and acknowledging different biases in the results, and reflexive practices in all project phases	

Note. This table is based on the mixed-methods model described in Johnson and Onwuegbuzie (2004).

Caveats to the results

Generalisability and use of the term 'prevalence'

A major caveat to the results is that a purposive, rather than a probability, sample was recruited. This raises questions about the external validity of the findings and the ability to generalise beyond this sample. For example, the proportion reporting drug use in this sample (referred to as 'sample prevalence') cannot be seen as an estimate of the prevalence in the wider population of people who use drugs at festivals. (Conversely, there are numerous challenges associated with using general population-based surveys to target hidden populations, such as the one investigated here (e.g. low response rates make inference unreliable, create systematic exclusion issues and mean high cost) (Barratt, Ferris, & Lenton, 2015).) While the term 'prevalence' has been used throughout this thesis, it is important to keep this caveat in mind. The issue of generalisability, and other limitations (and strengths) of this study are considered further in the discussion (see *Study strengths and limitations*).

Data tables

Given the length of the quantitative questionnaire and the size of the resultant dataset, the results are limited to key findings for readability and practical purposes. However, where appropriate, full statistics and tables with supplementary value are included in appendices and cross-referenced in-text.

Gender comparisons

As noted previously, in acknowledgement of the literature on gender differences in drug use behaviour and pharmacokinetics, the results include numerous gender comparisons. However, these analyses exclude participants who identified as 'non-binary', because their rarity (10 individuals) precluded any meaningful comparisons. Thus, when reporting bivariable figures/statistics, sample sizes may be slightly reduced.

Self-report data

Given the online sampling method, it was impossible to objectively verify responses about drug use (e.g. via urine screening) or festival attendance. Importantly, participants were unlikely to know the exact pharmacological content of the illicit drugs they consumed, and it is unlikely that all the drugs consumed contained their marketed content. Thus, references to

ecstasy/MDMA and other illicit drugs herein refer to drugs sold or marketed as those drugs but possibly containing something else.

Chapter 4: Results

This chapter begins with some key contextual information, including sample descriptions. Then the results are presented according to the four themes. Within each theme, a brief introduction summarises the key findings of and gaps in previous research, then outlines research questions which the candidate aimed to answer to fill those gaps. Qualitative interviewee data is used to complement and help interpret core data collected from the quantitative online questionnaire. Summary boxes are provided throughout to reca*p* key findings.

Introduction to the results

Sample descriptions

The key informant sample (*Phase 1 and 3 qualitative interviews)*

Twenty-nine KIs were recruited for pre- and post-survey qualitative interviews from the following sectors: health – on and offsite medical services, regulation – government (*n*=8), law enforcement and security – onsite drug policing (*n*=4), the music industry – event organisers/promoters (*n*=5), and harm reduction – HR and drug advocacy groups (*n*=6). Half of the KIs from the health sector also engaged in HR advocacy and/or had affiliations with HR organisations.

The regular festivalgoer sample (*Phase 1 and 3 qualitative interviews)*

The median age of these 20 festivalgoers was 21 years (IQR=19–27, range=17–35) and there was an equal gender split. As required, all were current regular festivalgoers; 90% reported using an illicit drug in association with the last festival they attended. All were working, studying, or both. Preferences for musical genre and festival type varied across age and jurisdiction. Older Victorians in the sample reported preferring, and primarily attending, multi-day bush doof-style festivals, but also attending the occasional one-day metropolitan festival; younger Western Australians preferred and predominantly attended one-day festivals (both regional and metro, mixed genre); and older West Australians and younger Victorians reported attending a mix of festival styles. Two participants reported a preference for more exclusive boutique festivals.

The online festivalgoer sample (*Phase 2 quantitative online survey)*

Demographics

The median age of the sample was 20 years (IQR=18-22) and 52% were male. Most reported living in their parent's/family home (61%), followed by rental accommodation (29%). Most participants (≥18 years old) reported completing year 12 of school (93%), and almost half (46%) had already completed a tertiary qualification. Two-fifths reported full-time study (41%) and a quarter reported full-time work (27%). Most reported being in the lower income brackets provided (*Table 4.1*).

Table 4.1: Demographic characteristics of the online festivalgoer sample

Demographics	Total
Median age (IQR)	*N*=1967 20.0 (18.0-22.0)
Underage (16-17 years old) (%)	*N*=1967 19.6
Gender (%)	*n*=1966
Male	52.0
Female	47.5
Other/non-binary	0.5
Aboriginal or Torres Strait Islander (%)	*n*=1571 1.2
Born in Australia (%)	*n*=1574 89.3
Jurisdiction	*n*=1967
Western Australia	49.7
Victoria	50.3
Speak English at home (%)	*n*=1565 98.0
Location (%)	*n*=1576
Inner city	8.1
Inner suburbs	43.0
Outer suburbs	30.8
Regional	15.2
Remote	2.2
Don't know	0.9

Demographics	Total
Accommodation (%)	*n*=1575
Parents'/family house	61.1
Rented house/unit	28.8
Own house/unit	7.7
Boarding house/hostel	1.6
No fixed address/homeless	0.1
Other	0.7
Sexual identity (%)	*n*=1577
Heterosexual	87.8
Gay male	2.1
Lesbian	0.9
Bisexual	6.2
Not sure/undecided	2.1
Other	0.9
Marital status (%)	*n*=1574
Never married	93.3
Married	6.0
Other	0.6
Highest school year among ≥18-years-olds (%)	*n*=1280
Year 6-9	0.5
Year 10	2.3
Year 11	4.5
Year 12 or equivalent	92.7
Trade or tertiary qualifications among ≥18-year-olds (%)	*n*=1279 46.0
Highest qualification (%)	*n*=615
Bachelor Degree	43.7
Trade certificate	22.1
Non-trade certificate	12.4
Masters or postgraduate degree	9.1
Associate diploma	6.8
Undergraduate diploma	5.0
Doctorate	0.3
Other	0.5
Employment status[a] (%)	*n*=1577
Part-time/casual	46.6
Full-time student	40.8
Full-time work	27.1
Unemployed (looking)	5.6
Part-time student	4.6
Self-employed	2.6
Benefits / pension	1.1
Unemployed (not looking)	1.0
Home duties	0.6
Other	0.5

Demographics	Total
Main source of income (%)	*n*=1569
Wage or salary	77.8
Parental allowance	7.9
Government	7.9
Self-employment	2.8
No income	3.5
Criminal activity	0.3
Other	1.1
Total income per week (%)	*n*=1437
$1-249	36.0
$250-599	29.2
$600-999	15.9
$1000-1599	11.6
$1600-2800	4.2
Greater than $2800	0.6
Nil or negative	2.6

Note. With the exception of age, gender and jurisdiction, demographic questions were asked in the final section of the survey. Thus, due largely to respondent attrition, the sample size varies between demographic variables.
[a]Multiple responses were allowed so totals may exceed 100%.

Music festival background

Participants were asked about their history of attending festivals, their preferred musical genres at festivals, their preferred type of festival, and what type of festival they *last* attended.

Festival attendance history

The median age respondents reported first attending a festival was 16 years (IQR=14–17); however, the median age at which they reportedly began attending regularly was 18 years (IQR=16–18). Most reported attending festivals regularly in their lifetime (91%) and the median number of festivals attended recently (preceding 12 months) was three (IQR=2-4).

Preferred music genres

Local music scenes and the types of festivals hosted across Australia differ, so the data below is presented by jurisdiction. As evident in *Table 4.2*, the most commonly reported favourite genre to attend festivals for was 'general EDM/dance' (22%), followed closely by 'indie/alternative' (20%) and then 'hi*p* hop/rap' and 'trance/psytrance' (each 9%). The main significant differences between jurisdictions were that a greater proportion of Western Australians reported attending for 'breakbeats/drum and bass' (DnB), whereas a greater proportion of Victorians reported attending for 'psytrance'.

Table 4.2: Preferred musical genres to attend festivals for (by jurisdiction; %)

	WA	VIC	Total	*P*
Genres attended festivals for[a]	*n*=978	*n*=989	*N*=1967	
General EDM/Dance	55.4	47.7	51.6	0.001**
Indi/Alternative	45.3	47.2	46.3	0.392
Hi*p* hop/rap	40.3	34.9	37.6	0.012*
Rock	22.8	29.3	26.1	0.001**
Breakbeats/DnB	35.9	12.3	24.0	<0.001***
Trance/Psytrance	12.1	34.3	23.2	<0.001***
Pop	29.9	20.4	20.2	0.788
Singer-songwriter/Folk	12.1	16.1	14.1	0.011*
Punk	10.1	16.0	13.1	<0.001***
Metal	7.7	11.3	9.5	0.006**
Techno/House[b]	0.3	3.5	1.9	<0.001***
Dubstep[b]	2.6	0.3	1.4	<0.001***
Other	2.6	3.2	2.9	0.369
I don't attend for any particular genres	19.6	16.4	18.0	0.061
Favourite genre to attend festivals for	*n*=871	*n*=877	*n*=1748	
General EDM/Dance	25.0	19.4	22.2	
Indi/Alternative	18.3	21.1	19.7	
Hi*p* hop/Rap	10.8	6.6	8.7	
Trance/Psytrance	1.4	15.7	8.6	
Breakbeats/DnB	10.8	0.7	5.7	<0.001***
Rock	2.6	4.0	3.3	
Punk	2.0	2.7	2.3	
Metal	1.4	3.3	2.3	
Techno/House[b]	0.7	3.8	2.2	
Pop	1.3	1.3	1.3	
Singer-songwriter/Folk	0.7	1.0	0.9	
Dubstep[b]	1.4	0.1	0.7	
Other	1.7	1.8	1.8	
I don't attend for any particular genres	22.0	18.5	20.3	

[a]Multiple responses were allowed so totals may exceed 100%.
[b]Commonly reported other responses which were recoded up.
*p<0.050, **p<0.010, ***p<0.001.

Preferred festival types

Overall, the preferred festival type was 'large-scale, one-day festivals' (52%). However, a significantly greater proportion of Victorians reported a preference for multi-day camping festivals (see *Table 4.3*).

Table 4.3: Festival type preferences (by jurisdiction; %)

	WA	VIC	Total	*p*
Festivals types like to attend[a]	*n*=978	*n*=989	*N*=1967	
Large scale, one-day	86.3	60.9	73.5	<0.001***
Large scale, multi-day camping	42.3	50.9	46.7	<0.001***
Smaller boutique, one-day	28.9	22.6	25.8	0.001**
Bush doof-style, multi-day camping	10.0	36.6	23.4	0.001**
Smaller boutique, multi-day camping	10.1	23.4	16.8	0.001**
Other	0.5	0.4	0.7	0.158
Favourite festival type[b]	*n*=909	*n*=926	*n*=1835	
Large scale, one-day	69.0	35.0	51.8	
Large scale, multi-day camping	15.5	28.0	21.8	
Bush doof-style, multi-day camping	2.4	21.6	12.1	<0.001***
Smaller boutique, one-day	10.1	4.0	7.0	
Smaller boutique, multi-day camping	2.1	11.1	7.0	
Other	0.9	0.3	0.6	

[a]Multiple responses were allowed so totals may exceed 100%.
[b]Among those who stated a preference.

The last festival attended

Most reported last attending a one-day festival (69%). However, significantly more Victorians than Western Australians reported attending a multi-day festival (*Table 4.4*). It is important to note that some respondents selected a festival type (e.g. multi-day) that was inconsistent with the name of the festival selected (e.g. a known one-day festival). To ensure these survey completion errors did not affect the validity of statistical comparisons between festival types, these cases were recoded as 'inconsistent festival selection'.

Table 4.4: Type of festival last attended (by jurisdiction)

	WA	VIC	Total	*p*
Type attended (%)	*n*=978	*n*=989	*N*=1967	
One-day festival	85.6	53.4	69.4	
Multi-day festival	5.5	39.0	22.4	<0.001***
Inconsistent festival selection	7.5	6.7	7.1	
Unknown	1.4	0.9	1.2	
	n=54	*n*=386	*n*=440	
Median days attended a multi-day festival (IQR)	2.5 (2.0-4.0)	3.0 (2.0-4.0)	3.0 (2.0-4.0)	0.318

Theme 1: Drug use 'prevalence', patterns and practices

Sample prevalence

As highlighted in the literature review, only one study had investigated the prevalence of drug use within the context of contemporary festivals in Australia (Hughes et al., 2017). Despite this dearth of prevalence data, many media reports imply that illicit drug use is a normal feature at festivals, while police spokespeople have stated that illicit drug use is a minority behaviour at festivals (e.g. Hohnen, 2016). Evidence of the true extent of drug use in these settings is needed to help guide future responses in Australia. Additionally, it has been argued that if illicit drug has become normalised in certain populations, policy must adapt (e.g. Duff, 2005; Parker et al., 1998). Specifically, policymakers need to re-evaluate current approaches, acknowledging drug use as a normal feature that may need to be accommodated. However, no identified studies had investigated normalisation specifically within the context of attending festivals. This section fills these gaps in the literature by describing research findings that address the following questions:

- How common was drug use (licit and illicit) associated with the last festival attended and what were the most commonly used drugs?
- To what extent was illicit drug use at festivals normalised in this sample?

How common was drug use associated with the last festival attended?

As previously, core quantitative data are followed by complementary qualitative data.

Percentage who used drugs at the last festival attended

Most festivalgoers in the online sample (88%) reported using a drug (including alcohol, but excluding tobacco) associated with the last festival they attended (Table 4.5). Additionally, 62% reported using an illicit drug[3]. The most commonly reported drug used was alcohol, followed by ecstasy, tobacco and then cannabis. Reported use of NPS was very low, but the most common were DMT and 2C-x family substances.

[3]Illicit drugs included pharmaceuticals not prescribed to the respondent (e.g. dexamphetamine), inhalants which are sold legally but used in a manner that is not intended (e.g. nitrous oxide), NPS and traditional illicit drugs (e.g. ecstasy).

Table 4.5: Drugs used associated with the last festival attended (% of respondents)

	Total % *N*=1967
Drugs used associated with the last festival	
Alcohol	81.6
Ecstasy	50.5
Tobacco	45.4
Cannabis	31.0
Ketamine	9.3
LSD	8.0
Nitrous oxide	7.5
Cocaine	7.5
Speed	7.5
Pharmaceutical stimulants	4.1
Benzodiazepines	3.9
MDA	3.5
Magic mushrooms	3.2
Crystal methamphetamine	1.8
DMT	1.7
Amyl nitrate	1.4
GHB	1.3
2C-x family	0.7
Other opiates/opioids	0.5
Heroin	0.2
Synthetic cannabis	0.2
Steroids	0.1
NBOMe series	0.1
Other[a]	0.8
N/A – no drugs used	12.0
Used an illicit drug associated with the last festival	61.9

[a]Other drugs which were entered into 'other responses' were predominantly NPS and included cathinones, DOM, DOB, MXE, PMA and mescaline.

Bivariable analyses

Gender differences

Some statistically significant differences were identified between genders. Firstly, males were more likely than females to report the use of any drug and any illicit drug. Secondly, males were more likely to report the use of almost every drug (*Appendix E.1*).

Jurisdictional differences

While there were no statistically significant differences between jurisdictions in the proportions reporting drug use or illicit drug use, significantly more Victorians reported use of certain illicit drugs. The most notable differences related to ketamine, speed and cocaine.

The only drug used by significantly more West Australians was pharmaceutical stimulants (*Appendix E.2*).

Festival type differences

There were significant differences in drug use between festival types. Firstly, more multi-day festivalgoers than one-day festivalgoers reported any drug use and any illicit drug use. Secondly, multi-day festivalgoers were more likely to report the use of almost every drug. Three of the most notable differences related to ecstasy, cannabis and LSD use. The only drug for which frequency was not significantly different was pharmaceutical stimulants (*Appendix E.3*).

Multivariable analyses

Table 4.6 provides a summary of results from the multivariable analyses investigating the correlates of using any illicit drug and individual illicit drugs associated with the last festival attended. Full statistics for the individual analyses are available in the appendices (see *Appendices E.4-E.12*), but have been compiled here for comparative purposes and reading ease.

Most findings were consistent with the bivariable analyses presented above. However, while at the bivariable level jurisdiction significantly predicted the use of nitrous oxide, cannabis and hallucinogens like LSD, this result was not seen after controlling for other variables. Festival type was the confounding variable, given the vast majority of multi-day festivalgoers were from Victoria (88%, n=386).

The multivariable analyses found that, relative to female gender, male gender was associated with significantly greater odds of using all drugs types investigated, except pharmaceutical stimulants. Males also had greater odds of using any illicit drug.

Younger respondents were significantly less likely than over-25s to use certain drugs (e.g. cocaine, methamphetamine and pharmaceutical stimulants). Additionally, respondents in the youngest age bracket (16–17) were less likely to report ecstasy use. Respondents aged 16–19 had lower odds of reporting any illicit drug use.

Victorians had greater odds than Western Australians of reporting ketamine, cocaine and methamphetamine use, while Western Australians had greater odds of reporting pharmaceutical stimulant use. Ketamine in particular should be highlighted as having far higher prevalence of use among Victorians.

Attendance at fewer recent festivals was associated with lower odds of using all drug types, except for pharmaceutical stimulants. It was also associated with lower odds of using any illicit drug.

A preference for a musical genre that does not fit within the umbrella of EDM was associated with lower odds of reporting all types of drug use, except for cannabis. It was also associated with lower odds of using any illicit drug.

Lastly, attendance at a one-day festival, relative to attending a multi-day festival, was associated with lower odds of using all drug types (except cocaine), particularly hallucinogens and nitrous oxide. It was also associated with lower odds of using any illicit drug.

Table 4.6: Correlates of illicit drug use associated with the last festival attended (adjusted odds ratios and significance levels)

	Ecstasy	Cannabis	Cocaine	Ketamine	Hallucinogen	Nitrous oxide	Meth	Pharm stims	Any illicit
Gender									
Male	1.722***	1.975***	1.538*	1.945**	2.329***	1.895**	1.825**	1.279	1.815***
Female	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Age									
16-17	0.606*		0.082***	0.891	0.741	0.847	0.547	0.133***	0.426***
18-19	0.704	#	0.149***	1.946	0.878	0.875	0.409**	0.302**	0.490**
20-21	1.071		0.253***	2.347*	0.571	1.037	0.407**	0.388*	0.787
22-25	1.216		0.473**	1.962	0.759	0.952	0.724	0.684	0.802
Over 25	1.000		1.000	1.000	1.000	1.000	1.000	1.000	1.000
Jurisdiction									
VIC	#	0.951	2.059**	43.897***	0.721	1.562	5.430***	0.204***	1.216
WA		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Total recent festivals[a]									
1-2	0.381***	0.555***	0.453**	0.522**	0.438***	0.370***	0.622*	0.566	0.309***
3-4	0.604***	0.768	0.551**	0.780	0.706	0.697	0.929	0.859	0.599**
5 or more	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
EDM preference									
No	0.319***	0.965	0.337***	0.175***	0.362***	0.303***	0.330***	#	0.389***
No genre preference	0.435***	1.140	0.686	0.493**	0.601*	0.715	0.854		0.551***
Yes	1.000	1.000	1.000	1.000	1.000	1.000	1.000		1.000
Festival type									
One-day	0.615***	0.334***	0.814	0.239***	0.078***	0.193***	0.416***	#	0.379***
Unknown	0.474***	0.346***	0.734	0.202**	0.063***	0.062***	0.265**		0.348***
Multi-day	1.000	1.000	1.000	1.000	1.000	1.000	1.000		1.000

Note. Full statistic tables for each analysis are available in the appendices. [#]excluded from the model because $p > .25$, [a]recent=preceding 12 months. *p<0.050; **p<0.010; ***p<0.001.

Comparison with Hughes et al.'s data

The prevalence data was compared to that from the only comparable Australian study (Hughes et al., 2017) to gauge its representativeness of the wider population of Australian festivalgoers. The studies had several similarities. Both investigated drug use within the context of the last festival attended, had similar sample sizes, were conducted at similar times (late 2015 for Hughes et al., mid-2016 for the current study), employed similar methods of recruitment (predominantly online advertisements) and involved anonymous online surveys. However, the present study was limited to WA and Victoria, whereas Hughes et al. (2017) recruited a national sample. Another key difference is that Hughes et al. (2017) grouped some drugs into categories (e.g. hallucinogens, NPS), whereas the present study asked respondents to select each individual drug used (e.g. LSD, NBOMe). Therefore, for comparison purposes, drugs in the present study were aggregated to match the categories provided in Hughes et al. (2017). However, Hughes et al. (2017) only provided examples for each drug category, which created some ambiguity for categorising certain drugs. For example, the candidate categorised N, N-Dimethyltryptamine (DMT) as a hallucinogen, but respondents in Hughes et al. (2017) may have viewed DMT as an NPS. Thus, while categories were matched as closely as possible, comparisons for hallucinogens, meth/amphetamine and NPS should be interpreted with caution.

As evident in *Table 4.7*, 62% of respondents in the present sample reported illicit drug use, compared to 65% in Hughes et al. (2017) sample. The types of drugs reportedly used were also similar across the two samples (no more than 4% different for any drug), with the exception of the proportion reporting other drug use, which was much higher in the present study. One explanation for this difference could be that respondents were more likely to select the individual drug response options provided to them (e.g. amyl nitrate, nitrous oxide) than a broad category called 'other drugs' (Byron, 2004). Overall, while both studies are non-representative, similar findings from multiple large purposive samples increases confidence in their validity.

Table 4.7: Drug used associated with the last festival attended in the present sample vs. in Hughes et al (2017) (% of respondents)

Drugs used	Current 2016 sample (VIC/WA)	2015 national sample (Hughes et al., 2017)
Used an illicit drug at the last festival	*N*=1967 61.9	*N*=2115 65.3
Drugs used[a]	*n*=1217	*n*=1382
Ecstasy/MDMA	82.4	85.1
Cannabis	50.1	48.2
Cocaine	12.1	14.8
Hallucinogens[b]	16.3[b]	20.8
Meth/amphetamine[c]	14.1[c]	10.6
GHB	2.1	2.1
NPS[d]	1.8[d]	2.0
Other[e]	30.7	9.0

Note. Comparisons for hallucinogens, meth/amphetamine and NPS may not be reliable as it is unknown which drugs were grouped in those categories in Hughes et al. (2017) study.
[a]Among those who used an illicit drug at the last festival.
[b]Merged LSD, magic mushrooms, DMT and mescaline.
[c]Merged crystal methamphetamine and speed.
[d]Merged 2C-x drugs, NBOMe drugs, DOM, DOB, other cathinones and synthetic cannabis.
[e]Merged ketamine, pharmaceutical stimulants, amyl nitrate, nitrous oxide, other opiates, heroin, steroids and benzodiazepines.

Views on drugs commonly used at festivals

In pre-survey interviews, KIs were asked which drugs they perceived as most prevalent at Australian festivals; the responses were largely consistent with quantitative data presented above. There was a general consensus among KI from all sectors that alcohol was the most commonly used drug used at Australian festivals, followed closely by ecstasy/MDMA, then cannabis. While there was no clear hierarchy of perceived prevalence beyond these three drugs, the next most commonly identified drugs were LSD, ketamine, GHB, pharmaceutical stimulants and magic mushrooms. To a lesser extent, KI reported festivalgoers using NPS, benzodiazepines and crystal methamphetamine.

One KI, who worked in the Victorian law enforcement sector, discussed the prevalence of drug use from the perspective of drugs seized at these events. This KI noted that NPS were commonly detected in drug samples seized from festivals, but questioned whether festivalgoers were aware they were purchasing NPS or whether drug suppliers were misrepresenting NPS as more familiar drugs, such as ecstasy/MDMA:

> *From seizure data, drugs in tablet form are the most dominant. MDMA is the most prevalent, with MDA the next most common. NPS are also popular at these events, but I am unable to say if this is due to tablets being sold as*

ecstasy but contain NPS or if they were sold as NPS. NPS tablets are becoming more complex; the majority still contain just one NPS but it is becoming more common to find more than one NPS in the same tablet.

[KI-23, deidentified, law enforcement, VIC]

Summary

How common was drug use (licit and illicit) associated with the last festival attended and what were the most commonly used drugs?

Key findings

1. Drug use (excl. tobacco) was reported by more than three-quarters of respondents (88%).
2. Illicit drug use was reported by more than three-fifths of respondents (62%, i.e. a majority behaviour).
3. The most common illicit drug reportedly used was ecstasy (51%), followed by cannabis (31%), ketamine (9%), and nitrous oxide and LSD (8%). Intended NPS use was rare (<2%).
4. No significant difference was identified between jurisdictions in overall drug use (licit or illicit). However, Victorians were more likely to report ketamine, cocaine and meth/amphetamine use. Western Australians were more likely to report pharmaceutical stimulant use.
5. After controlling for other variables, males were more likely to report any illicit drug use. Males were also more likely to report using most individual drug types, except pharmaceutical stimulants and benzodiazepines.
6. Multi-day festivalgoers were more likely to report illicit drug use. They were also more likely to report using most types of drugs, especially hallucinogens, cannabis and nitrous oxide.
7. Younger respondents (16–19-year-olds) were less likely to report illicit drug use. Younger respondents (particularly 16–17-year-olds) were also less likely to report using certain drug types, such as ecstasy and cocaine.
8. Those with a preference for an EDM genre were more likely to report using an illicit drug. They were also more likely to report using most types of illicit drugs, except cannabis.
9. Respondents who had attended more than five festivals recently (past 12 months) were more likely to report using an illicit drug. They were also more likely to report using most types of illicit drugs.

To what extent was illicit drug use at festivals normalised in this sample?

Table 4.8 presents data addressing four of the five components of normalisation, as outlined in Parker, Williams, and Aldridge (2002), applied to the context of festivals. While this theory was revisited to address critiques (Aldridge, Measham, & Williams, 2011), there was no reconceptualisation of the key components.

To explore the first component, 'illicit drug availability/access', respondents were asked how easy they thought it would have been to obtain illicit drugs at the last festival they attended. More than three-quarters (78%) reported that they thought it would have been easy or very easy to obtain drugs and only 2% reported it would have been very difficult. The results therefore suggest there was a high perceived availability of illicit drugs. To explore the second component, 'drug trying rates', respondents were asked about lifetime and recent (past 12 months) use of illicit drugs at festivals. More than two-thirds reported they had used an illicit drug at a festival at some point in their life, and a similar proportion reported they had used an illicit drug at a festival recently. Therefore, most had used illicit drugs in these settings, and used in these settings recently. To explore the third component, 'usage rates', respondents were asked about the frequency of illicit drug use at festivals they had attended in the preceding 12 months. About half (52%) reported always or mostly using illicit drugs. Finally, to explore the fourth element, 'social accommodation of use', respondents were asked whether they thought illicit drug use was a normal feature of attending festivals, how many of their friends used at festivals, and likelihood to use at festivals in future. Almost everyone thought illicit drug use was normal, most reported that all or most of their friends used at festivals, two-thirds reported likelihood to use at festivals in future and only half reported likelihood to attend without using. While these results do not address the issue of 'cultural accommodation of illicit drug use' in these settings (the fifth component of normalisation outlined in Parker et al. (2002)), they provide strong indications that, within this sample, illicit drug use at festivals was normalised.

To investigate the possibility that illicit drugs were only perceived as normal and easy to obtain among respondents who used illicit drugs (i.e. 'differentiated normalisation'), perceptions were explored according to respondents' drug-using status. While a significant difference was identified between the three groups in terms of perceived availability at the last festival, when the response options were dichotomised, there was no significant difference. Additionally, while more festival users perceived illicit drug use as a normal feature, most abstainers at festivals (94%) and lifetime abstainers (89%) also perceived illicit

drug use as a normal feature. Moreover, a significant minority of abstainers indicated the possibility of using illicit drugs at festivals in the future.

Table 4.8: Key indicators of normalisation (% of respondents)

	Lifetime user at festivals	Lifetime abstainer at festivals	Lifetime abstainer	Total %	*p*
Perceived access[a]	*n*=1345	*n*=233	*n*=340	*n*=1918	<0.001***
Very easy	41.4	29.6	30.0	38.9	
Easy	38.3	42.9	42.4	39.6	
Difficult	10.8	10.3	8.8	10.4	
Very difficult	2.3	2.6	2.4	2.3	
Don't know	7.2	14.6	16.5	9.7	
Perceived access[ab]	*n*=1248	*n*=199	*n*=284	*n*=1731	0.870
Very easy/easy	85.6	84.9	86.6	85.9	
Difficult/very difficult	14.1	15.1	13.4	14.1	
Lifetime use of illicit drugs at a festival	*N*=1967 70.7	#	#	*N*=1967 70.7	#
Recent (past 12 month) at a festival	*N*=1967 67.5	#	#	*N*=1967 67.5	#
Frequency of use at festivals recently	*N*=1967	#	#	*N*=1967	#
Always	33.6			33.6	
Mostly	17.7			17.7	
Sometimes	11.4			11.4	
Rarely	7.6			7.6	
Never	29.6			29.6	
Perceived as a normal feature of attending festivals	*n*=1350 97.9	*n*=220 94.1	*n*=288 88.9	*n*=1858 96.0	<0.001***
Proportion of friends who use at festivals	*n*=1381	*n*=225	*n*=297	*n*=1903	<0.001
All	17.2	0.9	1.3	12.8	
Most	55.5	18.2	16.8	45.0	
About half	19.3	22.2	16.8	19.3	
A few	5.6	52.4	44.8	18.8	
None	0.3	6.2	20.2	4.10	
Likelihood to use at a festival in the future	*n*=1390	*n*=234	*n*=319	*n*=1943	<0.001
Extremely likely	64.2	5.1	0.9	46.7	
Somewhat likely	22.9	17.5	7.8	19.8	
Neutral	7.3	15.8	12.9	9.2	
Somewhat unlikely	3.3	19.7	17.6	7.6	
Extremely unlikely	2.3	41.9	60.8	16.7	

	Lifetime user at festivals	Lifetime abstainer at festivals	Lifetime abstainer	Total %	*p*
Likelihood to attend in the future without using	*n*=1389	*n*=234	*n*=319	*n*=1942	
Extremely likely	14.0	63.7	79.3	30.7	<0.001
Somewhat likely	22.4	20.1	11.0	20.2	
Neutral	18.6	10.7	4.1	15.2	
Somewhat unlikely	28.1	2.6	3.4	21.0	
Extremely unlikely	16.9	3.0	2.2	12.8	

[a]At the last festival attended
[b]Dichotomised response options and excluded 'don't know' responses.
[#]Not applicable as had not reported illicit drug use at festivals.

Bivariable analyses (for indicators of normalisations)

Bivariable analyses exploring indicators of normalisation are summarised below (see *Appendices E.13-E.14* for full statistics).

Gender differences

A higher proportion of males than females reported lifetime use of illicit drugs at festivals (78% vs. 63%, $p<0.001$), recent use at festivals (76% vs. 58, $p<0.001$), and higher recent usage rates (39% always used illicit drugs at festivals vs. 28% of females, $p<0.001$). While a higher proportion of males thought it would have been very easy to obtain illicit drugs at the last festival (42% vs. 33%, $p=0.001$), when availability was dichotomised (easy/very easy, difficult/very difficult) there was no significant difference between genders ($p=0.417$). Given rates of illicit drug use are consistently higher among males in general population samples (Australian Institute of Health and Welfare, 2013, 2016), the results presented here do not necessarily mean illicit drug use was more normalised among male respondents.

Jurisdictional differences

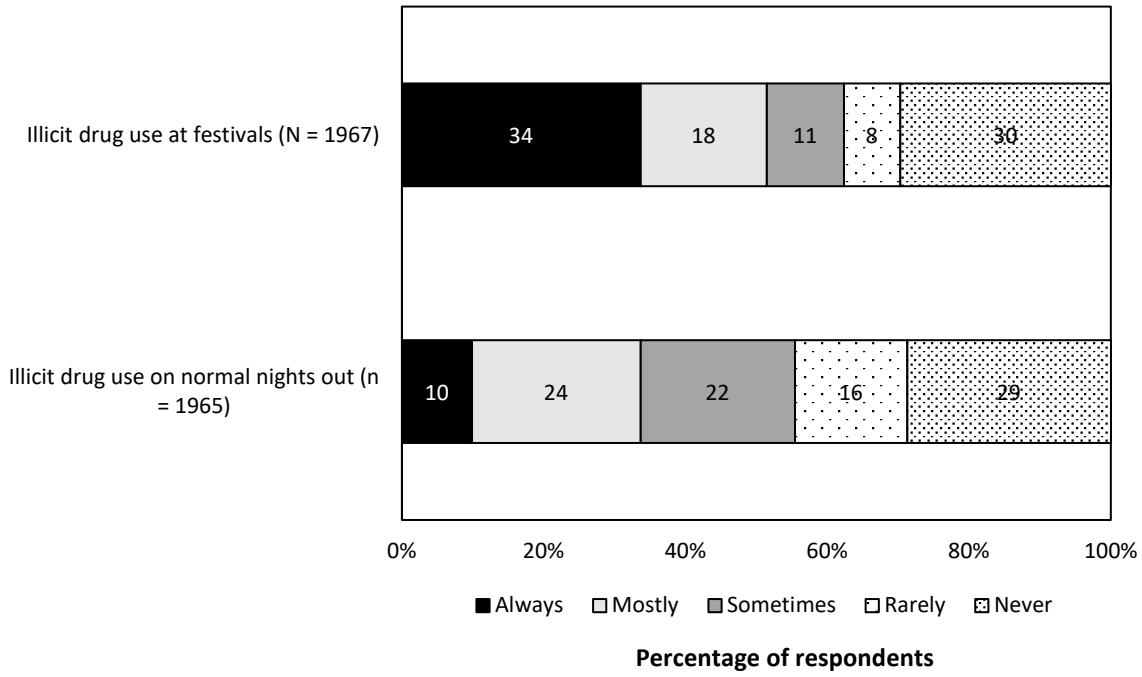
Victorians had higher rates of lifetime use of illicit drugs at festivals (74% vs. 67, $p=0.001$), recent use at festivals (71% vs. 64, $p=0.003$), and higher recent usage rates ($p=0.006$). However, there was no significant difference in the perceived availability of illicit drugs at the last festival ($p=0.286$). These results suggest slightly stronger normalisation among Victorian respondents.

Usage rates on 'normal nights out' versus festivals

Figure 4.1 presents a comparison of illicit drug use on 'normal nights out' (at nightclubs and parties) and festivals in the preceding 12 months. As expected, the proportion reporting 'always' was higher at festivals than normal nights out. These results suggest that illicit drug

use was more common, and thus more normalised, in festival settings than in other recreational settings.

Figure 4.1: Frequency of illicit drug use on 'normal nights out' versus at festivals



Correlates of first-time ecstasy/MDMA use at festivals

The finding that 30% of all respondents (and 44% of Western Australians) reported first-time ecstasy/MDMA use at a festival warrants further investigation, because new festival users may be a high-risk group (e.g. due to lack of experience, knowledge and tolerance) which could be targeted in future HR initiatives. While the questionnaire did not ask whether first-time use was planned or opportunistic, opportunistic first-time use in particular raises concern as decisions are less likely to be informed and users may already be affected by alcohol.

In the multivariable model below (see *Table 4.9*), male gender, living in Victoria and less frequent festival attendance was associated with lower odds of reporting first MDMA use at a festival (than their respective comparison categories), while being in the 20–21 age bracket was associated with greater odds than being aged over 25. Overall, living in WA was the strongest predictor of reporting first MDMA use at a festival.

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Table 4.9: Correlates of first-time ecstasy/MDMA use at a festival (multivariable logistic regression)

Variable	Level	N	Other location	Festival	Bivariate			Multivariable		
			70.5%	29.5%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	176	62.5	37.5	2.544	1.49-4.331	0.001**	1.501	0.851-2.624	0.160
	18-19 years old	338	69.8	30.2	1.833	1.118-3.003	0.016*	1.282	0.754-2.178	0.359
	20-21 years old	321	66.4	33.6	2.150	1.313-3.521	0.002**	1.806	1.064-3.069	0.029*
	22-25 years old	309	75.7	24.3	1.359	0.818-2.257	0.236	1.138	0.663-1.951	0.639
	Over 25 years old	131	80.9	19.1	1.000			1.000		
Gender	Male	755	73.6	26.4	0.694	0.544-0.884	0.003**	0.653	0.503-0.849	0.001**
	Female	520	66.0	34.0	1.000			1.000		
Jurisdiction	VIC	679	82.9	17.1	0.266	0.206-0.344	<0.001***	0.289	0.221-0.401	<0.001***
	WA	596	56.4	43.6	1.000			1.000		
Total festivals past 12 months	1-2	471	76.4	23.6	0.521	0.384-0.708	<0.001	0.577	0.414-0.805	0.001*
	3-4	465	70.1	29.9	0.721	0.536-0.970	0.003	0.802	0.585-1.100	0.172
	5 or more	339	62.8	37.2	1.000			1.000		
EDM genre preference	No	380	67.1	32.9	1.183	0.903-1.549	0.223	1.286	0.961-1.721	0.090
	Doesn't attend for any genre	209	76.1	23.9	0.759	0.531-1.085	0.131	0.705	0.481-1.032	0.072
	Yes	686	70.1	29.3	1.000			1.000		
Festival type	One-day	852	64.8	35.2	2.818	2.039-3.894	<0.001***	1.385	0.952-2.014	0.088
	Inconsistent selection	89	75.3	24.7	1.703	0.970-2.989	0.064	0.861	0.466-1.590	0.632
	Multi-day	334	83.8	16.2	1.000			1.000		

Model χ^2 (12)=154.868, p<0.001. Adjusted R square=0.114 (Cox & Snell), 0.163 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.803, n=1275. *p<0.050; **p<0.010; ***p<0.001.

Qualitative views on normalisation at festivals

Key informants were asked in the pre-survey interviews whether they thought illicit drug use had become a normal feature of festivals, and to explain their views. With the exception of one KI who was ambivalent, all reported 'yes'. Their explanations provided a more nuanced account of their opinions. Thematic analysis identified six key themes, described in greater detail below.

Yes, but it's not a new phenomenon

Thirteen KI (45%) suggested illicit drug use at festivals was not a new phenomenon, but had been a normal feature since the emergence of these events. While one KI referenced Woodstock in the 1960s, another suggested normalisation occurred later:

> *This isn't new though. Drugs and music have always happened together at festivals. Woodstock anyone?*
>
> *[KI-08, deidentified, law enforcement, NSW]*

> *It has been so since the 1990s. This is not a new phenomenon.*
>
> *[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC*]*

Yes, there has been a cultural shift in terms of patterns of use

Eleven KIs (38%) expressed a belief that while some illicit drug use has always been normal at festivals (e.g. cannabis), there has been a genuine cultural/societal shift relating to the normalisation of the *types* of drugs used, *attitudes* towards drug use, and *patterns* of drug use at these events. KIs reported a perceived shift over time towards using psychostimulant drugs, using multiple drugs (polydrug use), using drugs to excess (akin to 'drink to get drunk'), engaging in riskier practices (e.g. pre-loading), and initiating use at a younger age. For example:

> *It's always been there, what's changed is the attitude of people attending. So you know previously yes everyone took their pot, but it's a social thing nowadays where you've gone away from a good old smoke and now you're taking ecstasy, speed, cocaine and everything else, but it's a social thing as*

their expectations have changed when they go to a festival. So instead of having a joint, they're now taking a pill.

[KI-04, deidentified, festival security, national]

I think it's always been there when I think about it. It's probably more prevalent and harder now in terms of more effect.

[KI-01, deidentified, government/regulation, WA]

Yes, but the media sensationalises the issue

Four KIs (14%) suggested that increased and inaccurate media coverage has played a role in sensationalising and misrepresenting this issue. Specifically, they explained that media may have influenced public perception by portraying illicit drug use at festivals as a new and/or more problematic public issue than it actually is. For example:

It is normal, but I don't think a hundred per cent of festivalgoers (or even close to that number) take drugs. The media and some government agencies lead us to believe every sixteen-year-old will be 'pinging' all weekend.

[KI-14, deidentified, government/regulation, WA]

Illicit drug use has always existed – the drug of choice changes – and greater media scrutiny exists hence as to why it may appear more prominent or something new.

[KI-10, deidentified, law enforcement, WA]

Yes, but it's a reflection of wider society

Other KIs (*n*=4, 14%) claimed illicit drug use at festivals is simply a reflection of their normalisation in wider society:

Drug use has become no more or less normalised at festivals than drug use in wider society.

[KI-29, deidentified, event management, WA]

However, these views mainly came from those working within the festival industry. Thus, one could interpret these accounts as trying to deflect responsibility due to a vested interest in protecting the industry. Indeed, throughout the results, it is important to consider the possibility these accounts reproduce narratives that a serve a function to some KIs (i.e. there may be inherent biases). Nevertheless, it does not necessarily mean these accounts are untrue. To support their view, one KI highlighted two recent cases in which police officers

attending festivals, for the purpose of drug policing, were detected either using illicit drugs or in possession of illicit drugs:

> *It's society – you've just got to look – it's changed. I mean the fact that three police officers in WA tested positive after going to Stereosonic … and if you google it, a police officer in Brisbane was found with drugs on him at the Brisbane Stereosonic. So if those changes in society are now affecting our so-called law enforcement, you can see the problem is not the festivals, it's a social thing.*
>
> *[KI-04, deidentified, festival security, national]*

Another KI's interactions with festivalgoers led them to suggest it was quite normal for young people to use drugs "every weekend" in other settings:

> *… the comments I get are that it's just a normal part of attending a festival, or eight out of ten of my mates all do, or you'd be surprised at how many do it every weekend. Those comments have all been quite consistent.*
>
> *[KI-06, Jenny Payet, government/regulation, WA*]*

Two KI argued that what makes these events unique is not normalisation (because drugs are normalised outside these settings as well), but rather the sheer number of people in one place at one point in time using illicit drugs (i.e. the density of drug use at festivals). It was argued that based on the number of people that attend festivals, and use illicit drugs, there was a greater probability someone was going to encounter problems. However, they believed that a small number of problems should not reflect negatively on the wider festival industry:

> *Without a doubt, it's a normal feature of broader society. I mean statistically it is normal… I think that one of the problems when we talk about music festivals is it creates this idea – it's certainly something that's promoted in the media reporting of music festivals – that music festivals are somehow unique, that that's the place that perhaps the bulk of illicit drug taking among society takes place, but that is very far from the truth … I think that a music festival would be the most dense concentration of illicit drug use, that is true, you know. It has fifty thousand people potentially standing in a field, and um I think that it would be reasonable to assume that the majority of those people, not necessarily, certainly not all, without a doubt not all, but I think a majority of people would be using an illicit drug within those*

settings. So you're talking about tens of thousands of people potentially at one point in time, and that is a fairly unique setting – it is a unique situation.

[KI-03, Will Tregoning, Executive Director, Unharm, NSW]

… you know it's like you build a little city, the statistics would say you take a small town for example, you put fifty thousand people into a town for a week, you're surely going to have some issues, you're surely going to have a death … it's inevitable, it really is inevitable.

[KI-07, Josh Green, Phoenix Entertainment, industry, national]

Yes, but it's not homogenous across all festivals

Three KIs (10%) suggested illicit drug use was not homogenous across all festivals. It was explained that different types and genres of festivals attract different types, levels and patterns of drug use. Consistent with earlier analyses which identified EDM as a unique predictor of illicit drug use (*Table 5.7*), KIs identified EDM as a set of musical genres notorious for attracting higher levels of illicit drug use. However, they also believed drug use in different forms was consistent across the board. For example:

Yeah, and it's not just exclusive to these events. At the older events there is drug taking – they're just different people and different drugs. When you go to more laid-back music festivals there's different drugs, but it's pretty much across the board.

[KI-01, deidentified, government/regulation, WA]

It depends on which subcultures are catered for at the festival, but each subculture has their drugs of choice and drug taking methods of choice.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

Key informants who completed the online questionnaire were asked whether they believed there were differences in drug use between festivals. Almost all said 'yes' (*n*=18, 86%), and their explanations suggested rock, heavy metal and blues festivals were linked with alcohol and cannabis use, EDM festivals were linked with alcohol, stimulants and steroid users, transformational/psytrance festivals were linked with psychedelics and NPS, and boutique independent/alternative festivals with linked with depressants and pharmaceuticals. The subcultures attracted, including age, sexuality, musical preferences and commitment to the scene, were identified as key factors shaping the nature and extent of drug use. For example:

At rock concerts and blues festivals, alcohol and cannabis are the drugs of choice. EDM's it is alcohol, meth and ecstasy. At heavy metal festivals, it's

probably still alcohol and cannabis, but it is not as prevalent as other festival types.

[KI-14, deidentified, government/regulation, WA]

Definitely. Electronic music festivals seem to have more amphetamine/stimulant use. Smaller, more independent, festivals seem to have more use of depressants and increased misuse of pharmaceuticals.

[KI-17, deidentified, AOD agency, WA]

Absolutely. Different festivals often represent different subcultures, which will have their own political influences, status quo, understanding of the knowledge available and taboos. All of these factors feed into how the different groups approach drugs. I think all aspects of society have their preferred drugs, but I think some of these groups think of their drug taking in a very different manner to other groups.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

Yes – it depends on subculture (sexuality, music type, festival type), influenced by age, gender, financial status, location (availability of drugs) as mentioned previously. An obvious example is psychonauts and psychedelics.

[KI-24, deidentified, health on and offsite, NSW]

Definitely. GHB, amyl, K [ketamine] and crystal are probably more prevalent at LGBT parties. Committed aficionados of certain music styles attract more hallucinogen use, or more use of specific NPS due to their effects profiles. Ages of partygoers will impact on how experienced they are at drug use, and how carefully they stick to harm reduction 'rules'.

[KI-08, deidentified, law enforcement, NSW]

A KI from the Victorian law enforcement sector provided a more evidence-informed response:

From seizure and analytical data there does appear to be differences in the prevalence and types of drugs between the different music festivals.

[KI-23, deidentified, law enforcement, VIC]

Only one KI disagreed that drug use was heterogeneous, expressing the view there was minimal variation across festival types:

I don't believe there are any significant differences between festivals regarding the types of drugs used or the problems encountered. There may be small variations between some festivals, but I do not believe that it is significant.

[KI-02, deidentified, government/regulation, WA]

Yes, festivals are unique settings for normalisation

Lastly, a few KI (10%) described festivals as being unique spaces of normalisation. Festivals were described as special events which may be reserved for drug use or where drug use may be exacerbated. One KI referenced recent 'overdoses' at festivals to support their view, while others referred to a perceived subculture unique to these events:

It is like a rite of passage, go hard or go home.

[KI-22, deidentified, event crowd and risk management, government/regulation, NSW]

You just have to look at the last three music festivals to see the ODs [overdoses] at the festival.

[KI-16, deidentified, medical coordinator, onsite health, NSW]

A cultural norm has been created and perpetuated around the festival as an 'out of the everyday' experience where drug use is normalised as a valid way to enhance/get the most of the experience.

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

Summary

To what extent was illicit drug use at festivals 'normalised' in this sample?

Key findings

- There were strong indications that illicit drug use at festivals was normalised among respondents in this cohort.
- Almost all respondents (96%) believed illicit drug use was a normal feature and 78% thought it would have been easy to obtain illicit drugs at the last festival attended.
- Most lifetime abstainers still perceived illicit drug use as a normal feature, and thought it would have been easy for them to obtain illicit drugs at their last festival.
- Illicit drug usage rates were higher at festivals than for normal nights out.
- Almost a third reported first-time use of ecstasy/MDMA at festivals (44% of Western Australians). Being female, Western Australian and in the 20–21 age bracket was associated with greater likelihood of first-time use at festivals.
- Almost all KIs believed illicit drug use was normalised at festivals. However, some believed it was a reflection of wider society, while others believed illicit drugs were more normalised at festivals than in other recreational contexts.

Patterns

As revealed in the literature review, data on drug use patterns at festivals remains scarce. Only one Australian study examined polydrug use (Hughes et al., 2017), and no studies in the past 20 years investigated patterns of drug use before, during and after events, or quantities used and routes of administration at Australia festivals. Identifying patterns of use may inform when to target interventions and what issues should be targeted. For example, if ecstasy/MDMA is commonly used before festivals, there may be merit in expanding future interventions (e.g. drug-checking) to operate before events. Additionally, if ecstasy is commonly insufflated (snorted), there may be merit in promoting safety messages about the associated risks, given significantly more potent NPS have recently been misrepresented as ecstasy (e.g. 25x-NBOMe) and are significantly more potent if consumed via insufflation. To address these gaps in the literature, this section answers the following questions (about the last festival attended):

- How common was polydrug use, and what were the most common drug combinations?
- How were different drugs used, when were they used and how much was used?

How common was polydrug use associated with the last festival attended and what were the most common drug combinations?

The following section presents the quantitative data about polydrug use. It is important to note that while alcohol may not have been considered a drug of concern in earlier research on underground raves, the current study was focused on contemporary festivals which are typically licensed to sell alcohol. Moreover, it is widely known, and was emphasised by the KIs, that alcohol is almost always part of the mix of substances used now. Thus, it was important to include alcohol when investigating polydrug use.

How common was polydrug use?

Of the 1730 respondents who reported any drug use (including alcohol, but excluding tobacco), approximately two-thirds reported using more than one drug on the day and more than two-fifths reported using more than two drugs (see *Table 4.10*). The median number of different drugs (including alcohol, but excluding tobacco) reportedly used was three. Therefore, polydrug use was a majority behaviour among those who used a drug, and among the overall sample (60%).

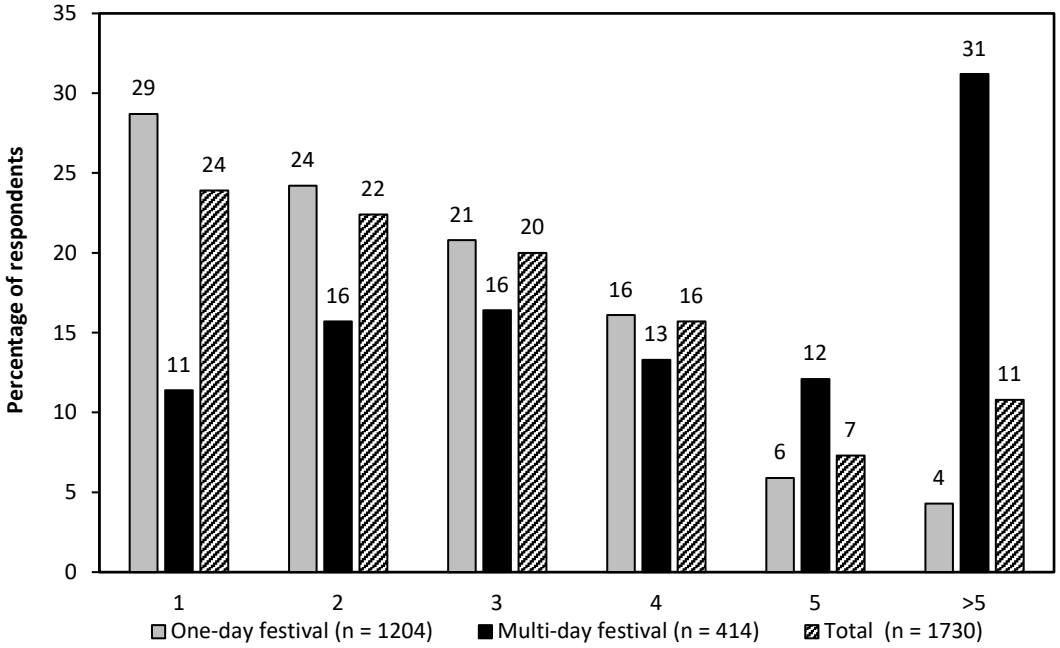
Table 4.10: Polydrug use associated with the last festival attended

	Total
Used more than one drug (excluding tobacco) (%)[a]	*n*=1730 67.6
Used more than two drugs (excluding tobacco) (%)[a]	*n*=1730 43
Median number of different drugs used (IQR)[a]	*n*=1730 3 (2-4)
Used more than one illicit drug (%)[b]	*n*=1217 60.5
Median number of different illicit drugs used (IQR)[b]	*n*=1217 2 (1-3)

[a]Among those who used a drug (licit or illicit) in association with the last festival
[b]Among those who had used an illicit drug in association with the last festival.

Figure 4.2 below presents the number of drugs used according to festival type attended. Interestingly, while the most common number of drugs to use at one-day festivals was one, the most common number at multi-day festivals was >5.

Figure 4.2: Number of drugs (including alcohol, but excluding tobacco) used associated with the last festival attended



Note. Percentages were calculated among those who reported using a drug associated with the last one-day festival attended. The total sample includes cases with inconsistent festival type selections.

Bivariable analyses for polydrug use

A significantly greater proportion of respondents reported polydrug use at multi-day festivals than one-day festivals, significantly more males reported polydrug use than females, and significantly more Victorians reported polydrug use than Western Australians (see *Appendices E.15-E.17* for full statistics).

Multivariable analyses for illicit polydrug use (*≥2 illicit drugs)*

Multivariable analyses were performed to investigate correlates of using ≥2 illicit drugs (among illicit drug users). The focus was on illicit drug use because an investigation of correlates of using ≥2 drugs (including alcohol, but excluding tobacco) would have been almost identical to the earlier analysis of correlates of illicit drug use. This analysis investigates differences among illicit drug users and thus produces more meaningful results.

In the model below (*Table 4.11*), male gender was associated with greater odds of reporting illicit polydrug use, while attending only 1–2 recent festivals, preferring a non-EDM genre and attending a one-day festival was associated with lower odds. Attendance at a multi-day festival was the strongest predictor (inverted AOR=2.7, $p<0.001$). While jurisdiction was significant in the bivariable analyses, it was not in the multivariable model. This again suggests festival type was a confounding variable.

Table 4.11: Correlates of using more than one illicit drug associated with the last festival attended (multivariable logistic regression)

Variable	Level	N	Used ≥2	Did not	Bivariable			Multivariable		
			60.4%	39.6%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	179	54	46	0.613	0.383-0.982	0.042*	0.943	0.569-.1562	0.820
	18-19 years old	315	59	41	0.747	0.485-1.150	0.185	0.879	0.554-1.393	0.582
	20-21 years old	297	57	43	0.684	0.443-1.056	0.086	0.713	0.449-1.133	0.152
	22-25 years old	289	67	33	1.058	0.680-1.647	0.803	1.093	0.683-1.748	0.712
	Over 25 years old	126	66	34	1.000			1.000		
Gender	Male	714	67	33	1.889	1.493-2.391	<0.001***	1.868	1.459-2.391	<0.001***
	Female	492	51	49	1.000			1.000		
Jurisdiction	VIC	622	67	17	1.799	1.424-2.271	<0.001***	0.781	0.594-1.026	0.076
	WA	584	53	47	1.000			1.000		
Total festivals past 12 months	1-2	449	56	44	0.728	0.542-0.978	0.035*	0.654	0.476-0.900	0.009**
	3-4	440	63	38	0.949	0.703-1.280	0.731	0.895	0.653-1.227	0.492
	5 or more	317	64	36	1.000			1.000		
EDM genre favourite to attend festivals for	No	365	53	47	0.590	0.454-0.768	<0.001***	0.619	0.469-0.818	0.001**
	Doesn't attend for any genre	207	57	43	0.690	0.501-0.950	0.023*	0.730	0.521-1.024	0.068
	Yes	634	66	34	1.000			1.000		
Festival type	One-day	783	54	46	0.342	0.256-0.457	<0.001***	0.372	0.267-0.520	<0.001***
	Inconsistent selection	83	53	47	0.330	0.200-0.545	<0.001***	0.389	0.228-0.266	0.001**
	Multi-day	340	77	23	1.000					

Note. After inverting the odds, attendance at >5 recent festivals was associated with 1.5 times greater odds, an EDM preference was associated with 1.6 times greater odds and multi-day festival attendance was associated with 2.7 times greater odds. Model $\chi 2$ (12)=116.997, p<0.001. Adjusted R square= 0.092 (Cox & Snell), 0.125 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.928, n=1206. *p<0.050; **p<0.010; ***p<0.001.

What were the most common drug combinations?

The three most common drug combinations (excluding tobacco) were alcohol and ecstasy; alcohol, ecstasy and cannabis; and alcohol and cannabis. As evident in *Table 4.12*, consistent with KIs' comments, alcohol was present in almost all drug combinations (90% of illicit drug users reported alcohol use).

Given GHB and alcohol was identified as a problematic combination in the literature and by KI, analyses were performed to identify the proportion reporting this mix; it was rare in this sample (*n*=19, <1% total sample). Nevertheless, the combination was very common among those reporting GHB use (76%). It important to note, however, that most GHB use occurred at multi-day festivals (84%). Thus, it is possible alcohol and GHB were used on separate days.

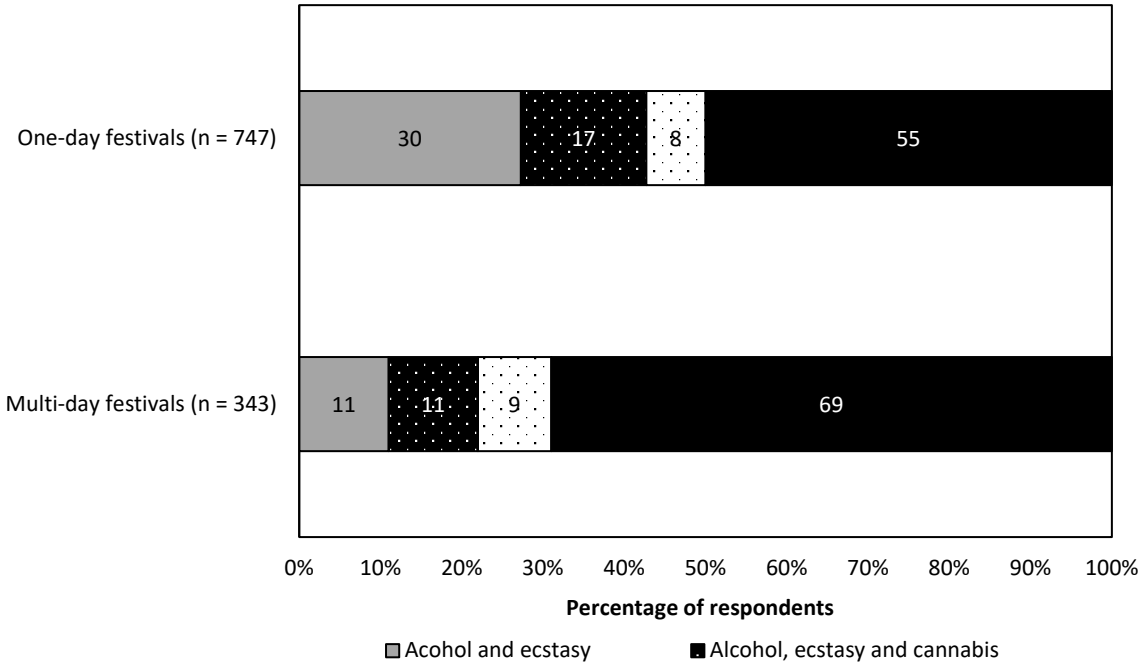
Table 4.12: Drug combinations associated with the last festival attended (% of respondents)

Ten most common drug combinations (including alcohol, excluding tobacco)[b]	*n*=1169
1. Alcohol and ecstasy	24.1
2. Alcohol, cannabis and ecstasy	15.4
3. Alcohol and cannabis	8.6
4. Alcohol, cocaine and ecstasy	2.2
5. Cannabis and ecstasy	2.1
6. Alcohol, ecstasy and ketamine	2.1
7. Alcohol and pharmaceutical stimulants	1.5
8. Alcohol, ecstasy and pharmaceutical stimulants	1.4
9. Alcohol, cannabis, ecstasy and speed	1.3
10. Alcohol, ecstasy and speed	1.2
11. Other combinations	40.0

[b]Among those who reported using more than one drug.

The three most commonly identified drug combinations made up approximately half of all drug combinations identified at one-day festivals, compared to less than a third at multi-day festivals. This again suggests a more diverse mix of substances used by multi-day festivalgoers (*Figure 4.3*).

Figure 4.3: Most common polydrug combinations associated with the last festival attended (including alcohol, but excluding tobacco)



Note. Among those who reported using a drug associated with the last festival attended.

Drug combinations according to 'The Drug Wheel'

Over 300 unique drug combinations were identified, so each drug was categorised according to 'The Drugs Wheel' (Adley, 2018) to create a smaller number of more meaningful categories (*Table 4.13*). The three most common combinations were depressants and empathogens; depressants, empathogens and cannabinoids; and depressants and cannabinoids.

Table 4.13: Polydrug use combinations associated with the last festival attended when grouped according to 'The Drug Wheel' (V2.0.6)

Polydrug combinations (including alcohol, excluding tobacco)b	*N*=1170
1. Depressant and empathogen	25.8
2. Depressant, empathogen and cannabinoid	16.3
3. Depressant and cannabinoid	9.1
4. Depressant, stimulant and empathogen	6.2
5. Depressant, stimulant, empathogen and cannabinoid	5.0
6. Depressant, stimulant, empathogen, cannabinoid and dissociative	4.3
7. Depressant, dissociative and empathogen	3.8
8. Depressant and stimulant	3.0
9. Depressant, dissociative, cannabinoid and empathogen	2.5
10. Depressant, stimulant, dissociative and empathogen	2.4
11. Depressant, dissociative, cannabinoid, empathogen and psychedelic	2.3
12. Cannabinoid, empathogen and psychedelic	2.1
13. Depressant, cannabinoid, empathogen and psychedelic	1.9
14. Depressant, stimulant, dissociative, cannabinoid and empathogen	1.9
15. Depressant, cannabinoid and psychedelic	1.2
16. Depressant, stimulant, dissociative, empathogen and psychedelic	1.2
17. Depressant, empathogen and psychedelic	1.0
18. Depressant, dissociative, empathogen and psychedelic	0.9
19. Depressant, stimulant, cannabinoid, empathogen and psychedelic	0.9
20. Depressants	0.3
21. Empathogens	0.3
22. Other – <10 respondents per combination	7.7

Note. Categories were based on V2.0.6 of 'The Drug Wheel' (Adley, 2018).

Polydrug use compared to another Australian sample

As shown in *Table 4.14*, 62% of illicit drug users in the present sample reported using ≥2 illicit drugs compared to 53% in Hughes et al. (2017). Note that the two samples were not compared statistically, and different question wording may have influenced responses. While the current survey asked about drug use 'associated with' the last festival, Hughes et al. (2017) asked about drug use 'at' the last festival. It is therefore possible the question was interpreted differently. For example, respondents in Hughes et al. (2017) may have excluded pre-festival use, which could account for the lower percentage. The potential for this type of

ambiguity, as well as sample differences in gender, age and festival type, should be considered when interpreting these results. Overall, however, illicit polydrug use was common in both cohorts.

Table 4.14: Illicit polydrug use compared to another Australian sample (% of respondents who reported using an illicit drug at the last festival attended)

	Current 2016 sample (VIC/WA) *n*=1217	2015 national sample (Hughes et al., 2017) [a]
Used only one illicit drug	39.5	47.5
Used two illicit drugs	30.8	28.1
Used more than two illicit drugs	29.7	24.5

[a]The candidate was unable to confirm the sample size (for participants who reported using illicit drugs) with the authors. However, the total festivalgoer sample size was 2115 and 65.3% reported illicit drug use. Thus, the estimated sample size for the comparison study is 1381.

Polydrug patterns described by KIs

When KIs were asked in the pre-survey interviews to describe any drug-related trends recently observed at festivals, six (21%) identified polydrug use. Several highlighted the consistent role alcohol plays in the mix of substances used, and concern was expressed about negative interactions that can result from mixing alcohol with different substances (e.g. GHB), as well as the difficulties associated with clinically managing these patients. For example:

> *Alcohol is almost always used in conjunction with multiple other drugs – usually with things like cannabis, a psychedelic (mushrooms, LSD) and a stimulant (MDMA, ice). Nangs (nitrous oxide) will also often be consumed.*
>
> *[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]*

> *People seem to be mixing alcohol with other drugs more these days, leading to new symptoms and behaviours.*
>
> *[KI-14, deidentified, government/regulation, WA]*

> *Common drug combinations seem to be alcohol and MDMA (ecstasy) or the use of speed and/or methamphetamines. These combinations can cause patients to become nearly impossible to manage in some cases, in addition to the variety of issues they pose when treating symptoms.*
>
> *[KI-02, deidentified, government/regulation, WA]*

As described previously, most KIs believed patterns differ according to festival type, the genre/s of music playing and the type of subculture attending. However, three (10%) also

believed that while drug use varies between festivals, there is a typical pattern across a festival day. The pattern described involved preference being given to stimulants before and/or during the festival (to 'amp' them up/increase energy), depressants after the festival (to bring them back down/help them unwind/sleep) and alcohol at all stages (to help them relax/take the edge off). For example:

> *Different festivals have different types of drugs and patterns of use depending on subculture influenced by age, gender, location, availability of drugs, purchasing power of consumer, and other demographics. As a general principle, up during the party (stimulants), down after (benzodiazepines and cannabis), and alcohol pre-during and post.*
>
> *[KI-24, deidentified, health on and offsite, NSW]*

Summary

How common was polydrug use associated with the last festival attended, and what were the most common drug combinations?

Key findings

1. Polydrug use (i.e. >1 drug; including alcohol, but excluding tobacco) was a majority behaviour among drug users (68%) and the overall sample (60%).
2. Illicit polydrug use (≥2 illicit drugs) was a majority behaviour among illicit drug users (61%).
3. The most commonly identified drug combinations were alcohol and ecstasy; alcohol, ecstasy and cannabis; and alcohol and cannabis. Alcohol was almost always involved (90% of illicit drug users reported alcohol use).
4. When controlling for other variables, male gender and attendance at a multi-day music festival were the variables most strongly predictive of illicit polydrug use.
5. Key informants identified polydrug use as a concerning trend observed among festivalgoers, and described typical patterns of polydrug use across a festival day.

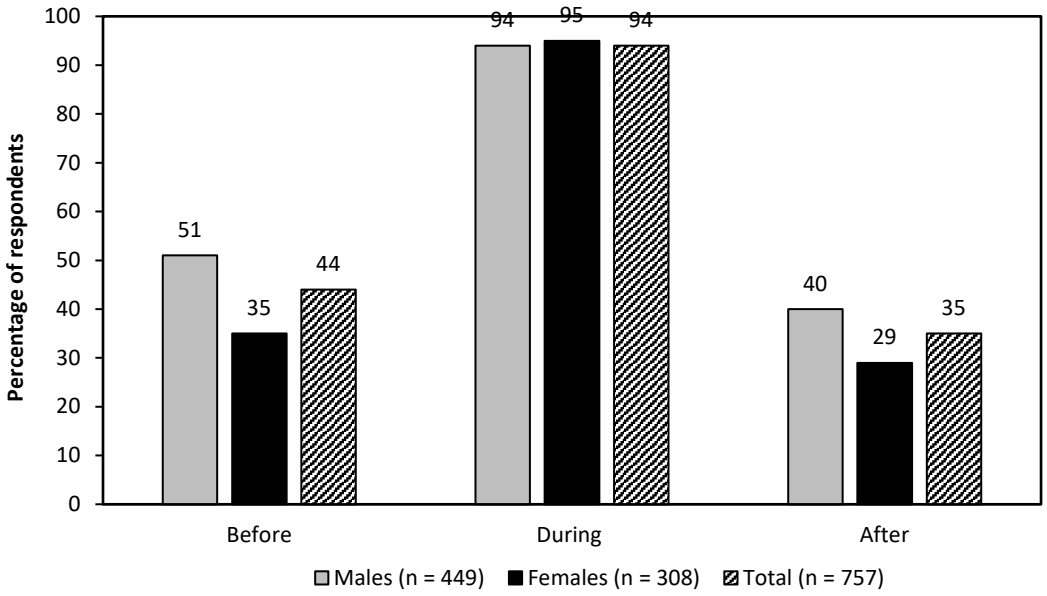
When were drugs used, how were drugs used and how much was used?

Although the questionnaire asked about 24 different drugs, this section focuses on the three most commonly used (excluding tobacco): alcohol, ecstasy and cannabis. However, a brief summary of patterns for the 10 most common drugs is presented at the end of this section. Before presenting patterns for individual drugs, a snapshot of patterns at one-day festivals is presented.

When were drugs used associated with one-day festivals?

As evident in *Figure 4.4*, of those who reported illicit drug use associated with the last one-day festival attended (n=757, missing=35), almost everyone reported use during the festival, while about two-fifths reported use before and about a third after. However, a significantly higher proportion of males than females reported illicit drug use before (p<0.001) and after (p=0.003) the festival.

Figure 4.4: Points illicit drugs were used in association with the last one-day festival attended



Note. Among those who reported using an illicit drug at the last one-day festival attended.

What drugs were most commonly used before, during and after?

The most commonly reported drugs used pre-festival were alcohol, ecstasy and cannabis (*Table 4.15*). While the order remained the same during the festival, the proportion reporting alcohol and cannabis use decreased, while ecstasy use increased. The order differed after the festival, with more respondents reporting cannabis use than ecstasy.

These results are therefore consistent with the 'typical pattern' described by KIs. This includes alcohol being the most commonly used drug at all stages, stimulants most common before and during the festival (e.g. ecstasy, cocaine and pharmaceutical stimulants), and drugs with depressant properties most common after the festival (e.g. alcohol and cannabis). However, there were exceptions, with cases of depressant use pre-festival and a substantial minority reporting stimulant use post-festival (e.g. ecstasy).

Table 4.15: Drugs used before, during and after the last one-day festival attended (% of respondents)

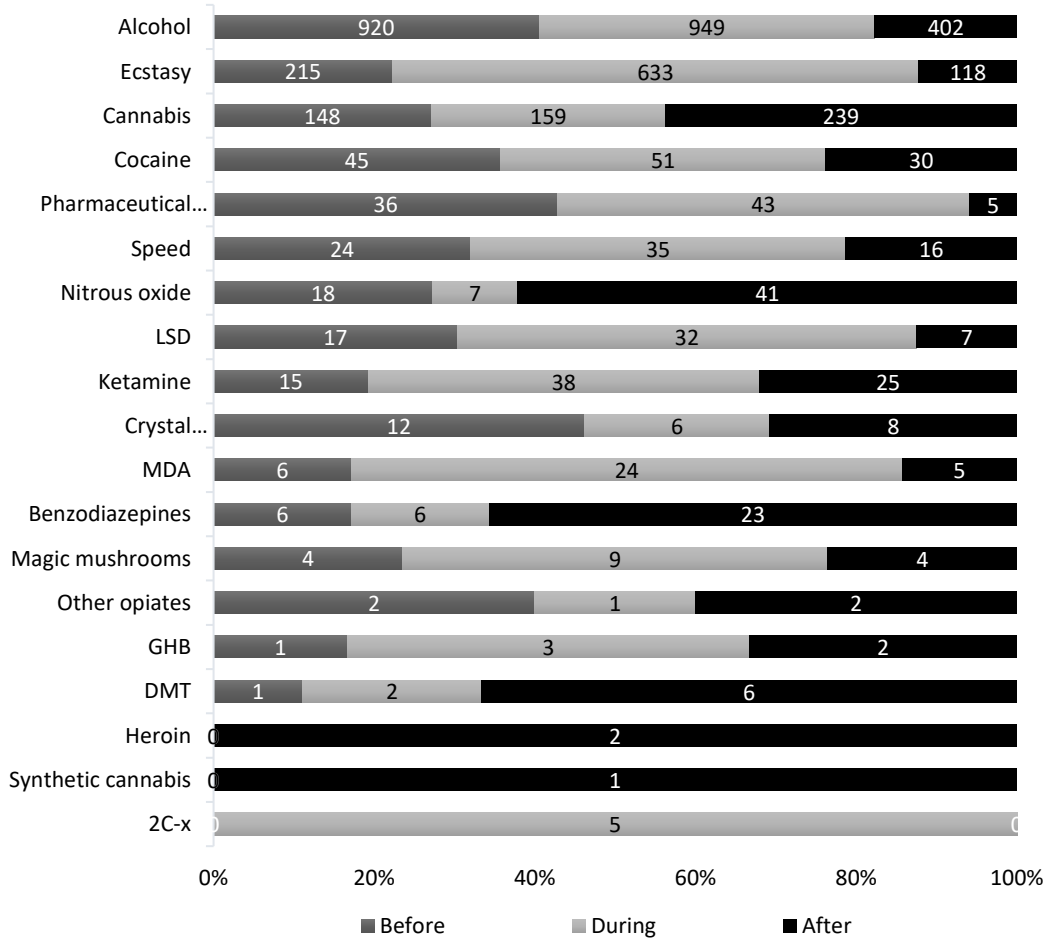
Drug used	Before (*n*=1365)	During (*n*=1365)	After (*n*=1365)
Alcohol	67.4	69.5	29.5
Ecstasy	15.8	46.4	8.6
Benzodiazepines	0.4	0.4	1.7
Cannabis	10.8	11.6	17.5
Cocaine	3.3	3.7	2.2
Crystal methamphetamine	0.9	0.4	0.6
DMT	0.1	0.1	0.4
GHB	0.1	0.2	0.1
Heroin	0.0	0.0	0.1
Ketamine	1.1	2.8	1.8
LSD	1.2	2.3	0.5
MDA	0.4	1.8	0.4
Magic mushrooms	0.3	0.7	0.3
Nitrous oxide	1.3	0.5	3.0
Other opioids	0.1	0.1	0.1
Pharmaceutical stimulants	2.6	3.2	0.4
Speed	1.8	2.6	1.2
Synthetic cannabis	0.0	0.0	0.1
2C-x	0.0	0.4	0.0

Note. Among those who reported using a drug associated with the last one-day festival attended.

What was the distribution of each drug before, during and after?

Figure 4.5 shows the distribution of cases before, during and after one-day festivals. These results could inform the targeting of interventions for particular drugs. However, it is important to note that this figure does not reveal when the greatest quantity of each drug was used.

Figure 4.5: Respondents reporting drug use before, during and after the last one-day festival attended



Note. The numbers in this bar chart represent cases, not percentages.

The excerpt below provides a useful example of one regular festivalgoer's trajectory of drug use across a one-day festival day, specifically highlighting why she used drugs, before and after the festival. The participant explained how 'pre's' were an integral part of the day, which involved alcohol and stimulant use to both relax and 'amp' them up for the day. She explained that while pre-drinking was exacerbated by the price of alcohol onsite, she and her friends would drink before the festival regardless because they did not like arriving at festivals completely sober. Additionally, pre-drinks were described as having other functions, such as extending and planning the day. Drug use post-festival was reportedly dependent on how the day progressed, but had also evolved with age. She reported that while in the past there was a tendency to 'kick on', there had been a shift towards more low-key post-festival gatherings which involved drugs with depressant rather than stimulant properties. Overall, the excerpt demonstrates that pre and post-festival activities represent key points in the day that should be considered when targeting HR interventions.

Well we always have 'pre's' – it's a big part of the day and the overall experience. You meet with your friends beforehand, plan out the day, who you want to see, how you're getting to the event, etc. You want to listen to some music playing on the day beforehand to get you in the mood. Recently I wasn't very organised and missed pre's so just went straight to the festival and it was a big mistake. I was flustered, not relaxed. It's almost a bit overwhelming for me to walk into a festival sober. I had to go straight to the bar. As sad as that might sound, I needed to relax myself. So yeah there are multiple reasons you do pre's – to plan the day, extend the day, get you in the mood, relax you. Also, drinks are so expensive at festival[s], you want to be a little bit on your way already … We'd almost certainly still drink before regardless of the price of alcohol at the event, although it may encourage us to drink less. Some friends without a lot of money will intentionally binge beforehand so it may influence them to pace themselves. In terms of [illicit] drug use, for a normal festival, I would use a bit beforehand in about eighty per cent of cases. Normally, to get us in the mood, we'll crush up a pill or cap and prepare some lines. It always gets us all amped and in the festival spirit. After the festival really depends on how the day goes. When I was younger we always had some sort of after party, whether we attended an 'official after party' or went back to a house and kicked on, there was always something. These days I'm a little too old and after parties usually involve some drinks, chilled music and then a valium or something hahaha but back in the day, we never wanted the party to end. We would push the day out as long as possible, sitting around getting high until the sun comes up and we were forced to face the reality that it was all over and we had to go home. Sometimes it's still like that.

[P02, female, 25yrs, WA]

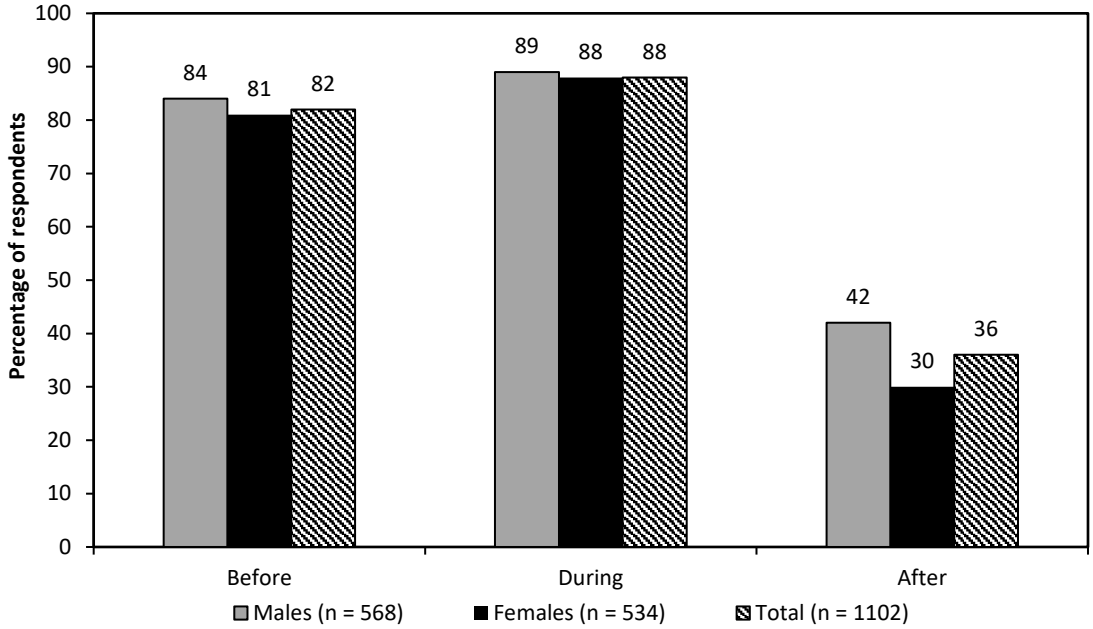
Patterns of alcohol use

Key findings for patterns of alcohol use are presented below (see *Appendices E.18-E.19* for full statistics).

When was alcohol used?

Eighty-one per cent of respondents reported alcohol use associated with the last one-day festival attended. However, the proportion was higher among those of legal drinking age (≥18 years old=89%; <18=52%). As demonstrated in *Figure 4.6*, most alcohol users reported drinking before and during the festival, while about a third reported drinking after. However, a higher proportion of males than females reported drinking post-festival ($p<0.001$). Similarly, 88% (n=388) reported alcohol use at the last multi-day festival attended (≥18 years=91%; <18=63%) and most (70%) reported drinking daily (males=74%, females=64%, p=0.039).

Figure 4.6: When alcohol was used among those who last attended a one-day festival



Note. Among those who reported alcohol use. Cases with inconsistent festival selections were excluded.

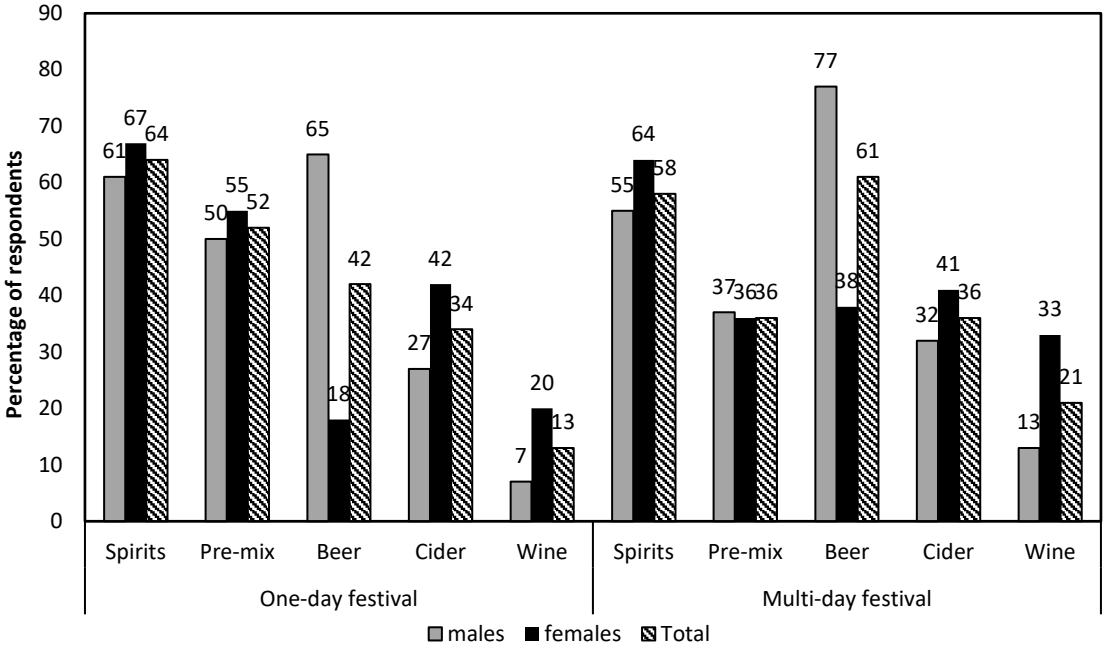
What types of alcohol were used?

The most common type of alcohol reportedly used in association with one-day festivals was spirits/post-mixes, followed by pre-mixes, beer, cider and wine (*Figure 4.7*). A higher proportion of males reporting drinking beer ($p<0.001$), while more females reported drinking wine, cider and spirits ($p<0.001$, $p<0.001$ and p=0.021 respectively).

In contrast to one-day festivals, beer was most popular at multi-day festivals, followed by spirits/post-mixes, pre-mixes and cider, and wine. Again, a higher proportion of

males reported drinking beer ($p<0.001$), while a higher proportion of females reported drinking wine ($p<0.001$).

Figure 4.7: Types of alcohol used associated with the last festival attended

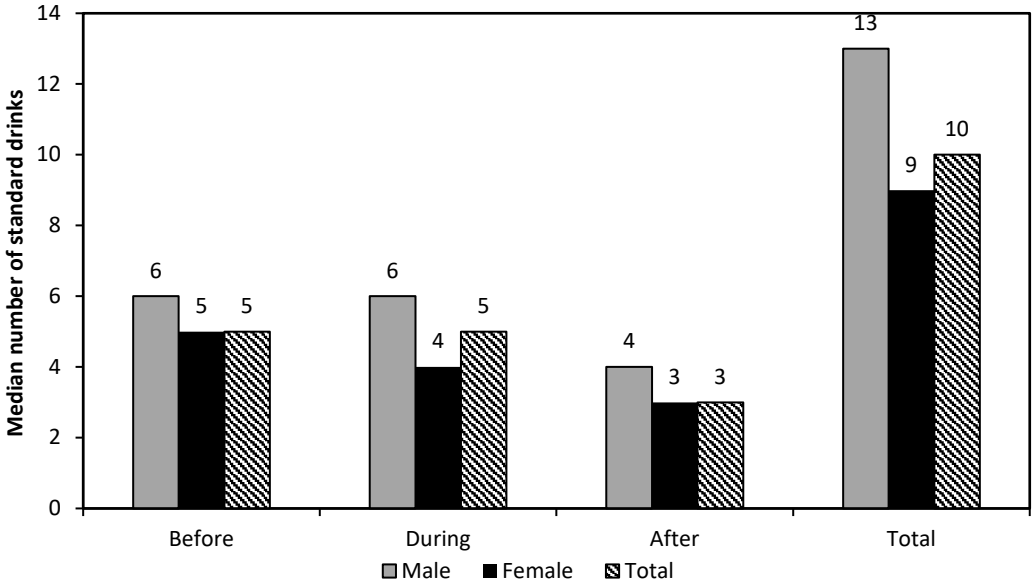


Note. Among those who reported using alcohol associated with the last festival attended.

How much alcohol was used?

As shown in Figure 4.8, the median number of standard drinks (as estimated by respondents who were shown a standard drinks guide) used before and during the last one-day festival attended was similar (before: *Mdn*=5, IQR=4–8; during: *Mdn*=5, IQR=3–8), but lower after (*Mdn*=3, IQR=2–5). The total median number of drinks consumed across the day was 10 (IQR=7–15). However, the median was significantly higher for males (*Mdn*=13, IQR=9–18) than females (*Mdn*=9, IQR=6–12) (U=78895.50, $p<0.001$).

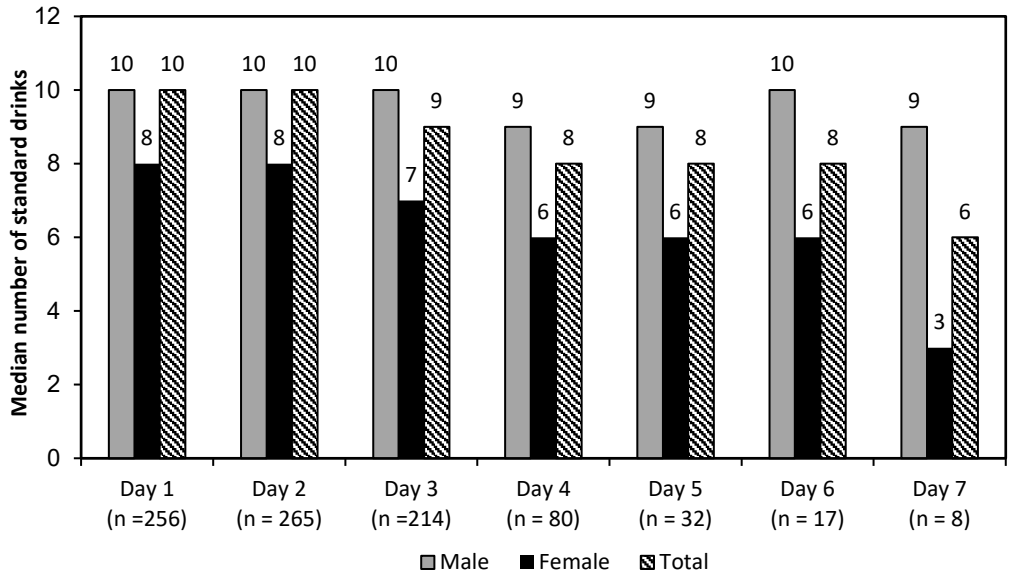
Figure 4.8: Median number of standard drinks used before, during and after the last one-day festival attended



Note. Among those who reported using alcohol associated with the last one-day festival attended.

Consistent with one-day festivals, those who last attended a multi-day festival reported consuming a median of 10 standard drinks on days one and two (both days: IQR=6–14). However, males again reported drinking significantly more (*Mdn*=10, IQR=10–15) than females (*Mdn*=8, IQR=5–10), (U=9623.00, p<0.001). As evident in *Figure 4.9*, drinking levels declined as days progressed, although the number of cases also declined. Thus, results after day four should be interpreted with caution.

Figure 4.9: Median number of standard drinks at the last multi-day festival attended

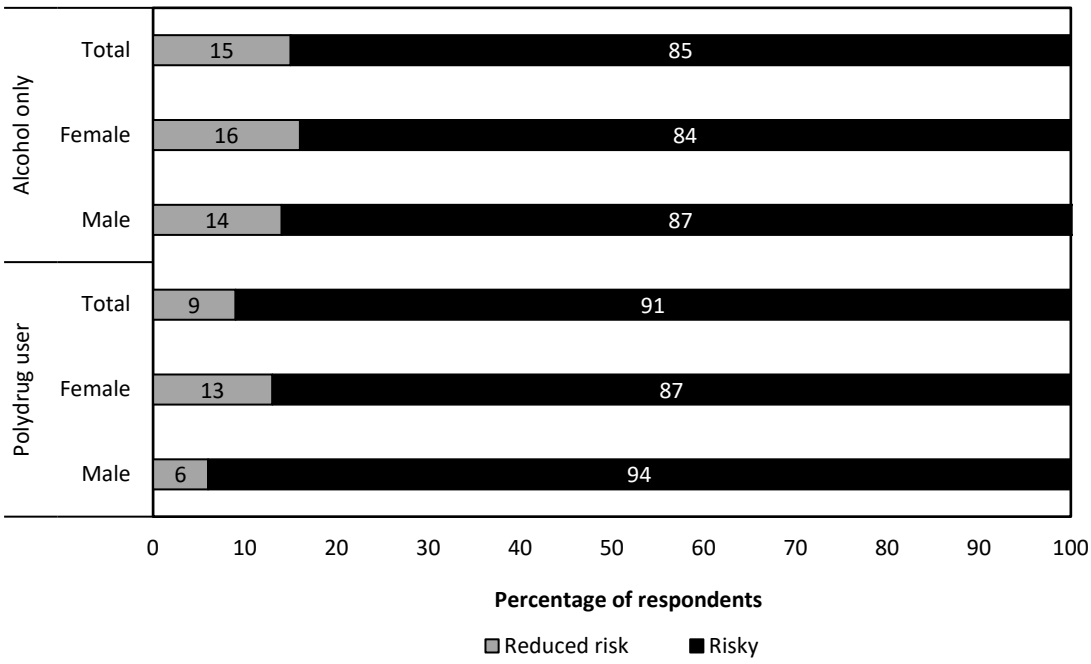


Note. Among those who reported using alcohol.

How risky was alcohol consumption according to 2009 NHMRC guidelines?

According to the 2009 NHMRC guidelines, most respondents reported drinking alcohol at risky levels for the last festival attended (*Figure 4.10*). However, significantly more male polydrug users reported drinking at risky levels than male alcohol users (p = .005) and more male polydrug users drank at risky levels than female polydrug users (p = .002).

Figure 4.10: Level of alcohol risk associated with the last one-day festival attended (NHMRC 2009 guidelines)



Note. According to the 2009 guidelines, to reduce the risk of alcohol-related injury during a single occasion of alcohol use, healthy males and females should drink no more than four standard drinks (reduced risk ≤ 4, risky 4>). The 2009 guidelines were under review at the time of writing (National Health and Medical Research Council, 2018).

Summary

When was alcohol used, what types of alcohol were used and how much was used?

Key findings

6. Most alcohol users drank before and during the festival and about two-fifths drank after. A higher proportion of males than females reported alcohol use after the festival.

7. The most common types of alcohol consumed at one-day festivals were spirits and post-mixes, while the most common types at multi-day festivals were beer and spirits. A higher proportion of males reported drinking beer, while a higher proportion of females reported drinking wine.

8. Respondents drank a median of 10 drinks over a festival day, which involved similar amounts before and during the festival, but less after. According to the NHMRC 2009 guidelines, the vast majority were drinking at risky levels.

9. Polydrug users, particularly males, tended to drink more than alcohol-only users.

Patterns of ecstasy/MDMA use

Key findings for patterns of ecstasy/MDMA use are presented below (full statistics are available in *Appendices E.23-E.24*).

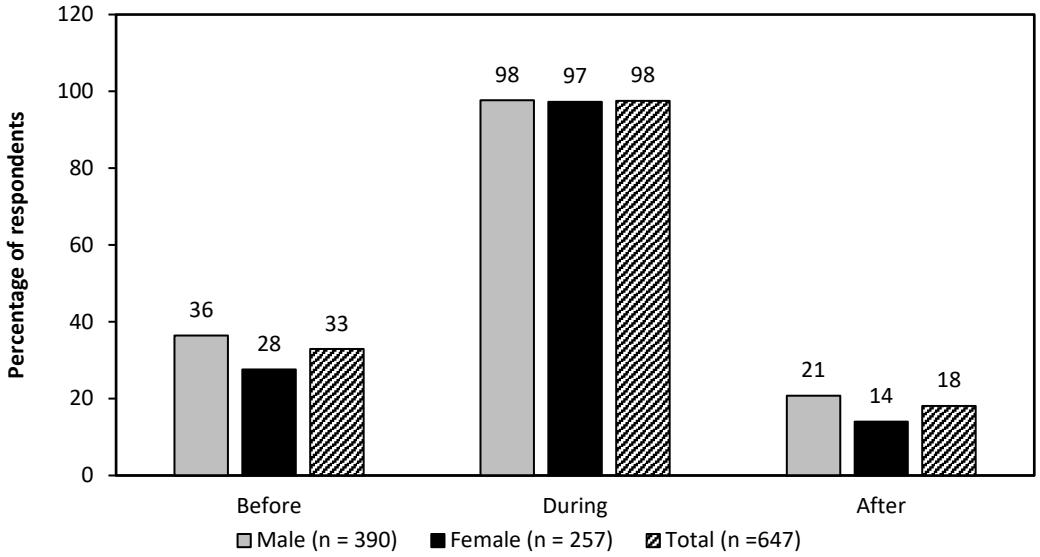
When was ecstasy/MDMA used?

Of the 1365 respondents who last attended a one-day festival, about half (48%) reported using ecstasy on the day. However, the proportion was higher among males (57% vs. 39%, $p<0.001$). A third of ecstasy users reported pre-festival use (33%), almost everyone reported using during the festival (98%) and about a fifth reported post-festival use (18%; *Figure 4.11*). However, a higher proportion of males than females reported pre- and post-use ($p=0.020$, $p=0.029$ respectively). The most common combination of time points was during the festival (58%), followed by before and during (22%), during and after (9%) and then all stages (9%).

The proportion reporting ecstasy use at multi-day festivals was higher. Almost two-thirds (63%) of the 440 attendees reported ecstasy use at some point (of which half reported

using daily). However, again, mores males reported use (67% vs. 56%, p=0.029) and daily use (54% vs. 39%, p=0.029).

Figure 4.11: When ecstasy/MDMA was used associated with the last one-day festival attended



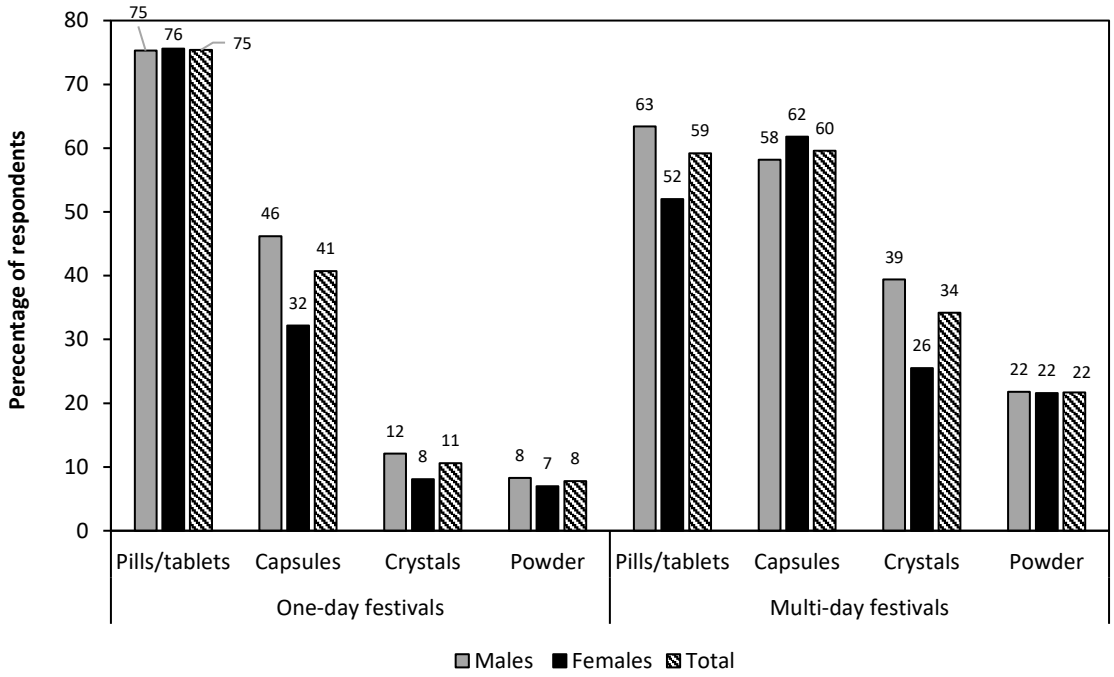
Note. Among those who reported ecstasy use associated with the last one-day festival attended. Cases with inconsistent festival selections were excluded.

What forms of ecstasy/MDMA were used?

Among those last attending one-day festivals, the most common form of ecstasy/MDMA reportedly used was pills/tablets, followed by capsules, crystals and powder. However, a higher proportion of males than females reported using capsules (p<0.001; *Figure 4.12*). Overall, 50% reported using pills only, 18% reported caps only and 15% reported both pills and caps. Most reported only using one form (73%).

In contrast, among those who last attended a multi-day festival, ecstasy capsules and pills were similarly popular, followed by crystal and then powder. However, a higher proportion of males than females reported crystal use (p=0.019). Overall, 42% reported using capsules only, 20% reported pills only and 14% reported pills and capsules. Almost half (46%) reported using more than one form.

Figure 4.12: Forms of ecstasy/MDMA used associated with the last festival attended



Note. Among those who reported ecstasy use associated with the last festival attended. Cases with inconsistent festival selections were excluded.

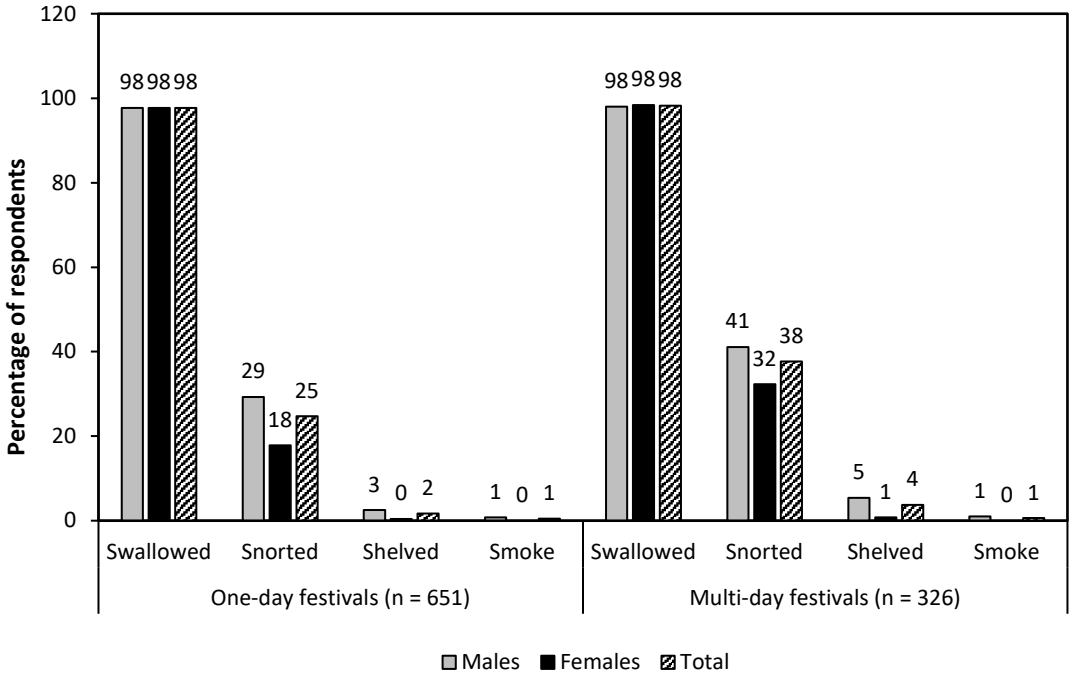
How was ecstasy used?

Among those last attending a one-day festival, swallowing was the most commonly reported route of administration (ROA), followed by snorting and shelving[1]. However, a higher proportion of males than females reported snorting (p=0.001).

The order of ROAs was the same among those last attending a multi-day festival. However, a higher proportion of males reported shelving than females (Fisher's Exact Test, p=0.034; *Figure 4.13*).

[1]Shelving involves taking drugs by anal or vaginal insertion.

Figure 4.13: Ecstasy routes of administration associated with the last festival attended



Note. Among those who reported ecstasy use associated with the last festival attended. Cases with inconsistent festival selections were excluded.

How much ecstasy was used?

Ecstasy pill-only users reported using a median of 2.8 pills associated with the last one one-day festival attended, slightly more than capsule-only users (

Table 4.16). Respondents using both pill and capsule forms reported the highest use. Among those reporting crystal use, a total median of one-third of a gram was used. The only significant difference identified between genders related to capsule use, although both males and females still used a median of two capsules (p=0.023).

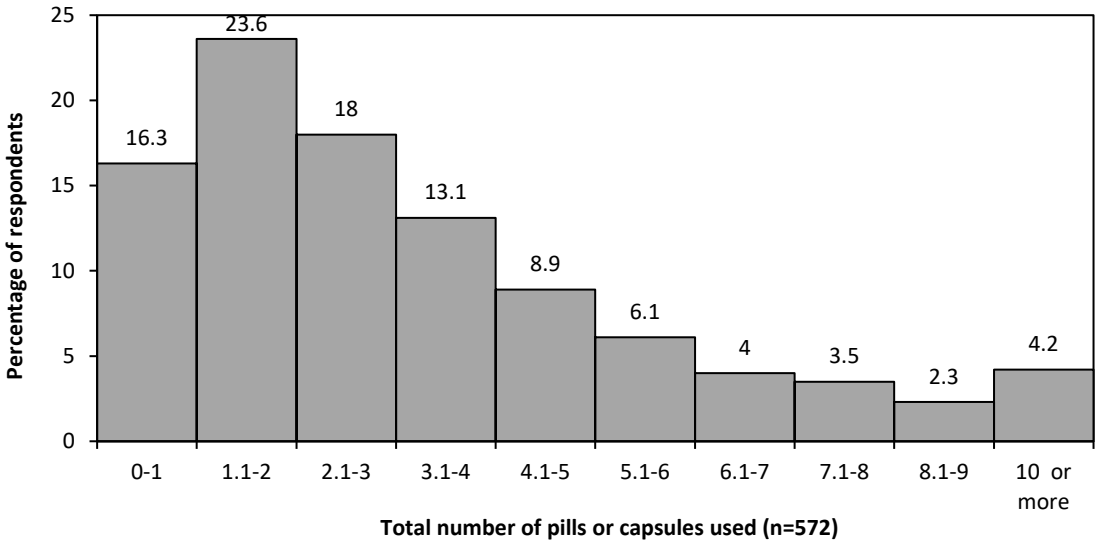
Table 4.16: Quantities of ecstasy/MDMA used before, during and after the last one-day festival attended

	Before	During	After	Total
Median number of pills used (pill only users) (IQR)	n=73 1.0 (1-2)	n=289 2.0 (1-3)	n=37 1.0 (1-2)	n=302 2.8 (2-4)
Median number of capsules (capsule only users) (IQR)	n=21 1.0 (1-1.3)	n=100 2.0 (1-3)	n=10 1.0 (1-3)	n=105 2.0 (1-3)
Median number of pills/caps (pill and cap users) (IQR)	n=39 1.5 (1-2)	n=91 4.0 (3-6)	n=26 1.5 (1-3)	n=91 5.0 (4-7)
Median grams of crystals (crystal only users) (IQR)	n=4 0.17 (0.1-0.24)	n=17 0.30 (0.15-1)	n=1 0.20[#]	n=17 0.35 (0.2-1)
Median lines of crystals (crystal only users) (IQR)	n=2 1.5 (1-[#])	n=4 2.0 (1-4)	n=2 0.60 (0.2-[#])	n=5 3.0 (1.1-4)

#Could not be computed due to small sample size.

Figure 4.14 demonstrates that vast majority (84%) of respondents reported using multiple pills/caps. Indeed, two-fifths (42%) reported using more than the median of 2.8.

Figure 4.14: Total number of ecstasy pills/capsules used associated with the last one-day festival attended



Note. While in Table 4.16 forms of ecstasy were looked at separately, for the purpose of this figure, the three consumption amount variables (ecstasy pills only, capsules only, and pills and capsules) were combined into a single variable.

Unsurprisingly, reported total quantities consumed were higher at multi-day festivals. However, daily amounts were similar to one-day festival totals. On day one, pill only users reported using a median of two, as did capsule only users. Those who reported using both pills and capsules again had the highest use (*Table 4.17*). There were no significant differences between genders in amounts used per day.

Table 4.17: Median amounts of ecstasy used per day at multi-day festivals

	Day 1	Day 2	Day 3	Total
Median number of pills used (pill only users) (IQR)	*n*=52 2.0 (1.5-4.0)	*n*=33 2.0 (2.0-3.5)	*n*=25 2.0 (1.0-4.0)	*n*=74 3.0 (2.0-6.0)
Median number of capsules (capsule only users) (IQR)	*n*=42 2.0 (1.0-3.0)	*n*=34 2.0 (1.4-3.0)	*n*=17 2.0 (1.8-3.0)	*n*=59 3.0 (2.0-5.0)
Median number of pills/caps (pill and cap users) (IQR)	*n*=30 4.5 (3.0-7.0)	*n*=20 3.5 (2.0-6.0)	*n*=17 4.0 (2.0-5.5)	*n*=35 7.0 (4.0-14.0)
Median grams of crystals (crystal only users) (IQR)	*n*=9 0.33 (0.22-0.55)	*n*=12 0.42 (0.21-0.74)	*n*=10 0.50 (0.31-0.70)	*n*=20 0.58 (0.02-1.00)

Summary

When was ecstasy used, how was it used, which forms were used and how much was used at the last festival attended?

Key findings

10. Almost half of one-day festivalgoers and almost two-thirds of multi-day festivalgoers reported ecstasy use at the last festival attended.

11. At the last one-day festival, more than a third of festivalgoers used before, almost all used during and a fifth used after the festival. Half of those who used ecstasy at a multi-day festival used ecstasy daily.

12. A higher proportion of males than females reported ecstasy use at one-day and multi-day festivals.

13. Pills were the most common form used at one-day festivals, while pills and capsules were used equally at multi-day festivals. Crystal and powder forms of ecstasy were more common at multi-day festivals. Compared to females, males reported more capsule use at one-day festivals and more crystal use at multi-day festivals.

14. The majority reported swallowing ecstasy, although a quarter snorted for one-day festivals and two-fifths snorted at multi-day festivals. Few reported shelving ecstasy (2–4%).

15. At one-day festivals, pill users reported a median of 2.8 pills, while cap users reported a median of two capsules. Those who used pills and caps reported a median of five pills/caps. At multi-day festivals, daily amounts consumed were similar, but total amounts were (unsurprisingly) higher.

16. Males and females mostly used comparable amounts of ecstasy. While males used significantly more capsules at one-day festivals, the median for both was the same.

Patterns of cannabis use

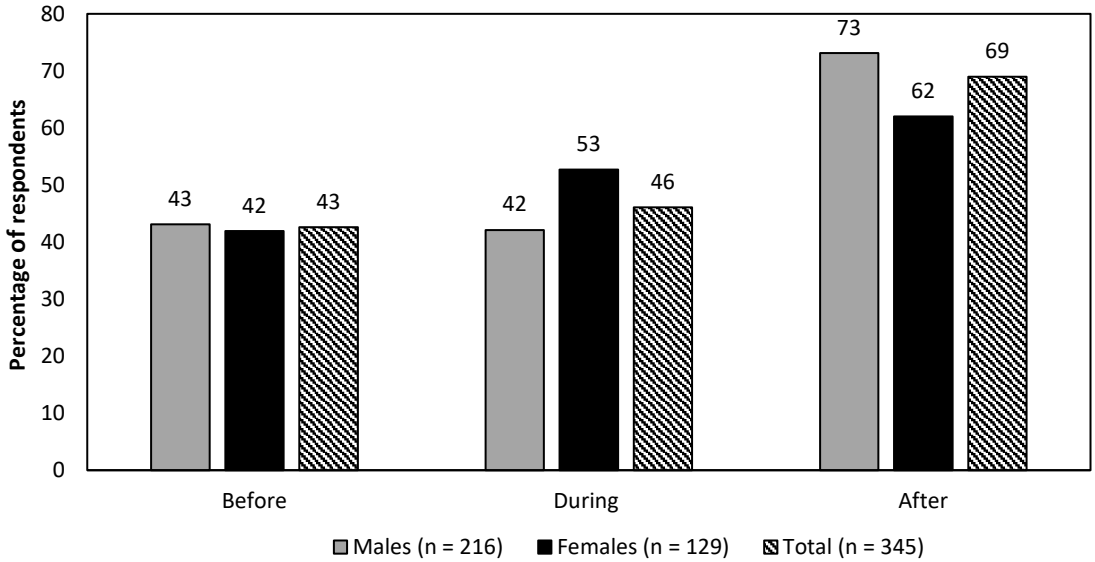
Key findings for patterns of cannabis use are presented below (see *Appendices E.21-E.22* for full statistics).

When was cannabis used?

Of the 1365 respondents who last attended a one-day festival, approximately one-quarter reported using cannabis on the day (26%). However, a higher proportion of males than females reported use (32% vs. 20%, $p<0.001$). Among those reporting cannabis use (n=346, missing=3), about half reported use during the festival and two-thirds after (*Figure 4.15*). However, a higher proportion of males reported post-festival use (p=0.031). Almost a third (30%) reported using cannabis after the festival only.

Of the 440 respondents who last attended a multi-day music festival, half (50%) reported cannabis use during the event (65% daily use). However, a significantly higher proportion of males reported any use (58% vs. 39%, $p<0.001$) and daily use (71% vs. 52%, p=0.006).

Figure 4.15: When cannabis was used in association with the last one-day festival attended



Note. Among those who reported cannabis use associated with the last one-day festival attended. Cases with inconsistent festival selections were also excluded.

How was cannabis used?

For one-day festivals, almost all cannabis users reported smoking it (98%), while small proportions reported vaporising and/or swallowing (each 3%). Likewise, most multi-day festivalgoers (98%) reported smoking (swallowing: 4%; vaporising: 3%).

How much cannabis was used?

The overall median number of cones[2] reportedly smoked in association with one-day festivals was five, while the median number of joints smoked was two (*Table 4.18*). The median number of cones smoked was higher for males than females (*Mdn*=6 vs. 4, *p*=0.021). Only 10 respondents reported consuming cannabis brownies.

Table 4.18: Median amounts of cannabis used before, during and after the last one-day festival attended

	Before	During	After	Total
Cones (IQR)	*n*=75 4.0 (2.0-6.0)	*n*=20 2.5 (1.3-9.5)	*n*=145 5.0 (3.0-10.0)	*n*=171 5.0 (3.0-11.0)
Joints (IQR)	*n*=68 1.0 (1.0-2.0)	*n*=138 2.0 (1.0-2.3)	*n*=101 1.0 (1.0-2.0)	*n*=223 2.0 (1.0-3.0)
Brownies (IQR)	*n*=8 1.0 (1.0-1.0)	*n*=3 1 (1.0-1.0)	*n*=2 1 (1.0-1.0)	*n*=10 1.0 (1.0-2.0)

Unsurprisingly, total amounts of cannabis used during multi-day festivals were higher than one-day festivals (*Table 4.19*). Daily medians for cones and brownies were also higher than one-day festivals. Interestingly, the median reported number of cones smoked per day increased across festival days. While females reported smoking a comparable number of cones, males reported smoking significantly more joints on all days (e.g. day 1 males: *Mdn*=2, IQR=1–5; females: *Mdn*=1, IQR=2–3; *p*<0.001).

Table 4.19: Median amounts of cannabis used at multi-day festivals

	Day 1	Day 2	Day 3	Total
Cones (IQR)	*n*=62 6.0 (3.0-20.0)	*n*=55 7.0 (3.0-20.0)	*n*=53 8.0 (3.0-20.0)	*n*=85 13.0 (5.0-52.3)
Joints (IQR)	*n*=94 2.0 (1.0-4.3)	*n*=111 2.0 (1.0-5.0)	*n*=84 2.0 (1.0-4.8)	*n*=149 4.0 (2.0-10.0)
Brownies (IQR)	*n*=7 3.0 (1.0-8.0)	*n*=9 3.0 (1.0-4.0)	*n*=6 2.5 (1.8-5.5)	*n*=16 3.0 (1.0-11.0)

[2]This does refer to cone shaped joints. In Australian slang, a cone is the area of a bong where cannabis is packed and burnt. One cone = one packed bong.

Summary

When was cannabis used, how was cannabis used and how much cannabis was used associated with the last festival attended?

Key findings

17. Twenty-six per cent of one-day festivalgoers used cannabis compared to 50% of multi-day festivalgoers. A higher proportion of males than females reported cannabis use at both one-day and multi-day festivals.

18. For one-day festivals, over two-fifths reported using cannabis before, almost half reported using during, and over two-thirds reported using after the festival. A higher proportion of males than females reported using after the festival.

19. At one-day and multi-day festivals, almost everyone reported smoking cannabis, but small proportions reported swallowing or vaporising (3–4%).

20. At one-day festivals, those who smoked cones reported a median of five over the day, while those who smoked joints reported a median of two. Multi-day festivalgoers also smoked a median of two joints per day, but smoked more cones. The number of cones smoked increased across festival days as well.

Patterns of use for other drugs

Table 4.20 below presents data on ROAs and amounts used for other drugs.

Table 4.20: Patterns of use for other drugs associated with the last festival attended

Drug	Swallow (%)	Snort (%)	Smoke (%)	Amount used one-day festivals (IQR)	Amount used one-day festivals (IQR)	Amount used multi-day festivals (IQR)	Amount used multi-day festivals (IQR)
Ketamine	(*n*=182) 4.4	(*n*=182) 98.9	(*n*=182) 8.8	(*n*=42) 3.0 bumps (2.0-6.3)	-	(*n*=85) 9.0 bumps (3.0-15.5)	-
LSD	(*n*=152) 100.0 (sublingual: 96.2; buccal: 8.9)	-	-	(*n*=38) 1.0 tabs (1.0-2.0)	-	(*n*=103) 2.0 tabs (1.0-3.0)	-
Nitrous oxide	-	-	-	(*n*=8) 7.0 bulbs (3.3-13.8)	-	(*n*=47) 24.0 bulbs (6.0-60.0)	-
Cocaine	(*n*=147) 4.1	(*n*=147) 89.8	(*n*=147) 0.0	(*n*=63) 3.0 lines (2.0-5.0)	(*n*=25) 0.5 grams (0.30-1.3)	(*n*=36) 4.0 lines (1.0-12.8)	(*n*=24) 1.0 gram (0.50-2.4)
Speed	(*n*=147) 17.0	(*n*=147) 79.6	(*n*=147) 4.1	(*n*=35) 2.0 lines (1.0-4.0)	(*n*=16) 0.5 grams (0.21-1.0)	(*n*=56) 3.0 lines (1.0-6.0)	(*n*=27) 2.0 grams (0.50-4.2)
Pharm stims[a]	(*n*=81) 87.7	(*n*=81) 13.6	(*n*=81) 0.0	(*n*=42) 2.5 pills (2.0-6.0)	-	(*n*=15) 4.0 (2.0-5.0)	-
Benzos[b]	(*n*=77) 97.4	(*n*=77) 3.9	(*n*=77) 1.7	#	#	#	#

Note. Drugs where self-reported use <3.9% were excluded from this table.
[a]The most commonly reported main pharmaceutical stimulant was dexamphetamine (80%), followed by methylphenidate (15%), modafinil (3%) and phentermine (1%).
[b]The most common main benzodiazepine was diazepam (54%), followed by alprazolam (25%), temazepam (8%) and then clonazepam, lorazepam and 'unknown' (each 4%).
[#]Quantities varied according to the type of benzodiazepine used.

Practices

As noted earlier, the candidate identified a dearth of literature on festivalgoers' drug practices. For example, no identified Australian studies investigated protective and risk behaviours. As highlighted in the review, one particularly important protective factor when using ecstasy/MDMA is properly managing water intake (given the heightened risk of hyperthermia and hyponatremia). However, the level of awareness regarding recommended water guidelines when using ecstasy is unknown. Additionally, while there have been multiple media reports about internal concealment of drugs when entering festivals (e.g. an 18-year-old female concealing almost 400 MDMA capsules internally (Deutrom & Graham, 2018)), no research had investigated the prevalence of this method of concealment. Other practices which have received increasing academic attention, but for which evidence remains scanty, include obtaining and supplying drugs at festivals. Thus, to address these gaps in the literature, this section answers the following five questions (in relation to the last festival attended):

- What practices did respondents employ which may have increased the risk of experiencing drug-related harms?
- What practices did respondents employ to try and minimise the risk of experiencing drug-related harms?
- What proportion of ecstasy users were aware of the recommended water guidelines?
- What practices did respondents engage in to obtain the drugs they used during the last festival they attended?
- What practices did respondents engage in related to supplying drugs at the last festival they attended?

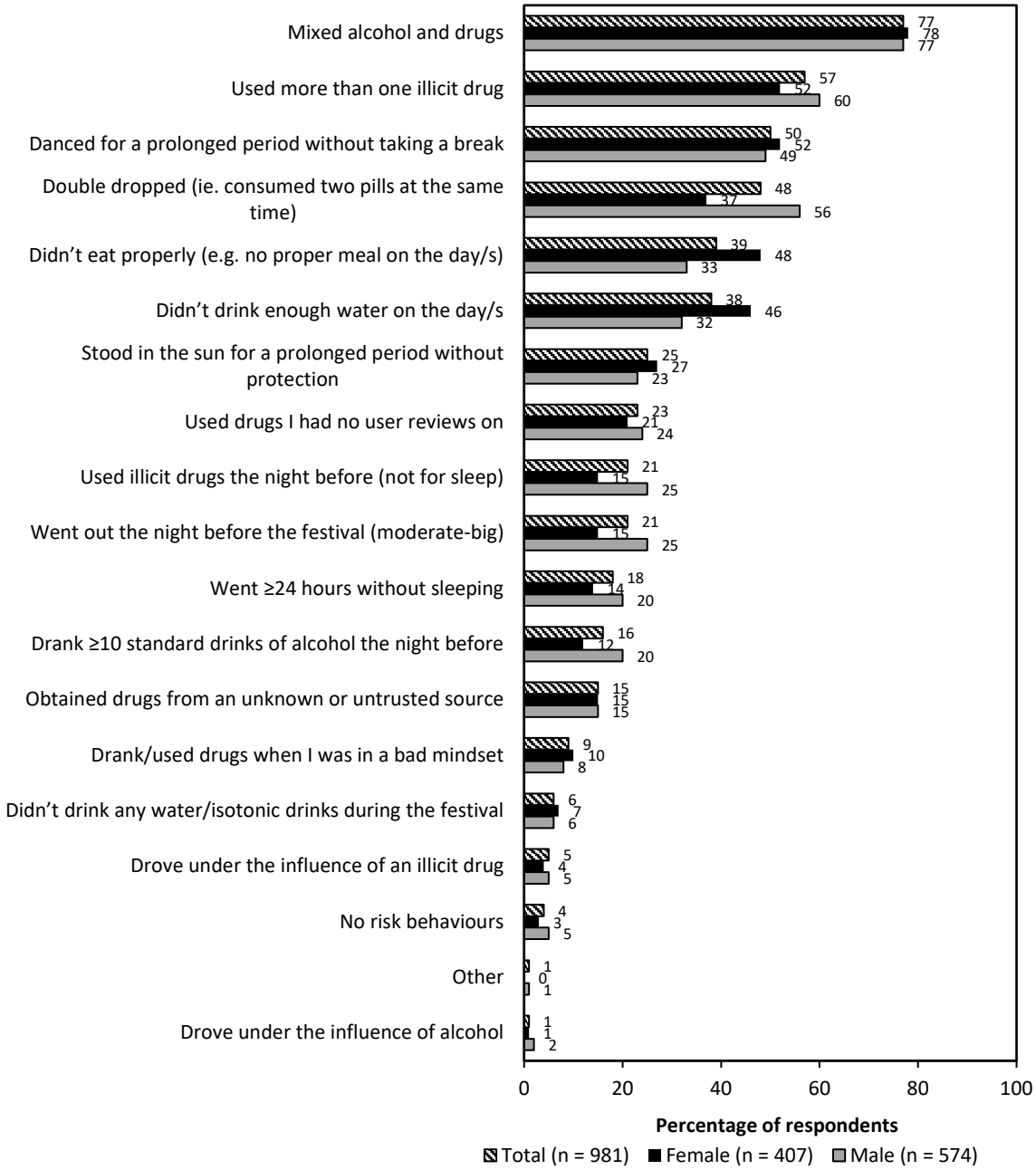
Again, for readability purposes, the key findings are presented in this chapter and full statistics are available in the appendices.

What risk practices did respondents engage in?

Respondents were provided with a list of 17 potential risk factors and asked to select those which applied to them in association with the last festival attended. The median number of risk practices nominated was four (IQR=3–6). A majority of illicit drug users reported mixing with alcohol and using multiple illicit drugs, while significant minorities reported not eating or drinking enough (*Figure 4.16*). Other notable risk behaviours included using drugs they had no reviews on and 'double dropping' (i.e. consuming two ecstasy pills/capsules simultaneously), reported by about half those who used pills or capsules.

A significant greater proportion of females reported not eating or drinking enough, while more males reported 'double dropping', using multiple illicit drugs, having a big night the night before, using illicit drugs the night before and going >24 hours without sleeping (*Figure 4.16*, see *E.25* for full statistics).

Figure 4.16: Risk practices reported among those who reported using illicit drugs in association with the last festival attended



Note. Those who identified as a non-binary gender were excluded from this figure (*n*=5). The proportion reporting 'double dropping' is among those who reported using ecstasy pills or capsules.

Correlates of 'double dropping' ecstasy/MDMA

The high proportion of ecstasy pill and/or cap users self-reporting 'double dropping' (48%), in combination with current market trends (e.g. increasing detection of NPS and increasing ecstasy purity trends), was identified as a significant concern in post-survey interviews with KIs (due to the heightened risk of overdose). Given the high risk potential associated with this practice, multivariable analyses were performed to investigate correlates.

In the model below (*Table 4.21*), more frequent general ecstasy use, younger age (e.g. 16–17), male gender and use of pill forms of ecstasy were associated with significantly greater odds of self-reporting double dropping associated with the last festival attended, while attendance at fewer recent festivals (e.g. 1–2), a preference for a genre other than EDM and attendance at a one-day festival was associated with lower odds (inverted odds are noted below *Table 4.21*). More frequent ecstasy use was the strongest predictor in the model.

While confidence interval patterns were largely consistent with MI (n=773) and without (n=516), the intervals for the odds of double dropping among those who reported more frequent ecstasy use were substantially higher without MI. This suggests the strength of the correlation between more frequent use of ecstasy and double dropping is underestimated by the MI model below. The complete case analysis is available in the appendices (*E.27*).

Table 4.21: Correlates of self-reported 'double dropping' among those who used ecstasy pills or caps associated with the last festival attended (multivariable logistic regression–MI model)

Variable	Level	*N*	Did double drop	Did not double drop	Bivariable			Multivariable		
			43.5%	56.5%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	103	53	47	2.714	1.401-5.258	0.003**	3.308	1.576-6.946	0.002**
	18-19 years old	207	54	46	2.738	1.500-4.999	0.001**	2.647	1.365-5.132	0.004**
	20-21 years old	194	40	60	1.593	0.867-2.926	0.134	1.256	0.646-2.442	0.501
	22-25 years old	205	36	64	1.310	0.713-2.405	0.384	1.020	0.527-1.977	0.952
	26 years and over	64	30	70	1.000			1.000		
Gender	Male	459	51	49	2.265	1.678-3.056	<0.001***	2.477	1.766-3.475	<0.001***
	Female	314	32	68	1.000			1.000		
Jurisdiction	WA	405	43	57	0.938	0.705-1.247	0.659	#		
	VIC	368	44	56	1.000					
Ecstasy form	Pills and caps	187	66	34	5.072	3.263-7.883	<0.001***	3.701	2.311-5.928	<0.001***
	Pills only	400	40	60	1.718	1.178-2.506	0.005	1.698	1.122-2.568	0.012*
	Caps only	186	28	72	1.000			1.000		
Frequency of general ecstasy use	1/week	97	62	38	5.160	2.928-9.091	<0.001***	3.645	1.937-6.862	<0.001***
	1/month	282	48	53	2.881	1.827-4.544	<0.001***	2.296	1.382-3.812	0.001**
	Every few months	256	43	57	2.359	1.485-3.749	<0.001***	2.270	1.368-3.769	0.002**
	1-2/year	138	24	76	1.000					
Total recent festivals attended	1-2	274	39	61	0.613	0.427-0.881	0.008**	0.622	0.410-0.946	0.026*
	3-4	286	43	57	0.723	0.506-1.033	0.075	0.660	0.444-0.982	0.040*
	5 or more	213	51	49	1.000			1.000		
Favourite genre to attend festivals for was an EDM genre	No	210	31	69	0.493	0.349-0.697	<0.001***	0.641	0.437-0.942	0.023*
	No favourite genre	125	47	53	0.962	0.646-1.432	0.848	1.230	0.790-1.916	0.360
	Yes	438	48	52	1.000			1.000		

Variable	Level	*N*	Did double drop	Did not double drop	Bivariable			Multivariable		
			43.5%	**56.5%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Festival type	One-day	529	41	59	0.752	0.540-1.046	0.090	0.596	0.402-0.884	0.010*
	Inconsistent selection	50	46	54	0.906	0.486-1.690	0.757	0.779	0.384-1.582	0.489
	Multi-day	194	49	52	1.000			1.000		

Note. Males were 2.5 times more likely than females to report double dropping; ecstasy pill users were approximately 1.7 times more likely than ecstasy capsule users; weekly ecstasy users were 3.6 times more likely than those who reported using ecstasy only once or twice per year and monthly ecstasy users and those who used every few months were still more than twice as likely to double drop than those reporting use only once or twice per year; respondents who reported attending more than 5 recent festivals were approximately 1.6 times more likely to report double dropping than those who reported attending only 1-2 recent festivals; those who preferred to attend music festivals for a genre fitting within the umbrella of EDM were also about 1.5 times more likely to report double dropping; and finally, those who reported last attending a multi-day festival were 1.7 times more likely to report double dropping than those who reported last attending a one-day festival. Model $\chi 2$ (16)=152.821, $p<0.001$. Adjusted R square=0.179 (Cox & Snell), 0.241 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, $p=0.110$, $n=773$.
[#]Dropped from the multivariable model because $p>0.25$. *$p<0.050$; **$p<0.010$; ***$p<0.001$

Qualitative responses for risk factors

In the pre-survey interviews, participants who experienced negative drug-related effects associated with the last festival attended were asked to identify any factors that may have contributed. Responses were recoded into four categories, discussed further below.

Factors which relate to heat/hydration

Factors that negatively affected heat and hydration were mentioned by 10 interviewees (50%). Responses coded into this category were jumping around in the mosh pit/crowd, warm weather/festivals being held in summer, dancing for long periods, not drinking water, setting up camp resulting in overheating and exhaustion, drinking in the sun, and the ambient temperature of campsite tents. One respondent explained how returning to their tent when feeling unwell inadvertently exacerbated their problems:

> *I wanted to lay down in the tent to try and recover in private, but it was so hot in there it made me feel so much worse. I think it was in the mid-thirties [Celsius] that day, but probably over forty in my tent. Definitely was not a good idea.*
>
> *[P16, female, 27yrs, VIC]*

Mixing drugs/polydrug use

Four participants (20%) believed mixing drugs contributed to negative drug-related effects. All reported using at least three different drugs concurrently and explained that some of this was unplanned (i.e. opportunistic). Thus, while not stated by respondents, easy access/availability within the event also played a role. For example:

> *On Sunday night I had some coke whilst drinking. I also had some DMT from a vaporiser that a friend offered – subsequent observation was that coke and DMT aren't particularly complementary!*
>
> *[P14, female, 35yrs, VIC]*

> *I just mixed pills, coke and weed because someone in the mosh was smoking a joint. And I went into the mosh with only half a UDL [can of pre-mixed alcohol and soft drink].*
>
> *[P01, male, 26yrs, WA]*

The duration of festivals/partying

Two female interviewees attributed their adverse experiences to the length of festivals. One explained how the nature and duration of multi-day festivals alone can lead to negative

effects, which are then exacerbated by drugs, while another explained how the accumulative effects across the day and night associated with a one-day festival take their toll:

> *Mentally, the usage over a number of days leads to fatigue, and serotonin depletion (MDMA) can lead to a few days of feeling down after the event. Someone such as myself who has learnt to expect this can mitigate to some extent by planning a couple of days recuperation time after the event. The impact is certainly lessened when the effects are known and expected. Physically, four days of dancing is tiring. Adding drugs to the mix does not help.*
>
> *[P13, male, 34yrs, VIC]*

> *It was such a long day because my friends came over from ten am for a champagne breakfast, we headed in [to the festival] at midday, left close to midnight and continued the party back at a friends until morning. I think the duration of drinking and doing drugs at festivals can get to you, particularly when it's hot and you maybe get too excited and forget to pace yourself.*
>
> *[P18, female, 20yrs, VIC]*

Inexperience/lack of HR

Only one participant commented on knowledge about HR. His account suggested his age and inexperience rendered him more vulnerable to riskier use:

> *I wasn't smart, but that was when I was younger and didn't know as much about staying safe as I do now.*
>
> *[P01, male, 26yrs, WA]*

Summary

What practices did respondents employ which may have increased the risk of experiencing drug-related harms at the last festival attended?

Key findings

21. Illicit drug users reported engaging in a variety of practices (*Mdn*=4) which could have increased health risks.

22. Almost half (48%) those who used ecstasy pills/capsules reported double dropping.

23. Other notable risk practices included going 24 hours or longer without sleeping (18%), obtaining from an unknown/untrusted source (15%), not drinking any water or isotonic drinks at all during the festival (6%) and driving under the influence of an illicit drug (5%).

24. Significant differences were identified between genders. For example, females were more likely to report not eating and drinking properly, whereas males were more likely to report double dropping and going 24 hours or longer without sleeping.

25. In the qualitative interviews, festivalgoers reported returning to their tents alone when they were feeling unwell, which they believed exacerbated problems. Other factors they thought contributed to adverse effects were mixing drugs (opportunistically), poor management of body temperature/hydration, and the duration of partying associated with festivals.

What 'protective' practices did respondents employ?

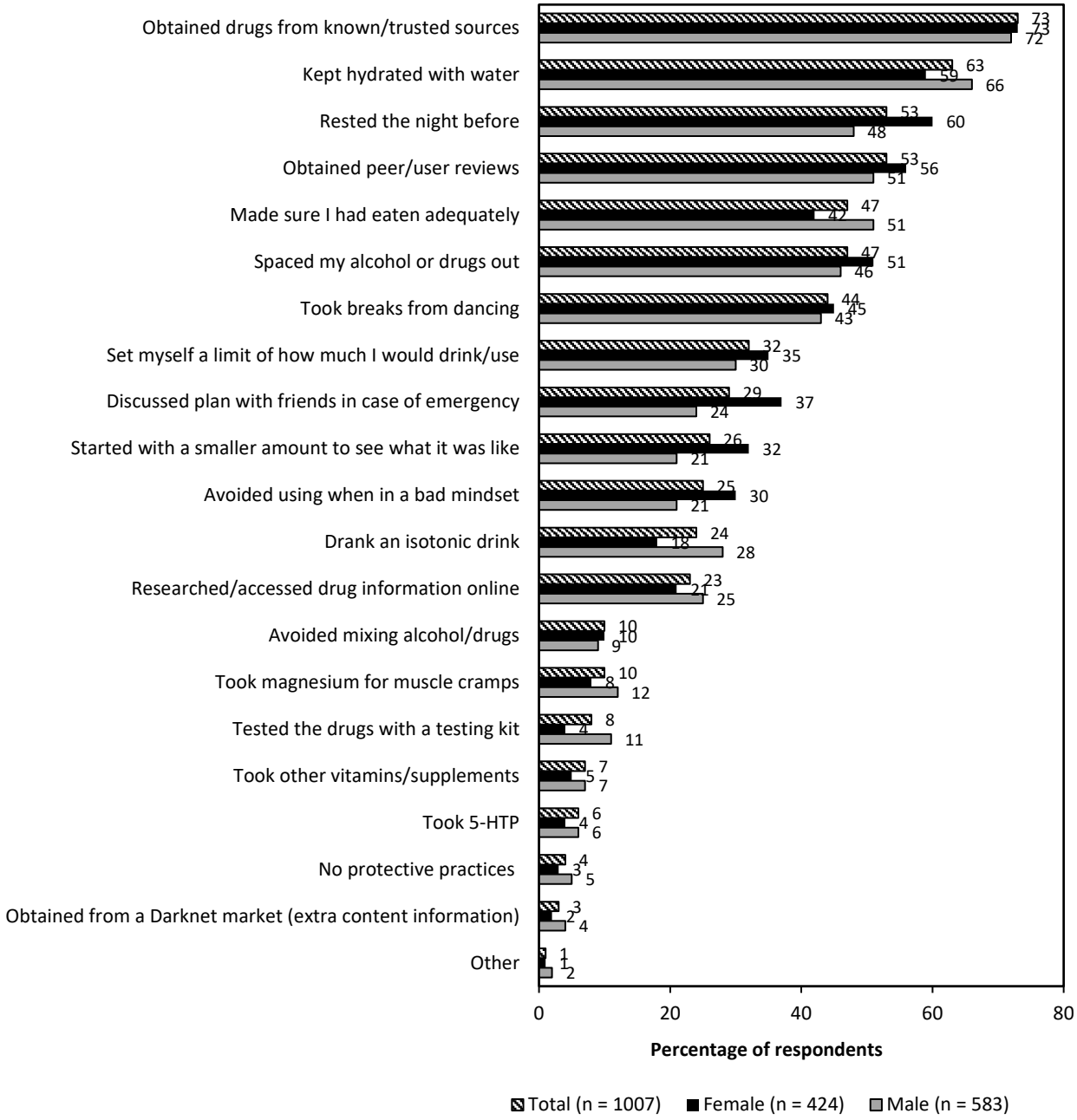
Respondents were asked to identify practices they employed to reduce the risk of experiencing negative drug-related effects associated with the last festival attended. Nineteen practices were listed, based on behaviours identified in the pre-survey interviews. However, it is important to note that while these behaviours were perceived as 'protective', the efficacy of some (e.g. 5-HTP) is questionable or lacks empirical support. Nevertheless, all practices were included in the quantitative survey list because engagement in them provides indications of enthusiasm for HR. Moreover, if a high proportion of festivalgoers nominate practices lacking empirical support, their enthusiasm could be channelled into more validated practices.

The median number of 'protective' practices nominated by illicit drug users was six (IQR=3–9). Most reported obtaining drugs from known/trusted sources (*Figure 4.17*), keeping hydrated, seeking peer reviews and resting the night before. Just under half reported spacing their drugs out and making sure they had eaten. Other notable practices included discussing an emergency plan, starting with a test dose, using a reagent testing kit and taking 5-HTP. Additionally, half those who used ecstasy pills reported checking the Pillreports website. Some common responses entered into 'other (please specify)' included booking the next day off work for recovery and only using pills they had used on other occasions. Overall, 71% of respondents who reported using an illicit drug associated with the last festival reported seeking information about drug content in some form.[1]

There were some significant gender differences. For example, higher proportions of females reported resting the night before, discussing an emergency plan and using a test dose, whereas higher proportions of males reported using a reagent testing kit, eating adequately and keeping hydrated (see *E.26* for full statistics). Overall, the results suggest most festivalgoers sampled were actively seeking information about their drugs and engaging in a variety of other practices they believed could help minimise the risk of experiencing drug-related problems.

[1] Forms of seeking information about drug content included: obtaining peer reviews, starting with a test dose, testing drugs with a testing kit, looking on the Pill Reports website and purchasing from a Darknet market to access a product description and reviews.

Figure 4.17: Protective practices reported by those who used illicit drugs in association with the last festival attended



Note. Those who identified as a non-binary gender were excluded from this figure (*n*=5).

Correlates of using a test dose

Given ecstasy has been historically impure, using a test dose makes sense for ecstasy users (e.g. in comparison to cannabis users). Thus, the below analysis focused on ecstasy users, although the multivariable analysis for all illicit drug users is available in *Appendix E.28*. As evident below (*Table 4.22*), being aged 20–21 years and of male gender were associated with lower odds of self-reporting using a test dose. The confidence intervals were similar with MI (*n*=829) and without (*n*=556). The complete case analysis is available in *Appendix E.28*.

Table 4.22: Correlates of ecstasy/MDMA users self-reporting 'started with a smaller amount to see what it was like' in association with the last festival attended (multivariable logistic regression – MI model)

Variable	Level	*N*	Did a test dose	Did not use a test dose	Bivariable			Multivariable		
			27.4%	72.6%	*OR*	95% CI	*p*	*AOR*	95% CI	*p*
Age	16-17 years old	103	28.2	71.8	0.612	0.330-1.135	0.119	0.631	0.326-1.221	0.171
	18-19 years old	215	26.5	73.5	0.564	0.329-0.965	0.036*	0.624	0.351-1.110	0.109
	20-21 years old	207	18.8	81.2	0.363	0.206-0.638	<0.001***	0.421	0.232-0.763	0.004**
	22-25 years old	222	31.5	68.5	0.720	0.425-1.218	0.220	0.812	0.466-1.416	0.463
	26 years and over	82	39.0	61.0	1.000			1.000		
Gender	Male	493	22.3	77.7	0.538	0.395-0.732	<0.001***	0.524	0.380-0.721	<0.001***
	Female	336	34.8	65.2	1.000			1.000		
Jurisdiction	WA	417	27.1	72.9	1.029	0.758-1.397	0.854	#		
	VIC	412	27.7	72.3	1.000					
Ecstasy form	Used pill/tablet form	249	28.5	71.5	1.084	0.779-1.509	0.632	#		
	Did not use a pill/tablet form	580	26.9	73.1	1.000					
Frequency of general ecstasy use	1/week	115	27.8	72.2	0.876	0.510-1.504	0.632	1.009	0.559-1.823	0.975
	1/month	299	24.4	75.6	0.734	0.472-1.142	0.170	0.805	0.499-1.301	0.376
	Every few months	271	28.8	71.2	0.919	0.591-1.428	0.706	0.935	0.586-1.492	0.777
	1-2/year	144	30.6	69.4	1.000			1.000		
Total recent festivals attended	1-2	301	30.6	69.4	1.528	1.028-2.271	0.036*	1.462	0.954-2.242	0.081
	3-4	300	28.0	72.0	1.350	0.904-2.015	0.142	1.349	0.889-2.045	0.159
	5 or more	228	22.4	77.6	1.000			1.000		
Favourite genre to attend festivals for was an EDM genre	No	221	24.0	76.0	0.849	0.587-1.228	0.385	0.753	0.509-1.114	0.156
	No favourite genre	128	34.4	65.6	1.410	0.930-2.139	0.106	1.275	0.825-1.970	0.274
	Yes	480	27.1	72.9	1.000			1.000		

Variable	Level	*N*	Did a test dose	Did not use a test dose	Bivariable			Multivariable		
			27.4%	**72.6%**	***OR***	**95% CI**	***p***	***AOR***	**95% CI**	***p***
Festival type	One-day	550	24.7	75.3	0.678	0.483-0.952	0.025*	0.732	0.509-1.053	0.092
	Inconsistent selection	50	34.0	66.0	1.066	0.557-2.038	0.848	1.118	0.564-2.215	0.749
	Multi-day	224	32.6	67.4	1.000			1.000		

Note. This model has had 33 multiple imputations applied corresponding to the percentage of missing cases. The complete case analysis is available in the appendices. Model $\chi 2$ (14)=44.197, p<0.001. Adjusted R square=0.052 (Cox & Snell), 0.075 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.717, n=829. [#]Dropped from the multivariable model because p>0.25. *p<0.050; **p<0.010; ***p<0.001.

Qualitative responses

In the qualitative interviews, most participants reported engaging in a variety of different precautions. These strategies were broadly recoded into two categories: sourcing information about their drugs/quality checking (*n*=18, 90%), and other. These categories are described in greater detail below. When reading this section, keep in mind that practices described by participants were *perceived* as protective, but there may not be evidence to support their efficacy in reducing the risk of drug-related harms (elaborated upon in chapter 5).

Sourcing information about their drugs/quality assurance

Participants reported numerous methods for sourcing information about drug content. These methods were coded into seven sub-categories: obtaining user reviews from friends and/or suppliers (*n*=10, 50%), searching for information on Pillreports.net (*n*=9, 45%), testing the drugs with a reagent testing kit (sometimes pre-purchase, sometimes post-purchase) (*n*=6, 30%), buying drugs from known/trusted sources (*n*=5, 25%), starting with a test dose (*n*=3, 15%), buying from dark net marketplaces with drug content details and reviews (*n*=2, 10%), and trying drugs from that 'batch' on a day prior to the festival to help inform usage/dosage (*n*=1, 5%). Some reported triangulating these methods, whereas others seemed happy to obtain information from one source only. For example:

> *Yes, I always ask my friends about the pill. One of them always looks for it online at the reports to make sure it sounds okay. Normally we get some details from the supplier about what they're like. Lately we haven't had anything dodgy. I also just try and pace myself so I don't ruin the day, make sure I've eaten something and stay hydrated. I would normally have trialled the caps before an event, but I didn't really get time so had to rely on reviews from friends and the fact there were no warnings on pill reports.*
>
> *[P03, female, 23yrs, WA]*

Another respondent acknowledged limitations to Pillreports.net, yet had gained trust in the site and perceived it as easier than the prospect of drug-checking:

> *As I said earlier, I use Pillreports. I understand that's not entirely accurate and you could even have a different pill altogether to the one in the report*

that looks exactly the same, but I've found it to be pretty accurate for me so far. Pill testing sounds like a bit of a fuck around.

[P01, male, 26yrs, WA]

Interestingly, a few participants seemed to place extreme confidence in obtaining from known/trusted sources. Additionally, while not described as an intentional precaution, they placed confidence in the purity and safety of crystals compared to pills:

Yeah definitely take some precautions, generally I'll stay in the night before, drink plenty of water the day I'm going out. Never had a drug testing kit, but I usually buy from my friend and they are essentially just crystals so I've known mainly what I'm getting ... I'll check pill reports if I do get pills or ask other people what they have thought of the pills before.

[P10, male, 19yrs, WA]

Indeed, it was common for ecstasy pills to be perceived as very distinct to ecstasy capsules/crystals. While pills were called 'ecstasy', other forms were commonly called 'MDMA'. This different terminology inherently suggests non-pill forms are purer:

If I buy pills, I usually always research them on pill report. I also try and buy from reliable contacts as well. I have quite a few. I prefer MDMA over pills. If I use the H [heroin] to manage my comedown, I test it with a testing kit. I have a reliable source for H, but if I get it from the dark net or I get a new batch, I always test it.

[P06, male, 24yrs, WA]

In contrast, one participant conceded that while they purchase from trusted sources and enquire about content, they realise their drug use practices are not particularly responsible and they ultimately "hope for the best":

I obviously make sure it's from someone I know well and trust. Best preference is a mate who deals and always has had good ones. But no I don't check, I just ask the person for details and known history. Main thing I care about otherwise is if it's double punched or anything which is like a two-in-one pill [also called double stack or double pressed pills, which are meant to contain twice the dose] ... I never do half. If anything double drop.

I really am not careful to be honest, I just take it whatever it is and hope for the best.

[P09, male, 17yrs, WA]

Interestingly, one participant explained that most suppliers operating at a festival campsite were willing to permit reagent testing pre-purchase. This testing was permitted to provide some assurance that the marketed content corresponded to the actual content. They added that while pre-purchase testing was not possible when purchasing online via dark net markets, they believed the risk was already reduced because sellers were less likely to misrepresent their products to avoid compromising their reputations (e.g. via negative online reviews). For example:

When purchasing online, testing pre-purchase is not possible and I take the risk of being sold mislabelled/inert product. In that case I will test on receiving. Dark net market purchasing ameliorates the risk to some extent as sellers tend to value their market reputation. Normal economics apply. When purchasing onsite, as sellers generally come by the camp, there will be a reagent kit on hand. Most sellers are happy to have their goods tested pre-purchase. If a seller isn't willing to have their product tested, it's assumed that it's misrepresented. I bought a kit from eBay. My network habitually tests. There are always a few test kits around the camp, so there's no barrier to anyone testing.

[P13, male, 34yrs, VIC]

In contrast to the majority, one participant reported a preference to avoid seeking information about their drugs to avoid triggering potential anxiety:

No, I didn't do any research as I didn't want to scare myself. I'm aware that there is SO many dangers that most people have no idea about.

[P05, male, 18yrs, WA]

Other precautions on the day/days leading up to the festival

In addition to sourcing information about their drugs, participants reported a variety of other precautions. These practices best fit into the following nine categories; managing hydration (n=7, 35%), dietary measures (n=6, 30%), ensuring they were well rested (n=5, 25%), strategies to avoid overheating (n=5, 25%), vitamin and/or supplement use (n=4, 20%), not using drugs when in a negative headspace (n=1, 5%), visiting onsite support services chewing gum to minimise dental risks (n=1, 5%), and using benzodiazepines for sleeping/comedowns/adverse effects (n=1, 5%).

The most common vitamins and supplements reportedly used were magnesium for muscle cramps, 5-HTP for serotonin depletion and vitamin B-12 for vitamin depletion associated with using nitrous oxide. Several participants also reported paying attention to their diet/nutrition pre and post-festival. Participants expressed a variety of beliefs about the impacts of drugs on optimal physical functioning, and therefore took precautions they believed could minimise these impacts. For example:

> *As I know the drugs are quite toxic, I try to eat well in the days before as well in the days after, including taking vitamins and staying well hydrated. When buying pills we always search online to see if there are any reports, but generally if no one we know have tried them one of my friends will prior to the festival or we just have them without testing!*
>
> *[P11, female, 19yrs, WA]*

Multiple participants cited Erowid (a non-profit education and HR website: https://www.erowid.org/) as a trusted source of information:

> *In terms of precautions, I always reagent test anything I am about to buy/acquire. As for supplements, yes, I tend to take magnesium for muscle cramps (MDMA) + 5-HTP (serotonin depletion). I have taken vitamin B-12 [for] depletion during nitrous usage in the past, but I don't use this regularly any more. I do consult both friends and trustworthy sources (e.g. Erowid) when considering taking anything new.*
>
> *[P13, male, 34yrs, VIC]*

One participant expressed strong enthusiasm for HR and had even considered volunteering at festivals:

> *I have taken magnesium to help with muscle tension on MDMA. I also use 5-HTP post MDMA. I have taken vitamin B post nitrous. I've also been to the DanceWize tent before (to look at the info they were handing out). I have a friend who volunteers with them and I have been considering applying to DanceWize as well. I'm pretty passionate about harm reduction and I like to read a lot about various substances, their effects and precautions that should be taken.*
>
> *[P14, female, 35yrs, VIC]*

While using 5-HTP to counter adverse effects of MDMA has little solid evidential backing, several respondents reported positive experiences with it. For example:

Try to have a decent meal before I go out, definitely a fan of 5-HTP to try get the serotonin levels up a bit after a big night, sometimes will take it before I go out too. Also I try to watch how much water I drink when I'm actually out, because obviously you can die from drinking too much from thinking you are dehydrated when you're not.

[P10, male, 19yrs, WA]

One female reported carrying benzodiazepines in case she experienced adverse effects. She suggested this precaution can also have a preventative effect:

I looked on Pillreports, but couldn't find the pills so asked people that had used them previously and they said they were pretty good. I only took halves just in case though. I also had a big breakfast on the day and stayed in the night before... I've learnt to do that these days as going out the night before can be very bad. I've learnt that the hard way ... Umm I mixed water/ice with my wine at pre's so I wasn't too drunk. I also knew I had some benzos in case it all went wrong. I find that almost prevents me from panicking in the first place.

[P02, female, 25yrs, WA]

Concerningly, one respondent reported intentionally not eating to avoid using "dodgy" festival toilet facilities. Other respondents expressed similar views, but in relation to avoiding drinking water:

Well I always usually want to know what inside the pill when I buy it, I really don't want to buy anything dodgy or anything that has nothing in it so I usually Pillreport it, I usually always take to festival or need is a bottle water to keep me hydrated, a pack of cigarettes to ease it out and pack of gum, just minimise gurning [teeth drinking and jaw clenching] and to relax, I always usually eat before I go because I never eat at festival because if I eat something dodgy I have to use those dodgy festival toilet which I don't enjoy.

[P07, male, 19yrs, WA]

Lastly, one respondent reported evaluating their psychological mindset when determining the appropriateness of drug use:

> *I also know drugs mainly enhance the mood you're in so I'd never take anything if I was in a bad mood, especially acid. I know that's not exactly what you're looking for, but I do think that's a key to not having a bad time as well. And to not rely on the drugs to make you have fun.*
>
> *[P15, female, 33yrs, VIC]*

Summary

What 'protective' practices did respondents employ to try to minimise the risk of experiencing drug-related harms?

Key findings

26. Illicit drug users actively sought information about drug content and engaged in a variety of other practices they believed would decrease health risks (*Mdn*=6).

27. Almost a tenth reported testing their drugs with a reagent testing kit.

28. Half of those who used ecstasy pills visited the Pillreports website.

29. Other notable practices included starting with a smaller amount (26%), taking magnesium for muscle cramps (10%) and taking 5-HTP (6%).

30. Females were more likely to start with a smaller amount and discuss an emergency plan in case they were feeling unwell, while males were more likely to test their drugs with a testing kit.

31. In the qualitative interviews, some participants placed significant confidence/trust in their suppliers. Additionally, there was a strong perception that crystals were safer than pills. Some participants termed non-pill forms 'MDMA' (suggesting they are pure), and pills 'ecstasy'.

32. Many of the perceived precautions lack empirical support (e.g. 5-HTP), and thus should be considered in the development of targeted education (addressed further in chapter 5).

What proportion of recent ecstasy users were aware of the recommended water guidelines?

Respondents were asked how much water they should drink when using ecstasy/MDMA in environments such as music festivals, which may raise body temperature via warm weather, crowds and dancing. Only 41% of respondents who reported recent ecstasy/MDMA use were aware of the recommended guidelines of 500 ml of water per hour. Approximately a quarter underestimated and a similar proportion overestimated the recommended water intake (*Table 4.23*).

Table 4.23: Awareness of recommended water consumption among those who had recently (past 12 months) used ecstasy/MDMA (% of respondents)

	Total (*n*=1060)
About 500 ml per hour (recommended)	41.2
About 300 ml per hour	26.5
You should drink as much as possible	16.4
About 1L per hour	9.2
Other	2.9
Don't know	3.8

Note. There were 230 missing cases due to drop out at this point in the survey.

Correlates of awareness of recommended water consumption among those who had recently (past 12 months) used ecstasy

To identify correlates which could help target hydration management campaigns, multivariable analyses were performed with and without MI. However, neither the bivariable or multivariable analyses produced significant models (*Table 4.24*, complete case analysis is available *Appendix E.29*). Thus, none of the candidate variables were a significant predictor of awareness of the water guidelines.

Table 4.24: Correlates of awareness of recommended water consumption among those who had recently (past 12 months) used ecstasy (multivariable logistic regression – MI model)

Variable	Level	*N*	Aware	Not aware	Bivariable			Multivariable		
			41.2%	58.8%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	124	42.7	57.3	1.102	0.659-1.842	0.711	1.194	0.706-2.021	0.508
	18-19 years old	273	40.3	59.7	1.219	0.783-1.897	0.381	1.232	0.785-1.931	0.364
	20-21 years old	267	37.8	62.2	1.352	0.866-2.111	0.185	1.321	0.841-2.075	0.227
	22-25 years old	273	43.2	56.8	1.081	0.695-1.680	0.731	1.059	0.678-1.653	0.803
	26 years and over	113	45.1	54.9	1.000			1.000		
Gender	Male	611	42.7	57.3	0.684	0.673-1.109	0.251	#		
	Female	439	39.2	60.8	1.000					
Jurisdiction	WA	504	43.7	56.3	1.211	0.947-1.549	0.127	0.799	0.618-1.032	0.086
	VIC	546	39.0	61.0	1.000			1.000		
Frequency of general ecstasy use	1/week	145	44.8	55.2	0.788	0.517-1.202	0.268	#		
	1/month	335	41.5	58.5	0.903	0.640-1.273	0.560			
	Every few months	342	40.9	59.1	0.924	0.656-1.301	0.650			
	1-2/year	228	39.0	61.0	1.000					
Total recent festivals attended	1-2	384	43.0	57.0	0.770	0.561-1.059	0.108	0.774	0.560-1.069	0.120
	3-4	391	42.7	57.3	0.779	0.567-1.069	0.121	0.772	0.561-1.061	0.110
	5 or more	275	36.7	63.3	1.000			1.000		
Favourite genre to attend festivals for was an EDM genre	No	182	41.3	58.7	1.006	0.760-1.332	0.967	#		
	No favourite genre	100	40.5	59.5	1.040	0.733-1.477	0.825			
	Yes	335	41.4	58.6	1.000					

Variable	Level	*N*	Aware	Not aware	Bivariable			Multivariable		
			41.2%	**58.8%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Festival type	One-day	707	40.5	59.5	1.130	0.852-1.499	0.395	[#]		
	Inconsistent selection	69	40.6	59.4	1.124	0.657-1.923	0.669			
	Multi-day	274	43.4	56.6	1.00					

Note. This is the multiple imputation model. The complete case model is available in the appendices (see *E.29*). Model $\chi 2$ (7)=8.322, p=0.305. Adjusted R square=0.008 (Cox & Snell), 0.011 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.695, n=1050. [#]Dropped from the multivariable model because p>0.25.

Summary

What proportion of recent (past 12 months) ecstasy users were aware of the recommended water guidelines?

Key findings

33. Less than two-fifths of ecstasy users were aware of the recommended water guidelines.

34. About one-quarter underestimated the amount and a similar amount overestimated, with almost a fifth believing 'you should drink as much as possible'.

35. Results for the bivariable and multivariable analyses were all non-significant. Thus, factors such as age, gender and frequency of ecstasy use did not significantly predict knowledge of water guidelines when using MDMA/ecstasy.

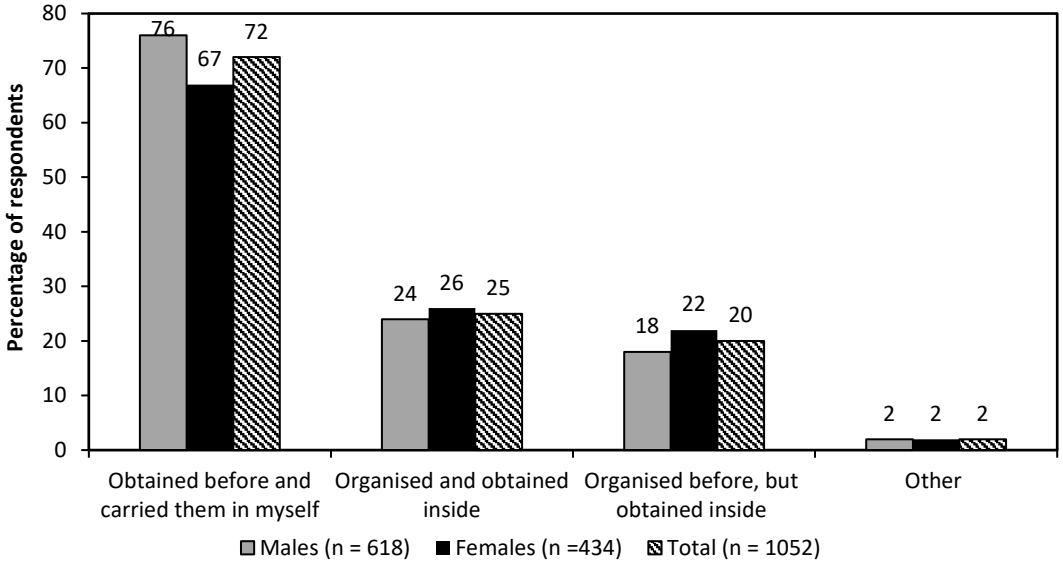
What practices did respondents engage in to obtain their drugs?

Respondents who reported using an illicit drug during the festival were asked a range of questions related to practices for obtaining their drugs. Key findings are presented below (full statistics available in *Appendix E.30*).

How were drugs used during the festival organised/obtained?

Almost three-quarters of respondents reported carrying drugs into the festival grounds themselves, one-quarter reported organising and obtaining drugs once inside and one-fifth reported organising before entering, but obtaining inside (i.e. someone else carried them into the festival). Additionally, almost two-fifths reported obtaining drugs in multiple ways (e.g. carried some in, but obtained more inside). A higher proportion of males reported carrying drugs in themselves (p=0.001). Those who entered 'other' responses reported being offered drugs for free or to share (*Figure 4.18*).

Figure 4.18: How illicit drugs used during the last festival attended were obtained



Note. Among those who reported using an illicit drug during the last festival attended. Those who identified as a non-binary gender were excluded (*n*=5).

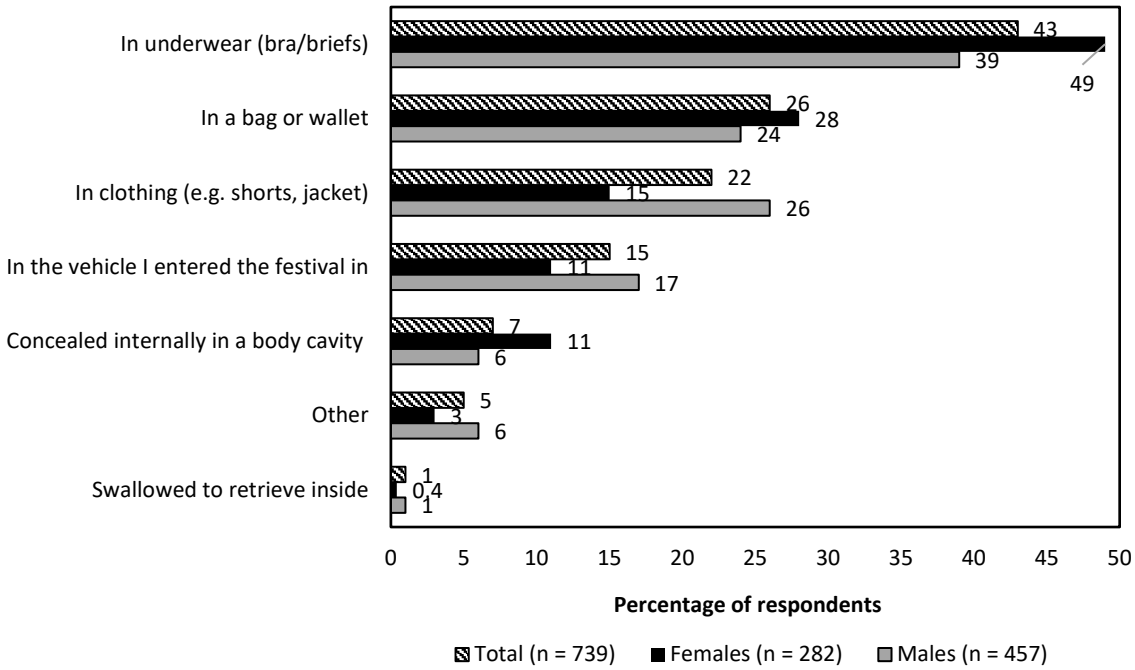
How were drugs carried drugs into the festival?

The most commonly reported method for carrying drugs into the grounds was in underwear (e.g. bras or briefs), followed by bags or wallets and then clothing (*Figure 4.19)*. Other notable methods included internal concealment in a body cavity and swallowing concealed drugs to retrieve once inside (via purging). The following excerpt provides an example of the level of planning and creativity that was often described.

> *I have dedicated months to stretching my belly button into a deep cavity which I can put things in, like an improvised marsupial pouch. I stash my drugs inside and put in a false-bottom skin tone plug and I am ready to go.*
>
> *[R1845, male, 19yrs, WA]*

A higher proportion of females than males reported carrying drugs in underwear and concealing them internally (p=0.009), while a higher proportion of males carried drugs in clothing and in vehicles they drove into the festival (i.e. at camping events) (p=0.024).

Figure 4.19: Methods for carrying drugs into the last festival attended



Note. Among those who reported carrying their drugs into the last festival attended. Those who identified as a non-binary gender were excluded (*n*=3).

Correlates of concealing drugs internally in a body cavity

Given risks associated with concealing drugs in a body cavity, further analysis was performed to identify correlates. As shown in *Table 4.26*, 16–17-year-olds were significantly more likely to self-report internal concealment than over-21-year-olds, while males and one-day festivalgoers were less likely than females and multi-day festivalgoers respectively.

Table 4.25: Correlates of self-reported internal concealment of illicit drugs in a body cavity for carrying drugs into the last festival attended (multivariable logistic regression)

Variable	Level	N	Concealed internally	Did not	Bivariate			Multivariable		
			7.5%	92.5%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	84	11.9	88.1	2.414	1.042-5.596	0.040*	2.664	1.114-6.372	0.028*
	18-19 years old	168	8.3	91.7	1.624	0.764-3.455	0.208	1.717	0.791-3.729	0.172
	20-21 years old	203	7.9	92.1	1.529	0.738-3.168	0.254	1.608	0.769-3.359	0.207
	Over 21 years old	283	5.3	94.7	1.000			1.000		
Gender	Male	457	5.5	94.5	0.484	0.278-0.842	0.010*	0.481	0.274-0.844	0.011*
	Female	281	10.7	89.3	1.000			1.000		
Jurisdiction	WA	383	7.3	92.7	0.958	0.553-1.660	0.879	#		
	VIC	355	7.6	92.4	1.000					
Total festivals past 12 months	1-2	248	6.9	93.1	0.797	0.400-1.589	0.520	#		
	3-4	277	7.2	92.8	0.843	0.434-1.637	0.614			
	5 or more	213	8.5	91.5	1.000					
Festival type	One-day	497	6.6	93.4	0.651	0.361-1.176	0.155	0.521	0.281-0.967	0.039*
	Inconsistent selection	48	6.3	93.8	0.611	0.173-2.155	0.443	0.471	0.130-1.710	0.253
	Multi-day	193	9.8	90.2	1.000			1.000		

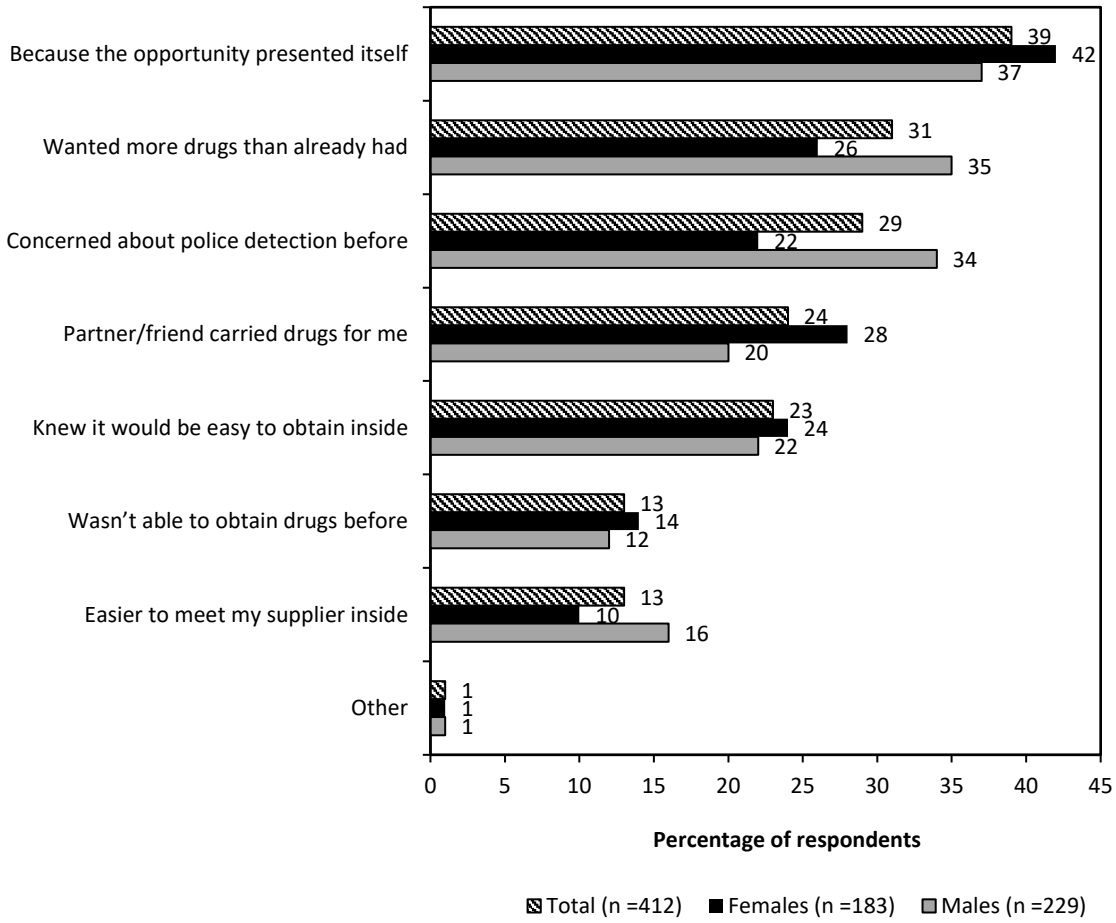
Model χ^2 (6)=14.489, p=0.025. Adjusted R square=0.19 (Cox & Snell), 0.047 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.782, n=738. #Dropped from the multivariable model because p>0.25. *p<0.050; **p<0.010; ***p<0.001.

Why were illicit drugs obtained inside the festival grounds?

The most commonly reported reason for purchasing drugs inside the festival was simply because the opportunity presented itself, followed by because they wanted more drugs and because they were concerned about police detection at the gates (*Figure 4.20*). Other common responses included because they had a friend/partner willing to carry drugs in for them and because they knew it would be easy to obtain drugs inside. These findings are therefore consistent with earlier results regarding a high perceived availability of drugs at festivals.

As evident in *Figure 4.20*, a higher proportion of males reported obtaining drugs inside the festivals due to concern about police detection before entering (p=0.012), while a higher proportion of females reported obtaining inside because a partner/friend carried drugs for them (p=0.037).

Figure 4.20: Reasons for purchasing illicit drugs inside the festival grounds at the last festival attended

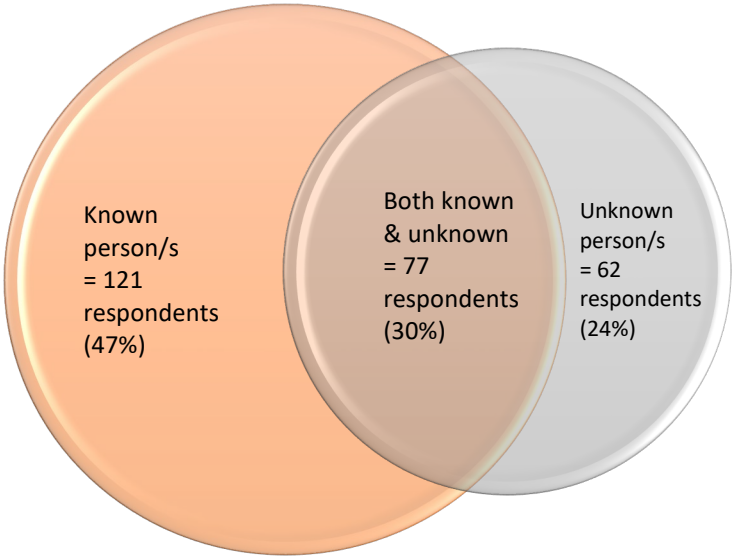


Note. Those who identified as a non-binary gender were excluded from this figure (n=2).

Who were drugs obtained from at the festival?

Among those who organised and obtained drugs inside the festival, approximately half reported they obtained from people known to them or their friends, almost a third obtained from people both known and unknown, and a quarter obtained from people unknown prior to the festival (*Figure 4.21*).

Figure 4.21: Person/s from whom illicit drugs were obtained at the last festival attended



Correlates of obtaining illicit drugs inside the festival

Obtaining illicit drugs inside festival grounds may increase risk to the consumer by increasing the chance of being sold misrepresented substances. Preference may be given to quick, inconspicuous transactions, rather than considered and informed ones; festivalgoers are less likely to have prior experience with and peer reviews of drugs from that batch; and Measham (2019) found those obtaining onsite were twice as likely to be missold drugs. Thus, multivariable analysis was performed to identify correlates of obtaining illicit drugs at the last festival.

Younger festivalgoers (e.g. 16–17 years), Victorians and those who had attended fewer recent festivals (e.g. 1–2) were at greater odds of self-reporting obtaining drugs inside (p <0.001 respectively), while males and one-day festivalgoers were at lower odds (p=0.011 respectively). Younger age was the strongest predictor in this model. Inverted odds are shown below Table 4.26.

Table 4.26: Correlates of obtaining illicit drugs inside the festival at the last festival attended (multivariable logistic regression)

Variable	Level	N	Obtained inside only	Carried in only	Bivariate			Multivariable		
			30.5%	69.5%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	117	46.2	53.8	4.286	2.209-8.316	<0.001***	7.686	3.756-15.726	<0.001***
	18-19 years old	224	36.2	63.8	2.832	1.527-5.243	0.001**	4.700	2.434-9.076	<0.001***
	20-21 years old	226	27.4	72.6	1.890	1.010-3.357	0.046*	2.717	1.406-5.250	0.003**
	22-25 years old	221	25.3	74.7	1.697	0.902-3.192	0.101	2.414	1.245-4.685	0.009*
	Over 25 years old	90	16.7	83.3	1.000			1.000		
Gender	Male	507	26.4	73.6	0.635	0.476-0.849	0.002**	0.640	0.469-0.872	<0.001***
	Female	371	36.1	63.9	1.000			1.000		
Jurisdiction	VIC	435	38.3	61.6	2.141	1.594-2.877	<0.001***	2.336	1.614-3.381	<0.001***
	WA	443	22.5	77.5	1.000			1.000		
Total festivals past 12 months	1-2	325	39.4	60.6	2.231	1.528-3.257	<0.001***	2.023	1.348-3.036	0.001**
	3-4	318	27.4	72.6	1.293	0.873-1.916	0.199	1.142	0.755-1.727	0.528
	5 or more	235	22.6	77.4	1.000			1.000		
Festival type	One-day	584	25.9	74.1	0.496	0.361-0.683	<0.001***	0.603	0.409-0.888	0.011*
	Inconsistent selection	59	33.9	66.1	0.730	0.401-1.327	0.302	0.818	0.419-1.598	0.557
	Multi-day	235	41.3	58.7	1.000			1.000		

Note. Response options were dichotomised into 'carried drugs in myself only' and 'obtained drugs inside only'. Those who obtained in multiple ways (i.e. carried drugs in and obtained inside) were excluded from this analysis (n=174) given the focus was identifying correlates of those who obtained their drugs inside the festival only.
Inverted odds=16–17-year-olds were at 7.7 times greater odds and 18–19-year-olds were at 4.7 times greater odds, than over-25-year-olds; females were at 1.6 times greater odds than males; Victorians were at 2.4 times greater odds than Western Australians ; those who had attended only 1–2 recent festivals were at 2.0 times greater odds than those who had attended over 5; and finally, those who attended multi-day festivals were at 1.7 times greater odds than who attended one-day festivals. Model χ^2 (10)=975.70, p<0.000. Adjusted R square=0.112 (Cox & Snell), 0.159 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.959, n=878. *p<0.050; **p<0.010; ***p<0.001.

Qualitative results for carrying drugs into the last festival attended

In the qualitative interviews, festivalgoers were asked to describe how they carried their drugs into the last festival attended. Responses were broadly coded into seven categories: someone else carried their drugs for them (*n*=7, 35%), concealed in their vehicle to be driven into the campsite (*n*=4, 20%), in clothing (*n*=2, 10%), in underwear (e.g. bras/briefs) (*n*=2, 10%), in a body cavity (*n*=2, 10%), on their body, but not in clothing or in a body cavity (*n*=2, 10%), and in bags/wallets (*n*=1, 5%).

Someone else carried them

Getting someone else to carry their drugs was the most common method (*n*=7, 35%). While most respondents giving this response were female (*n*=5), there were conflicting accounts about which gender most commonly carried the drugs. For example, two females explained that within their social group males carry the drugs, but females walk ahead as 'spotters' to guide them away from policing activity:

> *The boys carried the pills into the festival. I went ahead a hundred metres to check for sniffer dogs and then once at the gates told them it was all clear.*
>
> *[P03, female, 23yrs, WA]*

In contrast, another female explained that females in her group carry the drugs because they are typically searched less invasively than males:

> *The girls will also normally bring in the drugs for their boyfriends and friends as they don't get searched as aggressively.*
>
> *[P11, female, 19yrs, WA]*

Meanwhile, male respondents suggested that whomever has less to lose carries the drugs:

> *…yeah, she normally takes them in for me [participant's girlfriend] … I already have had a cannabis intervention so, if I get caught with drugs again, I'll get a criminal record and probably won't be able to practice pharmacy. I also want to move to Canada and I would definitely struggle to get a visa if I have a criminal record.*
>
> *[P10, male, 19yrs, WA]*

> *My girlfriend's friend carries them as she doesn't have a job and isn't going to uni or anything so it just makes sense that we don't risk our jobs. She doesn't mind either.*
>
> *[P19, male, 19yrs, VIC]*

One female attributed negative past experiences with drug dogs for her decision not carry drugs on her person. She explained how panic triggered by dogs led to hasty methods of concealment and consumption at the gates. She also suggested that demand and opportunity to profit from supplying drugs inside outweighs the legal risk for some:

> *In the past I've taken them in inside my bra, but I get very panicky now with the police and dogs around. One time I was too scared so my friend put hers and mine in a bag inside her mouth while we lined up. There was a massive line and when people noticed dogs towards the front everyone was panicking and there were people jumping out the line and walking away, people were swallowing them and trying to hide them. Since then I have refused to take them in myself. At other times I've known a friend who was going who was taking an amount in to sell. I think because you can sell them for like fifty dollars or more inside some people will take the risk.*
>
> *[P02, female, 25yrs, WA]*

Concealed in their vehicle to be driven into the campsite

Setups which allow patrons to drive their vehicle to their camping lot clearly make detection more challenging. While most did not specify whether the drugs were concealed within the car structure itself or within their belongings, one female reported hiding them in a tissue box:

> *… I brought my drugs hidden inside an unopened tissue box that I had used a knife to open at the side, put the drugs between sheets of tissue, then re-glued the box together. Just had that in one of my bags in the back that had other camping-related supplies and food. There was no additional car search to previous years. Did go through an RBT [random breath test for alcohol] on the road on the way in but no drug bus.*
>
> *[P14, female, 35yrs, VIC]*

In clothing

Among those who carried drugs in clothing, one involved careful concealment (taped pills inside his hat), while the other did not (carried in pockets). However, the latter festivalgoer was not concerned because a spotter was sent ahead:

I had the other two pills on me and my mate had a couple on him. When we got there, we sent my girlfriend in first to suss out whether there were any sniffer dogs. There weren't so we just walked in with them in our pockets.

[P01, male, 26yrs, WA]

In underwear

A female respondent carried drugs in her bra, while a male carried drugs in specially designed underwear for smuggling drugs into music venues. Both respondents also concealed them in 'baggies', and one reported 'double bagging' (i.e. placing the drugs inside two small zip lock bags) to contain the scent:

The drugs I took in were concealed in a pair of underwear I have which have a tiny pocket on the inside right near the hip. The purpose of this pocket is actually so people can smuggle drugs into festivals and nightclubs. I know this because I know the person who designed them. I hid the drugs in there inside a plastic baggy. My cannabis was rolled into cigarette blunts [tobacco paper] and hidden inside the actual cigarettes themselves as well as a small bag of separate cannabis in my underwear pocket.

[P06, male, 24yrs, WA]

We smuggled them into the festival in different ways, I double-bagged mine as I heard this helps with the scent and I put them inside a padded bra.

[P03, female, 23yrs, WA]

In a body cavity

One male festivalgoer reported hiding their drugs in their mouth; while one female reported hiding them in her vagina. The male had intended to swallow the drugs, but then purge them back up if he risked detection:

…in the bag and in my mouth under my tongue so I could quickly swallow and chuck back up quickly if necessary. That one hasn't happened just yet ha ha. Yeah I've also tied my hair in a bun and stuffed them in there in the knot or taped them around one of the dreads underneath.

[P06, male, 24yrs, WA]

At other points in the interviews, three participants admitted to internal concealment at festivals when asked, although not at the *last* festival. This information was not volunteered initially when discussing methods of smuggling drugs, perhaps due to a stigma or concern

about what that information could be used for (e.g. increasing search powers), although this was not discussed during the interview.

In post-survey interviews, an older female explained how she recently concealed drugs internally for the first time. This decision was based on a perceived increased risk of detection (due to increased policing with drug dogs) which could compromise her professional career. Thus, the perceived increased threat of detection did not deter her from using, but triggered more risky methods of concealment. Interesting, associated health risks were not considered:

> *Interviewer: ... there's been some concern about people hiding drugs internally which showed up in the results – have you heard about this at all?*
>
> *Interviewee: I've never really known anyone in my circle to do this commonly (particularly not at camping festivals). That said, there had been quite a big gap in me going to one day festivals from the early-2000s (when sniffer dogs were less common) to just starting to go to some again this last year. I actually did this for the first time myself at a festival in Sydney late last year (as did most of the friends I was attending with). This was due to concern about sniffer dogs – we discussed this and most people's concern was given that we are all mid-thirties professionals now, we're super-cautious about getting caught out, probably perceiving we have more to lose now than when we were younger.*
>
> *Interviewer: Okay that's interesting – did you all discuss it beforehand and decide to carry your own as opposed to one person hiding everyone's drugs? And were you concerned about any health risks?*
>
> *Interviewee: Yeah, we did discuss strategy beforehand – we also had a message from a friend who'd gone in earlier who confirmed the police were there with dogs. I don't think there was any talk about anyone carrying for other people. We've generally always just carried our own personal stash amongst my group of friends. To be honest, I probably didn't really think about health risks (beyond wrapping in fresh baggies and washing my hands).*
>
> *[P15, female, 33yrs, VIC]*

On their body, but not in clothing or in a body cavity

While only two respondents reported carrying drugs on their body at the last festival, several others made reference to hiding it in their hair, or taping to parts of their body at other festivals:

> *I braided my hair and put the baggie pinned inside. I had my friends on alert in case my hair moved or the bag became visible.*
>
> *[P17, female, 27yrs, VIC]*

> *For the first time I actually hid some finely crushed MD [MDMA] under a large band aid/bandage thing on my stomach. I came up with a full story of the injury too in case they asked and why I couldn't remove it.*
>
> *[P08, male, 21yrs, WA]*

In a bag or wallet

Perhaps due to the common nature of bag/wallet searches, this was the least common method of carrying drugs (n=1).

> *I know the festival in question does not generally search wallets thoroughly, if at all, so I was comfortable carrying the drugs in a discreet section of my wallet.*
>
> *[P20, male, 21yrs, VIC]*

However, participants who acted as spotters mentioned those who carried their drugs, simply carried within wallets. Thus, this method may be more common when perceived risk of detection is lower. Essentially, some festivalgoers adapt to the nature of policing on the day.

Summary

What practices did respondents employ to obtain drugs used during the last festival attended?

Key findings

36. Almost three-quarters of illicit drug users carried drugs in, a fifth had someone else carry drugs for them and a quarter organised and obtained drugs inside the festival.

37. The most common method for carrying drugs was in underwear.

38. About one in 10 females who carried drugs did so internally.

39. The most common reason for purchasing drugs inside was because the opportunity presented itself. Almost a third did so to avoid the risk of detection before entering.

40. More than half of respondents who obtained drugs inside did so from unknown person/s.

41. Younger age was highly predictive of obtaining drugs inside the festival (16–17-year-olds 7.7 times more likely than over-25s). Females, Victorians and multi-day festivalgoers were also more likely to obtain drugs inside the last festival.

42. Females and 16–17-year-olds were at greater odds of reporting internal concealment.

43. Qualitative data illuminated the creative and sometimes extreme lengths to which festivalgoers will go in order to smuggle in drugs.

What practices did respondents engage in related to supplying drugs?

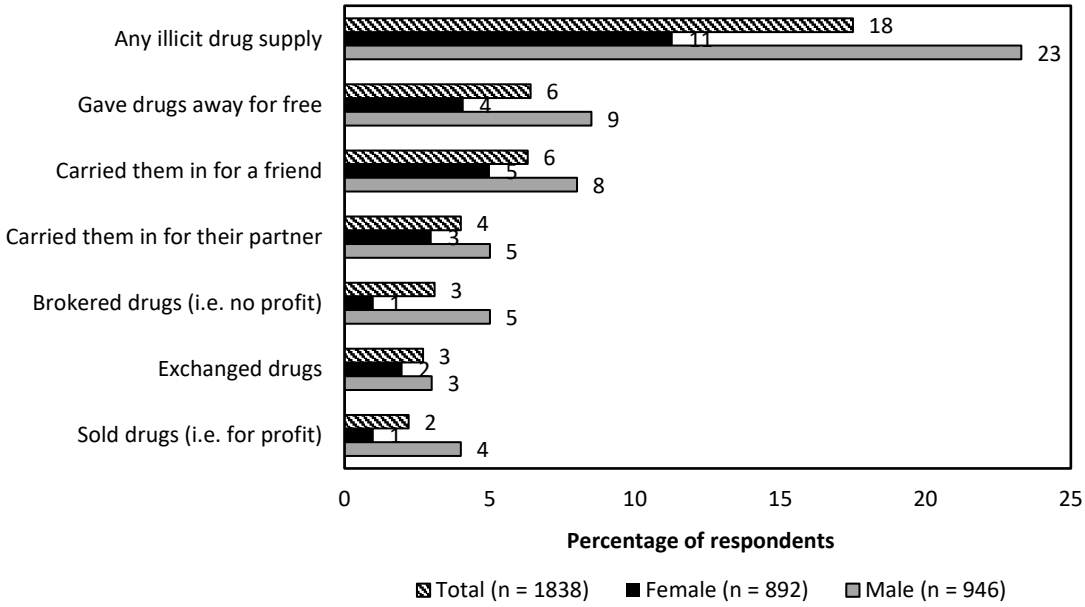
Respondents were asked a range of questions related to illicit drug supply at the last festival they attended. Key findings are presented below (see *Appendix E.31* for full statistics).

What proportion supplied illicit drugs at the last festival attended?

Among those willing to answer (98%, *n*=1843), two-fifths reported supplying illicit drugs in some form at the last festival they attended. A higher proportion of males than females engaged in supply activities (*Figure 4.22, p*<0.001).

The most common forms of supply were giving drugs away for free or carrying them in for a friend or partner. Few respondents reported selling drugs for profit.

Figure 4.22: Illicit drug supply at the last festival attended

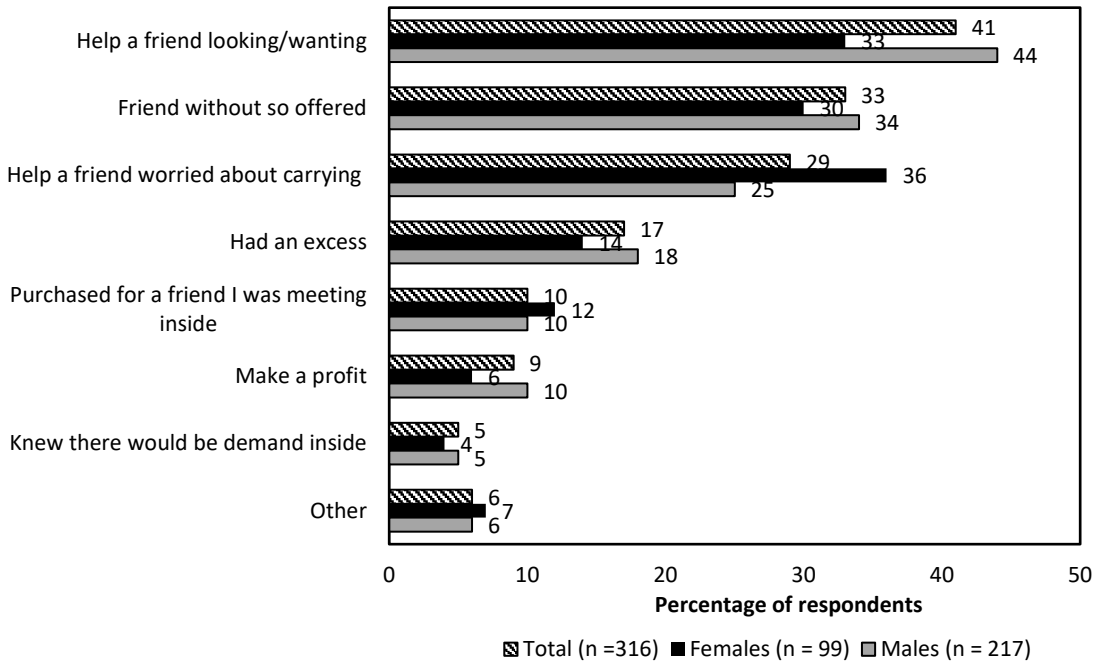


Note. Respondents who identified as non-binary (*n*=5) or selected 'prefer to not answer' (*n*=44) were excluded from the analysis for this figure.

Why did respondents supply illicit drugs?

The three most commonly reported reasons for supplying drugs were to help a friend who was looking/wanting, a friend did not have any so they offered them some and to help a friend who was worried about carrying drugs in themselves. Less than a tenth of suppliers indicated they did so for profit (*Figure 4.23*). However, despite assurances of anonymity, those involved in higher-level criminal supply may have been less likely to participate in the survey to avoid any risk of being identified by police. The only significant difference identified between genders was that more females reported supplying to help a friend concerned about carrying their own drugs (*p*=0.045).

Figure 4.23: Reasons for supplying illicit drugs at the last festival attended

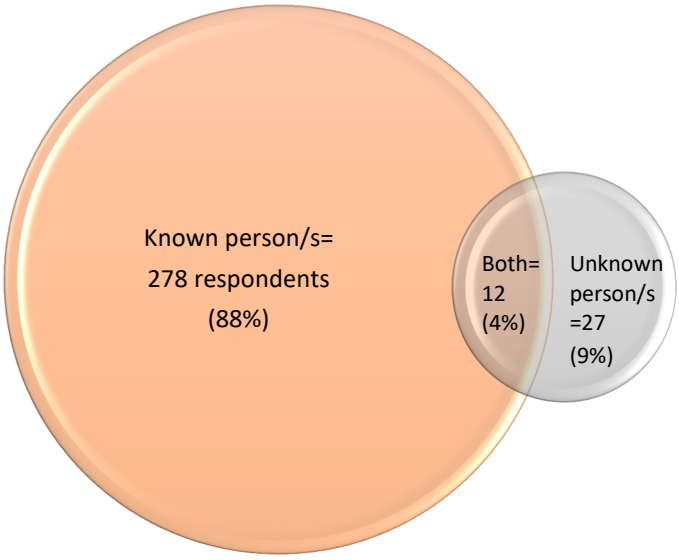


Note. Those who identified as a non-binary gender were excluded from this figure (*n*=0).

Who were illicit drugs supplied to?

While the majority reporting supplying illicit drugs to a known person/s, a small proportion reported supplying to a person/s that neither they nor their friends knew prior to the festival (*Figure 4.24*).

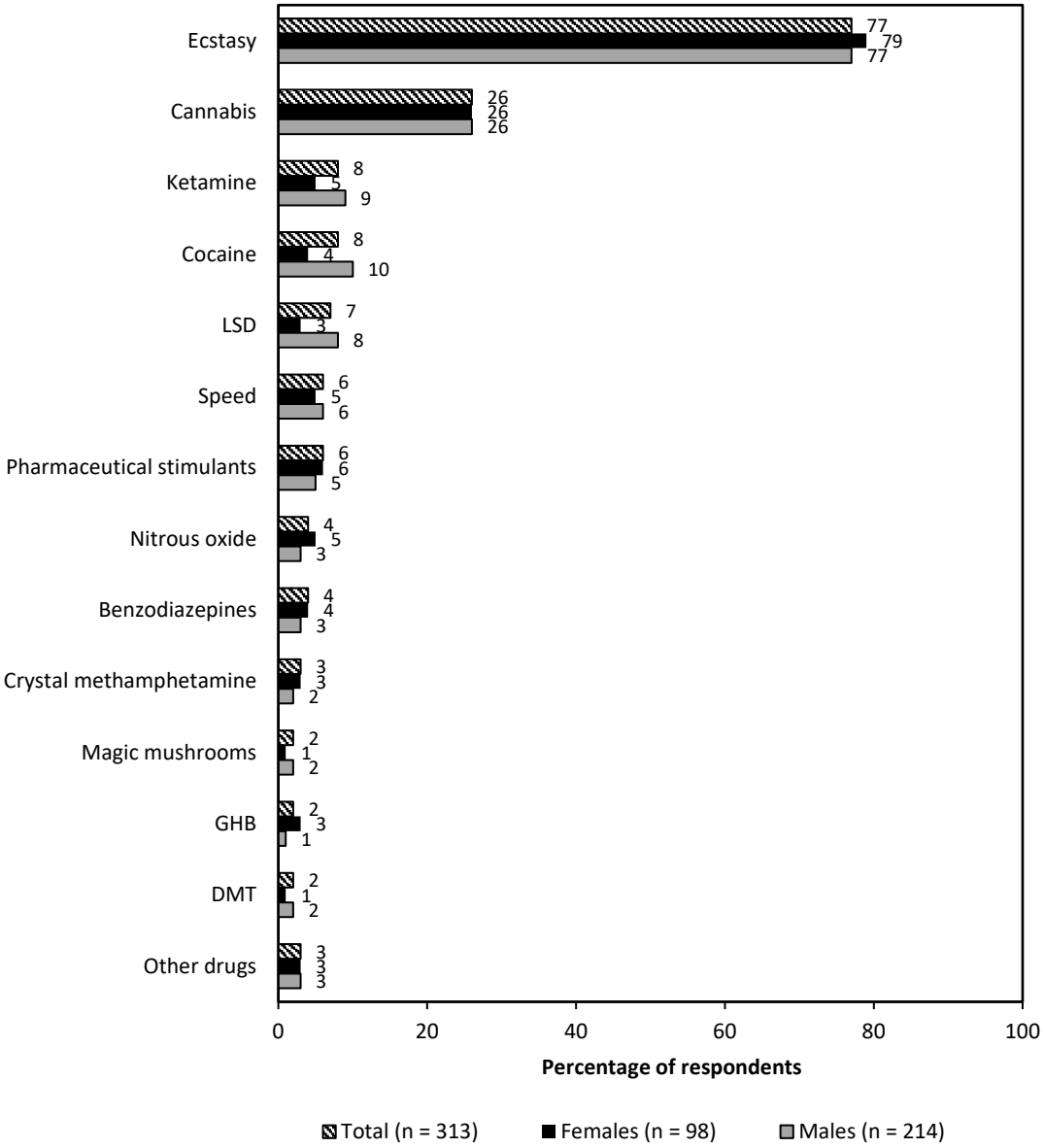
Figure 4.24: To whom respondents supplied illicit drugs at the last festival attended



Which illicit drugs were supplied?

Among those who supplied drugs at the last festival, the most commonly supplied drug was ecstasy/MDMA, followed by cannabis, ketamine, cocaine and LSD (*Figure 4.25*).

Figure 4.25: Types of illicit drugs reportedly supplied at the last festival attended

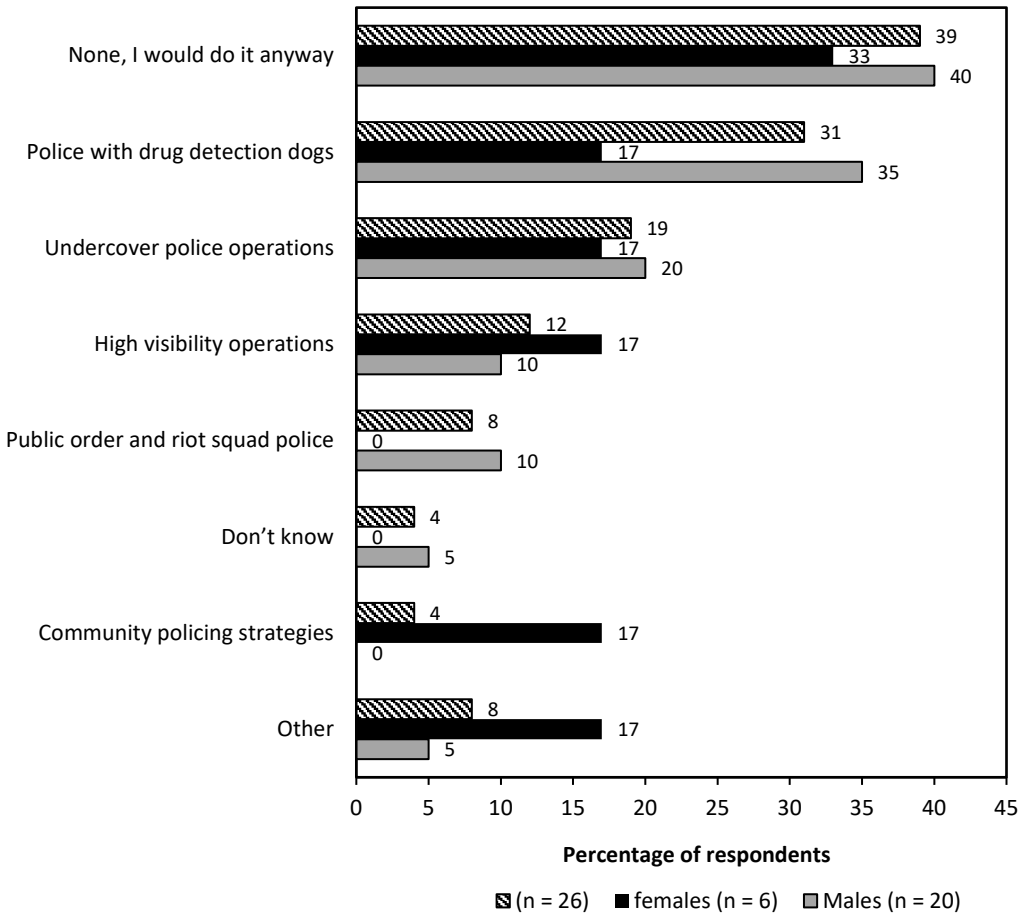


Note. Among those who reported supplying illicit drugs at the last festival attended.

Would different policing strategies have influenced their decision to supply?

Those who supplied illicit drugs for profit were asked what type of policing strategies would have influenced their decision to supply at the last festival they attended (*n*=26, missing=2). The most common response was 'none, I would do it anyway', followed by drug detection dogs and then undercover police (*Figure 4.26*). The small number of female sellers (*n*=6) precluded gender comparisons.

Figure 4.26: Potential influence of policing strategies on supply at the last festival attended



Note. Among those who reported supplying illicit drugs for profit at the last festival attended.

Illicit drug supply compared to another Australian sample

The results for illicit drug supply were compared to those reported by Hughes et al. (2017), who also asked about supply at the last festival. As shown in *Table 4.27*, the proportion reporting illicit drug supply was slightly higher in Hughes et al. (2017).

Table 4.27: Illicit drug supply in the current sample compared to another Australian sample (%)

	Current sample 2016 (VIC/WA) *n*=1838	**National sample 2015 (Hughes et al., 2017) *n*=2115**
Any illicit drug	17.5	22.5
Ecstasy	13.2	22.9
Cannabis	4.4	13.5
Cocaine	1.4	3.0
Hallucinogens[b]	1.4	5.4
Meth/amphetamine[c]	1.4	2.5
GHB	0.4	0.6
NPS[d]	0.2	0.9
Other illicit drugs[e]	3.0	1.9

Note. Comparisons for hallucinogens, meth/amphetamine and NPS may not be reliable as it is unknown which drugs were grouped in those categories in Hughes et al. (2017) study.
[b]Merged LSD, magic mushrooms, DMT and mescaline.
[c]Merged crystal methamphetamine and speed.
[d]Merged 2C-x drugs, NBOMe drugs, DOM, DOB, other cathinones and synthetic cannabis.
[e]Merged ketamine, pharmaceutical stimulants, amyl nitrate, nitrous oxide, other opiates, heroin, steroids and benzodiazepines.

Correlates of illicit drug supply

In the multivariable analysis (*Table 4.28)*, younger respondents, those who had only attended 1–2 recent festivals and those who attended one-day festivals were at significantly lower odds of reporting illicit drug supply at the last attended festival, while males were at significantly higher odds. Therefore, while younger age was highly predictive of obtaining illicit drugs at festivals, the opposite was true for supplying drugs. Inverted odds are available under *Table 4.28*.

Table 4.28: Correlates of self-reporting illicit drug supply at the last festival attended (multivariable logistic regression)

Variable	Level	*N*	Did supply	Did not supply	Bivariable			Multivariable		
			17.5%	82.5%	*OR*	95% CI	*p*	*AOR*	95% CI	*p*
Age	16-17 years old	351	10.0	90.0	0.256	0.157-0.417	<0.001***	0.323	0.193-0.539	<0.001***
	18-19 years old	524	11.5	88.5	0.299	0.194-0.461	<0.001***	0.293	0.186-0.463	<0.001***
	20-21 years old	408	21.3	78.7	0.627	0.415-0.947	0.027*	0.571	0.369-0.884	0.012*
	22-25 years old	384	23.4	76.6	0.708	0.468-1.070	0.101	0.613	0.396-0.948	0.028*
	26 years and over	159	30.2	69.8	1.000			1.000		
Gender	Male	941	23.4	76.6	2.395	1.852-3.098	<0.001***	2.134	1.633-2.789	<0.001***
	Female	885	11.3	88.7	1.000			1.000		
Jurisdiction	VIC	906	19.4	80.6	1.299	1.020-1.655	0.034*	0.855	0.637-1.146	0.294
	WA	920	15.7	84.3	1.000			1.000		
Total recent festivals attended	1-2	843	12.7	87.3	0.459	0.336-0.628	<0.001***	0.480	0.344-0.671	<0.001***
	3-4	613	20.2	79.8	0.801	0.588-1.091	0.159	0.798	0.577-1.104	0.173
	5 or more	370	24.1	75.9	1.000			1.000		
Favourite genre to attend festivals for was an EDM genre	No	712	12.6	87.4	0.473	0.359-0.624	<0.001***	0.567	0.424-0.758	<0.001***
	No favourite genre	337	14.2	85.8	0.543	0.384-0.769	0.001*	0.642	0.446-0.922	0.017*
	Yes	777	23.4	76.6	1.000			1.000		
Festival type	One-day	1277	14.7	85.3	0.437	0.334-0.571	<0.001***	0.461	0.335-0.634	<0.001***
	Inconsistent selection	150	12.7	87.3	0.367	0.216-0.622	<0.001***	0.455	0.259-0.801	0.006**
	Multi-day	399	28.3	71.7	1.000					

Note. Over-25-year-olds had over 3 times the odds of reporting supplying drugs of 16–17 and 18–19-year-olds and 1.8 times the odds of 20–21-year-olds; males had 2.1 times the odds of females; those who had attended 5 or more recent festivals had 2.0 times the odds of those who attended only 1–2; those with a preference for EDM genres had 1.8 times the odds of those with a preference for another genre; and those who attended a multi-day festival had 2.2 times the odds of those who attended a one-day festival. Model χ^2 (12)=164.620, p<0.000. Adjusted R square=0.086 (Cox & Snell), 0.143 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.175, n=1826. *p<0.050; **p<0.010; ***p<0.001.

Summary

What practices did respondents engage in related to supplying drugs at the last festival attended?

Key findings

44. Almost one in five supplied illicit drugs in some form at the last festival attended.

45. The majority of reported drug supply could best be described as 'social supply'.

46. Almost a third of suppliers were carrying drugs for friends who were scared of detection.

47. Almost nine in ten were supplying to known person/s.

48. Ecstasy was by far the most common drug supplied, followed by cannabis and then ketamine and cocaine.

49. Of those who supplied for profit, two-fifths would have done so regardless of the type/level policing level. However, almost a third (n=8) may have been influenced by drug detection dogs.

50. The most highly predictive variables for supplying illicit drugs at the last festival were older age and attending a multi-day festival. Being male, attending more recent festivals and a preference for EDM were also associated with greater odds of supplying.

Theme 2: Reasons for using drugs/positive effects

As identified in the literature review, the pleasures associated with using drugs at festivals has received little academic, political and media attention. Hunt and Evans (2008) highlighted this gap in the literature and described a dichotomy between epidemiological studies which typically view drugs as problematic versus sociocultural studies which have explored pleasures. This section seeks to address this issue by answering the following questions (in association with the last festival attended):

- Why did respondents use each drug they reported using?
- What positive effects did respondents attribute to the drugs they reported using?

Reasons for using drugs

Why did respondents use drugs in association with the last festival?

Summary tables for motivations are provided first, followed by a closer look at the most commonly used drugs. Throughout this section, gender is only commented on where significant differences were identified.

Summary of motives associated with each drug used

Ecstasy was associated with the greatest median number of motives, followed by cocaine (*Table 4.29)*. Dugs associated with the fewest motives were amyl nitrate and crystal methamphetamine (*Table 4.30*).

Unsurprisingly, the most commonly reported motive was 'for fun'. However, some drugs were cited as having more specific purposes. For example, pharmaceutical stimulants and speed were primarily used for energy, while benzodiazepines were used to sleep, relax or 'come down'.

Table 4.29: Reasons for using drugs in association with the last festival attended (drugs 1–11) (%)

Motive	Alcohol *n*=1465	Ecstasy *n*=924	Tobacco *n*=801	Cannabis *n*=556	Ketamine *n*=160	LSD *n*=140	Cocaine *n*=133	Speed *n*=128	Nitrous Oxide *n*=126	Pharm stimulants *n*=71	Benzos *n*=68
For fun	91.5	86.9	44.8	69.6	90.0	83.6	81.2	69.5	89.7	60.6	16.2
Help relax	22.9	8.9	46.7	56.8	23.8	7.1	4.5	3.9	15.1	11.3	55.9
Increase energy	27.8	71.1	6.1	8.3	19.4	26.4	69.2	77.3	10.3	84.5	2.9
Friends were using	31.1	32.5	29.6	29.3	24.4	25.7	28.6	27.3	40.5	21.1	1.5
Enhance social interaction	61.0	59.6	34.3	35.6	31.9	29.3	48.9	35.9	25.4	35.2	4.4
Enhance the music	31.9	80.3	5.7	41.9	48.1	73.6	45.1	38.3	33.3	26.8	2.9
Enhance the visual experience	14.7	58.8	3.5	28.4	45.0	73.6	26.3	20.3	35.7	12.7	2.9
Alcohol is expensive there	19.9	44.8	4.9	19.8	24.4	21.4	29.3	24.2	10.3	28.2	2.9
Avoid lining for alcohol/toilets	8.1	22.1	1.5	8.6	12.5	13.6	10.5	10.9	4.8	12.7	1.5
Help me sleep	1.6	0.4	3.4	42.4	9.4	0.7	0.0	0.8	2.4	0.0	58.8
Help me comedown	1.6	0.5	9.4	43.3	13.8	1.4	1.5	3.1	9.5	4.2	42.6
Other	1.3	1.6	8.5	1.4	1.3	2.9	0.8	1.6	2.4	1.4	2.9
Median no. reasons (IQR)	3 (1-4)	5 (3-6)	2 (1-3)	3 (2-4)	3 (1-5)	3 (2-5)	4 (1-5)	3 (1-5)	2 (1-4)	3 (1-4)	2 (1-3)

Table 4.30: Reasons for using drugs in association with the last festival attended (drugs 12-22) (%)

	MDA *n*=50	Magic mushrooms *n*=50	Crystal meth *n*=28	DMT *n*=24	Amyl nitrate *n*=23	GHB *n*=19	2C-x *n*=12	Other opioids *n*=9	Heroin *n*=3	Steroids *n*=1	NBOMe *n*=1
For fun	84.0	80.0	71.4	62.5	78.3	73.7	66.7	55.6	66.7	100.0	0.0
Help relax	2.0	8.0	0.0	8.3	8.7	10.5	0.00	55.6	66.7	0.0	0.0
Increase energy	40.0	24.0	57.1	12.5	4.3	36.8	25.0	11.1	0.0	0.0	0.0
Friends were using	22.0	22.0	28.6	25.0	21.7	26.3	16.7	0.0	0.0	100.0	0.0
Enhance social interaction	34.0	32.0	25.0	8.3	8.7	42.1	25.0	0.0	0.0	0.0	0.0
Enhance the music	56.0	66.0	28.6	37.5	47.8	52.6	58.3	11.1	0.0	0.0	100.0
Enhance the visual experience	52.0	74.0	14.3	54.2	26.1	36.8	75.0	11.1	0.0	0.0	100.0
Alcohol is expensive there	26.0	24.0	25.0	12.5	0.0	21.1	8.3	0.0	0.0	0.0	0.0
Avoid lining for alcohol/toilets	0.0	16.0	14.3	12.5	0.0	21.1	8.3	0.0	0.0	0.0	0.0
Help me sleep	0.0	2.0	0.0	4.2	0.0	15.8	0.0	55.6	100.0	0.0	0.0
Help me comedown	14.0	4.0	0.0	12.5	0.0	5.3	0.0	33.3	66.7	0.0	0.0
Other	4.0	4.0	0.0	12.5	0.0	5.3	16.7	0.0	0.0	0.0	0.0
Median number of reasons (IQR)	3 (1-5)	3 (2-4.25)	1.5 (1-4)	2 (1-3)	1 (1-3)	3 (1-6)	3 (1.25-4)	2 (1-4)	3 (2-[#])	[#]	[#]

[#]Not enough cases for statistical analysis.

Summary of drugs associated with particular motives

Table 4.31 shows the drugs most commonly associated with particular motives for use. Unsurprisingly, different classes of drugs were associated with different types of motives. For example, psychostimulant drugs (e.g. cocaine, speed and pharmaceutical stimulants) were used more to increase energy, drugs with hallucinogenic properties (e.g. LSD, magic mushrooms and ecstasy) were used more to enhance perception (e.g. sound/visual) and drugs with depressant properties (e.g. benzodiazepines, cannabis) were used more for sleeping and comedowns.

Table 4.31: Drugs which rated highest with particular motivations (% of respondents)

	For fun	Help relax	Increase energy	Friends were using	Enhance social	Enhance music	Enhance visual	Alcohol is expensive at festivals	Avoid lines for alcohol/toilets	Help me sleep	Help comedown
1.	Alcohol (91.5)	Cannabis (56.8)	PS (84.5)	Nitrous (40.5)	Alcohol (61.0)	Ecstasy (80.3)	2C-x (75.0)	Ecstasy (44.8)	Ecstasy (22.1)	Benzos (58.8)	Cannabis (43.3)
2.	Nitrous (89.7)	Benzos (55.9)	Speed (77.3)	Ecstasy (32.5)	Ecstasy (59.6)	LSD (73.6)	Mush (74.0)	Cocaine (29.3)	GHB (21.1)	Cannabis (42.4)	Benzos (42.6)
3.	Ecstasy (86.9)	Tobacco (46.7)	Ecstasy (71.1)	Alcohol (31.1)	Cocaine (48.9)	Mush (66.0)	LSD (73.6)	PS (28.2)	Mush (16.0)	GHB (15.8)	MDA (14.0)
4.	MDA (84.0)	Ket (23.8)	Cocaine (69.2)	Tobacco (29.6)	GHB (42.1)	2C-x (58.3)	Ecstasy (58.8)	MDA (26.0)	Ice (14.3)	Ket (9.4)	Ket (13.8)
5.	LSD (83.6)	Alcohol (22.9)	Ice (57.1)	Cannabis (29.3)	Speed (35.9)	MDA (56.0)	DMT (54.2)	Ice (25.0)	LSD (13.6)	DMT (4.2)	DMT (12.5)
6.	Cocaine (81.2)	Nitrous (15.1)	MDA (40.0)	Cocaine (28.6)	Cannabis (35.6)	GHB (52.6)	MDA (52.0)	Ket (24.4)	PS (12.7)	Tobacco (3.4)	Nitrous (9.5)
7.	Mush (80.0)	PS (11.3)	GHB (36.8)	Ice (28.6)	PS (35.2)	Ket (48.1)	Ket (45.0)	Speed (24.2)	Ket (12.5)	Nitrous (2.4)	Tobacco (9.4)
8.	Amyl (78.3)	GHB (10.5)	Alcohol (27.8)	Speed (27.3)	Tobacco (34.3)	Amyl (47.8)	GHB (36.8)	Mush (24.0)	DMT (12.5)	Mush (2.0)	GHB (5.3)
9.	GHB (73.7)	Ecstasy (8.9)	LSD (26.4)	GHB (26.3)	MDA (34.0)	Cocaine (45.1)	Nitrous (35.7)	GHB (21.1)	Speed (10.9)	Alcohol (1.6)	PS (4.2)
10.	Crystal (71.4)	Amyl (8.7)	2C-x (25.0)	LSD (25.6)	Ket (31.9)	Cannabis (41.9)	Cannabis (28.4)	Cannabis (21.1)	Coke (10.5)	Speed (0.8)	Mush (4.0)

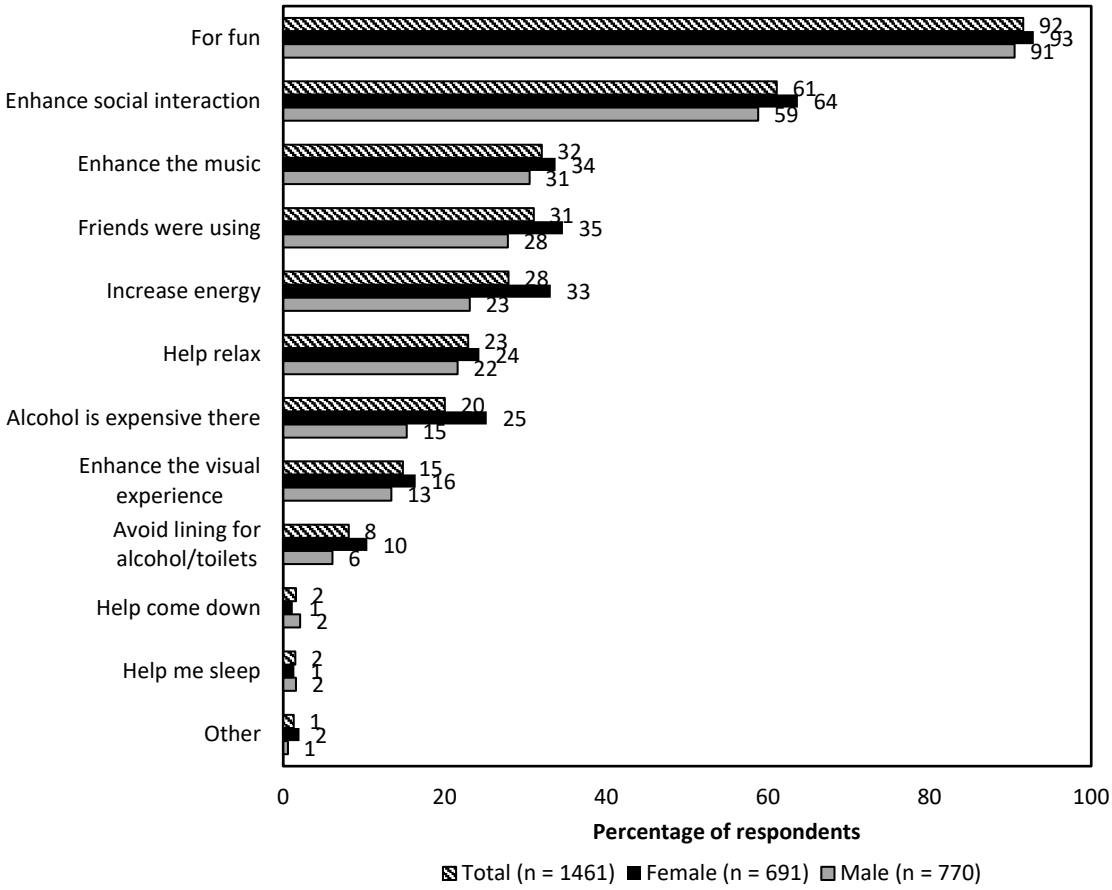
PS=pharmaceutical stimulants, Ket=ketamine, Amyl=amyl nitrate, Mush=magic mushrooms, Nitrous=nitrous oxide, Ice=crystal methamphetamine, Benzos=benzodiazepines.
Note. Drugs with low numbers of cases ($n<10$) were excluded from the above table (e.g. heroin, other opioids). It is important to note that the data is presented according to the percentage of respondents (rather than responses) and there was significant variability in the number of respondents reporting on each drug. Thus, while there were higher rates of 2C-x users using to enhance the visual experience, there were far more cases of LSD users selecting this response option.

Alcohol

Among alcohol users (*n*=1465), the most commonly reported motive was 'for fun', followed by 'to enhance social interaction' (*Figure 4.27*). About a quarter reported drinking to help them relax, but very few reporting drinking to come down or sleep. Importantly, the 20% who reported drinking because 'alcohol is expensive there' were likely referring to motives for pre-drinking.

Higher proportions of females than males reported drinking to increase energy ($p<0.001$), because friends were doing so ($p=0.004$), and because alcohol is expensive at festivals ($p<0.001$).

Figure 4.27: Reasons for using alcohol associated with the last festival attended

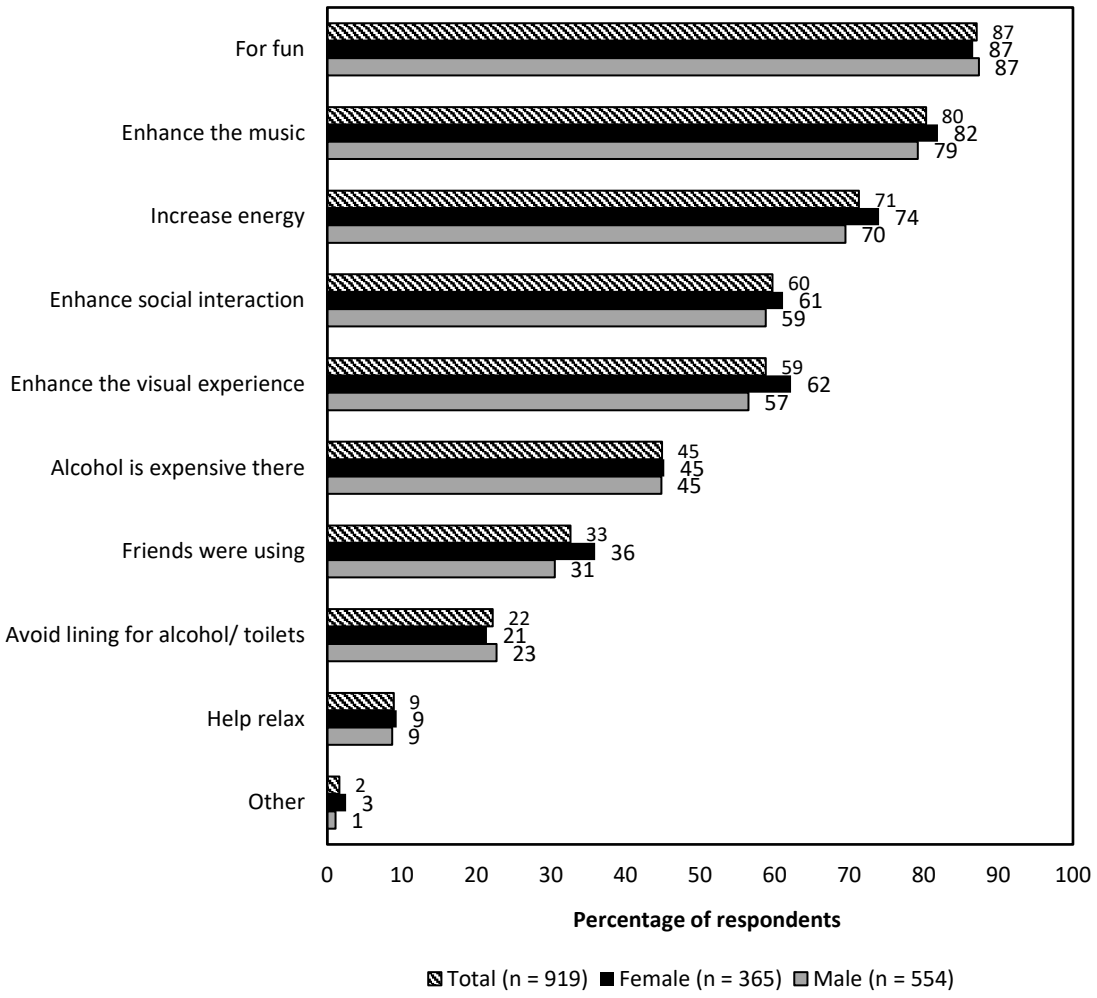


Note. Those who identified as a non-binary gender were excluded (*n*=4).

Ecstasy/MDMA

Among ecstasy users (*n*=924), the three most commonly reported motives were 'for fun', to enhance the music and to increase energy. Other commonly reported motives, which have not considered in previous studies, included alcohol being expensive at festivals and to avoid lines for alcohol/toilets (*Figure 4.28*).

Figure 4.28: Reasons for using ecstasy/MDMA associated with the last festival attended



Note. Those who identified as a non-binary gender were excluded (*n*=5).

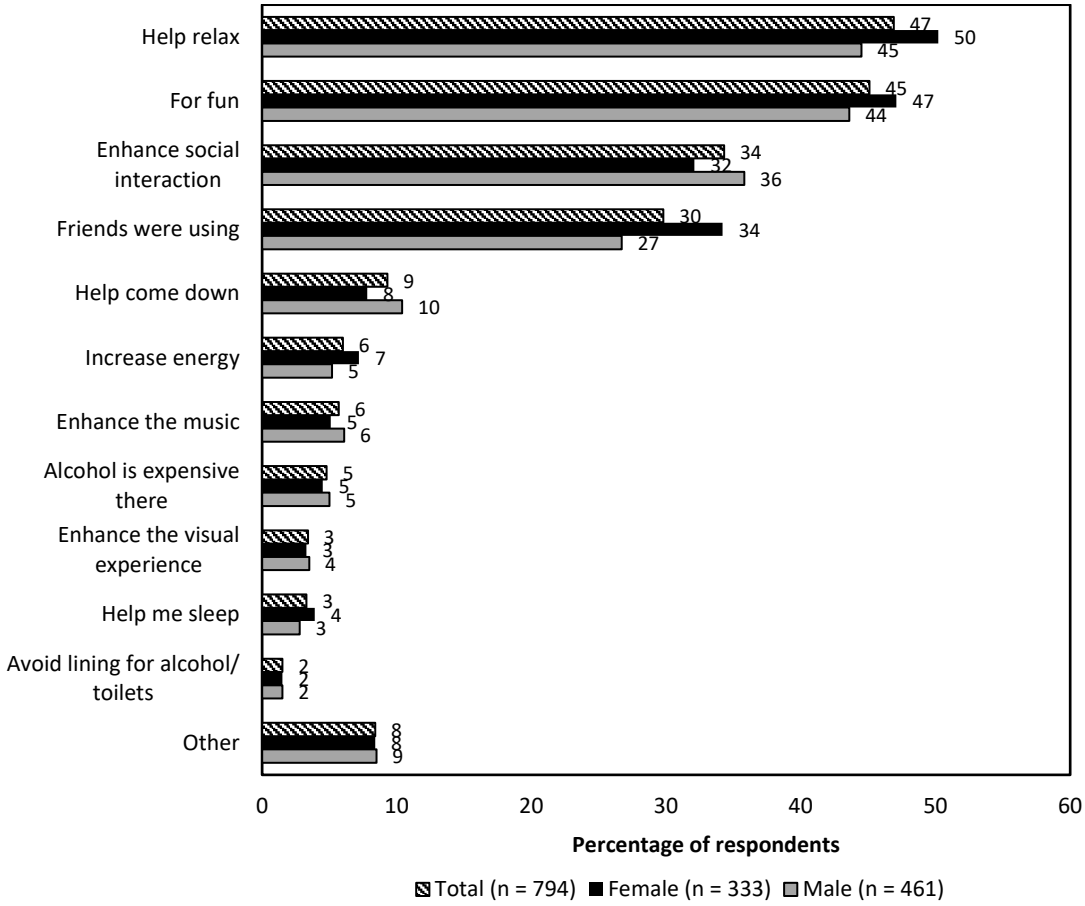
Tobacco

The most commonly reported motives for tobacco use (*n*=801) were to help relax and for fun (*Figure 4.29*). Responses entered into 'other (please specify)' were related to dependence/being a regular smoker/alleviating cravings. Other responses entered included synergistic effects, something to do between bands, something to do with their hands/tactile reasons, to portray a certain image or because they mix tobacco with cannabis. For example:

> *Because I'm addicted to cigarettes and menthol smokes are the best when you are rolling [high on ecstasy].*
>
> *[R1538, female, 18yrs, WA]*

The only significant difference identified between genders was that more females than males reported using tobacco because their friends were (*p*=0.022).

Figure 4.29: Reasons for using tobacco associated with the last festival attended



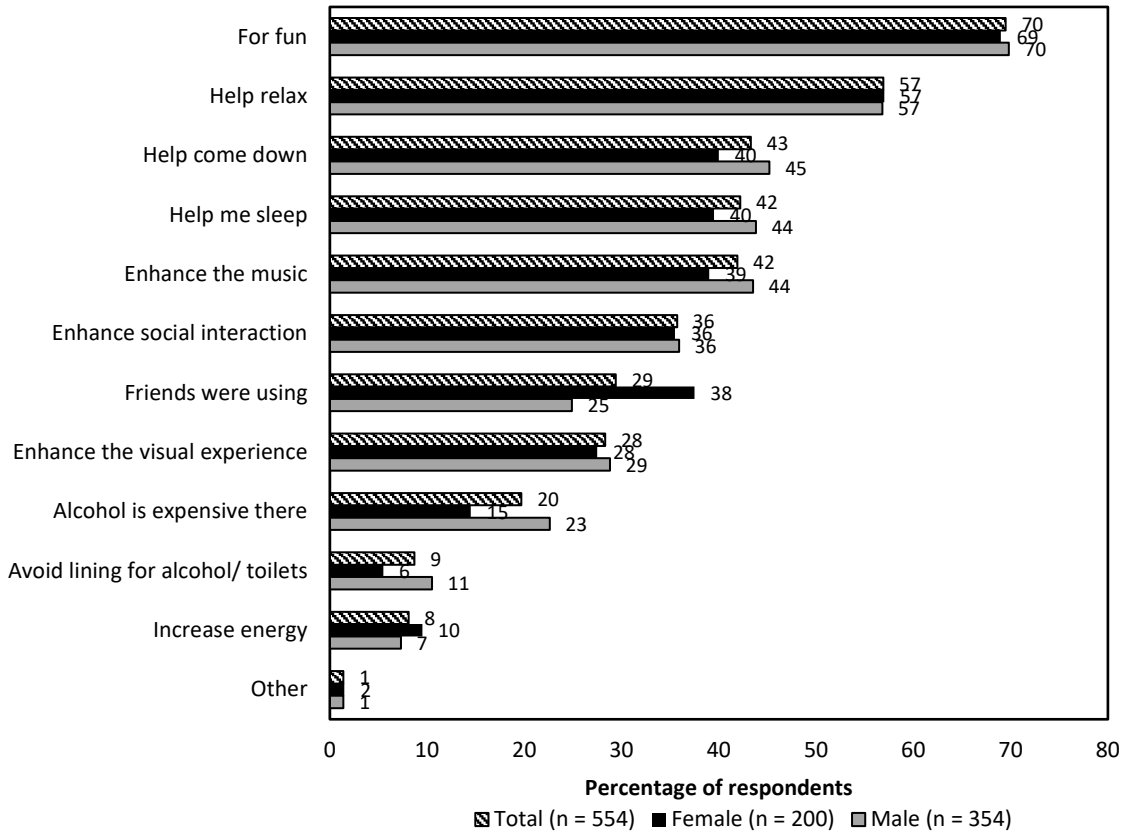
Note. Those who identified as a non-binary gender were excluded (*n*=7).

Cannabis

Among cannabis users (*n*=556), the most common motive reported was for fun, followed by to help relax (*Figure 4.30*). Additionally, consistent with drug use patterns previously discussed, over two-fifths reported using cannabis to help come down and sleep. One-fifth also nominated the cost of alcohol as a motivating factor.

A higher proportion of females reported using cannabis because their friends were (p=0.002), whereas a higher proportion of males reported using cannabis because alcohol is expensive at festivals (p=0.021) and to avoid lines (p=0.047).

Figure 4.30: Reasons for using cannabis associated with the last festival attended



Note. Among those who reported using cannabis. Those who identified as a non-binary gender were excluded (*n*=2).

Why festivalgoers used drugs at the last festival attended – qualitative responses

In the pre-survey interviews, regular festivalgoers were asked to qualitatively explain why they used drugs at the last festival they attended. While some themes were consistent with those revealed in KI interviews (discussed next), personal motives were described in more positive terms. Responses were coded into the following 11 categories, although many crossed over multiple themes as participants often described a multiplicity of motives.

To enhance the sensory experience

Two-thirds made reference to sensory enhancement (*n*=13, 65%). For example, some believed the lights look brighter, while others said the music sounds better:

> *There's a lot of lights at festivals and the pupil dilation and heightened sensitivity to light makes everything look a lot better as well.*
>
> *[P10, male, 19yrs, WA]*

One participant suggested that while drugs enhance the sensory experience, the sensory experience also enhances the drug experience:

> *Well when watching an artist perform there is always a light show, as well as maybe some projections to add to the entertainment. When on ecstasy the combination of lights, music and videos makes you feel even more smacked out of it as it becomes a bit overwhelming.*
>
> *[P11, female, 19yrs, WA]*

Two participants described deeper, more corporeal experiences relating to the interaction between the drugs and music:

> *We took another half each just before we went to watch our favvvv [favourite] act. It kicked in just as we squeezed to the front row and our FAV [favourite] song came on. This was almost like a feeling of euphoria with the high from the pills and the bass running through my whole body.*
>
> *[P05, female, 18yrs, WA]*

> *When you're peaking and the music is playing and everyone around you is moving in sync, you kind of feel like you're breathing and moving at one with the music. Almost like you're part of the music. It's hard to describe.*
>
> *[P19, male, 19yrs, VIC]*

To enhance the social experience

Participants (*n*=11, 60%) reported a variety of motives relating to enhancing social elements, including: enhancing bonding and shared experiences, helping everyone get on the same level, increasing empathy, reducing feelings of social awkwardness, lowering insecurities/inhibitions, and increasing confidence and the desire to have in-depth conversations and make new social connections. For example:

> *The main thing would probably be how loved up everyone gets. Everyone becomes your best friend and its super easy to talk to anyone, which is always fun.*
>
> *[P10, male, 19yrs, WA]*

> *I also find it a good combo for being silly with friends … Just bouncing off each other with silly quotes and doing stuff like writing sternly worded letters, fake business plans for random schemes we come up with, playing improve [improvised] sort of games.*
>
> *[P14, female, 35yrs, VIC]*

> *… everyone's in the same headspace for the most part so you don't feel judged.*
>
> *[P01, male, 26yrs, WA]*

Several participants also commented on their preference for illicit drugs over legal drugs for enhancing social experiences. There was a common belief alcohol does not elicit the same type of depth in communication or connection with others. For example:

> *I guess I like the confidence I get when I'm high, and I love the people I meet and the random adventures and encounters that I come across. These aren't as usual when just drinking or not on anything at all … The confidence from drugs is different to that on alcohol. I'm more open to being super-friendly to people (not that I'm usually a bitch, but you often find yourself with a new bestie when on drugs). It brings me closer to people because you've shared an experience with them, especially something like acid.*
>
> *[P15, female, 33yrs, VIC]*

When I use ecstasy I don't need to wake up with that dreaded feeling of what did I do or say last night. I remember everything and instead of being a drunken mess rambling stuff that doesn't make any sense, I can actually clearly articulate conversations so I think ecstasy is a far better drug than alcohol for socialising.

[P18, female, 20yrs, VIC]

To increase energy

Half (*n*=10) reported a desire to increase energy, but the reason for wanting to increase energy varied. For example, some participants reported using stimulants so they could dance all day, whereas others wanted to counteract effects of depressant drugs. For example:

The reason for the order I took my drugs was because I don't get as easily drunk when I have some sort of amphetamine in my system, so I was able to down the six beers with the Ritalin as well as the shots. I had somewhat of an energy boost from them which enabled me to smoke quite a few joints once the business end of the day approached. I did previously like to smoke ice the morning of a festival which would enable me to have the energy to see a lot of bands, mosh a lot and drink a bit. But I wouldn't bother taking anything else if I had a pipe in the morning. Just FYI [for your information] 😁

[P06, male, 24yrs, WA]

Okay well the dexies [dexamphetamine] are used to give you a buzz almost and added energy! I find that if I take dexies throughout and before the day then I will actually last the whole day and not be tired.

[P11, female, 19yrs, WA]

One participant commented on the risk of being overstimulated. He alluded to the importance of being cognisant of how much energy he was expelling and engaging in appropriate HR strategies:

For me at least it bumps my energy up a lot and I won't stop moving, music sounds better and I'm less socially awkward and feel connected with all the other people at the festival. I've reached stages where I wouldn't stop moving and almost pass out, but manage to realise I'm dehydrated and stop and ask for water from people.

[P09, male, 17yrs, WA]

Setting-related factors/contextual experience of pleasure

Almost half of all interviewees (*n*=9, 45%) reported motives relating to the setting, with three describing it as the "perfect environment" for using drugs. The below participant also described how different drugs specifically complement different spaces and times at festivals (e.g. MDMA on the dancefloor at night, LSD in the day) and how the effects can be positively or negatively influenced by those around you:

> *The usage of the right drug at the right time in the right environment can elevate an enjoyable experience to a transcendental one. It's about enhancing an already positive experience. Psychedelics can be produce altered states of consciousness that can be extremely pleasurable in the right setting. I would typically take these during the daytime, as a 'day-trip' on acid/LSD, for example can be a very stimulating experience. Stimulants/etheogens such as MDMA can elevate a night-time dancefloor experience. Importantly for me is group usage. The energy/empathic connection on a dancefloor when everyone is on MDMA is noticeable, but conversely, it can be isolating if only you are. Therefore, festivals for me, especially the sort that I attend, are the perfect environment.*
>
> *[P13, male, 34yrs, VIC]*

Two participants also spoke about the feeling of freedom when using drugs at festivals. For them, it wasn't just about the physiological effects, it was about deeper contextual pleasures such as the "corporeal experience of space" (Duff, 2008):

> *I enjoy taking acid at a big festival where I have the freedom and space to let the adventure take me wherever it may. With the open spaces and no judgement it's a brilliant experience.*
>
> *[P15, female, 33yrs, VIC]*

> *I like the feeling of running around the big open spaces with my mates and especially with my gf [girlfriend] looking at/dancing to music we all enjoy!*
>
> *[P01, male, 26yrs, WA]*

Prefer illicit drugs to licit drugs/alcohol (*effects, cost and convenience)*

Seven interviewees (*n*=7, 35%) directly or indirectly reported a preference for illicit drugs over alcohol at festivals. This preference related to the following perceived negatives of alcohol: high cost at festivals, effect on memory, "messy" effects (e.g. on vision/coordination and self-control), long lines to purchase it, a lack of high-strength alcohol sold at festivals, and the perception alcohol is more harmful than some illicit drugs.

Many believed ecstasy was better suited to festivals due to both psychoactive effects and convenience. For example:

> *Well the alternative is alcohol and I generally don't like alcohol because it makes you messy. I forget things when I drink, often I'll black out completely and forget most of the night. Alcohol is also expensive, especially at festivals, and you have to get tickets and line up, sometimes for ages in the sun. You can normally only get sugary mid-strength drinks like Smirnoff's which make me feel sick and are too heavy to drink a lot of so it's hard to get drunk anyway. Like twelve dollars for a can or something. Whereas ecstasy doesn't affect my memory, it often makes things clearer. I think it's a better suited drug to festivals.*
>
> *[P02, female, 25yrs, WA]*

One participant added that he would still preload on alcohol, but preferred the effects, cost and convenience of ecstasy:

> *The prices of drinks at festivals are so damn high it's better to just to take pills and have a massive pre's [pre-drinks] before you go into a festival because it's cheaper. To think, for me, a standard drinking rate to maintain, to not be sober, is roughly ten drinks which costs almost a hundred dollars to keep me running for the day. Which I think is absurd. Also, comparing alcohol to ecstasy, alcohol has higher rate in death toll compared to ecstasy. In my opinion, ecstasy has better effects, you have so much serotonin you're just excited for the music being played, but with alcohol you tend to lose vision and hardly remember anything of what you did.*
>
> *[P07, male, 19yrs, WA]*

In contrast, another participant explained that while he was originally motived by cost, after developing tolerance, ecstasy can be more expensive than alcohol. However, he maintained a preference for ecstasy because the effects were more desirable. As evident below, males also reported a dislike for the 'messy' effects of alcohol:

> *I started taking them because it was cheaper to an extent, but now it's probably ended up being more expensive than drinking after you build up a tolerance! But main reason now (at origin) is because it's just so much*

better than drinking. I hate the sloppy feeling of being drunk and hangovers suck.

[P10, male, 19yrs, WA]

To help 'get in the zone'

This theme encompassed responses involving drug use to relax, get 'amped', or simultaneously relax and get 'amped' (*n*=7, 35%). The following participant provided a nice description of how drugs helped her alleviate her insecurities so she could be present and engaged:

I've always been quite anxious and afraid of what people think of me, and my appearance, and all other silly things that teenage girls worry about. I felt none of that while on drugs, I felt a million dollars and so good. I danced my heart out, I sang at the top of my lungs and I ran around like I was never going to see the light of day again. I was completely in the moment.

[P05, female, 18yrs, WA]

Several participants spoke about using different drug types to get into different 'zones', which typically corresponded to the type of music playing. For example:

... I'll smoke a lot of cannabis whilst listening to hip hop or easy listening electro or acoustic music. Acid for heavy electro as well as psychedelic rock and MDMA for hard rock/metal and/electro/house, EDM, etc.

[P06, male, 24yrs, WA]

There were multiple mentions of 'getting into the zone' before headliners. Participants often planned their drug use in line with festival 'set times', ensuring they peaked at optimal times. The following participant reported 'double dropping' before his favourite act to heighten the experience:

Yes, there was a reason to drop at this time. It's because one of my favourite artists, 'Vince Staples', was playing at eight pm so I wanted to drop before that and get excited for it. So well the reason I double dropped was because I wanted to experience a more intense and happy moment for the artist that were ending the festival.

[P07, male, 19yrs, WA]

For fun

Similar to those who reported using to enhance the social/sensory experience, some participants (*n*=7, 35%) believed drugs simply made everything more enjoyable. One participant likened it to the reason he drinks with his friends on a Friday night. For example:

> *Everything is just a lot more fun on drugs hahaha.*
>
> *[P10, male, 19yrs, WA]*

> *My motivations are a bit hard to articulate. I guess I've never thought about it much before. It's like my motivation to drink with mates on a Friday night – it's fun and social.*
>
> *[P15, female, 33yrs, VIC]*

A couple also specifically articulated feelings of euphoria from ecstasy use:

> *I hate to sound clichéd, but the use of MDMA at festivals with friends is just euphoric. I can think back to so many euphoric experiences now that I won't forget of me and my friends dancing in the open air during main acts, occasionally looking up at the stars, and occasionally looking over at each other with just this smile of pure happiness which is like 'yes, this is best'.*
>
> *[P17, female, 27yrs, VIC]*

The below response was coded into multiple categories, and nicely sums up a variety of common motives:

> *Good question! I guess it's just really fun … You just feel happy, awake, alert, excited. That's not how most people feel most of their lives when at work … Everyone is in a good mood, everyone is amped.*
>
> *[P08, male, 21yrs, WA]*

To help wind down or comedown

Consistent with earlier results on patterns, depressant drugs were reportedly used to help wind down or come down post-festival (*n*=7, 35%). These drugs were described as helpful for counteracting stimulant and/or hallucinogenic effects. For example:

> *… I find you notice your comedown less when you're a bit tipsy as well. The cannabis is just to help the comedown and chill me out a bit, sometimes I'll have benzos (Valium, temazepam) if it's available.*
>
> *[P10, male, 19yrs, WA]*

Smoking [cannabis] afterwards calms you down and allows you to be tired enough to sleep after the ecstasy.

[P11, female, 19yrs, WA]

One participant believed heroin use after the festival not only helped him come down from psychedelics, but also helped his body recovery physically:

The heroin is something I use to cope with the comedown of drugs like LSD which can cause me to feel pretty awful afterwards. The heroin is, in every way, just the best cure for whatever you've been through physically with drugs or your body. So the heroin was always going to be left till I was literally sitting on my bed nursing my body.

[P06, male, 24yrs, WA]

Cultural factors

The festival subculture and normalisation of drugs at festivals was indirectly referenced by about a third of interviewees (*n*=7, 35%). Several participants made comments such as "it's just what you do". One participant believed there was a "novelty" element to using drugs at festivals, which ties in with the idea that drug use may be reserved for festivals or more normalised in these settings. For example:

I think there's also a novelty aspect to it. It's just what you do at festivals. I don't do ecstasy much now, but I'd pretty disappointed if I went to a festival and couldn't get anything for it. I'd probably look around [at other people using] and get jealous.

[P02, female, 25yrs, WA]

The excerpt below illustrates the potential for positive effects before even using the drugs (e.g. excitement):

It's all part of the experience. The line-up drops and you hit your boys up. Festivals are always a good excuse to get on it … I think all the planning and anticipation is part of it too. Gives you something to look forward to.

[P12, male, 19yrs, VIC]

The following excerpt also shows an indirect type of peer pressure, in that the participant felt she would not fit in if she did not use illicit drugs:

> *It's just expected. As soon as the line-up is announced and everyone buys their tickets, we start a festival group chat and work out who's organising the pills. It's always been like this in our group and I'm pretty sure it's the same for most people who go to festivals. I'd feel pretty out of place and left out if I went to a festival and all my friends were using and I wasn't …*
>
> *[P17, female, 27yrs, VIC]*

To escape everyday lives

Consistent with KIs' comments, some participants claimed they used drugs to help escape their daily lives (*n*=4, 20%). Festivals were perceived as spaces where it was okay to "get loose" and getting "fucked up" on drugs was described as a way of helping them forget their worries. For example:

> *I'll tell you why I take pills, it's because usually people wanna get fucked up at festivals as much as possible as it's a day where they can become animals and just get loose for the entire day and not think about life.*
>
> *[P07, male, 19yrs, WA]*

However, while there were indications of situational disinhibition at festivals, there were many indications of controlled forms of hedonism. For example:

> *Festivals are a good excuse to get really high, forget your problems for the day and just have fun … But I won't get so messed up that I make stupid decisions or can't control my behaviour. Just messed up enough to forget work, finances and any other problems at the time.*
>
> *[P18, female, 20yrs, VIC]*

For introspection

Lastly, two Victorians (10%) mentioned introspection. Both believed evoking deeper emotions through drug use could be productive in providing emotional insight:

> *I don't necessarily think that feeling sad or tough emotions is the worst thing. Sometimes drug experiences can help you delve more deeply, either through your own introspection or by having an in-depth chat with a good friend.*
>
> *[P14, female, 35yrs, VIC]*

I also find introspection and disassociation useful. I feel that when I look in the mirror and think about things, I see myself more objectively and are kinder to myself and think about myself and life differently. It gives me a different perspective on life that I can't get without the use of drugs.

[P16, female, 27yrs, VIC]

Key informants' views on why festivalgoers use drugs

In pre-survey interviews, KIs were asked to explain why they thought people used illicit drugs at festivals. Unsurprisingly, there were some general trends across sectors/roles, with more KI from government discussing cultural issues, those involved in advocacy and HR discussing pleasures, and those from industry discussing wider societal trends. Again, remember that KI accounts may reproduce narratives that a serve a function, but this does not mean they are inaccurate. Responses were coded into the following eight categories:

Cultural factors (*sober is not the norm, need drugs to have fun)*

Cultural reasons was the strongest theme identified (*n*=16, 55%). Subthemes included that illicit drug use is normalised; festivalgoers think they need drugs to have fun; cultural peer pressures; festivals are special events with new rules; and increasing popularity of EDM and historical links to drug use.

One KI expressed the view that illicit drugs have become more central to music festivals than the music itself, while another suggested most festivalgoers would not even consider attending sober. Interestingly, the latter view was partially supported by results presented earlier, with only 51% of survey respondents reporting they were likely to attend in future without using an illicit drug. Overall, there was a clear theme that while some people attend festivals sober, it is certainly not the norm. For example:

In Western Australia, I believe the culture of music festivals has become focused on taking drugs as opposed to the festival itself. It has become more about getting "fucked up" as patients have said, than going to the festival to enjoy the other aspects.

[KI-20, deidentified, operations team leader, health onsite, WA]

Similarly, several KIs cited the view that many young people felt they 'needed drugs to have fun'. One KI believed the amount of fun festivalgoers have depends on how 'high' they can get, while another suggested they struggle to just be themselves without taking substances. For example:

Yeah and they don't seem to be able to have fun without it. So, you know, the concept of just being yourself is not something they would even contemplate.

[KI-05, deidentified, government/regulation, WA]

Um, I just think like alcohol and drugs – it decreases your inhibitions doesn't it? So it's like let's party, let's have fun and basically you know if someone is high as kite they're really enjoying themselves … Yeah, I think there is that very strong connection that I'm going to have much more fun if I have drinks or I've taken something because my friends have taken it and they look like they're having a fabulous time. So I think there is that peer pressure, but I think it's also accepted as the norm and they think that's the only way they can enjoy something – if they're drunk or high.

[KI-02, deidentified, government/regulation, WA]

There were references to both direct and indirect peer pressure (e.g. seeing friends having fun and feeling left out):

People also take drugs to fit in with their friends, or there could be some peer pressure to take drugs with everyone else.

[KI-14, deidentified, government/regulation, WA]

One KI suggested shifts in popular music culture play a role (e.g. rise in EDM, which is often linked to illicit drug use):

It's an international scene, it probably goes in hand with the music, but yeah it's become the norm unfortunately.

[KI-01, deidentified, government/regulation, WA]

For fun or pleasure (*drugs feel good)*

While 'fun' was a primary motive reported by festivalgoers, only two-fifths of KI (*n*=12, 41%) acknowledged that illicit drug use can be pleasurable. Unsurprisingly, those involved in HR and advocacy recognised this motive. One KI expressed a view that festivalgoers are not "recklessly hedonistic", rather he believed many are informed and use drugs because it positively enhances their lives:

Because drugs feel good. There's a lot to unpack in that statement and I don't think it should be taken to mean that young people are recklessly hedonistic. Most of the young people I meet who take drugs are intelligent and understand what they're doing when they take drugs … When I say that it 'feels good', I mean that in the broadest sense possible … Many things feel

good and have positive and beneficial aspects to our lives. I think you will find that most people who use drugs do so because they feel it brings something positive and beneficial to their lives.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

Interestingly, when another KI was asked to elaborate on his comment "because it's fun", he responded with a degree of frustration, explaining there was not always a need to seek some deeper pathological explanation. Essentially, he believed most young people use drugs simply because it is pleasurable, not because they have some underlying problem:

It's kind of crazy that we need to [elaborate] in a way because I think for anyone who has used MDMA in that kind of setting understands that the reason why people use MDMA at music festivals is because it's an intensely pleasurable experience, it generates strong feelings of empathy so that you have a sense, a very strong sense of being part of the shared experience with a big group of people, it gives a great deal of energy and sense of euphoria and in combination of a whole bunch of other people who are similarly excited about doing something they love, which is listening to music that they enjoy and dancing. It's an incredibly powerful experience and so that's why people do it – because it's really fun. And the fact that we need to kind of um look beyond it, like there's some kind of deeper meaning, I think is systematic of the misunderstanding about the reasons why people use illicit drugs – it's rooted in the belief that illicit drug use is synonymous with addiction and drug use is symptomatic of some deeper set of problems, rather than it's just a pleasurable thing to do – which I think is far closer to the reality.

[KI-03, Will Tregoning, Executive Director, Unharm, NSW]

The following KI observed how pleasure associated with drug use is commonly ignored in the drug policy debate. He also critiqued deterrent approaches on the basis that they ultimately aim to deter people from pleasure:

…. this is the area where often policymakers and police and others try to avoid, and that's people use them because they enjoy them and they enhance their mood and make that experience a whole lot better. And that's why most people use drugs, in terms of recreation use, because they find it fun and they really enjoy the experience. And you know, again, it questions deterrent effects because if people are actually enjoying using, um, then you know we're trying to deter someone from doing something they really enjoy doing.

[KI-12, Greg Denham, Harm Reduction Australia, VIC]

Enhance the social and sensory experience

Enhancing the social and sensory experience was reported across all sectors (*n*=11, 38%). The ability to empathise, connect and communicate more freely was reported, as was the heightened sensitivity to festival stimulus. For example:

Stimulants and hallucinogens can [be] perceived to enhance the experience by heightening sensory input – music, lights, the crowd. Similarly, depressants can allow the user to 'relax' into the experience.

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

To heighten their senses, feel love for their friends, boost their self-esteem.

[KI-14, deidentified, government/regulation, WA]

Prefer illicit drugs to licit drugs/alcohol (*effects, cost and convenience)*

Another theme identified (*n*=8, 28%) was that illicit drugs are used because they are preferred to legal drugs, namely alcohol. Subthemes included: cheaper/more cost-effective; more convenient (e.g. in terms of portability and administration); and perceived as less harmful. For example:

… also, the other significant fact is, I don't know how much a pill is these days – thirty bucks? Yep, so thirty-five and all you've got to do is drink water, you don't need to drink alcohol. Why? Because it costs you ten bucks a can.

[KI-04, deidentified, festival security, national]

1. Cheaper than alcohol. 2. Perceived as less harmful than alcohol. 3. Portability is far easier – rather than carrying alcohol. 4. Administration is quick and easy. 5. Word of mouth – perceptions that drugs enhance the experience. 6. Culture.

[KI-10, deidentified, law enforcement, WA]

Same reasons why people use drugs in wider society

KIs involved in the festival industry (*n*=4, 14%) again referred to drug use in wider society:

> *For the same reasons they use drugs in the greater society …*
>
> *[KI-15, deidentified, director event company, industry, national]*

> *Well people are using drugs, the only difference is they're doing it a festival with a load of music. They're probably taking pills going down to the pub on a Saturday night too, you know, so the only difference is they might take two or three and get their mates to get some more because they're going to a festival …*
>
> *[KI-04, deidentified, festival security, national]*

To escape daily lives (*special celebratory event with new rules)*

Two KI (7%) suggested young people use drugs at festivals because they are perceived as special events where they can 'let loose' and escape everyday life stressors (i.e. 'situational disinhibition'). One KI likened festivals to other celebratory events where it is socially acceptable to consume alcohol to excess:

> *I think it is about a cultural norm that offers music festivals as a special experience, with a select crowd of people, removed from everyday constraints. They become worlds with different rules … I would liken it to our broader cultural expectations of using alcohol at celebratory events, such as Melbourne Cup or the AFL Grand Final. It is accepted that these events include alcohol consumption, and in many cases to excess.*
>
> *[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC*]*

> *It's about risk-taking, escaping from reality and forgetting their day-to-day life.*
>
> *[KI-14, deidentified, government/regulation, WA]*

To increase energy

Consistent with festivalgoer comments, a couple of KI (7%) noted that psychostimulants are used to keep festivalgoers energised throughout the day/s (so they can continue dancing/socialising) and/or to counter the effects of alcohol (so they can continue drinking all day):

> *... seeking ways to maintain energy levels over a long day or night; something to counter the downer effects of alcohol.*
>
> *[KI-08, deidentified, law enforcement, NSW]*

Summary

Why did respondents use drugs in association with the last festival attended?

Key findings

51. The most commonly nominated reason for using most drugs (except speed, pharmaceutical stimulants, benzodiazepines and tobacco) was 'for fun'.

52. As expected, certain classes of drugs were associated with certain motivations (e.g. psychostimulants for energy, depressants to relax/sleep).

53. The three most commonly nominated reasons for using alcohol were for fun, to enhance social interaction and to enhance the music.

54. The three most commonly nominated reasons for using ecstasy/MDMA were for fun, to enhance the music and to increase energy. Other notable reasons were because alcohol is expensive at festivals and to avoid lines for alcohol/toilets.

55. The three most commonly nominated reasons for using cannabis were for fun, to help relax and to help come down.

56. There were no significant differences between genders in relation to reasons for using ecstasy. However, a higher proportion of females than males reported using tobacco and cannabis because their friends were, while a higher proportion of males reported using cannabis because alcohol is expensive at festivals and to avoid lines for drinks and toilets.

57. Qualitative interviews with both KI and regular festivalgoers suggested festival drug use was viewed as an opportunity to escape the stress and mundaneness of everyday lives. Festivals were described as out-of-the-ordinary events at which illicit drug use is more socially acceptable (i.e. normalised), meaning drug use is often reserved and/or exacerbated for these settings (i.e. 'situational disinhibition'). The normality of illicit drug use at festivals was very evident in these interviews, and on multiple occasions festivals were described as "the perfect environment" for using illicit drugs, particularly ecstasy.

While festivalgoers described how illicit drugs can enhance festivals, they also revealed how festivals enhance the effects of the drugs.

58. Qualitative accounts illuminated how illicit drugs were seen to deeply enhance the overall experience by helping festivalgoers relax and be more present, more energised, less inhibited, more connected and sociable with those around them, and more in tune with their senses. All of these psychoactive effects were ultimately seen to make the festival more 'fun'. In turn, the stimulating effects of festivals synergised with the drugs, amplifying their effects.

59. While some festivalgoers and KIs described attitudes or behaviours which could be considered reckless hedonism (e.g. a desire to get as "fucked up" as possible), most accounts suggested attitudes and behaviours could be better described as 'controlled hedonism'.

60. Importantly, in-depth interviews with regular festivalgoers revealed a strong preference for the effects of ecstasy over alcohol, particularly in festival settings where the drug was perceived as better suited (in terms of psychoactive effects and practicalities/convenience). Females in particular emphasised a preference for feeling in control (mentally and physically), avoiding the 'messy' effects of alcohol (e.g. blackouts, vomiting) and feeling more socially connected to those around them (deep bonds are often formed while using ecstasy). Convenience factors described included avoiding lining up for drinks/toilets, which often results in missing performances. Illicit drugs were also considered more portable than alcohol.

Positive drug effects

What positive effects did respondents experience?

In addition to motivations for using drugs, survey respondents were asked what positive effects they would attribute to each drug they used. A summary of responses is presented below (*Table 4.32*), followed by a closer look at the most common drugs. When interpreting the results, please remember that polydrug use was very common in this sample.

Summary of positive effects associated with each drug

Overall, ecstasy and magic mushrooms had the highest median number of positive effects, followed by GHB, LSD, cocaine and MDA (see *Table 4.32* for full list). Drugs with the lowest median number of positive effects included tobacco and other opioids, followed by pharmaceutical stimulants and benzodiazepines, which, as identified in the previous section, had more specific motives (e.g. increased energy, aiding sleep).

Table 4.32: Positive drug effects associated with the last festival (drugs 1–10)

	Alcohol *n*=1409	Ecstasy *n*=890	Tobacco *n*=727	Cannabis *n*=531	Ketamine *n*=153	LSD *n*=133	Cocaine *n*=129	Speed *n*=117	Nitrous Oxide *n*=116	Pharm stimulants *n*=72
Euphoria, happiness	49.5	90.7	12.1	57.6	71.2	76.7	76.0	52.1	83.6	44.4
Relaxation	41.9	20.0	61.9	81.4	46.4	22.6	14.0	6.0	37.9	1.4
Reduces inhibitions	42.7	38.9	5.8	25.2	36.6	18.8	31.0	25.6	13.8	11.1
Increased confidence	72.2	74.8	6.5	20.7	31.4	25.6	72.1	57.3	9.5	41.7
Increased energy	36.9	86.3	4.7	10.9	23.5	44.4	86.0	92.3	10.3	87.5
Enhanced social interaction	69.6	76.4	22.1	34.8	32.0	30.1	67.4	50.4	19.8	43.1
Enhances senses	10.4	72.7	4.1	34.1	39.2	69.2	49.6	42.7	35.3	22.2
Decreased aggression	7.8	37.2	11.6	37.1	27.5	36.8	14.0	16.2	14.7	4.2
Spirituality/introspection	3.7	28.2	1.5	27.5	30.1	72.9	12.4	10.3	27.6	1.4
Enhanced creativity	5.5	30.3	1.2	33.1	25.5	63.9	16.3	13.7	13.8	5.6
Mind expansion	3.8	35.4	1.7	32.4	30.7	71.4	20.9	11.1	39.7	5.6
Enhanced sex	7.3	24.0	0.7	20.2	7.8	25.6	20.9	18.8	7.8	6.9
Helped/improved sleep	6.5	2.2	4.3	51.6	16.3	3.0	1.6	0.9	6.9	0.0
Other	0.6	0.6	2.6	1.1	0.0	0.8	0.8	0.9	1.7	0.0
No positive effects	4.0	1.2	24.8	1.9	7.2	2.3	0.8	3.4	0.9	4.2
Median number of positive effects (IQR)	3 (2-5)	6 (4-8)	1 (1-2)	4 (2-7)	4 (2-6)	5 (3-8)	5 (3-6)	4 (1-6)	3 (1-4)	2 (1-4)

Table 4.33: Positive drug effects associated with the last festival (drugs 11–21)

	Benzos *n*=63	Magic mushroom *n*=44	MDA *n*=43	Crystal meth *n*=28	DMT *n*=24	Amyl nitrate *n*=22	GHB *n*=18	2C-x *n*=11	Other opioids *n*=6	Heroin *n*=3	NBOMe *n*=1
Euphoria, happiness	19.0	77.3	76.7	71.4	41.7	68.2	77.8	54.5	50.0	66.7	0.0
Relaxation	73.0	34.1	11.6	10.7	8.3	31.8	22.2	9.1	66.7	66.7	0.0
Reduces inhibitions	15.9	20.5	32.6	25.0	4.2	9.1	50.0	9.1	33.3	33.3	0.0
Increased confidence	7.9	25.0	51.2	67.9	0.0	0.0	72.2	0.0	0.0	33.3	0.0
Increased energy	0.0	36.4	67.4	71.4	12.5	4.5	72.2	36.4	0.0	0.0	0.0
Enhanced social interaction	11.1	34.1	65.1	46.4	0.0	9.1	77.8	72.7	0.0	0.0	0.0
Enhances senses	6.3	77.3	62.8	57.1	37.5	22.7	27.8	9.1	0.0	33.3	100.0
Decreased aggression	12.7	25.0	34.9	25.0	8.3	9.1	22.2	54.5	16.7	33.3	0.0
Spirituality/introspection	4.8	77.3	20.9	10.7	54.2	0.0	16.7	36.4	0.0	33.3	100.0
Enhanced creativity	4.8	65.9	30.2	17.9	37.5	0.0	16.7	0.0	0.0	0.0	100.0
Mind expansion	6.3	59.1	23.3	25.0	54.2	4.5	16.7	63.6	0.0	33.3	100.0
Enhanced sex	7.9	25.0	25.6	32.1	0.0	9.1	44.4	18.2	0.0	0.0	0.0
Helped/improved sleep	66.7	4.5	0.0	3.6	0.0	4.5	22.2	0.0	33.3	100.0	0.0
Other	4.8	2.3	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No positive effects	1.6	2.3	2.3	3.6	0.0	13.6	0.0	9.1	0.0	0.0	0.0
Median number of positive effects (IQR)	2 (1-3)	6 (4-7)	5 (2-7)	4.5 (2-6)	2 (1-4)	2 (1.2.25)	5.5 (4-7)	3 (2-5)	1 (1-3.5)	3 (1-[#])	[#]

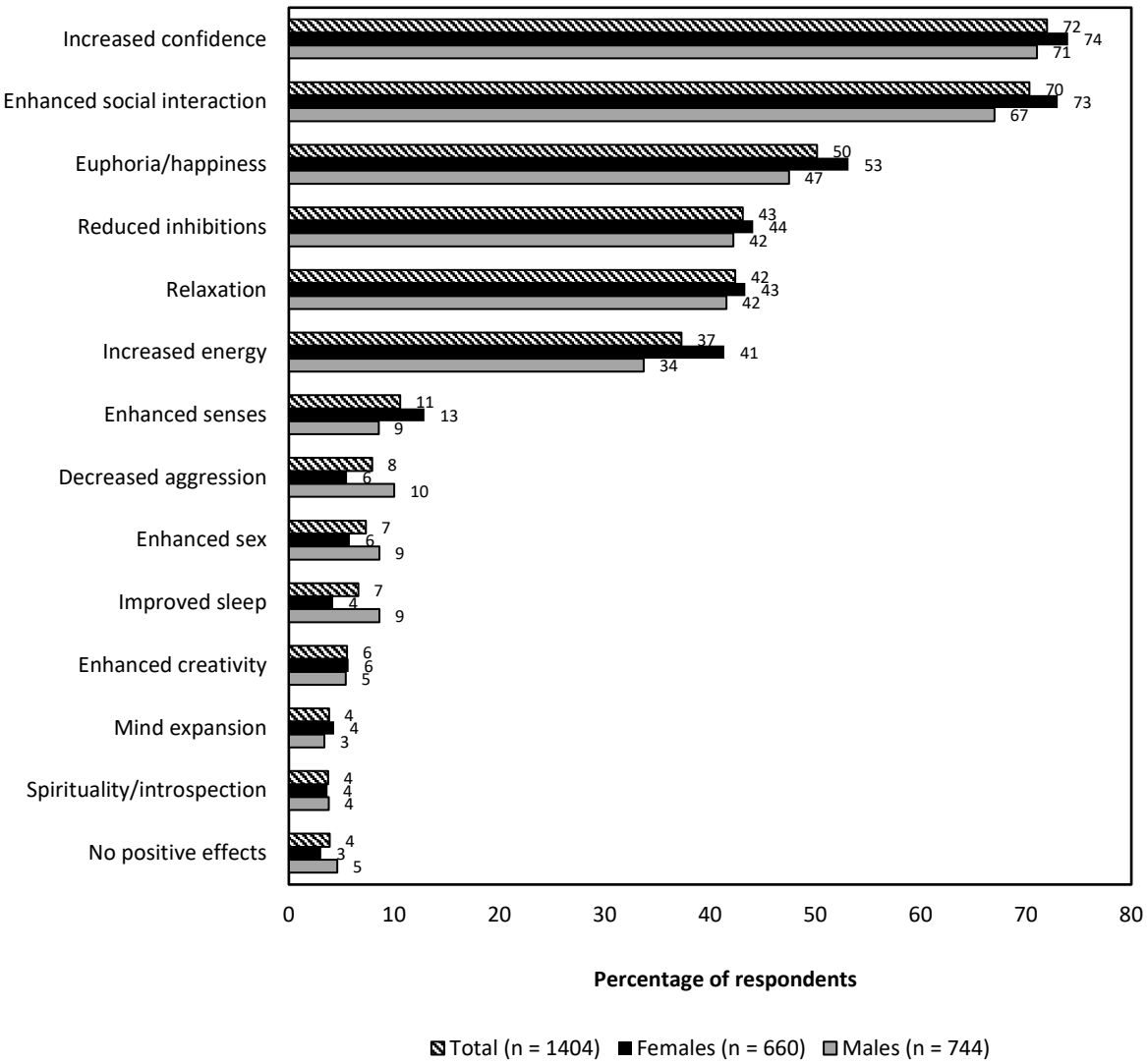
[#]Could not be computed due to small sample size.

Alcohol

Among 1409 respondents, the most common positive effect attributed to alcohol use was increased confidence, followed by enhanced social interaction (*Figure 4.31*). Interestingly, while almost everyone (91%) reported using 'for fun', only half (50%) attributed feelings of happiness to alcohol use.

A higher proportion of females than males attributed happiness (p=0.043), increased energy (p=0.004) and enhanced senses (p=0.009) to their alcohol use, while a higher proportion of males reported decreased aggression (p=0.002) enhanced sex (p=0.040) and improved sleep (p=0.001).

Figure 4.31: Positive effects attributed to alcohol use associated with the last festival attended



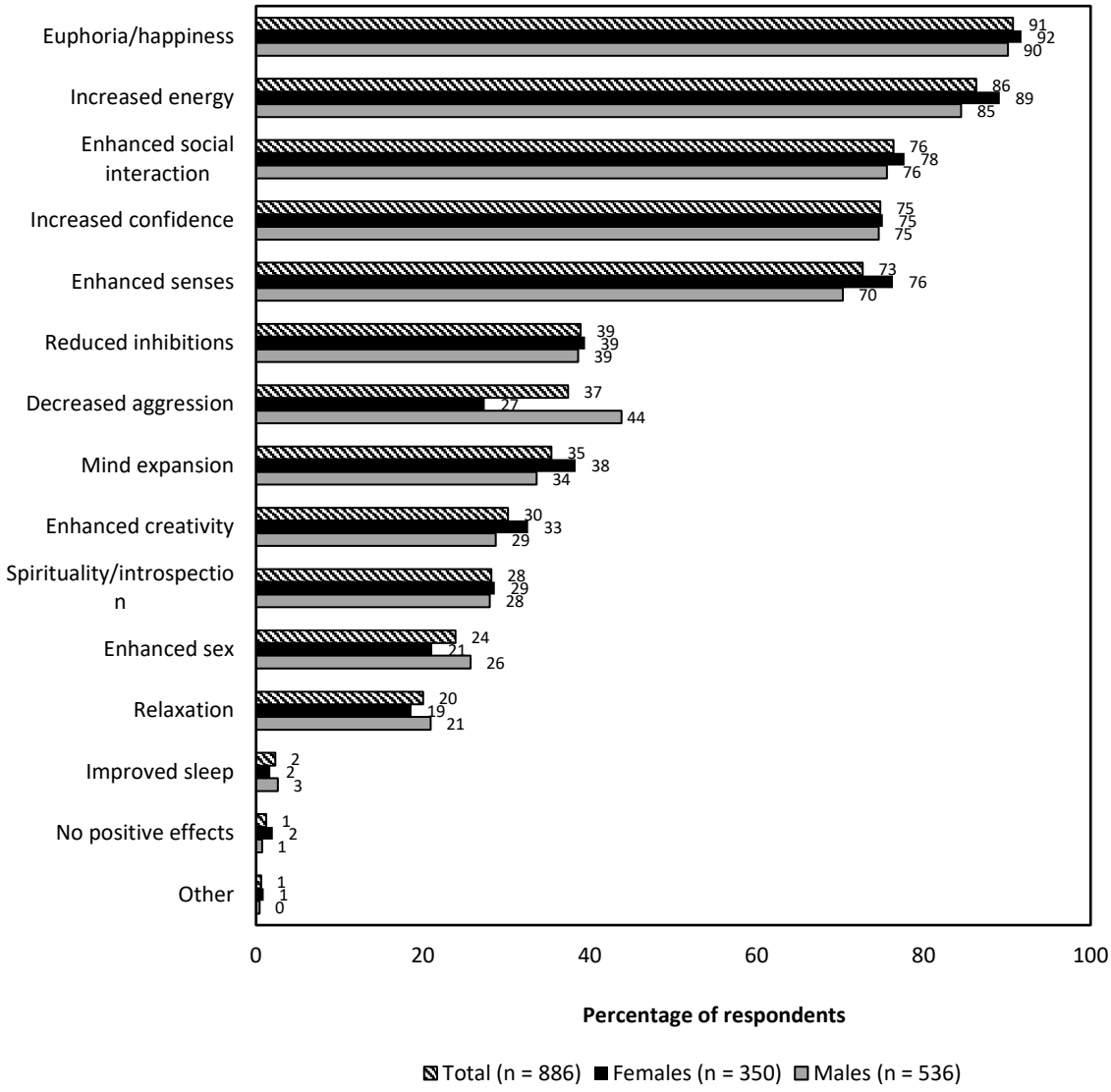
Note. Those who identified as a non-binary gender were excluded (n=5).

Ecstasy/MDMA

Of 890 ecstasy users, high proportions attributed euphoria/happiness and increased energy to their ecstasy use (*Figure 4.32*). Roughly three-quarters also reported enhanced social interaction, increased confidence and enhanced senses. One in four reported enhanced sex.

More males reported experiencing decreased aggression ($p<0.001$). This finding is consistent with reports from KIs working in festival crowd control, who believed ecstasy users were generally relaxed and happy and therefore more easily managed than alcohol users.

Figure 4.32: Positive effects attributed to ecstasy/MDMA use associated with the last festival attended

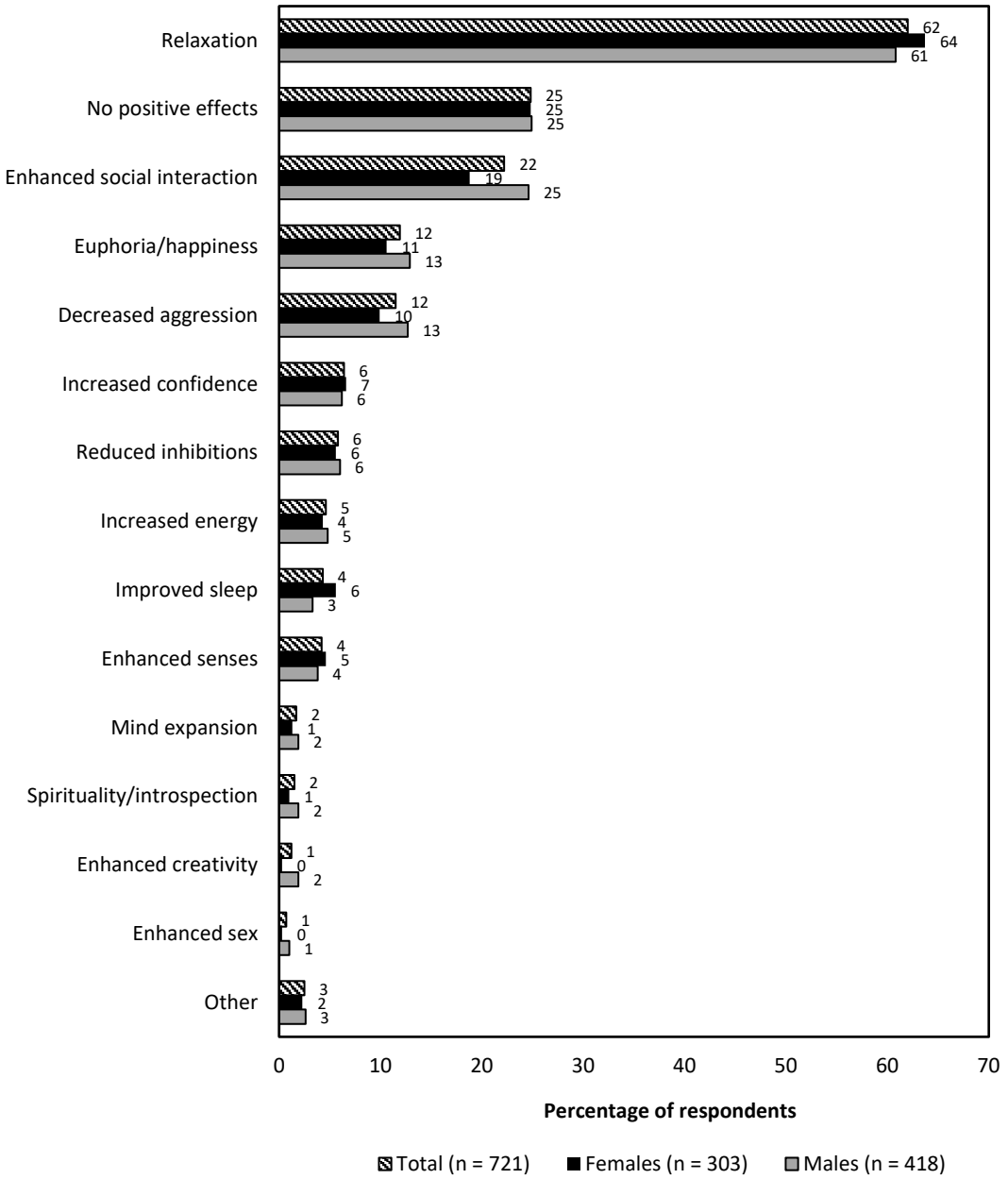


Note. Those who identified as a non-binary gender were excluded (n=4).

Tobacco

Of 727 respondents, the most common positive effect attributed to tobacco use was relaxation, which may reflect alleviation of nicotine cravings for dependent smokers. Interestingly, a quarter reported enhanced social interaction and a small proportion reported increased confidence. A quarter reported experiencing no positive effects at all.

Figure 4.33: Positive effects attributed to tobacco use associated with the last festival attended



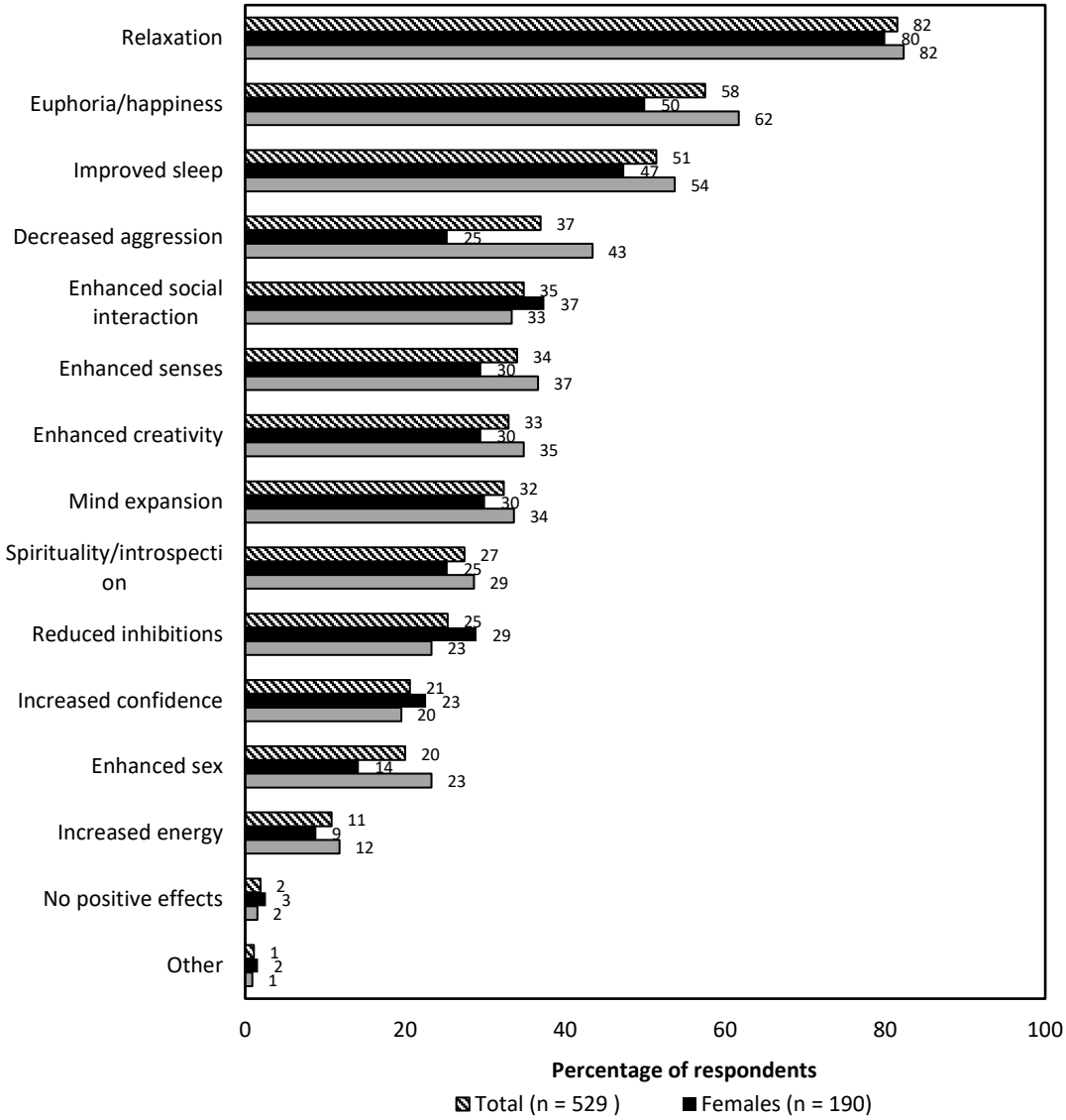
Note. Those who identified as a non-binary gender were excluded (*n*=6).

Cannabis

Of 531 respondents, the most common positive effect attributed to cannabis was relaxation, over half reported euphoria/happiness and improved sleep, and over a third reported decreased aggression, enhanced social interaction and enhanced senses (*Figure 4.34*).

A higher proportion of males than females reported happiness/euphoria (p=0.009), decreased aggression (p<0.001) and enhanced sex (p=0.012).

Figure 4.34: Positive effects attributed to cannabis use associated with the last festival attended



Note. Those who identified as a non-binary gender were excluded (n=2).

Summary

What positive effects did respondents attribute to the drugs they reported using in association with the last festival they attended?

Key findings

61. Ecstasy and magic mushrooms had the highest median number of positive effects (*Mdn*=6), followed by GHB (*Mdn*=5.5), LSD, cocaine and MDA (*Mdn*=5). The drugs with the lowest median reported number of positive effects were tobacco and other opioids (*Mdn*=1) and pharmaceutical stimulants (*Mdn*=2).

62. The most common positive effects attributed to alcohol were increased confidence, enhanced social interaction and happiness/euphoria (*Mdn*=3).

63. The most common positive effects attributed to ecstasy were euphoria/happiness, energy and enhanced social interaction (*Mdn*=6).

64. The most common positive effects attributed to cannabis were relaxation, happiness/euphoria and improved sleep (*Mdn*=4).

65. A higher proportion of males than females reported decreased aggression and enhanced sex as positive effects attributed to alcohol, ecstasy and cannabis use.

Theme 3: Drug-related harms/negative effects

As highlighted in the literature review, drug-related harms (predominantly deaths) linked to festivals have been the primary focus of academic, political and media attention. However, no identified Australian studies have surveyed contemporary festivalgoers about adverse effects attributed to using drugs. The existing academic literature is largely limited to retrospective studies of onsite medical data and onsite cross-sectional surveys in countries other than Australia. This section aims to address these gaps by answering the following questions (in association with the last festival attended):

- What negative drug-related effects did respondents attribute to each drug used?
- How common were moderate to severe negative drug-related effects?

Further analysis was also performed to investigate correlates of adverse outcomes.

Negative effects

What negative effects were experienced in relation to each drug?

For each drug reportedly used in association with the last festival attended, survey respondents were asked to identify attributable negative physical, psychological and social effects they experienced (before, during or after the festival). It is important to re-emphasise the high rates of polydrug use reported in this sample. Thus, when interpreting results, please consider the possibility adverse effects were due to the combinations of drugs used and/or that respondents were unaware which drugs were responsible for which effects.

Summary of adverse effects associated with each drug used

As evident in *Table 4.34* and *Table 4.35* below, the largest median number of adverse effects was attributed to ecstasy use, followed by crystal methamphetamine, MDA, speed, pharmaceutical stimulants and cocaine. Tobacco, cannabis, benzodiazepines, nitrous oxide and DMT had the lowest median number of negative effects (zero).

Table 4.34: Negative drug effects reported in association with the last festival attended (drugs 1–10)

	Alcohol	Ecstasy	Tobacco	Cannabis	Ketamine	LSD	Cocaine	Speed	Nitrous Oxide	Pharm stimulants
Total median negative effects from all categories (IQR)	*n*=1412 1 (0-3)	*n*=881 3 (1-6)	*n*=747 0 (0-1)	*n*=507 0 (0-1)	*n*=144 1 (0-3)	*n*=130 1 (0-3.25)	*n*=126 1.5 (0-4)	*n*=117 2 (0-4)	*n*=110 0 (0-1)	*n*=69 2 (0-4.5)
Psychological (% of respondents)	*n*=1263	*n*=820	*n*=624	*n*=451	*n*=130	*n*=125	*n*=111	*n*=104	*n*=93	*n*=62
High too intense	0.4	7.1	0.2	2.9	8.5	14.4	2.7	3.8	4.3	6.5
Anxiety/panic	1.6	8.8	1.0	9.1	8.5	9.6	8.1	1.0	2.2	12.9
Paranoia	0.7	5.5	0.3	13.7	5.4	14.4	2.7	3.8	2.2	3.2
Irritability	3.0	4.1	0.5	0.9	2.3	4.8	4.5	4.8	0.0	11.3
Confusion	3.2	6.6	0.0	6.7	13.1	16.8	1.8	1.9	4.3	3.2
Aggression	4.6	1.5	0.2	0.2	0.8	0.0	1.8	6.7	0.0	1.6
Bad trip	0.1	1.1	0.0	1.6	3.8	13.6	0.0	0.0	6.5	1.6
Low mood/sadness	4.8	7.9	0.3	3.1	3.1	1.6	3.6	3.8	0.0	0.0
Memory loss	14.6	13.3	0.2	6.4	8.5	4.8	4.5	5.8	6.5	9.7
Unable to concentrate	4.3	10.2	0.5	6.9	9.2	11.2	5.4	2.9	3.2	6.5
Comedown	5.9	46.0	1.4	2.9	20.8	14.4	28.8	37.5	7.5	24.2
Shame/regret from actions while using	7.8	4.3	2.2	1.3	3.1	1.6	2.7	4.8	1.1	9.7
Shame/guilt generally from using	2.7	6.8	6.3	2.9	10.8	5.6	3.6	5.8	4.3	1.6
Other	0.2	0.5	0.3	0.7	0.0	0.8	0.9	0.0	0.0	0.0
No negative psychological effects	71.6	43.0	90.1	72.5	60.0	54.4	63.1	55.8	75.3	58.1
Median number of negative psychological effects (IQR)	0 (0-1)	1 (0-2)	0 (0-0)	0 (0-1)	0 (0-1)	0 (0-2)	0 (0-1)	0 (0-1)	0 (0-0.5)	0 (0-2)

	Alcohol	Ecstasy	Tobacco	Cannabis	Ketamine	LSD	Cocaine	Speed	Nitrous Oxide	Pharm stimulants
Physical (% of respondents)	*n*=1346	*n*=861	*n*=634	*n*=417	*n*=131	*n*=116	*n*=119	*n*=105	*n*=93	*n*=59
Nausea or vomiting	26.6	9.4	5.4	4.3	6.9	2.6	2.5	3.8	9.7	3.4
Chest pain	1.1	1.6	8.4	1.7	1.5	0.9	3.4	3.8	4.3	3.4
Shaking/tremors	1.8	12.4	1.4	2.9	3.1	7.8	13.4	10.5	3.2	15.3
Muscle twitches	1.1	16.5	0.6	3.6	9.9	9.5	10.9	11.4	6.5	10.2
Increased body temperature	6.5	27.2	1.3	4.1	7.6	6.9	16.8	23.8	3.2	11.9
Breathing problems	0.8	2.0	16.9	5.5	3.8	0.9	1.7	1.9	4.3	0.0
Increased/irregular heart rate	3.1	21.5	2.2	5.8	8.4	8.6	27.7	27.6	8.6	32.2
Dizziness/fainting	3.9	3.8	4.6	4.3	6.1	1.7	0.8	2.9	16.1	3.4
Headache/migraine	17.0	4.1	5.7	3.8	4.6	1.7	3.4	1.9	20.4	6.8
Jaw clenching/teeth grinding	1.3	69.1	0.6	1.7	9.2	13.8	26.1	42.9	2.2	37.3
Unwanted visual disturbances/hallucinations	0.1	5.6	0.2	2.6	14.5	18.1	1.7	2.9	5.4	0.0
Sleeping problems	3.0	26.4	0.5	1.7	9.9	18.1	27.7	35.2	2.2	40.7
Comedown/hangover	50.7	55.7	4.7	6.7	22.9	24.1	37.0	39.0	8.6	32.2
Other	0.9	0.8	3.5	1.4	3.1	0.9	2.5	0.0	0.0	0.0
No negative physical effects	37.9	19.3	63.7	75.8	51.1	53.4	37.8	35.2	55.9	27.1
Median number of negative physical effects (IQR)	1 (0-2)	2 (1-4)	0 (0-1)	0 (0-1)	1 (0-1)	0 (0-2)	1 (0-3)	2 (0-3)	0 (0-1)	1 (0-3)
Social (% of respondents)	*n*=1302	*n*=787	*n*=675	*n*=455	*n*=127	*n*=115	*n*=116	*n*=102	*n*=95	*n*=64
Economic problem/s	8.4	7.5	6.7	4.4	3.1	2.6	12.9	2.0	0.0	0
Argument with friends or partner	5.5	3.6	0.9	1.5	1.6	3.5	2.6	4.9	1.1	3.1
Argument with parents or family	1.2	2.9	1.3	2.4	2.4	6.1	2.6	3.9	1.1	0
Called in sick the day/s following the festival	4.7	6.4	0.7	1.8	3.9	2.6	6.9	2.9	0.0	4.7
Problems studying/working in day/s following	9.1	20.6	0.9	5.7	15.0	9.6	13.8	17.6	3.2	12.5
Other	0.3	0.5	0.1	0.2	0.0	1.7	0.0	0.0	0.0	0
No negative social effects	78.7	71.5	89.9	88.6	81.1	81.7	75.0	75.5	94.7	84.4

	Alcohol	Ecstasy	Tobacco	Cannabis	Ketamine	LSD	Cocaine	Speed	Nitrous Oxide	Pharm stimulants
Median number of negative social effects (IQR)	0 (0-0)	0 (0-1)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-0)	0 (0-1)	0 (0-1)	0 (0-0)	0 (0-0)

Table 4.35: Negative drug effects reported in association with the last festival attended (drugs 11–20)

	Benzos	Mushrooms	MDA	DMT	Crystal meth	Amyl	GHB	2C-x	Other opioids	Heroin
Total negative effects from all categories (IQR)	0 (0-0)	1 (0-3.25)	2 (0-6)	0 (0-2)	2.5 (0.25-5.75)	1 (0-2)	0.5 (0-3.5)	1 (.25-2)	0 (0-2)	#
Psychological (% of respondents)	*n*=57	*n*=37	*n*=39	*n*=21	*n*=25	*n*=15	*n*=13	*n*=10	*n*=6	0.0
High too intense	0.0	8.1	5.1	19.0	8.0	0.0	23.1	10.0	0.0	0.0
Anxiety/panic	0.0	8.1	10.3	9.5	8.0	0.0	7.7	0.0	0.0	0.0
Paranoia	0.0	8.1	2.6	4.8	16.0	0.0	0.0	10.0	0.0	0.0
Irritability	0.0	0.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0
Confusion	3.5	8.1	2.6	4.8	0.0	0.0	0.0	0.0	16.7	0.0
Aggression	1.8	0.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0	0.0
Bad trip	0.0	16.2	2.6	4.8	0.0	0.0	7.7	0.0	0.0	0.0
Low mood/sadness	1.8	0.0	5.1	0.0	12.0	0.0	0.0	0.0	0.0	0.0
Memory loss	3.5	0.0	12.8	0.0	16.0	6.7	7.7	0.0	16.7	0.0
Unable to concentrate	1.8	0.0	10.3	0.0	0.0	0.0	7.7	10.0	16.7	0.0
Comedown	1.8	10.8	41.0	4.8	40.0	6.7	0.0	20.0	16.7	0.0
Shame/regret from actions while using	0.0	0.0	5.1	4.8	4.0	0.0	0.0	0.0	0.0	0.0
Shame/guilt generally from using	0.0	2.7	5.1	4.8	12.0	0.0	0.0	10.0	0.0	0.0
Other	0.0	2.7	2.6	0.0	0.0	0.0	0.0	10.0	0.0	0.0
No negative psychological effects	89.5	62.2	53.8	66.7	48.0	80.0	69.2	40.0	100.0	100.0
Median negative psychological effects (IQR)	0 (0-0)	0 (0-1)	1 (0-2)	0 (0-1)	1 (0-2)	0 (0-0)	0 (0-1)	1 (0-1)	0 (0-1)	

	Benzos	Mushrooms	MDA	DMT	Crystal meth	Amyl	GHB	2C-x	Other opioids	Heroin
Physical (% of respondents)	*n*=57	*n*=40	*n*=40	*n*=20	*n*=27	*n*=16	*n*=30	*n*=11	*n*=6	*n*=3
Nausea or vomiting	0.0	10.0	7.5	0.0	7.4	12.5	14.3	9.1	0.0	0.0
Chest pain	0.0	2.5	2.5	0.0	3.7	0.0	0.0	0.0	0.0	0.0
Shaking/tremors	0.0	5.0	15.0	0.0	18.5	0.0	0.0	0.0	0.0	0.0
Muscle twitches	0.0	5.0	15.0	0.0	14.8	0.0	28.6	9.1	16.7	0.0
Increased body temperature	0.0	5.0	37.5	0.0	33.3	6.3	28.6	9.1	0.0	0.0
Breathing problems	0.0	2.5	0.0	5.0	0.0	0.0	7.1	0.0	0.0	0.0
Increased/irregular heart rate	0.0	12.5	22.5	5.0	29.6	0.0	21.4	0.0	16.7	0.0
Dizziness/fainting	0.0	5.0	2.5	0.0	0.0	25.0	14.3	0.0	16.7	0.0
Headache/ migraine	0.0	2.5	0.0	0.0	3.7	43.8	0.0	9.1	0.0	0.0
Jaw clenching/teeth grinding	0.0	12.5	45.0	5.0	29.6	0.0	21.4	9.1	0.0	0.0
Unwanted visual disturbances/hallucinations	1.8	22.5	7.5	15.0	3.7	0.0	7.1	18.2	0.0	0.0
Sleeping problems	0.0	17.5	25.0	5.0	33.3	0.0	7.1	18.2	0.0	0.0
Comedown/hangover	5.3	20.0	40.0	10.0	37.0	18.8	7.1	9.1	16.7	0.0
Other	3.5	7.5	0.0	0.0	0.0	0.0	7.1	9.1	0.0	0.0
No negative physical effects	91.2	55.0	35.0	75.0	33.3	37.5	50.0	54.5	100.0	100.0
Median number of negative physical effects (IQR)	0 (0-0)	0 (0-2)	2 (0-4)	0 (0-0.75)	2 (0-3)	1 (0-2)	0.5 (0-3.2)	0 (0-1)	0 (0-1)	#
Social (% of respondents)	*n*=59	*n*=34	*n*=38	*n*=18	*n*=26	*n*=18	*n*=17	*n*=10	*n*=7	*n*=3
Economic problem/s	0.0	0.0	10.5	0.0	19.2	0.0	0.0	0.0	0.0	0.0
Argument with friends or partner	0.0	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0	0.0
Argument with parents or family	0.0	5.9	13.2	9.5	15.4	0.0	11.8	9.1	14.3	0.0
Called in sick the day/s following the festival	3.4	2.9	5.3	4.8	11.5	0.0	0.0	0.0	0.0	0.0
Problems studying/working in day/s following	3.4	8.8	18.4	9.5	15.4	5.6	11.8	9.1	14.3	0.0
Other	1.7	0.0	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
No negative social effects	93.2	85.3	65.8	85.7	65.4	88.9	82.4	90.1	85.7	100.0
Median number of negative social effects (IQR)	0 (0-0)	0 (0-0)	0 (0-1)	0 (0-0)	0 (0-1)	0 (0-0)	0 (0-1)	0 (0-0)	0 (0-0)	#

Summary of drugs associated with adverse effects

The following tables (*Table 4.36 – Table 4.38*) rank drugs according to what percentage of respondents associated them with adverse effects. Overall, the results were consistent with the psychoactive properties of each drug. For example, hallucinogens ranked highest for 'bad trips' and 'unwanted visuals', psychostimulants ranked highest for 'sleeping problems' and 'shaking/tremors', and solvents (nitrous and amyl nitrate) ranked highest for 'headaches' and 'dizziness'. Ecstasy ranked highest for comedowns and jaw clenching/teeth grinding.

Table 4.36: Drug ranking for adverse physical effects associated with the last festival attended (% of respondents using each drug)

	Nausea / vomiting	Chest pain	Shaking / tremors	Muscle twitches	Increased temperature	Breathing problems	Irregular heart rate	Dizziness / fainting	Headache	Jaw clench / teeth grind	Unwanted visuals	Sleeping problems	Comedown / hangover
1.	Alco (26.6)	Tobacco (8.4)	Ice (18.5)	GHB (28.6)	MDA (37.5)	Tobacco (16.9)	PS (32.2)	Amyl (25)	Amyl (43.8)	E (69.1)	MM (22.5)	PS (40.7)	E (55.7)
2.	GHB (14.3)	Nitrous (4.3)	PS (15.3)	E (16.5)	Ice (33.3)	GHB (7.1)	Ice (29.6)	Nitrous (16.1)	Nitrous (20.4)	MDA (45.0)	2C-x (18.2)	Speed (35.2)	Alco (50.7)
3.	Amyl (12.5)	Speed (3.8)	MDA (15)	MDA (15)	GHB (28.6)	Weed (5.5)	Coke (27.7)	GHB (14.3)	Alco (17)	Speed (42.9)	LSD (18.1)	Ice (33.3)	MDA (40.0)
4.	MM (10.0)	Ice (3.7)	Coke (13.4)	Ice (14.8)	E (27.2)	DMT (5)	Speed (27.6)	K (6.1)	2C-x (9.1)	PS (37.3)	DMT (15.0)	Coke (27.7)	Speed (39.0)
5.	Nitrous (9.7)	Coke (3.4)	E (12.4)	Speed (11.4)	Speed (23.8)	Nitrous (4.3)	MDA (22.5)	MM (5.0)	PS (6.8)	Ice (29.6)	K (14.5)	E (26.4)	Ice (37.0)
6.	E (9.4)	PS (3.4)	Speed (10.5)	Coke (10.9)	Coke (16.8)	K (3.8)	E (21.5)	Tobacco (4.6)	Tobacco (5.7)	Coke (26.1)	MDA (7.5)	MDA (25)	Coke (37.0)
7.	2C-x (9.1)	MM (2.5)	LSD (7.8)	PS (10.2)	PS (11.9)	MM (2.5)	GHB (21.4)	Weed (4.3)	K (4.6)	GHB (21.4)	GHB (7.1)	2C-x (18.2)	PS (32.2)
8.	MDA (7.5)	MDA (2.5)	MM (5)	K (9.9)	2C-x (9.1)	E (2)	MM (12.5)	Alco (3.9)	E (4.1)	LSD (13.8)	E (5.6)	LSD (18.1)	LSD (24.1)
9.	Ice (7.4)	Weed (1.7)	Nitrous (3.2)	LSD (9.5)	K (7.6)	Speed (1.9)	Nitrous (8.6)	E (3.8)	Weed (3.8)	MM (12.5)	Nitrous (5.4)	MM (17.5)	K (22.9)
10.	K (6.9)	E (1.6)	K (3.1)	2C-x (9.1)	LSD (6.9)	Coke (1.7)	LSD (8.6)	PS (3.4)	Ice (3.7)	K (9.2)	Ice (3.7)	K (9.9)	MM (20.0)
11.	Tobacco (5.4)	K (1.5)	Weed (2.9)	Nitrous (6.5)	Alco (6.5)	LSD (0.9)	K (8.4)	Speed (2.9)	Coke (3.4)	2C-x (9.1)	Speed (2.9)	GHB (7.1)	Amyl (18.8)
12.	Weed (4.3)	Alco (1.1)	Alco (1.8)	MM (5.0)	Amyl (6.3)	Alco (0.8)	Weed (5.8)	MDA (2.5)	MM (2.5)	DMT (5.0)	Weed (2.6)	DMT (5.0)	DMT (10.0)
13.	Speed (3.8)	LSD (0.9)	Tobacco (1.4)	Weed (3.6)	MM (5.0)	MDA (0.0)	DMT (5.0)	LSD (1.7)	Speed (1.9)	Nitrous (2.2)	Benzos (1.8)	Alco (3.0)	2C-x (9.1)
14.	PS (3.4)	Benzos (0.0)	Benzos (0.0)	Alco (1.1)	Weed (4.1)	Ice (0.0)	Alco (3.1)	Coke (0.8)	LSD (1.7)	Weed (1.7)	Coke (1.7)	Nitrous (2.2)	Nitrous (8.6)
15.	LSD (2.6)	DMT (0.0)	DMT (0.0)	Tobacco (0.6)	Nitrous (3.2)	PS (0.0)	Tobacco (2.2)	Ice (0.0)	GHB (0.0)	Alco (1.3)	Tobacco (0.2)	Weed (1.7)	GHB (7.1)
16.	Coke (2.5)	Amyl (0.0)	Amyl (0.0)	Benzos (0.0)	Tobacco (1.3)	2C-x (0.0)	2C-x (0.0)	DMT (0.0)	MDA (0.0)	Tobacco (0.6)	Alco (0.1)	Tobacco (0.5)	Weed (6.7)
17.	Benzos (0.0)	GHB (0.0)	GHB (0.0)	DMT (0.0)	Benzos (0.0)	Amyl (0.0)	Amyl (0.0)	2C-x (0.0)	DMT (0.0)	Amyl (0.0)	Amyl (0.0)	Amyl (0.0)	Benzos (5.3)
18.	DMT (0.0)	2C-x (0.0)	2C-x (0.0)	Amyl (0.0)	DMT (0.0)	Benzos (0.0)	Benzos (0.0)	Benzos (0.0)	Benzos (0.0)	Benzos (0.0)	PS (0.0)	Benzos (0.0)	Tobacco (4.7)

Note. Heroin and other opioids were excluded from this analysis due to $n<10$. Data is presented according to the percentage of respondents (rather than responses) and there was significant variability in the number of respondents reporting on each drug. Thus, while there were higher rates of muscle twitching among GHB users, there were far more cases of muscle twitching among ecstasy users due to more respondents using ecstasy. alco=alcohol, amyl=amyl nitrate, nitrous=nitrous oxide, MM=magic mushrooms, E=ecstasy, Ice=crystal methamphetamine, K=ketamine, PS=pharmaceutical stimulants, coke=cocaine, weed=cannabis.

Table 4.37: Drugs identified as having highest rates of different negative psychological effects associated with the last festival attended (% of respondents using each drug)

	High too intense	Anxiety / panic	Paranoia	Irritability	Confusion	Aggression	Bad trip	Low mood / sadness	Memory loss	Unable to concentrate	Comedown	Shame from actions	Shame from using
1.	GHB (23.1)	PS (12.9)	Ice (16.0)	Ice (16.0)	LSD (16.8)	Ice (16.0)	MM (16.2)	Ice (12.0)	Ice (16.0)	LSD (11.2)	Ecstasy (46)	PS (9.7)	Ice (12.0)
2.	DMT (19)	MDA (10.3)	LSD (14.4)	PS (11.3)	K (13.1)	Speed (6.7)	LSD (13.6)	Ecstasy (7.9)	Alco (14.6)	MDA (10.3)	MDA (41.0)	Alco (7.8)	K (10.8)
3.	LSD (14.4)	LSD (9.6)	Weed (13.7)	LSD (4.8)	MM (8.1)	Alco (4.6)	GHB (7.7)	MDA (5.1)	Ecstasy (13.3)	Ecstasy (10.2)	Ice (40.0)	MDA (5.1)	2C-x (10.0)
4.	2C-x (10)	DMT (9.5)	2C-x (10)	Speed (4.8)	Weed (6.7)	Coke (1.8)	Nitrous (6.5)	Alco (4.8)	MDA (12.8)	2C-x (10.0)	Speed (37.5)	Speed (4.8)	Ecstasy (6.8)
5.	K (8.5)	Weed (9.1)	MM (8.1)	Coke (4.5)	Ecstasy (6.6)	Benzos (1.8)	DMT (4.8)	Speed (3.8)	PS (9.7)	K (9.2)	Coke (28.8)	DMT (4.8)	Tobacco (6.3)
6.	MM (8.1)	Ecstasy (8.8)	Ecstasy (5.5)	Ecstasy (4.1)	DMT (4.8)	PS (1.6)	K (3.8)	Coke (3.6)	K (8.5)	GHB (7.7)	PS (24.2)	Ecstasy (4.3)	Speed (5.8)
7.	Ice (8.0)	K (8.5)	K (5.4)	Alco (3.0)	Nitrous (4.3)	Ecstasy (1.5)	MDA (2.6)	Weed (3.1)	GHB (7.7)	Weed (6.9)	K (20.8)	Ice (4.0)	LSD (5.6)
8.	Ecstasy (7.1)	Coke (8.1)	DMT (4.8)	K (2.3)	Benzos (3.5)	K (0.8)	Weed (1.6)	K (3.1)	Amyl (6.7)	PS (6.5)	2C-x (20.0)	K (3.1)	MDA (5.1)
9.	PS (6.5)	MM (8.1)	Speed (3.8)	Weed (0.9)	Alco (3.2)	Tobacco (0.2)	PS (1.6)	Benzos (1.8)	Nitrous (6.5)	Coke (5.4)	LSD (14.4)	Coke (2.7)	DMT (4.8)
10.	MDA (5.1)	Ice (8.0)	PS (3.2)	Tobacco (0.5)	PS (3.2)	Weed (0.2)	Ecstasy (1.1)	LSD (1.6)	Weed (6.4)	Alco (4.3)	MM (10.8)	Tobacco (2.2)	Nitrous (4.3)
11.	Nitrous (4.3)	GHB (7.7)	Coke (2.7)	Nitrous (0.0)	MDA (2.6)	LSD (0.0)	Alco (0.1)	Tobacco (0.3)	Speed (5.8)	Nitrous (3.2)	Nitrous (7.5)	LSD (1.6)	Coke (3.6)
12.	Speed (3.8)	Nitrous (2.2)	MDA (2.6)	Benzos (0.0)	Speed (1.9)	Nitrous (0.0)	Tobacco (0.0)	Nitrous (0.0)	LSD (4.8)	Speed (2.9)	Amyl (6.7)	Weed (1.3)	Weed (2.9)
13.	Weed (2.9)	Alco (1.6)	Nitrous (2.2)	MM (0.0)	Coke (1.8)	MM (0.0)	Coke (0.0)	PS (0.0)	Coke (4.5)	Benzos (1.8)	Alco (5.9)	Nitrous (1.1)	Alco (2.7)
14.	Coke (2.7)	Tobacco (1)	Alco (0.7)	MDA (0.0)	Tobacco (0.0)	MDA (0.0)	Speed (0.0)	MM (0.0)	Benzos (3.5)	Tobacco (0.5)	DMT (4.8)	Benzos (0.0)	MM (2.7)
15.	Alco (0.4)	Speed (1)	Tobacco (0.3)	DMT (0.0)	Ice (0.0)	DMT (0.0)	Benzos (0.0)	DMT (0.0)	Tobacco (0.2)	MM (0.0)	Weed (2.9)	MM (0.0)	PS (1.6)
16.	Tobacco (0.2)	Benzos (0.0)	Benzos (0.0)	Amyl (0.0)	Amyl (0.0)	Amyl (0.0)	Ice (0.0)	Amyl (0.0)	MM (0.0)	DMT (0.0)	Benzos (1.8)	Amyl (0.0)	Benzos (0.0)
17.	Benzos (0.0)	Amyl (0.0)	Amyl (0.0)	GHB (0.0)	GHB (0.0)	GHB (0.0)	Amyl (0.0)	GHB (0.0)	DMT (0.0)	Ice (0.0)	Tobacco (1.4)	GHB (0.0)	Amyl (0.0)
18.	Amyl (0.0)	2C-x (0.0)	GHB (0.0)	2C-x (0.0)	2C-x (0.0)	2C-x (0.0)	2C-x (0.0)	2C-x (0.0)	2C-x (0.0)	Amyl (0.0)	GHB (0.0)	2C-x (0.0)	GHB (0.0)

Note. Heroin and other opioids were excluded from this analysis due to $n<10$. Data is presented according to the percentage of respondents (rather than responses) and there was significant variability in the number of respondents reporting on each drug. Thus, while there were higher rates of muscle twitching among GHB users, there were far more cases of muscle twitching among ecstasy users due to more respondents using ecstasy. alco=alcohol, amyl=amyl nitrate, nitrous=nitrous oxide, MM=magic mushrooms, E=ecstasy, Ice=crystal methamphetamine, K=ketamine, PS=pharmaceutical stimulants, coke=cocaine, weed=cannabis.

Table 4.38: Drugs identified as having highest rates of different negative social effects associated with the last festival attended (% of respondents using each drug)

	Economic problem/s	Argument with friends/partner	Argument with parents/family	Called in sick day/s following	Problems study/work after	No negative social effects
1.	Crystal meth (19.2)	Crystal meth (15.4)	Crystal meth (15.4)	Crystal meth (11.5)	Ecstasy (20.6)	Nitrous Oxide (94.7)
2.	Cocaine (12.9)	Alcohol (5.5)	MDA (13.2)	Cocaine (6.9)	MDA (18.4)	Benzos (93.2)
3.	MDA (10.5)	Speed (4.9)	GHB (11.8)	Ecstasy (6.4)	Speed (17.6)	2C-x (90.1)
4.	Alcohol (8.4)	Ecstasy (3.6)	DMT (9.5)	MDA (5.3)	Crystal meth (15.4)	Tobacco (89.9)
5.	Ecstasy (7.5)	LSD (3.5)	2C-x (9.1)	DMT (4.8)	Ketamine (15.0)	Amyl (88.9)
6.	Tobacco (6.7)	Pharm stimulants (3.1)	LSD (6.1)	Alcohol (4.7)	Cocaine (13.8)	Cannabis (88.6)
7.	Cannabis (4.4)	Cocaine (2.6)	Mushrooms (5.9)	Pharm stimulants (4.7)	Pharm stimulants (12.5)	DMT (85.7)
8.	Ketamine (3.1)	Ketamine (1.6)	Speed (3.9)	Ketamine (3.9)	GHB (11.8)	Mushrooms (85.3)
9.	LSD (2.6)	Cannabis (1.5)	Ecstasy (2.9)	Benzos (3.4)	LSD (9.6)	Pharm stimulants (84.4)
10.	Speed (2)	Nitrous Oxide (1.1)	Cocaine (2.6)	Speed (2.9)	DMT (9.5)	GHB (82.4)
11.	Nitrous Oxide (0.0)	Tobacco (0.0.9)	Cannabis (2.4)	Mushrooms (2.9)	Alcohol (9.1)	LSD (81.7)
12.	Pharm stimulants (0.0)	Benzos (0.0)	Ketamine (2.4)	LSD (2.6)	2C-x (9.1)	Ketamine (81.1)
13.	Benzos (0.0)	Mushrooms (0.0)	Tobacco (1.3)	Cannabis (1.8)	Mushrooms (8.8)	Alcohol (78.7)
14.	Mushrooms (0.0)	MDA (0.0)	Alcohol (1.2)	Tobacco (0.0.7)	Cannabis (5.7)	Speed (75.5)
15.	DMT (0.0)	DMT (0.0)	Nitrous Oxide (1.1)	Nitrous Oxide (0.0)	Amyl (5.6)	Cocaine (75)
16.	Amyl (0.0)	Amyl (0.0)	Pharm stimulants (0.0)	Amyl (0.0)	Benzos (3.4)	Ecstasy (71.5)
17.	GHB (0.0)	GHB (0.0)	Benzos (0.0)	GHB (0.0)	Nitrous Oxide (3.2)	MDA (65.8)
18.	2C-x (0.0)	2C-x (0.0)	Amyl (0.0)	2C-x (0.0)	Tobacco (0.0.9)	Crystal meth (65.4)

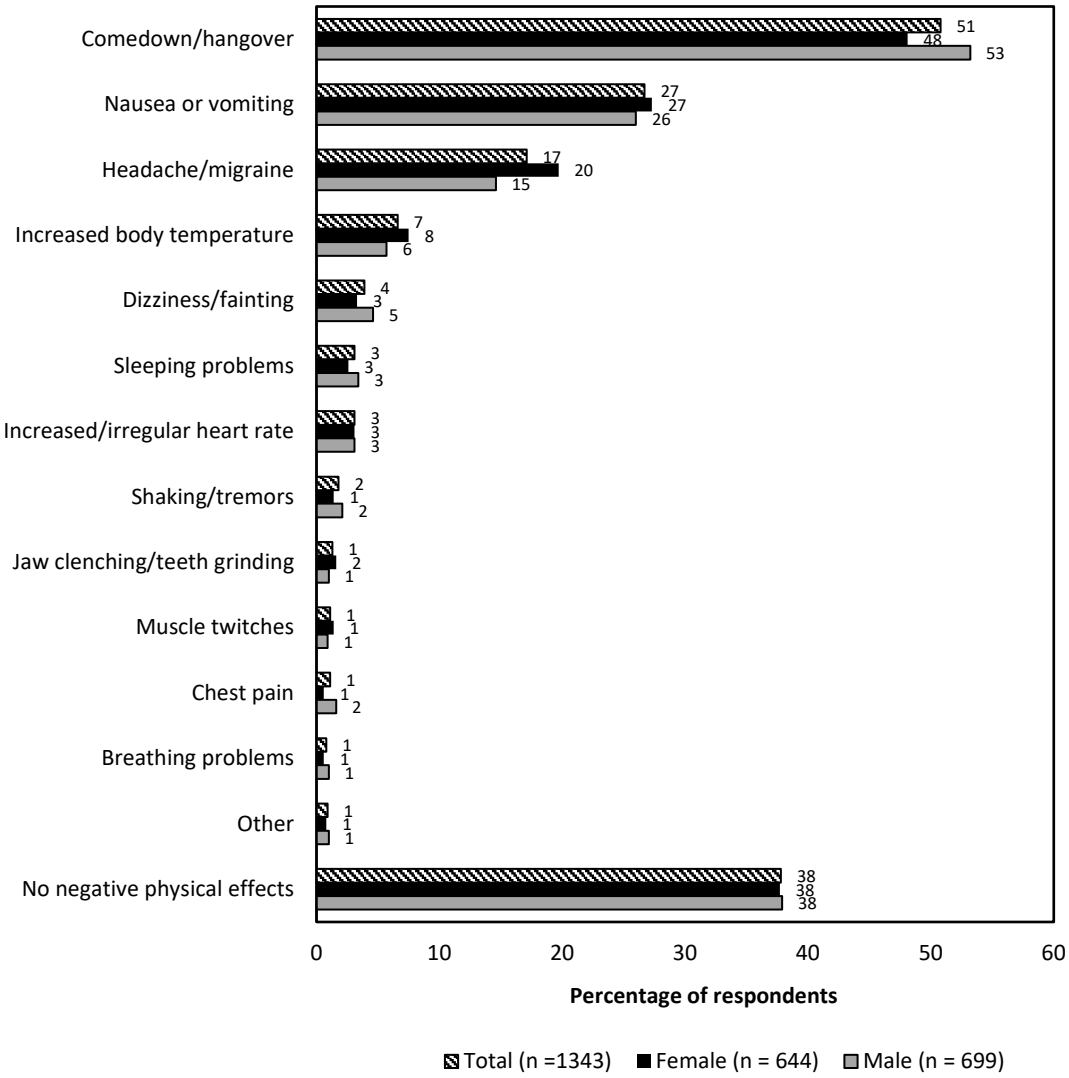
Note. Heroin and other opioids were excluded from this analysis due to $n<10$. Data is presented according to the percentage of respondents (rather than responses) and there was significant variability in the number of respondents reporting on each drug. Thus, while there were higher rates of muscle twitching among GHB users, there were far more cases of muscle twitching among ecstasy users due to more respondents using ecstasy. alco=alcohol, amyl=amyl nitrate, nitrous=nitrous oxide, MM=magic mushrooms, E=ecstasy, Ice=crystal methamphetamine, K=ketamine, PS=pharmaceutical stimulants, coke=cocaine, weed=cannabis.
.

Alcohol

Physical effects

Of the 1346 respondents, the most commonly reported negative physical effect attributed to alcohol use was a hangover, followed by nausea or vomiting and then a headache/migraine (*Figure 4.35*); a higher proportion of females attributed a headache/migraine to alcohol use (p=0.013).

Figure 4.35: Negative physical effects attributed to alcohol use associated with the last festival attended

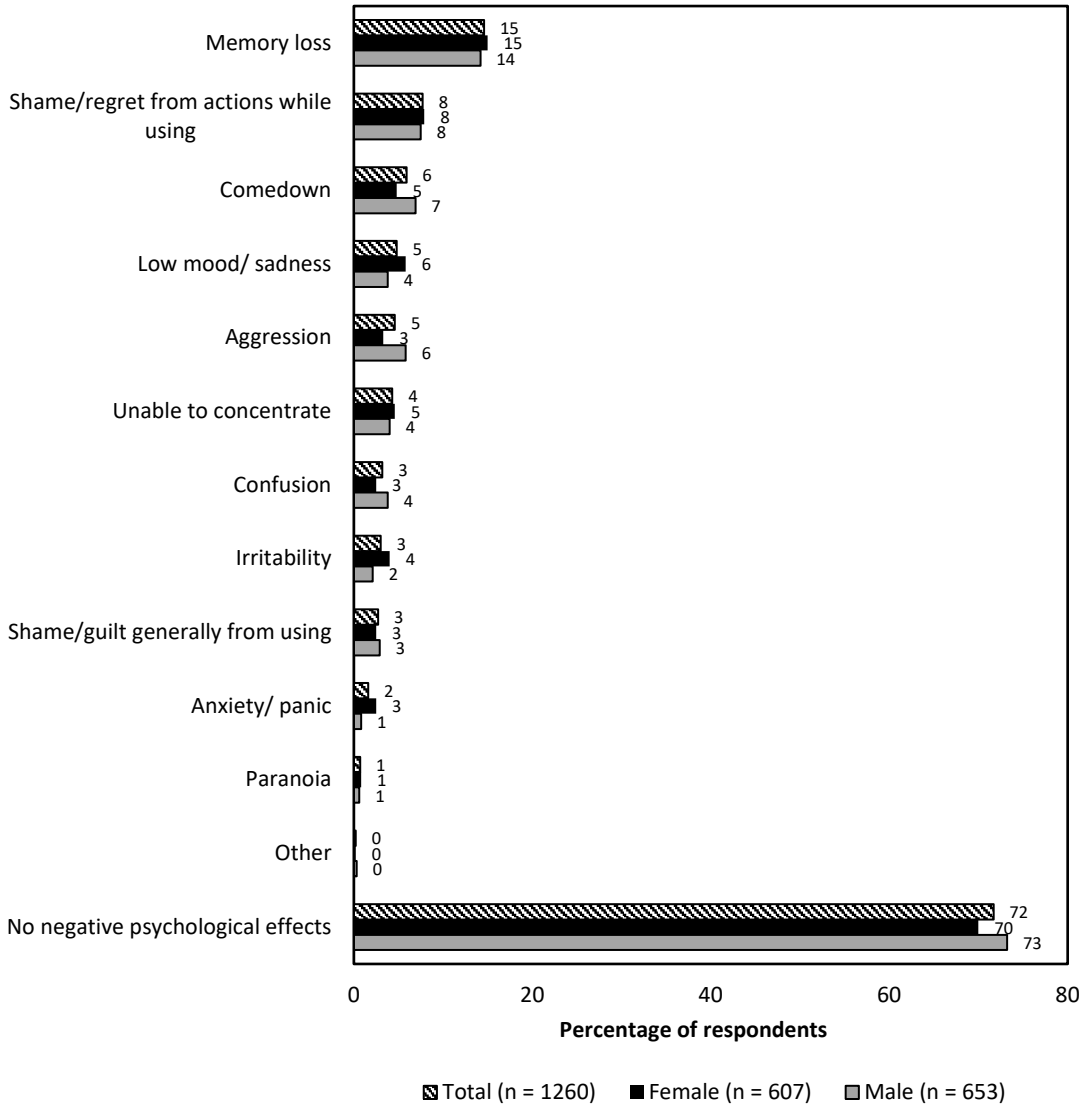


Note. Those who identified as a non-binary gender were excluded (n=3).

Psychological effects

Of 1263 respondents, the most common adverse psychological effect attributed to alcohol use was memory loss, followed by shame or regret from actions while drinking (*Figure 4.36*); a higher proportion of males than females attributed aggression to their alcohol use (p=0.033), while a higher proportion of females reported anxiety (p=0.016).

Figure 4.36: Negative psychological effects attributed to alcohol use associated with the last festival attended

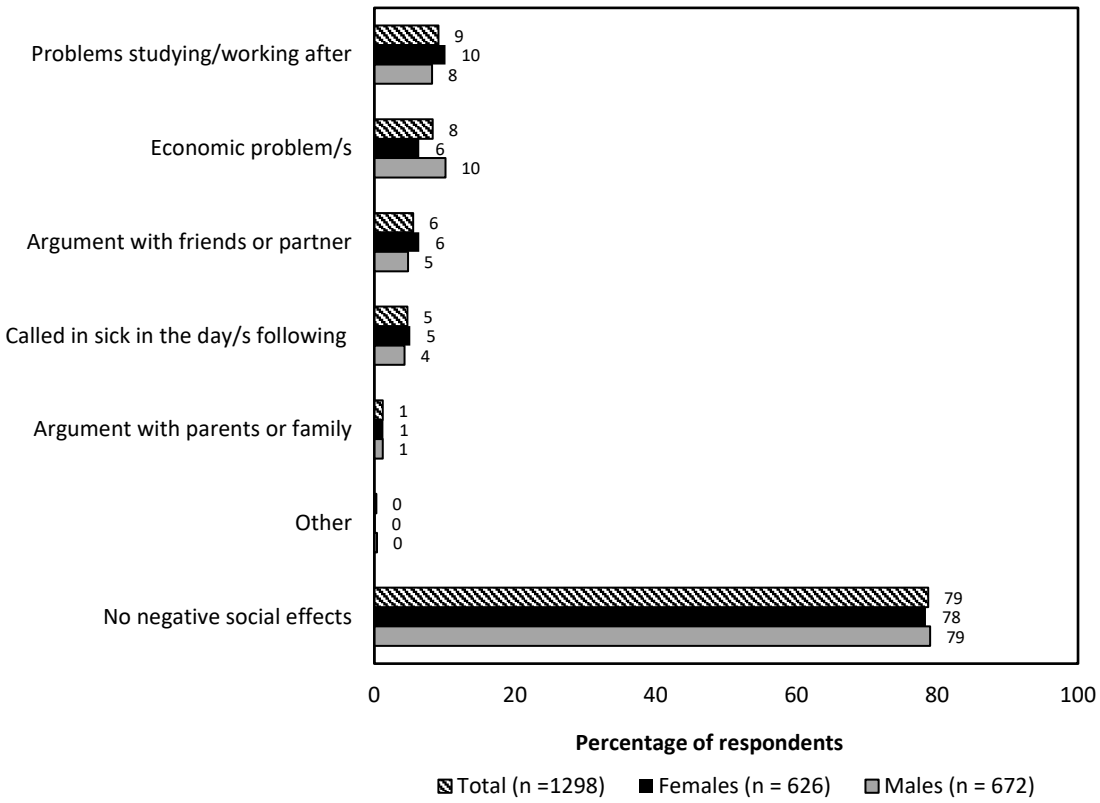


Note. Those who identified as a non-binary gender were excluded (n=3).

Social effects

The most common adverse social effects attributed to alcohol were problems studying or working in the day/s following the festival, followed by economic problem/s and conflicts with a friend or partner (*Figure 4.37*); a higher proportion of males than females attributed economic problem/s to alcohol (p=0.015).

Figure 4.37: Negative social effects attributed to alcohol use associated with the last festival attended



Note. Those who identified as a non-binary gender were excluded (n=4).

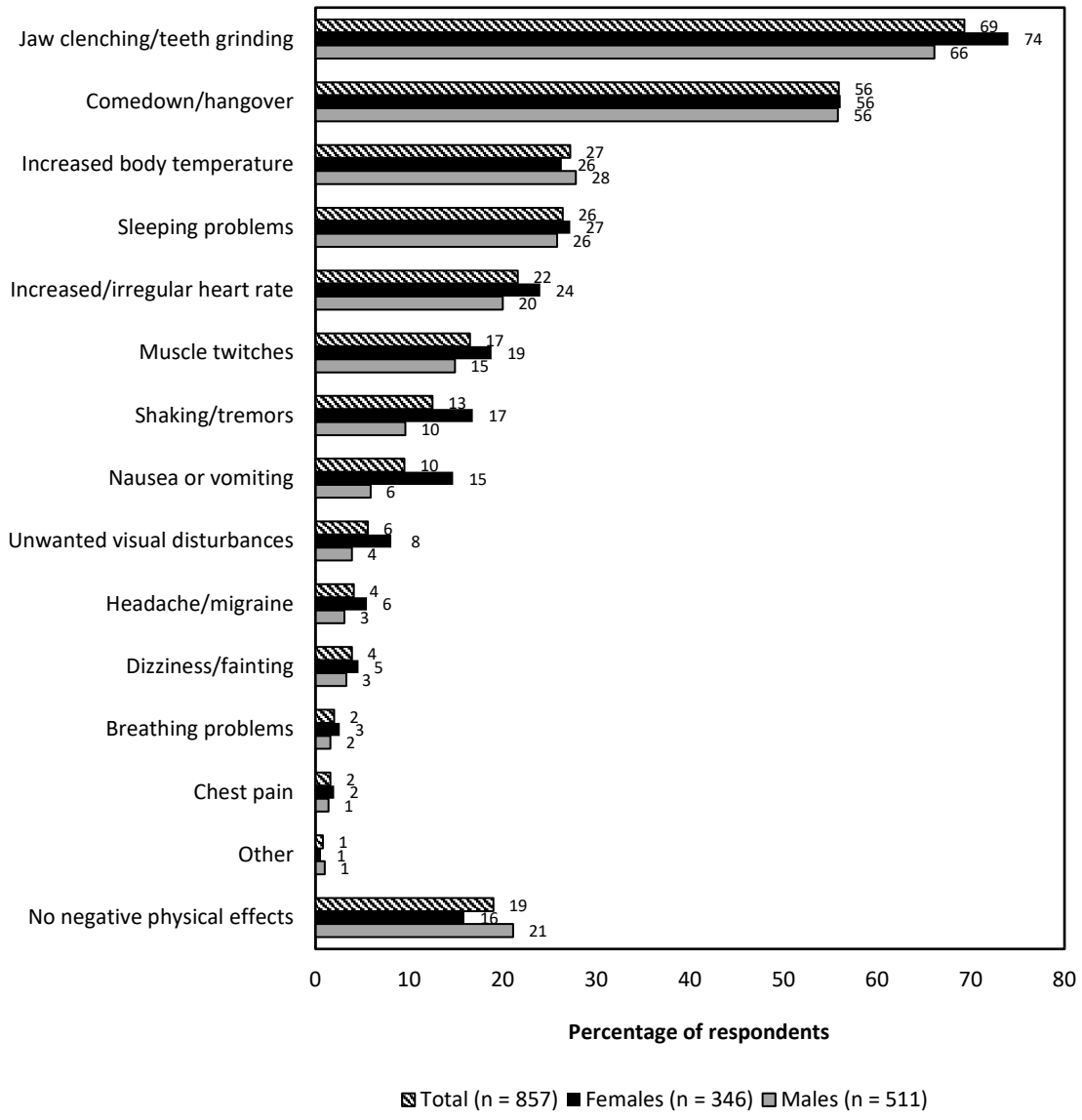
Ecstasy/MDMA

Physical effects

Of 861 respondents, the most common adverse physical effects attributed to ecstasy use were jaw clenching/teeth grinding and comedowns, while about a quarter reported increased body temperature, sleeping problems and increased/irregular heart rate (*Figure 4.38*).

A higher proportion of females than males reported experiencing nausea/vomiting ($p<0.001$), shaking/tremors ($p=0.002$), jaw clenching/teeth grinding ($p=0.015$) and unwanted visual disturbances/hallucinations ($p=0.009$).

Figure 4.38: Negative physical effects attributed to 'ecstasy/MDMA' use associated with the last festival attended

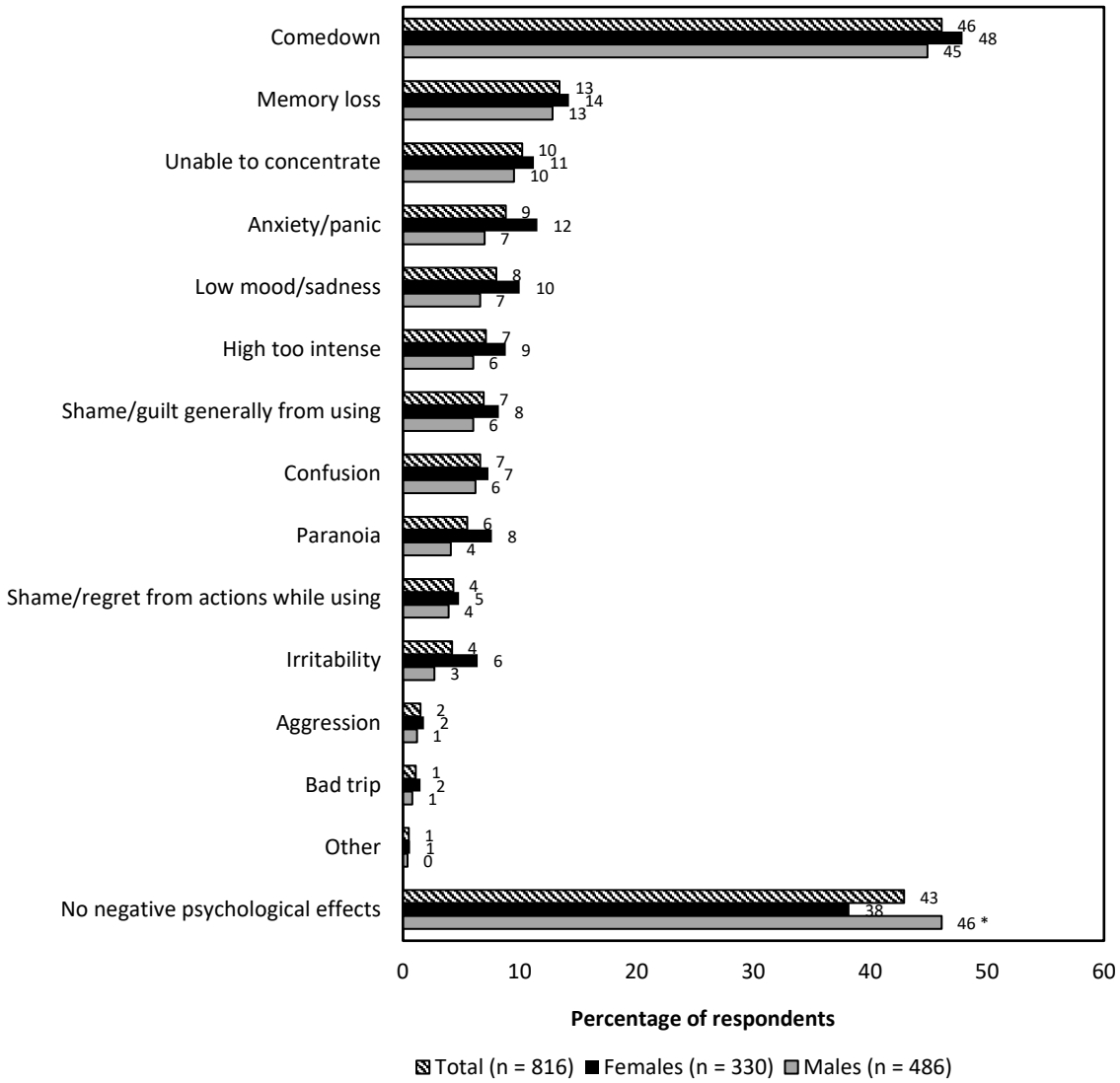


Note. Those who identified as a non-binary gender were excluded ($n=4$).

Psychological effects

Of 820 respondents, almost half reported a comedown, and roughly a tenth reported memory loss, inability to concentrate and anxiety/panic attributed to ecstasy use (*Figure 4.39*); a higher proportion of males than females reported experiencing no negative *psychological* effects (p=0.025), while more females reported anxiety/panic (p=0.025), paranoia (p=0.034) and irritability (p=0.010).

Figure 4.39: Negative psychological effects attributed to ecstasy use associated with the last festival attended

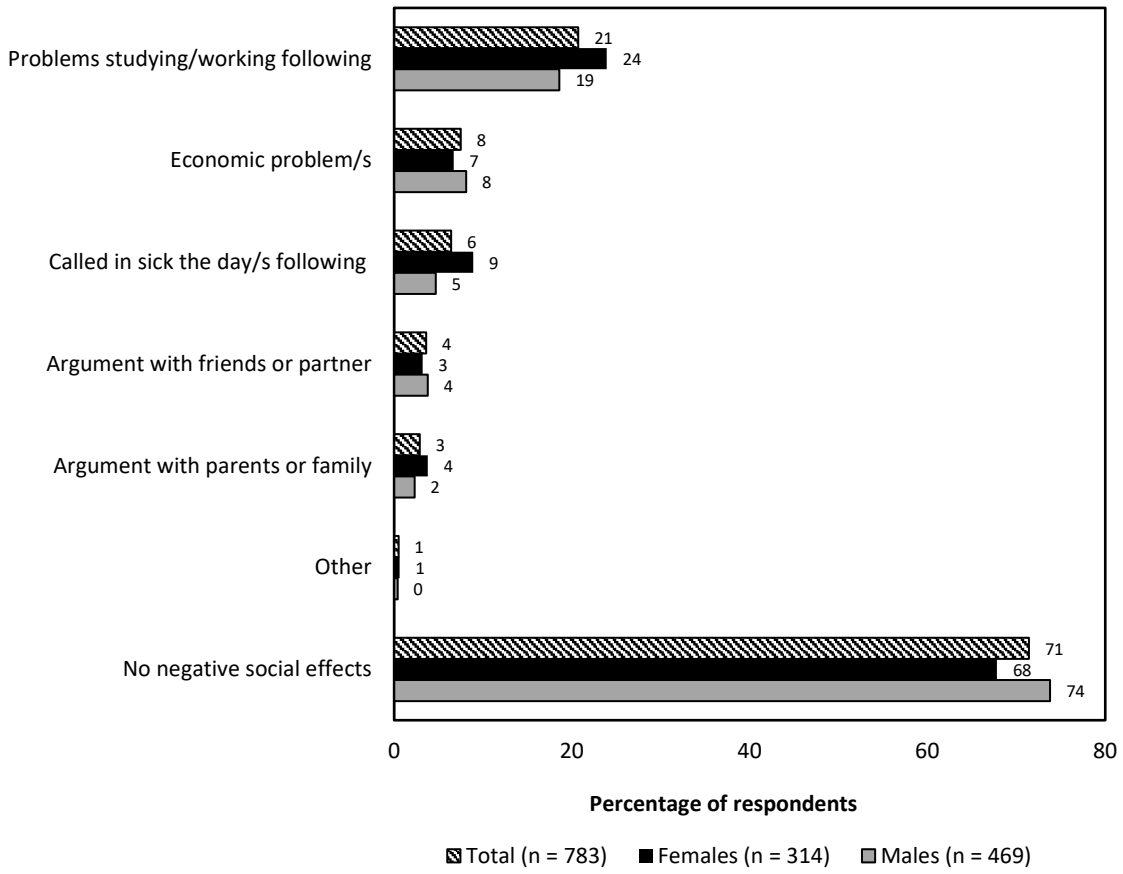


Note. Those who identified as a non-binary gender were excluded (n=4).

Social effects

One in five respondents attributed problems studying or working in the day/s following the festival to ecstasy use, while small proportions reported economic problem/s or calling in sick to work (*Figure 4.40*); a higher proportion of females than males reported calling in sick to work (p=0.018).

Figure 4.40: Negative social effects attributed to ecstasy use associated with the last festival attended



Note. Those who identified as a non-binary gender were excluded (n=4).

Correlates of experiencing negative effects attributed to ecstasy use

Ecstasy/MDMA was by the far most commonly reported illicit drug used in association with the last festival attended, and was linked to the greatest number of festival deaths in *Table 2.11*. Therefore, further analyses were performed to identify correlates associated with adverse effects of ecstasy/MDMA. *Table 4.39* provides a summary of results (see *Appendices E.32-E.34* for full statistics).

Note that when bivariable analyses were performed, using ≥5 ecstasy pills or capsules did not result in significantly greater odds of reporting a physical, psychological or social effect compared to those who used 3–4 or 1–2 pills/caps. This variable was thus excluded from the multivariable analyses, because a complete case analysis would have excluded those who used crystal and powder forms of ecstasy.

Younger age and dancing for a prolonged period without break was associated with greater odds of experiencing an adverse physical effect, while male gender and having gone out the night before was associated with lower odds (*Table 4.39*). While multiple gender differences were identified at the bivariable level, the only variables in the multivariable model which significantly predicted a negative psychological effect were not eating properly (i.e. no proper meal on the day) and using drugs when in a bad mindset (*Table 4.39*). Lastly, attendance at a one-day festival, using drugs with no reviews and using drugs when in a bad mindset were associated with greater odds of experiencing a negative social effect (*Table 4.39*).

Table 4.39: Correlates of a negative physical, psychological or social effect attributed to 'ecstasy' use associated with the last festival attended (adjusted odds ratios and significance levels)

Variable	Level	*N*	Physical	Psychological	Social
Age	16-17 years old	104	2.146*	1.480	2.149
	18-19 years old	208	2.250**	1.301	1.403
	20-21 years old	200	2.367**	1.173	1.520
	22-25 years old	215	1.939*	1.205	1.251
	Over 25 years old	80	1.000	1.000	1.000
Gender	Male	477	0.663*	0.914	0.829
	Female	330	1.000	1.000	1.000
Jurisdiction	WA	415	#	1.337	#
	VIC	392		1.000	
Festival type	One-day	552	0.937	1.040	1.602*
	Inconsistent selection	49	0.655	0.907	1.200
	Multi-day	206	1.000	1.000	1.000
Type of form used	Used a pill/tablet form	569	1.209	1.254	#
	Used non-pill forms only (crystals/powder)	238	1.000	1.000	
Number of illicit drugs used	1	272	0.810	1.162	#
	2	270	0.964	0.953	
	3 or more	265	1.000	1.000	
Risk behaviours	Went out the night before (moderate-big)	164	0.668*	#	#
	Used illicit drugs night before (not for sleep)	165	#	#	#
	Drank >9 standard drinks the night before	135	#	#	#
	Obtained drugs from untrusted source	121	#	#	1.270
	Used drugs I had no user reviews on	192	1.050	1.102	1.678*
	Didn't eat properly	331	1.295	1.565*	1.226
	Didn't drink ANY water (or isotonic drinks)	46	#	#	1.013
	Didn't drink ENOUGH water (< 9 glasses)	293	1.173	1.068	#
	Double dropped	342	1.215	#	#
	Danced for a prolonged period without break	423	1.485*	#	1.320
	Stood in sun for a prolonged period	189	#	#	1.052
	Drank/used drugs in a bad mindset	61	#	2.131*	1.914*
	Went 24 hours or longer without sleeping	147	1.299	#	#

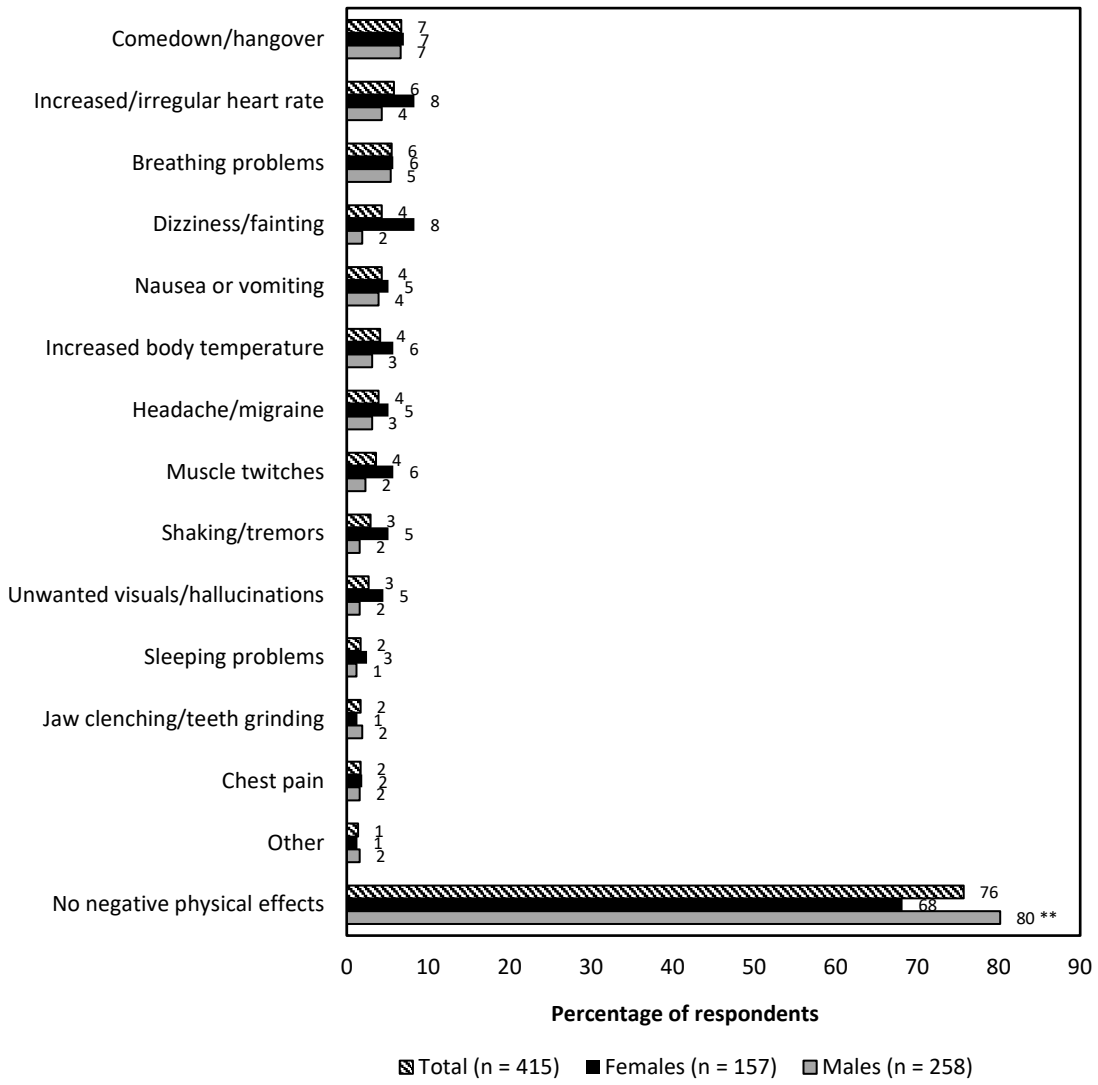
Note. Sleeping problems, comedowns and jaw clenching/teeth grinding are largely expected effects, so were excluded from the analysis. Likewise, comedowns were excluded from the analysis for psychological effects, as was shame from using/actions because the focus here was on acute psychological effects. See *Appendices E.32-E.34* for full statistics. #Dropped from the multivariable model because $p>0.25$. *p<0.050; **p<0.010; ***p<0.001.

Cannabis

Physical effects

Of 417 respondents, most reported no adverse physical effects attributed to cannabis. However, small proportions reported comedowns, an irregular heartrate and breathing problems (*Figure 4.41).* A higher proportion of males reported no negative physical effects (p=0.005), while a higher proportion of females reported dizziness/fainting (p<0.002).

Figure 4.41: Negative physical effects attributed to cannabis use associated with the last festival attended

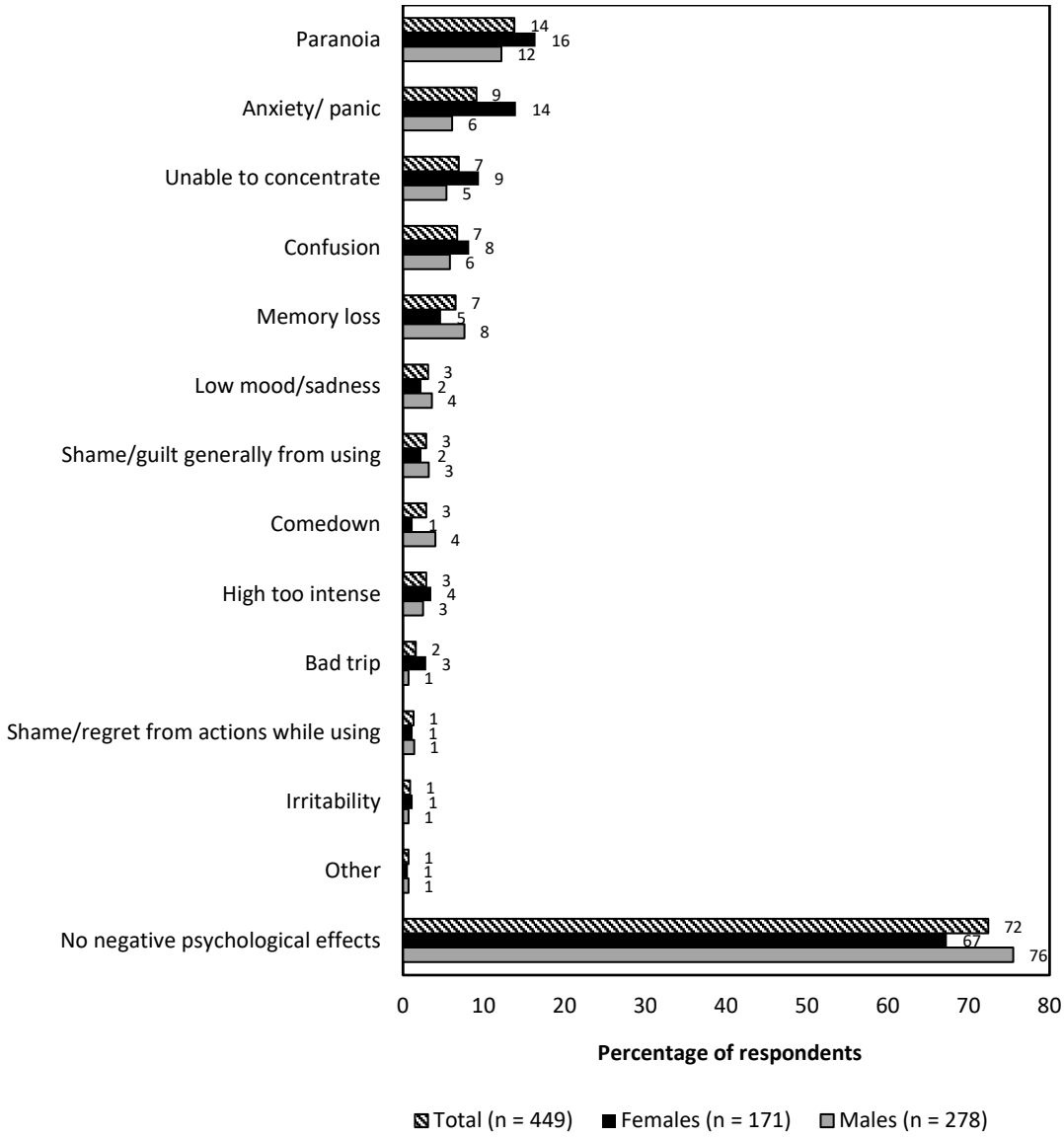


Note. Those who identified as a non-binary gender were excluded (n=2).

Psychological effects

While most respondents did not attribute any adverse psychological effects to cannabis use, small proportions reported paranoia and anxiety/panic (*Figure 4.42*). A higher proportion of females than males attributed anxiety/panic to their cannabis use (p=0.005).

Figure 4.42: Negative psychological effects attributed to cannabis use associated with the last festival attended

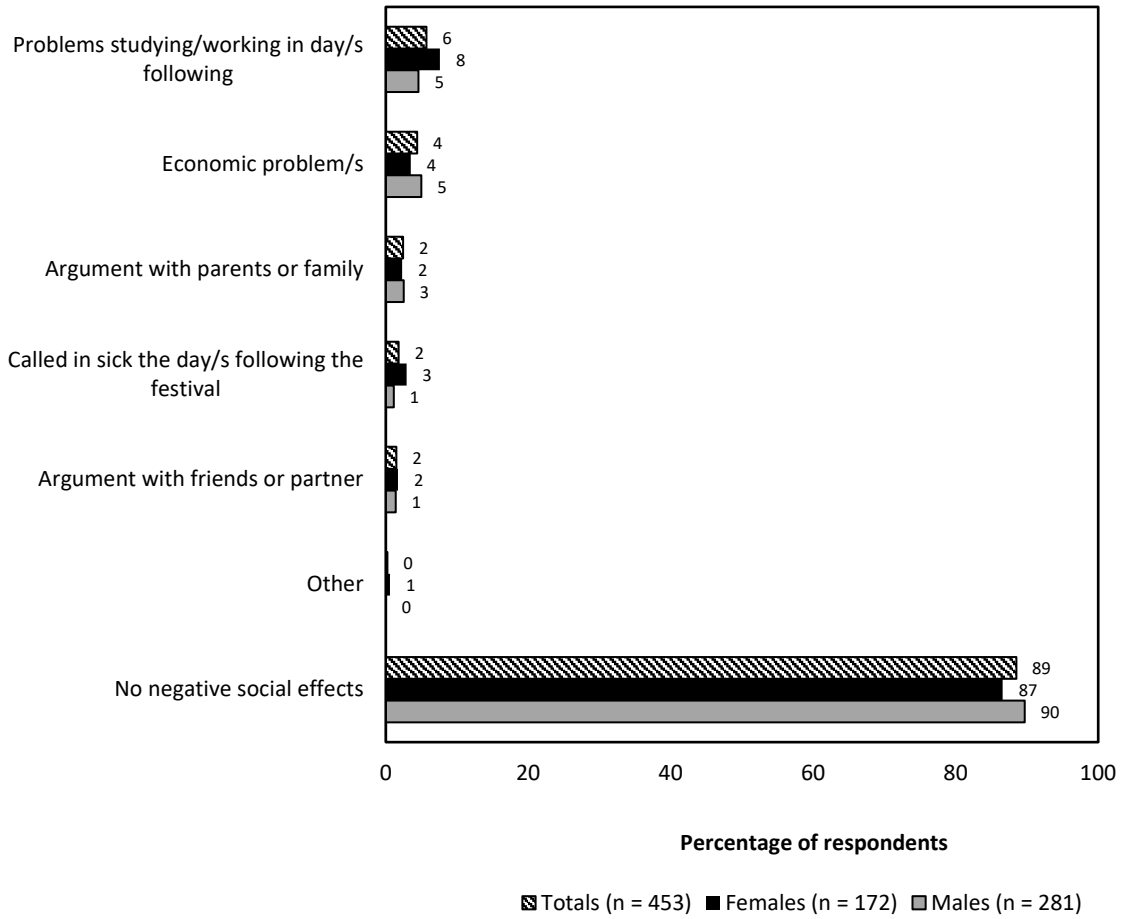


Note. Those who identified as a non-binary gender were excluded (n=2).

Social effects

The most common (but still rare) adverse social affect attributed to cannabis use was problems studying or working in the day/s following the festival (*Figure 4.43*)..

Figure 4.43: Negative social effects attributed to cannabis use associated with the last festival attended



Note. Those who identified as a non-binary gender were excluded (*n*=2).

Qualitative responses from regular festivalgoers

In pre-survey interviews, festivalgoers were asked to describe any negative drug-related effects they experienced in association with the last festival attended. Behavioural factors attributed to adverse effects were described earlier in Qualitative responses for risk factors. Three-quarters reported experiencing at least one negative effect, but the majority could best be described as mild to moderate. However, some interviewees reported severe effects (e.g. overdose and psychosis) experienced at other festivals they had attended in the past. Responses were coded into the following eight categories.

Anxiety/psychological problems

While not always articulated as 'anxiety', over half of all interviewees (*n*=11, 55%) described psychological symptoms such as feeling "rattled" or "jittery". These complaints were primarily related to hallucinogens and ecstasy/MDMA. For example:

> *Acid tends to give you somewhat of a rattled feeling when you're coming off it.*
>
> *[P06, male, 24yrs, WA]*

> *Not so much a negative experience this time, but I mentioned earlier that when I had the coke, I also ended up having some DMT from a vaporiser… My friend had suggested that may enhance the laser show… Whilst the vaporiser effects weren't particularly strong, it did bring on some intense closed eye visuals and pretty much killed my energy levels on the spot. That gave me some mild anxiety (just because I was thinking about previous LSD experiences). The anxiety passed in a minute or so, but it left me feeling much more introspective and I ended up not feeling much like dancing (or being right in the middle of the dancefloor anymore).*
>
> *[P14, female, 35yrs, VIC]*

One participant reported a particularly unpleasant experience involving unwanted perceptual disturbances after using ecstasy, which triggered anxiety/paranoia. However, the duration, nature and severity of effects reported suggested the ecstasy may have contained something other than MDMA. The participant also reported re-dosing when she did not feel the effects within the expected timeframe, suggesting a slower onset than MDMA. Nevertheless, she reported that after limiting external stimuli, the effects resolved on their own:

I took a really trippy pill. I'd had one beforehand and it didn't do much so I did another. The boys were complaining that they were getting weird visuals, but it hadn't hit me yet. Then it did. It was one of the worst, if not the worst, experiences of my life. I felt like Alice in Wonderland. Everyone looked big and strange and I felt like everyone was looking at me. Time slowed down as well. A minute felt like an hour. When we finally got home I shut myself in a dark room until it went away, but it took like 24 hours.

[P02, female, 25yrs, WA]

Comedowns

Comedowns were also commonly reported (*n*=11, 55%). Descriptions of them varied, but included a range of negative psychological and physical effects (e.g. feeling depressed, irritable, craving intimacy, exhaustion). However, comedowns were mostly viewed as an expected and manageable part of using ecstasy. Unsurprisingly, severity was linked to the level of use. For example:

Aaaaaa yessss, the comedown. Almost every time since the second time I consumed it I have a comedown. Usually everyone gets it. For two days after you took them you start to feel depressed, sad even or distant. Nothing too major, but you can definitely feel it and can be bad if you're not careful. I usually just stick to myself a lot more for a while. Well for example I would go to festival, do the drugs and sleep back at mine and get home really late so parents don't realise and when I wake up everything feels fine, pupils back to normal and just a bit tired. However, as the day goes on you feel slow. My movements sometime feel slow, like reflexes to things, and I feel a lot more calm and collected. However, there are many negative thoughts and you just want to be connected to people, and be with people especially like love life wise, preferably with a girl. But yeah, you go down for a bit, usually talk less as well, but once it's over its like nothing happened. Some friends don't even get them, while I know one literally gets depressed, especially when she consumes eight pills or so. I have mates who would consume up to sixteen in a day, but you can see the side effects alllll over them.

[P09, male, 17yrs, WA]

I don't always get obvious comedowns, but if I've done a lot of MDMA I can get very needy the next day. Then in a day or two I might realise I'm really pissed off or irritable and my girlfriend has to remind me it's probably just the comedown. So yeah it's not always extreme depression like it's made out to be, it's like you become impatient and I guess just don't feel happy, but I guess remembering to expect that and reminding yourself there's a reason you feel miserable helps.

[P19, male, 19yrs, VIC]

As mentioned previously, one participant commented on the physical and psychological impacts after attending multi-day festivals, which he indicated without drugs would take a toll, but adding drugs exacerbates the toll. However, he noted they had learnt to expect and prepare for after-effects:

There are certainly some negative effects. Mentally, the usage over a number of days leads to fatigue, and serotonin depletion (*MDMA) can lead to a few days of feeling down after the event. Someone such as myself who has learnt to expect this can mitigate to some extent by planning a couple of days recuperation time after the event. The impact is certainly lessened when the effects are known and expected. Physically, four days of dancing is tiring. Adding drugs to the mix does not help. I think there is some perception of social isolation/psychological stress on returning to 'normal civilisation' after a long festival weekend. Again, this is lessened with experience.*

[P13, male, 34yrs, VIC]

Another participant believed exercise sped up the recovery process:

Generally the day after you feel a bit unsociable and emotionless/numb. I always find exercise quickens the comedown though.

[P11, female, 19yrs, WA]

Feeling sick/nausea and/or vomiting

A quarter of interviewees (*n*=5) reported feeling sick/nauseous and/or vomiting. In all cases, these symptoms resolved without medical intervention. However, in one case the interviewee attended onsite medical services:

We didn't get back to the tent until the early morning and it was already super-hot in the tent. I felt extremely unwell and was vomiting a lot. I was also overheating a bit. My partner took me to first aid and they said to drink more water and take it easy. That's the worst I've ever had and don't think I'd blame the drugs, just my ignorance.

[P15, female, 33yrs, VIC]

In another case, a friend and unknown festivalgoers cared for a research participant:

After our favourite act was over we left the crowd and I started to feel really really sick. Which may I add I was devo [devastated] about because another one of my favourite acts was on, but I just had to go find some water and shade. I ended up having a big spew – and at this stage I was so glad I had eaten and I had such a good friend looking after me. Other people also stopped. A couple of girls rubbed my back and held my hair and calmly talked me through it. I really appreciated this and it was nice to see people looking out for each other – even complete strangers.

[P05, female, 18yrs, WA]

Overheating

Unsurprisingly, some participants complained of overheating (*n*=4, 20%). Some contributing factors included summer weather, setting up camp in the sun, and mixing drugs. Overheating was such a concern for one participant that she sometimes opted to sell her tickets:

Yes, the problem I have is overheating. Even without drugs, I struggle with heat, and when you add alcohol and ecstasy, it makes it worse. In the past I've just overheated and got quite anxious. I think it was mid or late thirties [Celsius] one year and we were camping and had dragged our stuff to the campsite in the heat and then was just drinking in the sun and I could not cope. At several other events it's also landed on super-hot days because they're all in summer. I either sell my ticket these days or go really late when the sun isn't so bad.

[P03, female, 23yrs, WA]

Too high

Some participants (*n*=4, 20%) reported feeling 'too high', but they did not consider these occasions to be overdoses. All participants said the intensity faded after taking a timeout:

> *I took a little too much MDMA initially and I laid on the ground under some trees just waiting for it to pass a little. Once it passed, I was fine and ready to get back amongst it. But during that time I was just overwhelmed with .... serotonin? Haha. I laid on the ground feeling extremely high and laying down and in the shade seemed to help it pass a little quicker.*
>
> *[P06, male, 24yrs, WA]*

While not in relation to the last festival, the above participant also reported "getting trapped in a K-hole" on route to another festival. A 'K hole' typically refers to a state of ketamine intoxication in which users feel physically frozen and psychologically detached. While some enjoy this effect, others do not:

> *I took some ketamine whilst on the bus to the festival. So I was literally trapped in the K-hole whilst trying to make my way from the bus to the gate.*
>
> *[P06, male, 24yrs, WA]*

Bruxism/trismus or 'gurning'

Only three participants (15%) reported bruxism/trismus, colloquially known as 'gurning'. However, it is possible others did not report these effects because they did not consider them negative. Indeed, these effects seemed to be viewed as more of an annoyance than a concern:

> *I didn't come into any issues particularly. However, the usual one of my mouth being quite sore as I would've have chewed my gums throughout the day without realising. My gums generally take up to a week to heal so this is annoying!*
>
> *[P11, female, 19yrs, WA]*

> *...I also woke up with messed up gums from chewing them. I barely realise at the time that I'm doing it, but I must. Always a sign I must've been pretty high!*
>
> *[P18, female, 20yrs, VIC]*

Feeling judged/stigma

One participant (5%) reported feeling uncomfortable due to perceived judgment from other festivalgoers not using drugs, and noted how this affected her experience. However, she conceded that she also critically observed people's behaviour when they appear to be drug affected:

Yeah in relation to ecstasy, when you are on drugs, some of the people that aren't make it quite clear that they don't accept it and you can feel the judgement. It can make you feel pretty uncomfortable when you are trying to have a good time. When you aren't on drugs and others are, you notice those people more, you watch their behaviour and some people just can't handle themselves, they stumble, make silly comments, act in a way that makes them out to have little self-worth.

[P04, female, 19yrs, WA]

Family/social problems

Lastly, a young man described a drug-related incident resulting in temporary trust problems with his parents:

I dropped three pills on my kitchen floor just before I went and my parents found them ... They crushed them up and put them down the sink and were pretty mad at me, but I told them that they weren't mine (which they didn't really believe) then they gave me a hundred to pay back the people who they were for (I'm a dick I know ha-ha). Then the next day when I came home they just told me to stop taking them and asked how much I had done them. Few trust issues for a bit, but resolved itself eventually.

[P10, male, 19yrs, WA]

Types of drug-related problems/harms KI reported observing

KI in pre-survey interviews were asked to describe the types of drug-related problems/harms at festivals they had witnessed or heard about in their field of work. A variety of different pharmacological and behavioural problems were reported, which could broadly be coded into 13 categories described below.

Antisocial behaviour (physical violence and aggression)

Antisocial behaviours were reported by 45% of all KI (n=13). Subthemes included physical violence, aggression, sexual assaults, intimidation and group/gang conflicts. Consistent with quantitative findings, the primary drug linked to aggression was alcohol. However, crystal methamphetamine was also implicated, as well as certain problematic drug combinations:

Basically, the ones I hear about, it's usually assaults. Well that might be the wrong word – basically security guards apprehending fence-jumpers and injuring and dislocating shoulders, lacerations, fighting and certainly when they're drunk or when they've got drugs on board they ark up more so

there's lots of fist fights. I'm just talking about the injuries we see coming into the ED predominantly so obviously the punches, the king hits, dislocations, intoxications and basically overdoses on the drugs – they're the predominant ones.

[KI-02, deidentified, government/regulation, WA]

Another one is aggression, so they're a bit off their trolley I suppose, that's often associated with a mix of drugs they have on board, a bit of alcohol and certainly methamphetamine can do that if they're mixing it with other things as well …

[KI-05, deidentified, government/regulation, WA]

Guys intimidating women. Guys/gangs picking on other guys/gangs.

[KI-22, deidentified, event crowd and risk management, government/regulation, NSW]

Overdoses

Less than one-third mentioned overdoses (*n*=9, 31%), which some KI attributed to excessive use of ecstasy. Several also identified GHB as a major overdose concern due to the delicate balance required to appropriately dose:

Harms from GHB is most concerning given the fine line between effective dose and fatal dose (particularly when mixed with alcohol) … In an overdose situation, immediate medical attention is required and could lead to death.

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

GHB – high-risk overdose, and outcomes of this are critical, with a number of hospitalisations, esp. due to respiratory impairment.

[KI-08, deidentified, law enforcement, NSW]

Alcohol intoxication

About a quarter of KIs (*n*=7, 24%) identified alcohol intoxication as the primary problem they encounter at festivals. Warm environmental conditions and alcohol availability/promotion were identified as contributing factors:

Alcohol and polydrug stacking are the two biggest. In my work, the main drug-affected punter we have to look after is the person who's too drunk and queasy. This also tends to happen more often on hot or sunny days when people disregard things like keeping hydrated and staying sun safe.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

Most of the problems that I've encountered relate to excessive alcohol consumption.

[KI-18 – deidentified, environmental health officer, government/regulation, WA]

Alcohol has the highest potential for harm both from a toxicological and behavioural point of view.

[KI-11, David Caldicott, Health on and offsite, ACT]

Another KI explained how alcohol-intoxicated patients are problematic in regards to clinical management. He suggested these patients can drain resources due to their need for 'babysitting':

People who have consumed too much alcohol are often bounced between the medical staff and the HRV [Harm Reduction Victoria] staff, with the latter expected to babysit the person who is difficult to 'entertain'.

[Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

Negative drug interactions

Adverse drug interactions were commonly mentioned by KI (*n*=7, 24%). As noted previously, GHB and alcohol was identified on multiple occasions as a particularly problematic mix. Consistent with earlier KI comments, alcohol was again identified as a primary drug of concern regarding drug interactions:

Typically we hear of harms arising from polysubstance use (often combining drugs with alcohol).

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

Overdose (e.g. GHB +/-alcohol).

[KI-24, deidentified, health on and offsite, NSW]

Another KI identified respiratory issues as a problem occurring from mixing depressant and stimulant drugs. She added that symptoms tend to get exacerbated by panic about their symptoms.

Drug-induced psychosis/psychological problems (*n=6, 21%)*

Drug-induced psychosis/psychological problems (e.g. a 'bad trip') was described as the primary problem arising from psychedelic drug use at festivals. One KI explained that these cases can be interpreted/defined differently (e.g. 'overdose' versus 'psychosis'):

> *The main issue from psychedelic drugs are that people have a difficult time and this could be described as overdose, drug-induced psychosis, or abreaction, depending on the field of study.*
>
> *[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC*]*

Another KI expressed concern about festivalgoers developing more pronounced psychological sequelae (e.g. depression and anxiety). She drew links between the high rates of young people being prescribed anti-anxiety medication and psychological problems caused by drug use in these types of settings:

> *These products are having an effect on young first time users – so, drug psychosis. As a result of that there's anxiety, and with that comes depression. So we are very concerned about the amount of young people on medication for anxiety, whether that is a result of drug psychosis or not we don't know, and we know there are a whole lot of other reasons why that might be happening too, but there certainly has been a gradual climb in that area.*
>
> *[KI-06, Jenny Payet, government/regulation, WA*]*

Deaths

Deaths were reported (*n*=5; 17%), but rarely elaborated on. However, a KI who worked in festival security attributed deaths to excessive use and different individual predispositions:

> *In my field, based on drugs – deaths … it's just someone who's gone and taken a pill, that shouldn't have taken a pill, that probably couldn't handle it, that's probably taken extra ones and their body just doesn't like it. I mean you can go see people who would probably wolf down three or four pills in a night and they keep going, but you know some people just can't handle it.*
>
> *[KI-04, deidentified, festival security, national]*

Panic-based overdose

Despite the topical nature of panic-based overdoses, only four KI (14%) identified it as a problem. One KI suggested those who consume their drugs hastily may be aware the dose is excessive, but assume they can handle it:

Kids who panic when they see police or a sniffer dog, they tend to down the drugs they have. So if they have three pills, they'll take them. Even though logically in their brain they know they are overdosing, they still do it thinking they'll get away with it, but often they'll end up coming to see us as a result of those effects and that I think is a bit of a problem.

[KI-05, deidentified, government/regulation, WA]

Adverse reactions from unknown or unfamiliar substances (*adulterants/NPS)*

Some KIs (*n*=4; 14%) described adverse reactions from unknown and/or unfamiliar substances as a significant concern. Unknown substances refer to drugs which may have been misrepresented or contain unknown adulterants (e.g. PMA/NPS), whereas unfamiliar substances refer to NPS which may have been intentionally consumed, but for which there are still many unknowns (e.g. short and long-term effects). These presentations were described as concerning due to unpredictable reactions and the difficulties posed in terms of clinical management. For example:

… and unexpected adverse reactions from taking unknown substances such as NPS where the effects can be highly unpredictable. For example, PMA and PMMA have similar properties to MDMA and can be substituted for the latter, but PMA and PMMA are associated with overheating even when the user isn't physically exerting themselves, and because the effects are felt more slowly than MDMA, people may re-dose which can lead to overdose.

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

At our hospital, occasional clusters of NPS/unknown substance overdose.

[KI-24, deidentified, health on and offsite, NSW]

Some people have toxic reactions to pills that have probably not contained MDMA or from poly-drug use.

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

One KI expressed the view that unknown/unfamiliar illicit substances are more concerning than alcohol-related issues, which can be more predictably managed. They highlight the problems unfamiliar substances pose to issues such as staff training:

> *Alcohol issues by and large you can deal with fairly readily, violence and aggression and that sort of thing. Umm the drugs are certainly difficult because it's hard to get training with them and get people to know what to do. That's part of the problem I think. There's not a lot of information about what to do in certain circumstances or even what the drugs are because they keep changing them these days. As to what the makeup is …*
>
> *[KI-01, deidentified, government/regulation, WA]*

Behavioural factors leading to injury

Three KI (10%) identified injuries resulting from hyperactivity or erratic/risk taking behaviour while using drugs.

Hyperthermia

Interestingly, despite being one of the most prominent health risks in these settings, hyperthermia was only identified by a few KIs (10%). For example:

> *… it's really important if you want to keep people safe in a context where some of them are going to be using MDMA, given that we know that one of the really problematic symptoms –sorry, side effects of MDMA use – in combination with dancing and high ambient temperatures, is that the body begins to overheat.*
>
> *[KI-03, Will Tregoning, Executive Director, Unharm, NSW]*

Hyponatremia

Despite hyponatremia – like hyperthermia – being linked to ecstasy-related deaths in similar settings, only two KI (7%) reported this problem. For example:

> *Ingesting pills with unknown/deleterious ingredients, ingesting too many pills, combining pills and other drugs, too much or too little water.*
>
> *[KI-12, Greg Denham, Harm Reduction Australia, VIC]*

Legal/criminalisation issues

One KI simply listed "arrests" as a problem, while another suggested criminalising illicit drugs was the "primary" cause of harm to festivalgoers. They explained the impacts criminalisation can have on young people's lives, in terms of their prospects, but also in terms the way they are perceived by others and the way the perceive themselves. The term 'self-stigmatisation' was cited:

When it comes to illicit drugs, the primary harm that people experience is criminalization of illicit drug use … and those [consumer offences] have substantial negative impacts on people's lives. Even when, as in the majority of cases, they don't receive a custodial sentence. Nevertheless, they can still have reduced job opportunities or lose their job, reduced opportunity to study because all of a sudden they can't access some kinds of courses, and in particular, some kinds of financial support to complete study. It has negative impacts on people's family life and relationships … it also kind of exacerbates self-stigmatisation … So yeah, without a doubt, the most problematic thing is the fact that, you know, for the majority of illicit drug users the worst thing that will happen to them is to be arrested.

[KI-03, Will Tregoning, Executive Director, Unharm, NSW]

Drugs lost or secreted internally

Lastly, two KIs (7%) identified complications related to internal methods of smuggling drugs into festivals as an increasing problem. Two types of internal concealment were described: swallowing concealed drugs to purge once inside the festival, and concealing drugs in a body cavity. The health risks associated with these practices were noted. Additionally, KIs provided anecdotal reports of festivalgoers presenting to the ED unable to relocate/remove drugs concealed internally:

… the third one is hiding drugs internally in body cavities, which has become a commonplace phenomenon in the music festival scene. Uh, either tying drugs up in condoms and swallowing them and then vomiting them up in the toilets, or hiding them up your vagina or anus and then hopefully getting them out later on – and, you know, those are quite risky things to do – I mean a condom full of ten pills that bursts in your digestive system is really bad news, and similarly there have been cases of people presenting to the emergency department unable to either vomit up or find a bag full of drugs that they've secreted within a body cavity and that's a real concern.

[KI-03, Will Tregoning, Executive Director, Unharm, NSW]

Stuff's being smuggled in internally. All you've got to do is sit outside a portaloo and hear how many people are throwing up or see how many condoms are lying on the floor from when girls and boys have put it internally.

[KI-04, deidentified, festival security, national]

In reporting these adverse effects, it is important to note that several KI emphasised that most festivalgoers do not experience any significant harm from using illicit drugs. For example:

> *The vast majority of users do not have substantial negative effects or negative effects no worse [sic] than the negative effects of using alcohol.*
>
> *[KI-28, Buck Reed, onsite medical, national*]*

Factors contributing to drug-related harm

Key informants were asked to identify factors they believed could contribute to drug-related harms at festivals. Physical, social and policy factors were reported, and coded into the following 11 categories.

Drug laws and drug policing

Drug laws and policing were by far the most commonly identified factors (*n*=24, 83%). Several KI noted that most serious harms stem from the illicit status of drugs and the criminalisation of illicit drug users:

> *Drug laws, including drug prohibition and the enforcement of laws are the most significant contributor to drug-related harms.*
>
> *[KI-12, Greg Denham, Harm Reduction Australia, VIC]*

One KI argued that current punitive approaches contribute to harms, but also conceded that they were not able to offer any alternative approaches:

> *The head in the sand (‘drugs are bad’) approach of politicians and the police is a factor, though I can't offer any ideas that may lead to a solution.*
>
> *[KI-18, deidentified, environmental health officer, government/regulation, WA]*

Various deleterious impacts were also described, including the lack of quality control which contributes to dosing difficulties:

> *The government's hard-line approach to drugs (criminalisation, zero tolerance, etc.) contributes to drug-related harms. Nobody knows what is in the drug, nor how pure a drug is, so every time a person takes a drug, even if it is the same drug from the same dealer, it could have a different purity level, or [be] formulated differently …*
>
> *[KI-14, deidentified, government/regulation, WA]*

Others spoke more specifically about the impacts of policing at festivals (namely drug detection dogs) which they suggested can contribute to risky drug practices, particularly pre-loading, panic consumption and internal concealment. For example:

> *Probably the biggest influence is maybe an active police presence which probably pushes people to, you know, they have three pills which they're going to take over the course of fourteen hours so then they get frightened and take them all together at the start or something so they won't get detected. That sort of thing I think is a huge issue. Um, but it's so difficult to detect and search. I mean, some get found, but the majority probably don't. It's just too easy to conceal it really.*
>
> *[KI-01, deidentified, government/regulation, WA]*

> *... the behaviours that those kind of policy interventions [drug detection dogs] have invented are the ones that put the consumer at much greater risk. So pre-loading, which is taking all your drugs before travelling to the event, a panic-based overdose where you take all your drugs at once in order to avoid drug detection dog operation at the event, and the third one is hiding drugs internally in body cavities ... So at that level the policy response has been really worrying...*
>
> *[KI-03, Will Tregoning, Executive Director, Unharm, NSW]*

> *Sniffer dogs encourage the festival goers to pre-load before arriving on site. This is dangerous.*
>
> *[KI-22, deidentified, event crowd and risk management, government/regulation, NSW]*

> *Drug dogs and 'no pass out' rules mean people may dose with all their drugs before they get to the front gate of the event.*
>
> *[KI-08, deidentified, law enforcement, NSW]*

One KI suggested decriminalising personal use to combat the risks associated with onsite policing, arguing festivalgoers may not panic if they were not risking criminal charges (several others also proposed decriminalisation at other points in the interview):

Drugs for personal use should be decriminalised. Kids with drugs on them coming to a festival might see police and sniffer dogs and take all his drugs, rather than being caught and face criminal charges. If he was confident he only had a personal supply and police would not charge him he is less likely to swallow all his drugs, and [more likely to] consume them over a longer period of time.

[KI-14, deidentified, government/regulation, WA]

The potential for police to inadvertently escalate drug-related problems was also identified (e.g. by triggering paranoia/anxiety/aggression):

Police can unwittingly escalate drug-induced psychosis.

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

In a slightly different vein, one KI argued that poor drug policy has contributed to alcohol-related problems. Specifically, he suggested the legal status of drugs can mislead the public to perceive legal drugs as safer, even if this is not true:

The alcohol issue is as pronounced as it is because of a false separation between alcohol and other psychoactive substances, largely proliferated through poor psychoactive policy (i.e. separate legislation for alcohol, tobacco and other drugs) and a large, ingrained industry protective over its status quo.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

Unpredictable/shifting purity and potency (n=8, 28%)

The unpredictable nature of the drug market was cited by KI at various points in the interviews. Shifting drug purity trends, 'bad batches' and misrepresented substances were referred to on multiple occasions. Several KI commented on the problems this variability poses for dosing and suggested the market has become increasingly risky. For example:

Australians use plenty of illicit drugs, but we are still a tiny and distant market for MDMA. Therefore, drug purity and potency is wildly variable, making dose titration challenging.

[KI-08, deidentified, law enforcement, NSW]

… varying quality, potency and active ingredients in drugs being consumed.

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

One KI, who works with drugs seized at festivals, commented on risks associated with high-risk NPS resembling more traditional drugs:

> *Some NPS such as NBOMes are present on tickets which are often identical in size to LSD tickets and bearing the same designs.*
>
> *[KI-23, deidentified, law enforcement, VIC]*

Inadequate onsite support services

There were suggestions by eight KI (28%) that inadequate onsite support services, such as paid medical professionals and peer support groups, contribute to harm. Consistent with previous comments on this issue, one KI explained that while there have been improvements in recent years, the health component is still not considered a priority by many festival organisers and consequently not allocated appropriate resources. Lack of resources therefore mean services can become overwhelmed leading to long waiting periods and/or poor service delivery. For example:

> *I think part of the issue is the health response is not the priority for a lot of festival organisers. It's kind of like a mandated response that they have to do, but the money that they put towards that would be interesting to see. I've always advocated that I think we should have a levy on ticket sales for a mandated medical response that has X amount spent on it. I think that at some festivals the medical response is slammed in terms of coping.*
>
> *[KI-05, deidentified, government/regulation, WA]*

> *Limited support services (e.g. peer support, medical services) on site.*
>
> *[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC*]*

Another KI believed a lack of appropriately qualified and non-judgmental staff was an issue:

> *Lack of non-judgemental experienced health and community workers to provide early detection and response for harms.*
>
> *[KI-24, deidentified, health on and offsite, NSW]*

Cultural factors (e.g. normalisation and situational disinhibition)

Again, festival subculture and 'situational disinhibition' were commonly identified (*n*=8, 28%) as contributing factors:

People live on the edge a bit at big events, sometimes using more drugs than usual, or experimenting with new drugs, or trying drugs when they haven't used them before.

[KI-08, deidentified, law enforcement, NSW]

A few KIs believed there were strong social pressures to use drugs at festivals to conform to the 'norm':

I feel that social pressures are the main contributing factor on drug use and drug-related problems at these events. It has become a social norm to take various substances at these events and as a result the culture is completely focused on this aspect.

[KI-02, deidentified, government/regulation, WA]

Another KI went so far as to say the culture is the sole cause of drug problems, claiming that physical, economic and political factors were irrelevant:

The problem is not anything to do with physical/economic/political [factors], it the social norm for young and old to take drugs at festivals.

[KI-16, deidentified, medical coordinator, Health onsite, NSW]

In a slightly different vein, another KI suggested the culture of intoxication can decrease the capacity for festivalgoers to identify/assist friends experiencing problems:

… if everyone in a friendship group is intoxicated there may be no one who can support or take charge if a member is experiencing harms.

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

Environmental factors

Common environmental conditions at festivals were identified (*n*=6, 21%). KIs explained how crowds, warm weather, limited access to water/shade and fast paced/loud music can contribute to health issues like overheating/dehydration:

Physical exertion (*dancing) leading to exhaustion, lack of preventative measures* (*absence of health information, air conditioning), access to water, high crowd density, hot weather conditions.*

[KI-10, deidentified, law enforcement, WA]

Environmental factors – heat, overcrowding + physical exertion – promoting dehydration, cardiovascular stress, overheating.

[KI-24, deidentified, health on and offsite, NSW]

One KI believed crowding was a problem because it creates difficulties for festivalgoers wishing to seek help:

... crowding which can make it difficult to seek/locate support services if harmful effects are being experienced.

[KI-10, deidentified, law enforcement, WA]

Lack of education/awareness

Five KI (17%) commented on a lack of drug education, particularly regarding polydrug use. One KI believed that while young people may view drugs positively, they commonly lack knowledge about drugs, while another reported young people may have difficulty accessing accurate drug information:

Despite the existence of google, many people (especially young users) don't find accurate and helpful information about drug safety, and they are too afraid of being caught to ask around to find good advice.

[KI-08, deidentified, law enforcement, NSW]

Positive perceptions to illicit drug use as opposed to actual knowledge of drug ... no experience of illicit drugs therefore will buy/try anything.

[KI-10, deidentified, law enforcement, WA]

Lack of education around what people are taking and the effects it can have, particularly when mixing drugs.

[KI-17, deidentified, AOD agency, WA]

Lack of awareness of the effects of different substances – lack of awareness of the effects of combining substances.

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

Resistance to drug-checking services

A few KI (10%) identified resistance to drug-checking as a problem. They believed drug-checking would allow for more informed decisions on drug usage/dosage and could deter the use of dangerous drugs:

The fact that we are unable to provide people with better information about what chemical is in the drug they are taking contributes to harm.

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

… If government was to allow pill testing then the patron would have a better idea of what they're taking and how much they should take.

[KI-14, deidentified, government/regulation, WA]

… a much better way of finding the really dangerous drugs is to actually test people's drugs for them to find out what's really in them so the fact there's ongoing resistance to the introduction of so called pill testing or drug-checking at these events is also a major concern because that would be the best way to identify and eliminate the most dangerous kinds of drugs from the market.

[KI-03, Will Tregoning, Executive Director, Unharm, NSW]

Alcohol use and promotion at festivals

Two KI (7%) commented on alcohol-related factors. One noted promotion as a problem, while another commented on antisocial behaviour linked to binge drinking:

Alcohol is a significant contributing factor. When used on its own, it can lead to increased violence.

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

However, concern about alcohol use was expressed at numerous other points in the pre- and post-survey interviews. Consistent with comments in the literature review, one KI identified alcohol problems as a consequence of commercialising the festival scene. Ultimately, he suggests the two scenes (the illicit drug subculture and the wider binge-drinking culture) have combined to create a polydrug use culture.

Alcohol is a significant issue in festival goers. This has represented a major shift in substance use from the early 2000s which was a remnant of the nineties PLUR culture. As festivals became larger and more commercial, they attracted a broader demographic which resulted in festival populations normalising to Australian drinking culture more prevalent in the wider community.

[KI-28, Buck Reed, onsite medical, national]*

Hesitance to access onsite support services

Two KIs (7%) noted concerns about festivalgoers' reluctance to seek help from onsite medical services. For example, one KI suggested festivalgoers are sometimes concerned about being judged. They also explained that festivalgoers may have a fear of missing out on the festival:

> *Some potential social stigma in seeking medical assistance as well as FOMO (fear of missing out) if the person leaves the action to get help.*
>
> *[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC*]*

High drug availability and 'dodgy dealers' at festivals

Two KIs (7%) identified easy access to illicit drugs as contributing to risk. One explained that dealers have even developed strategies which allow customers to identify them:

> *... it's very easy to spot who's selling the drugs in there because they're giving out chewing gum.*
>
> *[KI-05, deidentified, government/regulation, WA]*

Queues for drinks and toilets discouraging hydration

Lastly, one KI identified drinks/toilet queues and the perceived unsanitary state of festival facilities as a problem. Consistent with comments from regular festivalgoers, KIs acknowledged festivalgoers will avoid drinking to avoid queuing for drinks and then toilets:

> *Music festivals are equally famous for long drink queues and disgusting toilets, which can discourage adequate hydration and therefore exacerbate drug and alcohol harms.*
>
> *[KI-08, deidentified, law enforcement, NSW]*

Negative assemblages

As explained in the literature review, identifying negative assemblages could inform future HR efforts. Thus, some examples of negative assemblages identified within the qualitative data (some of which were considered previously) are considered below.

Assemblage one: overheating

> *Yes, the problem I have is overheating. Even without drugs, I struggle with heat, and when you add alcohol and ecstasy, it makes it worse. In the past I've just overheated and got quite anxious. I think it was mid or late thirties [Celsius] one year and we were camping and had dragged our stuff to the*

campsite in the heat and then was just drinking in the sun and I could not cope. At several other events it's also landed on super-hot days because they're all in summer. I either sell my ticket these days or go really late when the sun isn't so bad.

[P03, female, 23yrs, WA]

A variety of different socio-spatial elements can be identified in the above assemblage, including a potential predisposition to heat sensitivity, even in the absence of drugs; high ambient temperature; exhaustion from an extended walk carrying camping gear from the car to the campsite; inadequate shade at the campsite; alcohol consumption; and attempting to set up camp. These six elements clearly represent a problematic assemblage, but also highlight areas which could be targeted with HR initiatives to encourage more positive assemblages, such as:

- encouraging festivalgoers to dress appropriately and take bottles to fill up at water stations;
- event organisers ensuring there are ample water stations situated on the path to camp so festivalgoers can refill bottles, and hand out free bottles or paper cups for water refills;
- situate camps in shaded areas or consider ways of making campsites more habitable (e.g. shaded chill zones with water stations and bean bags when people need a break from the sun);
- encourage festivalgoers to drink water while setting up camp (via festival Facebook posts, etc.); and
- have rovers on golf carts available to assist those struggling with their belongings and hand out waters.

Assemblage two: adverse effects to a drug sold as ecstasy

Well it started at our friend's house. We were drinking before heading in and my friends had got these pills a bit last minute and no one had any information on them and we couldn't find them online [on Pillreports]. So I actually only took half before the festival, but when I got in about forty-five to sixty minutes, I didn't feel much from only half so took a full one. Then maybe forty minutes after I noticed the sky looked a really intense, eerie dark blue and I thought … shit, this doesn't feel like MDMA. I should have got out of the action as soon as I felt that way, but everyone else was coping okay and my partner wanted to go to the main stage soon for his favourite artist which is very heavy rock. I told him I wasn't up for it, but he said I'd

be fine and made me feel guilty for suggesting he miss his favourite act, so I carried on despite becoming increasingly uncomfortable of my surroundings. As we worked our way into the mosh everything around me seemed to distort and it felt like all eyes turned on me and everything became super clear, but vague and detached. I was scared and said I needed to get out, but we were trapped in the mosh with people jumping and knocking me around and there was little hope of getting out anytime soon. Eventually I pushed my way out, but it was about a twenty-minute push without help from anybody in my path. Once out the mosh, we couldn't find our way to the exit either because we were too fucked up or it was just hard to get out, but once we did, there were no taxis and our phones had died earlier in the day and there were no charging stations. We walked for about an hour in which time I started to feel better and a friend came and got us.

The primary elements in the above assemblage are: last-minute purchase preventing user reviews/sampling; redosing to soon (not accounting for potential misrepresentation); peer pressure from partner to continue despite feeling anxious; entering the mosh pit for a heavy musical genre; lack of assistance from fellow festivalgoers to clear a path out of the mosh pit; poor signage for festival exits; phone not charged/no charging stations; and lack of transport options home/taxis on standby. This negative assemblage also highlights areas which could be targeted by HR efforts:

- on and offsite drug-checking accompanied by a digital warning system;
- education on appropriate re-dosing timeframes;
- mosh or crowd 'lifeguards'– people amongst the crowds and in towers watching the crowd to identify/help at risk festivalgoers;
- encouraging festivalgoers to look out for each other and help clear the path for those trying to exit;
- phone charging stations at festivals and encouraging festivalgoers to come prepared/fully charged;
- signage for all HR services and festival entry/exit points; and
- improving public transport options home.

Assemblage three: Excess and exhaustion

> *A festival I went to last year is the only time I've actually been bad. We'd been on it [drugs] all day, as you do for festivals. I'm talking ten am start, funnels [using a funnel to drink alcohol] in the garden, caps [MDMA capsules] already getting dropped. Then we dropped a few more times throughout the day and was drinking all day. When it came to seeing the act I was waiting for I was already fucked and had a solid walk to get to the other side of the event which felt a never-ending saga. I hadn't prepared myself well for this saga and there was no water in sight. After my journey to the main stage there was no time for acquiring provisions before continuing the saga into the mosh. Half way into a one-hour set I started feeling off. My vision was blurred more than I would like and I felt very weak and sick, but I'd come all this way and it was going to be next to impossible to make my way out the crowd in my state. Luckily I had crew around me to make sure I didn't get knocked to the floor and I pulled through okay ... I think I hit it too hard, hadn't drank or eaten and had barely sat all day. Still managed to get to the afterparty though ☺*
>
> *[P08, male, 21yrs, WA]*

Problematic elements included an early start, multiple redosing, exhaustion after a long walk, lack of water/dehydration, and crowding preventing movement. However, a positive element in this assemblage was friends who kept him safe in the mosh. Factors which could have improved this assemblage include rovers handing out water on direct routes between stages, shaded walkways, crowd 'lifeguards', and HR messaging before and during the festival encouraging people to pace themselves, listen to their bodies and take breaks.

Summary

What negative effects did respondents experience in association with drug use?

Key findings

66. With the exception of a few negative effects, reports of negative drug-related effects were generally low (reported by minorities).

67. Ecstasy was associated with the highest median number of negative effects, followed by crystal methamphetamine, MDA, speed, pharmaceutical stimulants and then cocaine. Tobacco, cannabis, benzodiazepines, nitrous oxide and DMT were associated with the lowest median number of negative effects.

68. Physical effects were more commonly reported, followed by psychological and then social effects.

69. The most common negative physical effects were comedowns/hangovers, jaw clenching/teeth grinding and nausea/vomiting. The most common psychological effects were comedowns, inability to concentrate and anxiety/panic. The most common social effect was problems study/working in the day/s following the event.

70. At the bivariable level, a higher proportion of females than males reported negative effects attributed to ecstasy (e.g. vomiting, shakes, anxiety, paranoia and irritability).

71. In the multivariable analyses, younger age and being female were associated with greater odds of experiencing a negative physical effect attributed to ecstasy use; not eating properly and using drugs when in a bad mindset was associated with greater odds of a negative psychological effect; and being aged 16–17, attendance at a one-day festival, not eating properly and using drugs when in a bad mindset were associated with greater odds of experiencing a negative social effect.

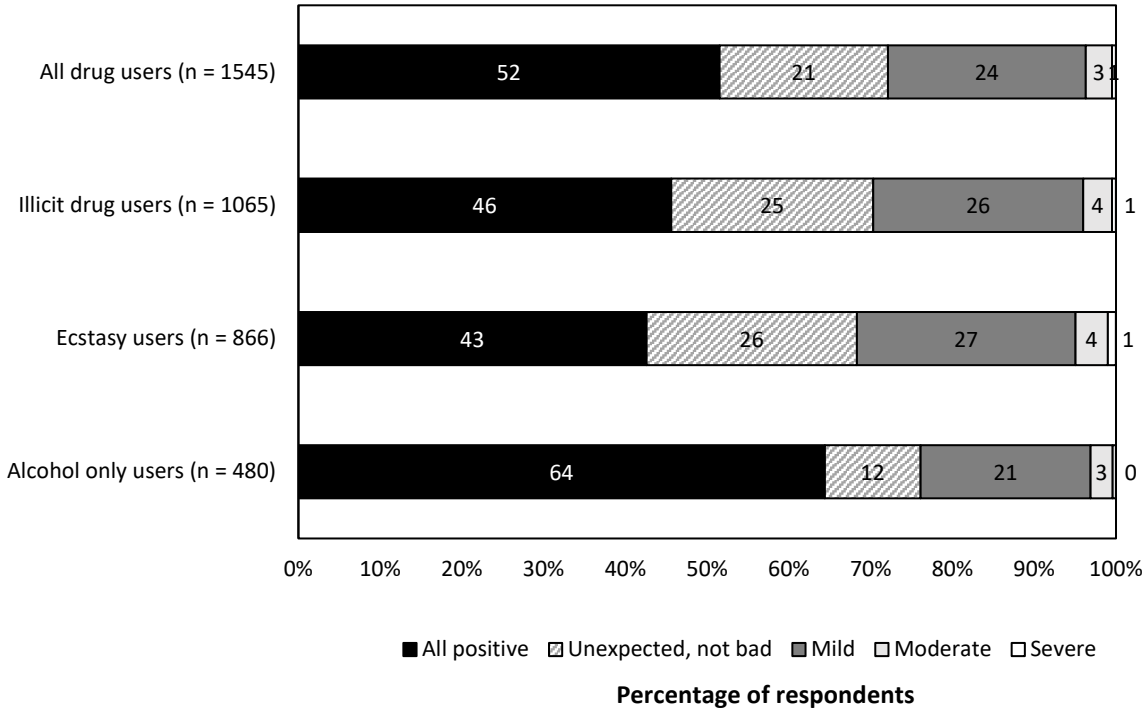
Severity of negative effects

How common were moderate to severe negative drug-related effects?

Respondents were asked how they would describe the severity of the negative drug effects they had experienced on a five-point scale. As evident in *Figure 4.44*, among 1065 illicit drug users, almost half nominated 'n/a, all positive effects', a quarter nominated 'unexpected effects, not necessarily bad' and a quarter nominated 'mild negative effects'. Only 3% described the severity as 'moderate negative effects' and fewer than 1% described 'severe negative effects'.

When aggregating moderate and severe categories (to increase cell sizes for analysis), no significant difference was identified between the genders for alcohol-only users (p=0.382) or illicit drug users (p=0.063).

Figure 4.44: Severity of negative drug effects associated with the last festival attended (taking all drugs used as a whole)



Drugs associated with moderate-severe negative effects

Respondents who reported moderate to severe negative effects (n=57) were asked to identify the main drug to which they would attribute those effects and perceived contributing factors (*Table 4.40*). The commonly attributed drug was ecstasy, followed by alcohol and then 'the mix of the drugs'. The most commonly reported contributing factors included mixing alcohol

and/or drugs, not eating enough food, not drinking enough water and taking too much (drugs/alcohol). Responses entered in the 'other (please specify)' category included sleep deprivation, bad mindset, high potency and mixing energy drinks with other stimulants.

Table 4.40: Severity of negative drug effects associated with the last festival attended (taking all drugs as a whole; % of respondents)

	Alcohol only	Illicit drug users	Total
For moderate to severe effects – main drug blamed	*n*=15	*n*=42	*n*=57
Ecstasy	0.0	59.5	43.9
Alcohol	100.0	2.4	26.3
I think it was the mix of the drugs	0.0	19.0	14.0
Cannabis	0.0	7.1	5.3
Crystal methamphetamine	0.0	2.4	1.8
Ketamine	0.0	2.4	1.8
Magic mushrooms	0.0	2.4	1.8
Don't know	0.0	4.8	8.8
Contributing factors	*n*=15	*n*=41	*n*=56
Mixed alcohol and/or drugs	0.0	46.3	33.9
Didn't eat enough food	26.7	36.6	33.9
Didn't drink enough water	26.7	34.1	32.1
Took too much (drugs/pills)	0.0	43.9	32.1
Drank too much alcohol	53.3	19.5	28.6
Not enough resting	20.0	26.8	25.0
Too much dancing	6.7	14.6	12.5
Hot weather	13.3	9.8	10.7
Wasn't with friends I felt comfortable with	6.7	9.8	8.9
Took a 'bad' pill	0.0	12.2	8.9
Difficulty accessing water at the festival	6.7	9.8	8.9
Suspect my drugs weren't what I thought	0.0	9.8	7.1
Went out the night before	13.3	2.4	5.4
Difficulty accessing shade at the festival	0.0	4.9	3.6
Other	13.3	19.5	17.9
Don't know	20.0	4.9	8.9

Correlates of moderate-severe drug-related effects

The only significant predictors in the multivariable model (*Table 4.41*) were not eating properly, dancing for a prolonged period without taking a break and using in a negative headspace. These results are consistent with earlier bivariable analyses for adverse effects associated with ecstasy.

Table 4.41: Correlates of moderate-severe drug-related negative effects associated with the last festival attended among all drug users (multivariable logistic regression)

Variable	Level	N	Mod-severe	Positive-mild	Bivariate			Multivariable		
			3.5%	96.5%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	194	2.1	97.9	1.516	0.274-8.390	0.634	1.681	0.286-9.861	0.565
	18-19 years old	426	4.5	95.5	3.361	0.773-14.609	0.106	4.489	0.980-20.566	0.053
	20-21 years old	355	3.4	96.6	2.519	0.557-11.397	0.230	3.654	0.772-17.301	0.102
	22-25 years old	352	4.0	96.0	2.982	0.669-13.291	0.152	3.716	0.799-17.281	0.094
	Over 25 years old	146	1.4	98.6	1.000			1.000		
Gender	Male	773	2.8	97.2	0.678	0.368-1.191	0.176	0.688	0.372-1.272	0.233
	Female	700	4.1	95.9	1.000			1.000		
Jurisdiction	VIC	721	2.9	97.1	0.719	0.409-1.264	0.252	#		
	WA	752	4.0	96.0	1.000					
Festival type	One-day	1036	3.2	96.8	0.715	0.384-1.333	0.291	#		
	Inconsistent selection	96	3.1	96.9	0.701	0.199-2.474	0.581			
	Multi-day	341	4.4	95.6	1.000					
Number of drugs used (excluding tobacco)	1	371	2.7	97.3	0.637	0.310-1.310	0.220	0.806	0.356-1.822	0.604
	2	334	2.7	97.3	0.637	0.301-1.350	0.239	0.741	0.327-1.679	0.472
	3 or more	768	4.2	95.8	1.000			1.000		
Risk behaviours	Went out the night before (moderate-big night)	319	2.5	97.5	0.655	0.309-1.428	0.295	#		
	Used illicit drugs night before (not for sleep)	230	3.5	96.5	0.989	0.467-2.168	0.989	#		
	Drank ≥10 standard drinks the night before	235	3.0	97.0	0.833	0.371-1.873	0.659	#		
	Obtained drugs from untrusted source	155	7.1	92.9	2.441	1.224-4.862	0.011*	1.197	0.513-2.793	0.677
	Used drugs I had no user reviews on	229	7.4	92.6	2.854	1.566-5.201	0.001**	1.878	0.864-4.082	0.111
	Didn't eat properly	579	5.5	94.5	2.694	1.515-4.800	0.001**	2.012	1.059-3.820	0.033*
	Didn't drink ANY water (or isotonic drinks)	133	6.8	93.2	2.243	1.067-4.716	0.033*	1.603	0.712-3.609	0.254
	Didn't drink ENOUGH water (< 9 glasses)	645	4.7	95.3	1.875	1.063-3.306	0.030*	1.236	0.663-2.306	0.505
	Double dropped	367	4.9	95.1	1.677	0.833-3.016	0.084	1.266	0.630-2.545	0.508
	Danced for a prolonged period without break	703	2.8	97.2	0.698	0.394-1.236	0.218	0.428	0.230-0.795	0.007**

Variable	Level	N	Mod-severe	Positive-mild	Bivariate			Multivariable		
			3.5%	96.5%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
	Stood in sun for a prolonged period	405	3.2	96.8	0.899	0.474-1.705	0.744	#		
	Drank/used drugs in a bad mindset	115	11.3	88.7	4.427	2.286-8.576	<0.001***	3.355	1.612-6.986	0.001**
	Went 24 hours or longer without sleeping	193	2.6	97.4	0.713	0.280-1.818	0.479	#		

Note. Response options were dichotomised ('all positive effects' or 'unexpected, but not bad' or 'mild'=0; 'moderate' or 'severe' negative effects=1). This analysis was performed for all drug users to maximise the sample size (sample would be too small to perform any meaningful analyses if limited to ecstasy users only). Model $\chi 2$ (15)=45.766, $p<0.001$. Adjusted R square=0.031 (Cox & Snell), 0.118 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, $p=0.810$, $n=1473$. #Dropped from the multivariable model because $p>0.25$. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

Summary

How common were moderate to severe negative drug-related effects associated with the last festival attended?

Key findings

72. The experience of moderate to severe negative drug-related effects was rare (3% moderate, 1% severe). The proportion was the same for alcohol-only users and illicit drug users.

73. Among illicit drug users who experienced moderate to severe effects, three-fifths attributed it to ecstasy/MDMA, while a fifth attributed it to a mix of the drugs.

74. The most commonly reported contributing factors were mixing alcohol and/or other drugs, taking/drinking too much, not eating enough and not drinking enough water.

75. In the multivariable analysis, not eating properly, dancing for a prolonged period and using in a negative headspace was associated significantly greater odds of experiencing moderate to severe adverse effects.

Theme 4: Management of drug-related issues/interventions

As highlighted in the literature review, the annual number of drug-related deaths at Australian festivals has increased in recent years. These deaths have heightened concern about the risk of drug-related harm, as well as contention about how to effectively respond. Two of the most hotly debated strategies have been the continued use of drug detection dogs and the proposed trialling of drug-checking services. There have also been isolated concerns about barriers to seeking medical attention and the availability of onsite support/HR (e.g. "Stereosonic death," 2015). While drug dogs and drug-checking have received increasing academic attention in recent years (e.g. Barratt, Bruno, et al., 2018; Hughes et al., 2017), gaps were identified in the literature. Additionally, no peer-reviewed studies address access and barriers to HR strategies. This section therefore seeks to address these gaps. Relevant research questions are outlined in the introduction to each section.

Access and barriers to onsite first aid

Media reports suggest most young people who have died at Australian festivals did not seek help from onsite medical services before falling critically unwell. Moreover, in at least one case, a festivalgoer who died was allegedly called "weak" by his friends and persuaded to abandon the first aid line (Music Feeds, 2016). In other cases, instead of seeking medical support when feeling unwell, festivalgoers were reported to have left their friends, returned to campsites alone and were later found dead (e.g. Begley & Arlington, 2015; The Morning Bulletin, 2015). Surprisingly, the reasons why festivalgoers do not seek medical attention has received no academic attention. To address this gap, this section answers the following questions:

- What proportion of respondents sought medical attention when they experienced moderate to severe negative drug-related effects at the last festival attended?
- How comfortable would respondents have felt accessing onsite medical support for a problem related to illicit drug use at the last festival attended?
- What would have been (or were) the barriers to seeking help at the last festival?
- What proportion had ever sought from help from onsite medical or thought they should have in hindsight?
- What were the barriers among those who had ever considered seeking help or thought they should have in hindsight?

Key findings are presented below, while full statistics are available in the appendices.

What proportion of festivalgoers sought medical help when they experienced moderate to severe negative drug-related effects?

Of those who experienced moderate to severe negative drug effects (*n*=55), only two respondents reported attending an onsite medical service (*Table 4.42*). Both were female, and one reported severe adverse effects. Only one respondent sought medical care after the festival and that involved a visit to a GP. Instead, the most commonly reported behavioural responses were to drink water, rest, be helped by friends, slow down drug use and eat food (*Table 4.42*). The most common response entered into the 'other response (please specify)' category was to consume benzodiazepines. No gender differences were identified.

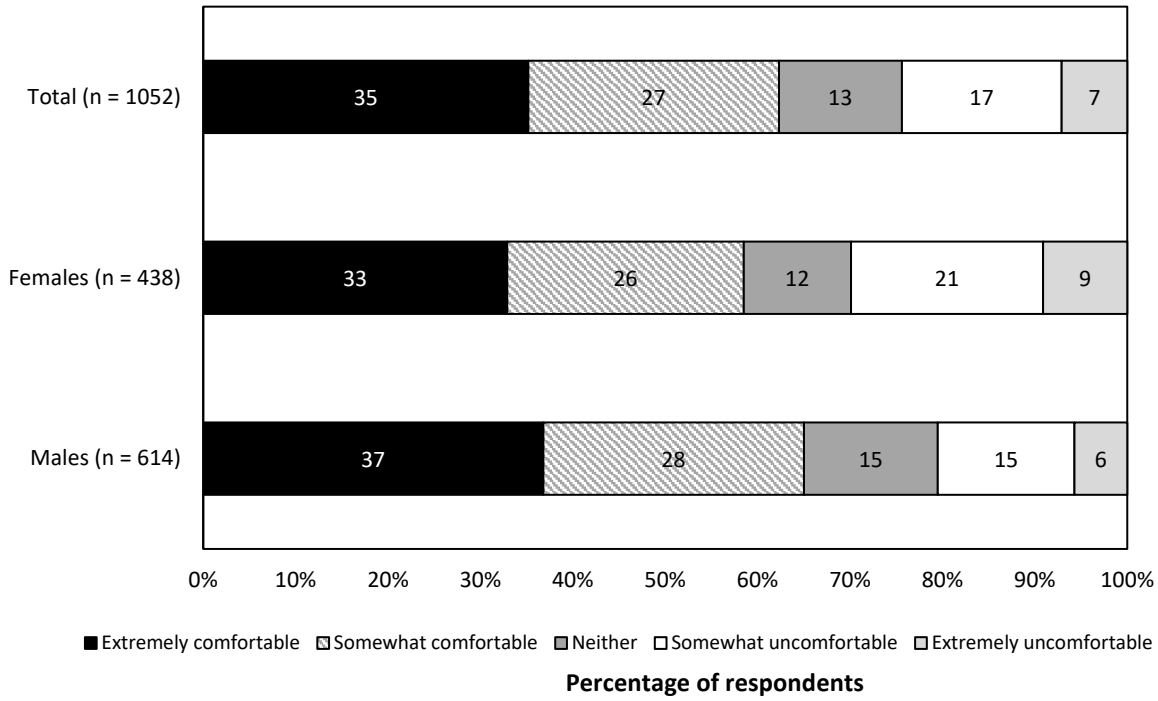
Table 4.42: Responses to moderate-severe negative drug effects experienced in association with the last festival attended (%)

	Total ***n*=55**
Drank water	58.2
Rested / sat down	52.7
Helped / monitored by friends	32.7
Slowed down alcohol / drug use	32.7
Ate food	23.6
I did nothing	14.5
Left the festival early	14.5
Found shade	7.3
Went to the onsite first aid tent	3.6
Helped by roaming support (e.g. Red Frogs Crew, Save-A-Mate)	3.6
Saw my GP after the festival	1.8
Don't know / can't remember	3.6
Other	7.3

How comfortable would festivalgoers have felt accessing onsite medical support (for a problem related to illicit drug use) at the last festival attended?

Respondents were asked how comfortable they would have felt (or actually felt) accessing a medical service at the last festival they attended (for a problem related to illicit drug us). As shown in *Figure 4.45,* only 62% said they would have felt extremely or somewhat comfortable. A higher proportion of females than males reported they would have felt uncomfortable (30% vs. 21%, p=0.012).

Figure 4.45: Level of comfort in accessing onsite medical service at the last festival attended among those reporting illicit drug use



Note. Among those reporting illicit drug use at the last festival attended. Those who identified as a non-binary gender were excluded (n=5).

What would have been (or were) the barriers to seeking medical attention at the last festival attended?

Among those who selected a response other than 'very comfortable' (n=679; see *Figure 4.45*), the most commonly reported barriers were 'fear of legal issues', 'fear of negative treatment or judgment by staff', 'fear of parents or family being notified' and 'fear of people seeing/social stigma/embarrassment' (*Figure 4.46*). The most common responses entered into the 'other (please specify)' category were not wanting to inconvenience, worry or lose contact with friends, distrust/lack of faith in onsite medical services, fear of being ejected/banned from festivals and feeling uncomfortable accessing a religion-based service. For example:

> *First aid people are often unequipped to deal with someone on pingers [ecstasy pills], the feeling of someone controlling you is always bad and first aid workers need to be aware of this.*
>
> *[QP1358, male, 19yrs, WA]*

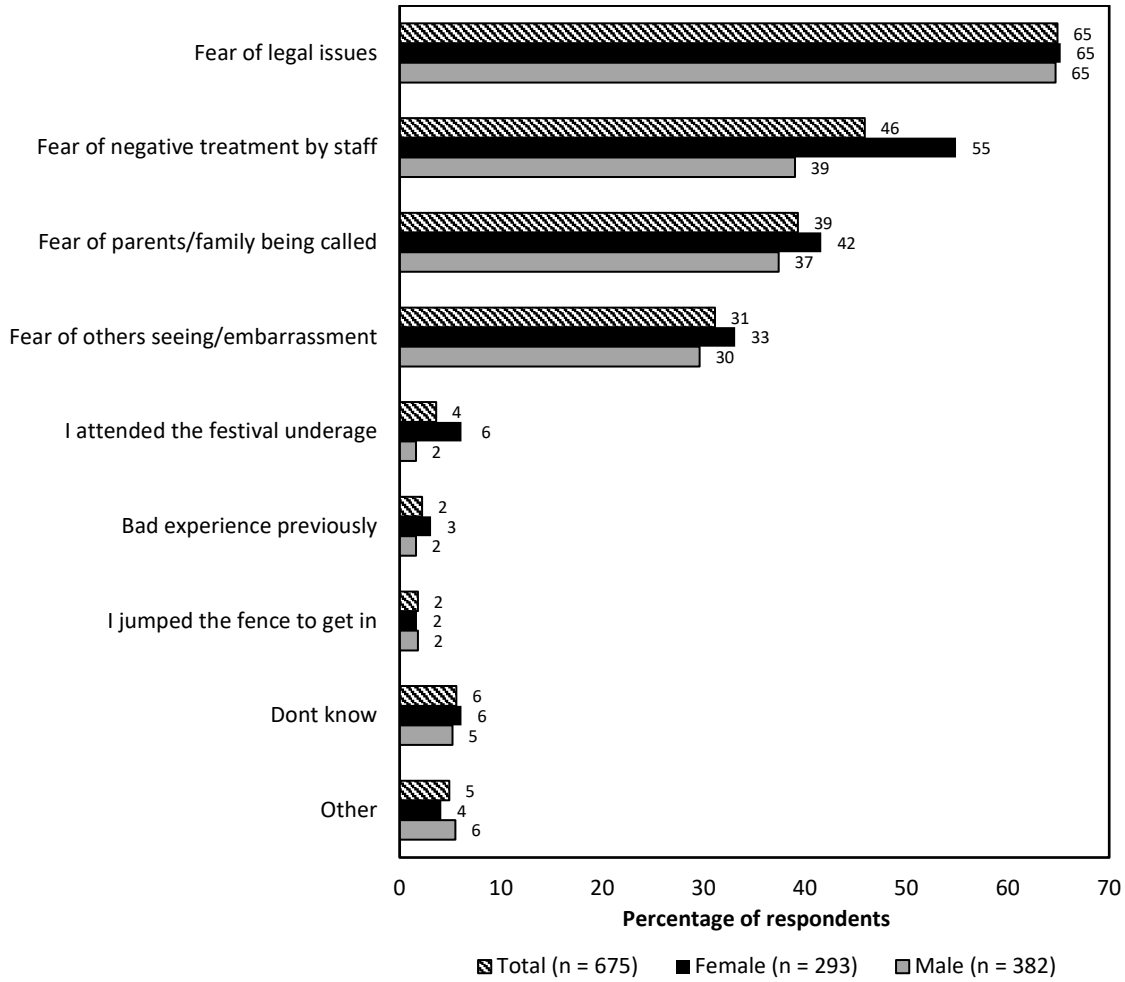
> *Don't want friends to worry about me and decrease their enjoyment of the day.*
>
> *[QP1794, male, 24yrs, WA]*

> *Having to pull friends from enjoying the festival to go with you.*
>
> *[QP1733, female, 23yrs, VIC]*

> *I know a lot of first aid/service tents are run by religious charity* groups*, and that makes me uncomfortable.*
>
> *[QP1285, female, 22yrs, WA]*

Higher proportions of females than males reported fear of negative treatment/judgment by staff (p<0.001) and concerns about attending the festival underage (p=0.001).

Figure 4.46: Reasons why respondents who reported illicit drug use would not have felt comfortable accessing onsite first aid at the last festival attended



Note. Those who identified as a non-binary gender were excluded (*n*=4).

Correlates of feeling uncomfortable accessing onsite first aid for a problem related to illicit drug use (at the last festival attended, among those who reported illicit drug use)

As demonstrated in the summary table below (*Table 4.43*), among those reporting illicit drug use, being aged 16–17 and attending a one-day festival was associated with greater odds of feeling uncomfortable accessing onsite first aid for a drug-related problem, while being male was associated with lower odds of feeling uncomfortable. Multivariable analysis was also performed on the most commonly identified barriers (see *Appendix E.36* for full statistics).

Fear of legal issues

Age was the only variable in the model which significantly predicted fear of legal issues, with 16–17-year-olds at 2.4 times the odds and 18–19-year-olds at 2.5 times the odds of over-25s.

Fear of negative treatment

The model found 18–19-year-olds had twice the odds of over-25s of reporting fear of negative treatment. Females also had twice the odds, and Victorians had 1.6 times the odds of Western Australians of reporting fear of negative treatment.

Fear of parents being notified

Unsurprisingly, age was the strongest predictor of reporting fear of parents being notified, with 16–17-year-olds at 7.6 times the odds, 17–18-year-olds at 3.6 times the odds and 19–21-year-olds at 2.6 times the odds of over 25-year-olds. Attendance at a one-day festival was also associated with 1.9 times the odds of reporting fear of parents being notified.

Table 4.43: Correlates of feeling uncomfortable accessing onsite first aid for a problem related to illicit drug use and barriers (adjusted odds ratios and significance levels)

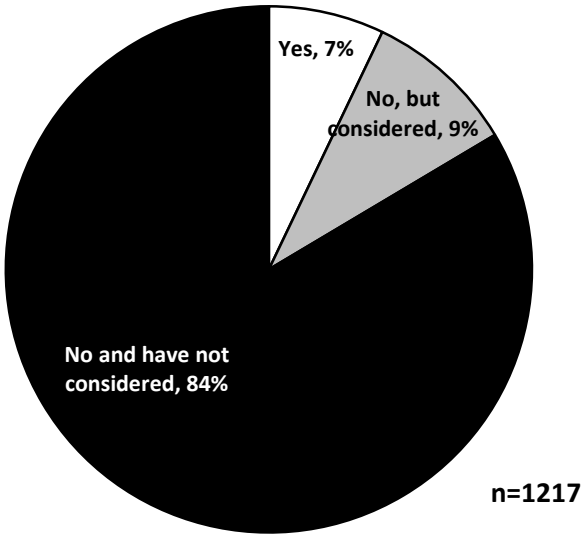
	Uncomfortable accessing first aid	Fear of legal issues	Fear of negative treatment	Fear of parents being notified
Age				
16-17 years old	2.118*	2.440**	1.087	7.586***
18-19 years old	1.459	2.547**	2.043*	3.592**
20-21 years old	0.834	1.509	1.384	2.625*
22-25 years old	1.096	1.053	1.294	2.488*
26 years and over	1.000	1.000	1.000	1.000
Gender				
Male	0.658**	#	0.492***	#
Female	1.000		1.000	
Jurisdiction				
VIC	0.943	#	1.607**	1.092
WA	1.000		1.000	1.000
Festival type				
One-day	1.606*	1.193	0.976	1.973**
Unknown	1.361	1.540	0.664	1.266
Multi-day	1.000	1.000	1.000	1.000
Total recent festivals				
1-2	#	#	#	#
3-4				
5 or more				

Note. This analysis includes those who reported using an illicit drug associated with the last festival attended. Full statistic tables for each analysis is available in the appendices. #Dropped from the model because $p > 0.25$. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

What proportion had ever accessed onsite medical services for a problem related to illicit drug use?

Of 1217 respondents who reported *ever* using an illicit drug at a festival, a small minority reported attending onsite medical for a problem related to their illicit drug use (*Figure 4.47*). However, among those who had not (*n*=1125), 9% had considered it or, in hindsight, thought they should have.

Figure 4.47: Proportion who had ever (at least once in their lifetime) accessed onsite first aid for a problem related to illicit drug use



Note. Among those who reported ever having used an illicit drug at a festival.

What were the barriers to those who had ever considered accessing help or thought they should have in hindsight?

The three most commonly reported reasons for not seeking help were 'decided it wasn't serious enough', 'fear of legal issues' and 'fear of negative treatment/judgment by staff' (*Figure 4.48*). Other commonly reported reasons included 'fear of parents or family being contacted/notified', 'didn't want to miss any of the festival' and 'fear of other people seeing/embarrassment'. Some respondents also reported their friends encouraged them not to and they didn't think it would help. Common responses entered into the 'other (please specify)' category included concerns it could have damaged their career, not wanting to inconvenience friends, too intoxicated to consider seeking help, and managed the symptoms themselves. For example:

I had taken very strong LSD and was not cognitively aware that the first aid service was an option.

[QP1181, female, 28yrs]

After a while I was able to remedy the effects myself f… I was severely overheating and needed to cool down. Luckily there were massive water spray fans that I was able to stand in front of for half an hour.

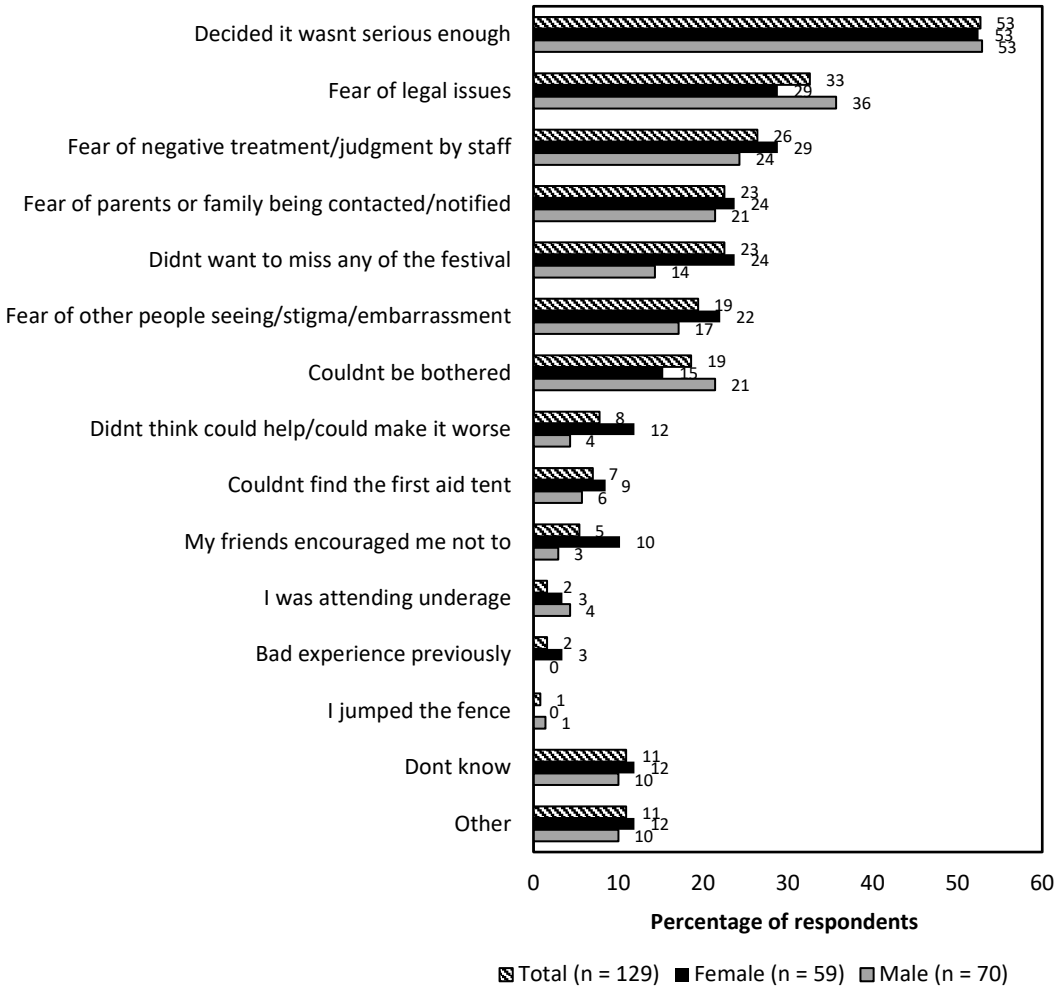
[QP913, male, 22yrs]

I work in health care and could have known the medics.

[QP892, female, 25yrs]

No statistically significant gender differences were identified.

Figure 4.48: Lifetime reasons for not accessing onsite first aid for a problem related to illicit drug use



Note. Among those who reported they should have accessed onsite first aid in the past. Those who identified as a non-binary gender were excluded (*n*=1).

Qualitative views on seeking help

In the pre-survey interviews (*n*=20), participants were asked how comfortable they would have felt accessing onsite medical services for an illicit drug-related problem at the last festival they attended and why. Consistent with the quantitative data, responses were mixed (45% reported they would have felt comfortable and 55% reported they would not have felt uncomfortable).

Would feel comfortable

The reasons why participants reported they would feel comfortable accessing onsite medical services were broadly coded into the following categories: health is a priority (i.e. health concerns top other concerns); medical services are there to care for you, regardless of your drug use; and positive past experiences eliminating hesitance to seek help in future. For example:

> *At the time I was upset with my partner for taking me to first aid, I didn't want to go at all. They were so nice and non-judgemental though it was fine. I would go there again if I needed.*
>
> *[P15, female, 33yrs, VIC]*

> *Of course, yes. You can't put a price on your health and wellbeing at a festival or anywhere for that matter. If I had drugs on me, then maybe I'd be sceptical, but I'm sure they could be palmed off to someone in an emergency situation :p [smiley face with tongue out] People don't seem to realise as well that medics and what not don't care what you've taken, they're just there to help.*
>
> *[P06, male, 24yrs, WA]*

> *If anything was wrong with me, like feeling unwell, or I just was out of it, I would definitely go to a first aid tent. Even if I'd consumed drugs, I would still go.*
>
> *[P07, male, 19yrs, WA]*

Would not feel comfortable

There were a multitude of reasons why participants reported they *would not* have felt comfortable. Responses were coded into legal concerns; stigma, embarrassment or judgment concerns; their psychological state was affected at the time (e.g. scared of people, not thinking logically); concern about parents being notified; concern it would cause further distress/exacerbate symptoms; concern they would be ejected and/or possibly banned from

future events; a perception that the problem/s could be self-managed; and they were unsure where to go. For example:

> *No, I guess at times I've felt like I should, but just haven't. Just wasn't sure if I would look stupid, don't normally know where to go and think going there would stress me out more. I just need calm, shade and a fan. Especially if I've already taken something, I get a little paranoid and don't know if I'd feel comfortable with them asking questions.*
>
> *[P03, female, 23yrs, WA]*

> *Just embarrassment and stigma I guess. I didn't want to be seen there. Concern about my parents findings out perhaps if they were called or my details had to be taken.*
>
> *[P02, female, 25yrs, WA]*

> *No, I didn't think about getting first aid as I have been in this situation before. If I gave attention to the fact that I was actually in a life/death situation, I think that would have made it worse. You just have to try and stay as calm as possible.*
>
> *[P05, female, 18yrs, WA]*

However, ultimately, a couple of participants conceded that in hindsight they should have sought help despite the risks:

> *I don't think I would have felt comfortable as I was on drugs – drugs are illegal and there were police there. I was more concerned about getting in trouble than getting help, which once again was a stupid way of thinking looking back.*
>
> *[P05, female, 18yrs, WA]*

However, others maintained that they definitely would not have attended. The following participant expressed distrust with medical services, particularly when "vulnerable":

> *I wouldn't go, especially if I didn't have a wrist band on and jumped [jumped the fence without paying for a ticket], unless I truly needed it. To get kicked out was my only concern really, and when you are on drugs, you don't really think straight. You sometimes do, but sometime I feel my logic is a bit silly. Even if the ambulance says they won't get you kicked out or*

something, I'd still not go. You can't take their word, you would be vulnerable too, in a bad state.

[P09, male, 17yrs, WA]

Another participant perceived onsite services as incompetent and lacking capacity to care for complex cases. They would thus bypass onsite medical and go straight to an ED:

I don't trust onsite medical services as I don't think they're qualified to manage people experiencing serious drug problems. It is my understanding they are often volunteers who are judgmental and want to lecture you which will only piss me off and increase my heart rate even more. If I really needed help, I would leave the event and find my way to a hospital where I know I'll be in good hands.

[P20, male, 21yrs, VIC]

Summary

How comfortable would festivalgoers have felt in accessing onsite medical support (for a problem related to illicit drug use) and what are the barriers to seeking help?

Key findings

76. Only 7% of lifetime illicit drug users at festivals had attended onsite first aid, but a further 9% had considered it or thought they should have in hindsight.

77. The most common reasons for not accessing first aid were 'decided it wasn't serious enough' (52%), 'fear of legal issues' (32%) and 'fear of negative treatment by staff' (24%).

78. Three-fifths reported they would have been comfortable accessing onsite first aid at the last festival for a problem related to illicit drug use. One quarter would have felt uncomfortable and the remainder were neutral.

79. The main barriers associated with the last festival were 'fear of legal issues' (64%), 'fear of negative treatment or judgment by staff' (43%), 'fear of parents or family being notified' (41%) and 'fear of people seeing/social stigma/embarrassment' (32%). Common other responses were not wanting to inconvenience their friends.

80. After controlling for other variables, being aged 16–17, being female and attendance at a one-day festival were associated with greater odds of feeling uncomfortable accessing first aid at the last festival attended.

81. After controlling for other variables, younger age was the only variable which significantly predicted fear of legal issues. Being aged 18–19, being female and living in

Victoria were associated with greater odds of fear of negative treatment. Unsurprisingly, younger age was the strongest predictor of fear of parents being notified.

82. The qualitative data revealed mixed views on onsite medical services. Some participants reported they would seek help, despite perceived risks and feeling uncomfortable, because they viewed health as the priority. Others believed medical services are only there to help. However, others expressed concern and distrust in many areas, such as legal risks, being ejected from the event and/or banned from future events, parents being contacted, being judged and treated poorly by staff, concern that they would actually exacerbate symptoms, fear of burdening their friends, losing contact with their friends and being seen as 'weak'. Several participants expressed strong negative perceptions of medical services in terms of their level of competency and care for patients. Perhaps linked to fear of being seen as 'weak', many reasoned that they could self-manage their problems and would be okay. One participant explained that in their intoxicated state, seeking help was not physically or cognitively possible without assistance from someone sober, therefore whether or not they felt comfortable was another issue. This is consistent with an earlier KI comment relating to a culture of intoxication, meaning others may not easily recognise 'red flag' symptoms and get their friends to help. Lastly, another participant mentioned that they were not sure where or how to get help, which made them both uncomfortable and unable to seek help.

Access and barriers to harm reduction strategies

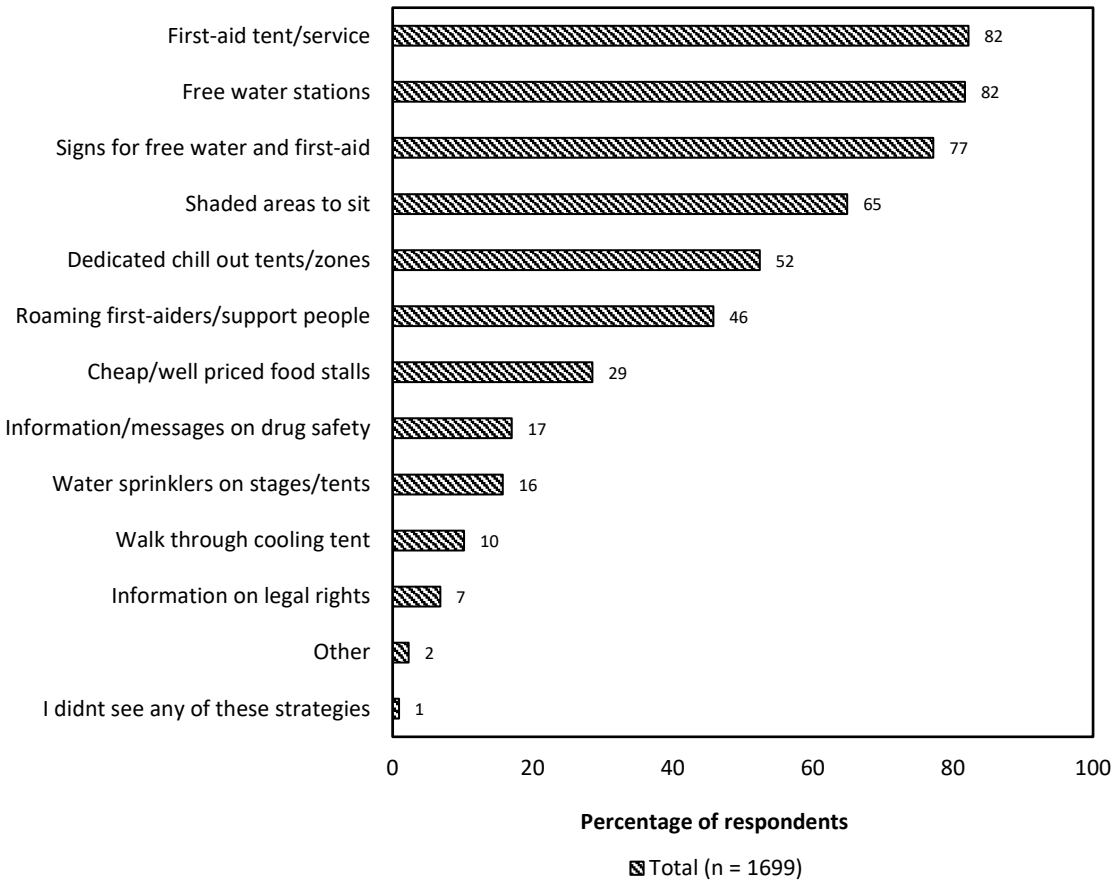
As identified in the literature review, government guidelines provide information on the strategies that should be implemented at festivals to reduce the risk of drug-related harms (e.g. first aid, free water). However, little was known about festivalgoers' experiences of accessing these strategies. To address this gap in knowledge, this section provides answers to the following questions:

- What HR strategies did respondents observe at their last festival?
- What difficulties did respondents experience in accessing onsite HR strategies at the last festival?

What HR strategies were observed at the last festival?

The most common strategies respondents observed were first aid services and free water stations, followed by signs for things like free water and first aid, and shaded areas to sit (*Figure 4.49*). About half observed dedicated chill out areas and roaming support staff. Less than a fifth reported observing information on drug safety. Water sprinkles and cooling tents were also less commonly observed, although they may not be applicable at festivals in the cooler months. The median number of HR strategies reportedly observed was five (IQR=3–6).

Figure 4.49: Harm reduction strategies observed at the last festival attended



Correlates of HR observed

Given jurisdictional guidelines may play a role in what strategies are implemented, and multi-day festivals are often considered to have more of a HR-focused approach (e.g. Rainbow Serpent in Victoria (Staff Writers, 2019)), multivariable analysis was performed to investigate correlates (*Table 4.44*). As expected, people who attended one-day festivals had significantly lower odds of observing almost all HR strategies, most notably well-priced food options, water sprinklers and information on drug safety and legal rights. While Victorians had greater odds of observing well-priced food options and information on legal rights, Western Australians had greater odds of observing first aid services, shade and chill out zones (see *Appendix E.36* for full statistics).

Table 4.44: Summary of correlates of HR strategies observed at the last festival (odds ratios from multivariable logistic regression)

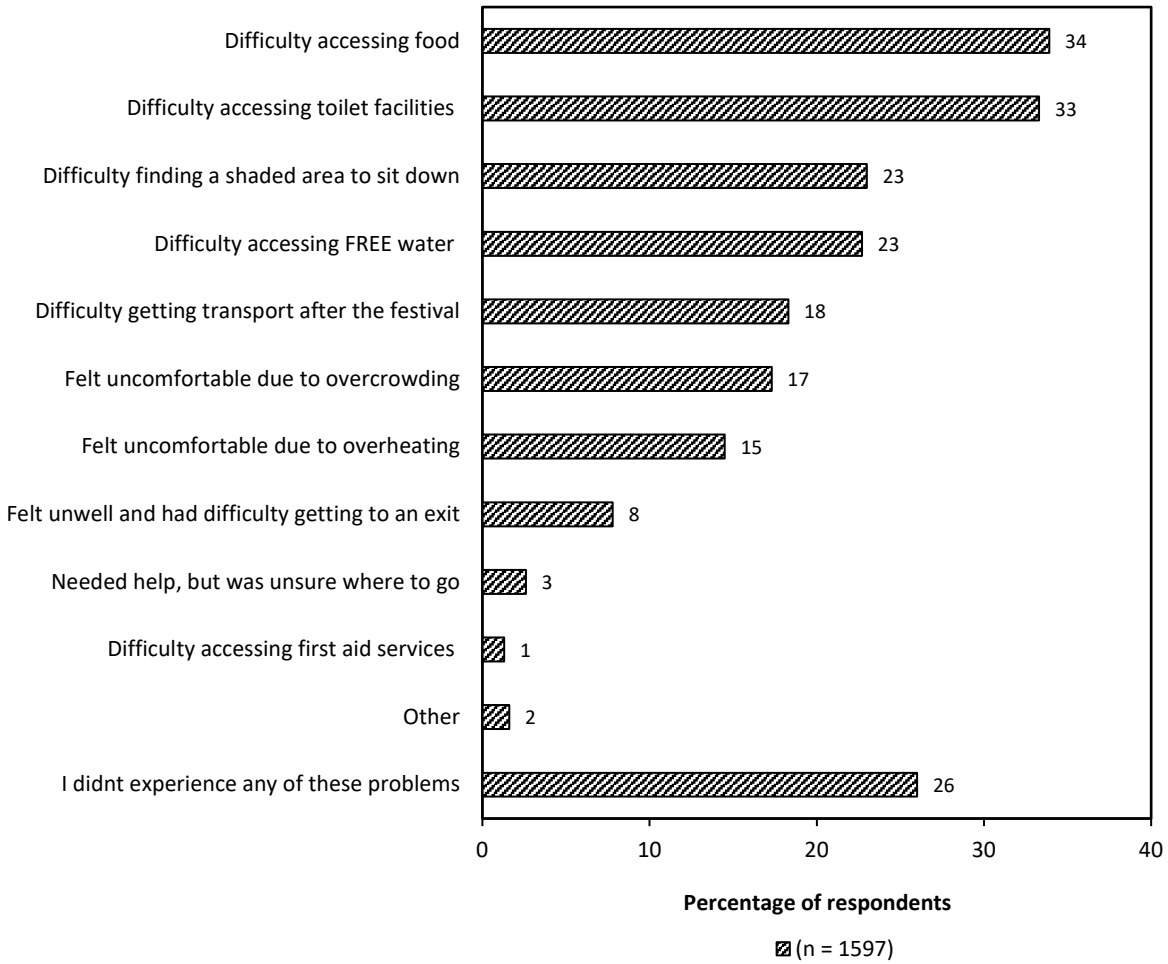
	Jurisdiction		Festival type		
	VIC	**WA**	**One-day**	**Inconsistent**	**Multi-day**
Signs for free water and first aid	0.915	1.000	0.929	0.855	1.000
Free water stations	0.832	1.000	0.911	0.901	1.000
Well-priced food stalls	1.468**	1.000	0.367***	0.375***	1.000
First aid service	0.629**	1.000	0.595**	0.559*	1.000
Shaded areas to sit	0.744**	1.000	0.541***	0.704	1.000
Dedicated chill out areas	0.718**	1.000	0.637**	0.531**	1.000
Walk through cooling tent	0.898	1.000	0.493***	0.861	1.000
Water sprinklers on stages/tents	1.097	1.000	0.287***	0.571*	1.000
Roaming support people	1.099	1.000	0.745*	0.674	1.000
Information on drug safety	1.216	1.000	0.428***	0.700	1.000
Information on legal rights	1.812**	1.000	0.495**	0.454	1.000

Note. Full statistics for each analyses are located in the appendices (see *E.36*). *p<0.050; **p<0.010; ***p<0.001.

What HR difficulties were experienced?

Respondents were asked to describe the difficulties they experienced at the last festival attended. Of the 1597 who responded, approximately one-third reported difficulty accessing food and toilet facilities and about one-quarter reported difficulty accessing free water and finding a shaded area to sit down (*Figure 4.50*). Other commonly reported problems involved getting transport after the festival, feeling uncomfortable due to overcrowding and overheating. Additionally, almost a tenth reported they felt unwell or overwhelmed in a tent/pavilion and had difficulty getting to an exit. Few reported they needed help, but were unsure where to go. The median number of difficulties reported was one (IQR=0–3).

Figure 4.50: Difficulties reportedly experienced at the last festival attended



Drug detection dogs

As highlighted in the literature review, drug detection dogs continue to operate at festivals across Australia, despite accumulating evidence suggesting they are ineffective at both detecting drugs and deterring use, and may contribute to risky drug use practices (e.g. panic consumption). A recent Australian study (Hughes et al., 2017) suggested this policing strategy encourages festivalgoers to purchase their drugs inside the event, which could increase the risk of being sold misrepresented drugs. Despite accumulating evidence undermining the efficacy of this strategy, to date no studies have investigated behavioural responses to the expected presence and sight of drug dogs in this context. To address this gap, this section answers the following questions (in relation to the last festival attended):

- How did festivalgoers respond to the expected presence of drug detection dogs?
- How did festivalgoers respond to seeing a drug dog (when they had illicit drugs on their person)?
- What proportion was detected with an illicit drug due to a positive identification from a drug dog (among those who saw drug detection dogs and had illicit drugs on their person)?

How did festivalgoers respond to the expected presence of drug dogs at the last festival attended?

As evident in *Table 4.45*, after filtering out 'I was not intending to take drugs so it didn't affect me' (*n*=647), the most commonly reported response to the expected presence of dogs was to conceal their drugs well, followed by 'nothing, I just hoped for the best'. Other common responses involved precautions to avoid contact, such as assessing the situation when they arrived and avoiding the dogs or sending a spotter ahead, whereas some attempted to avoid the risk altogether by getting someone else to carry their drugs for them or buying drugs inside. Some reported trying to minimise the risk by taking less easily detected drugs or taking smaller quantities to the festival. The least commonly reported response was deciding not to take drugs at all on the day. No significant differences were identified between genders (see *Appendix E.38* for full statistics).

Table 4.45: Responses to the expected presence of drug detection dogs at the last festival attended (% of respondents)

	Total
Heard/suspected dogs would be present	*n*=1682 66.5
Responses among those who suspected dogs would be present:	*n*=1118
I wasn't intending on taking drugs so didn't affect me	42.1
Planned to conceal them well	27.6
Nothing, just hoped for the best[a]	20.4
Decided to assess the situation when arrived and avoid them	14.9
Decided to send a spotter ahead to report back police activity	11.6
Got someone else to carry my drugs in for me	8.6
Decided to time my arrival to avoid them	8.6
Decided to try and buy drugs inside the festival	6.8
Decided to take drugs less easily detected by the dogs	5.6
Decided to take drugs before the festival, but not during	3.9
Decided to take a smaller quantity of drugs to the festival	3.9
Decided not to take drugs at all that day	3.4
Other	2.1
Responses among those who suspected dogs and were intending to take drugs:	*n*=647
Planned to conceal them well	47.8
Nothing, just hoped for the best[a]	34.8
Decided to assess the situation when arrived and avoid them	25.8
Decided to send a spotter ahead to report back police activity	19.6
Got someone else to carry my drugs in for me	14.8
Decided to time my arrival to avoid them	14.5
Decided to try and buy drugs inside the festival	11.0
Decided to take drugs less easily detected by the dogs	9.7
Decided to take drugs before the festival, but not during	6.8
Decided to take a smaller quantity of drugs to the festival	6.5
Decided not to use drugs at all that day	4.0
Other	3.4

Note. Multiple responses were allowed therefore the total may exceed 100%.
[a]Only 11% (*n*=74) selected this response option exclusively. This indicates that while they hoped for the best, they also engaged in other precautions.

Correlates of expecting drug dogs and responses to expecting dogs

Further analyses were conducted to identify correlates associated with expecting dogs, and different behavioural responses to expecting dogs which might have implications for HR. Key findings are summarised in

Table 4.46 (see *E.39-E.41* for full statistics).

Correlates of expecting dogs

Younger age (e.g. 18–19 vs. over-25s) and attendance at a one-day festival was associated with greater odds of expecting dogs at the last festival (*Table 4.46*

Table 4.46).

Correlates of deciding to buy inside the festival (*among those expecting dogs and wanting to take drugs)*

Younger age was associated with greater odds of deciding to buy drugs inside, while attendance at a one-day festival was associated with lower odds (*Table 4.46*

Table 4.46

Table 4.46). This is consistent with earlier analysis (*Table 4.26*) which found younger age and attendance at multi-day festivals associated with greater odds of buying drugs inside the festival.

Correlates of deciding not to use at all on the day (*among those expecting dogs and wanting to take drugs)*

Living in Victoria, attending a one-day festival, and having only attended 1–2 recent festivals were associated with greater odds of deciding *not* to use illicit drugs at all on the day (*Table 4.46*

Table 4.46). However, it should be noted that this response was a rare event (n=26) and the model would have suffered from small-sample bias. Thus, the results should be interpreted with caution.

Table 4.46: Correlates of expecting drug detection dogs and responses to expecting dogs at the last festival (adjusted odds ratios and significance levels)

	Expecting dogs	Response: Buying drugs inside	Response: Not using drugs
Age			
16-17	1.871**	19.450**	
18-19	2.207***	10.364*	2.951[a]
20-21	1.621*	13.691*	1.000
22-25	1.255	8.531*	
Over 25	1.000	1.000	
Gender			
Male	#	#	0.620
Female			1.000
Jurisdiction			
VIC	0.839	1.735	3.856**
WA	1.000	1.000	1.000
Festival type			
One-day	1.799***	0.464*	10.573*
Unknown	1.230	0.908	24.344**
Multi-day	1.000	1.000	1.000
Total recent festivals			
1-2	#	#	4.557*
3-4			2.664
5 or more			1.000

Note. Full statistic tables for each analysis is available in the appendices (see *E.39-E.41)*.
[a]Given this was a rare event (n=26), age categories were dichotomised (16-21 vs. >21) to increase cell sizes for analysis. Given likelihood of small sample bias, this analysis should be interpreted with caution.
[#]Dropped from the model because p>0.25. *p<0.050; **p<0.010; ***p<0.001

How did festivalgoers respond to actually seeing drug dogs at the last festival?

Of those who responded (*n*=1674), less than a third reported actually seeing drug dogs at the last festival attended (*Table 4.47*). Of those who reported seeing dogs (*n*=470), two-fifths reported having illicit drugs on their person at the time. Among those who saw dogs and had drugs on their person, almost half reported avoiding the dogs, while a tenth reported consuming some or all of their drugs.

Bivariable analyses revealed no significant differences between genders or jurisdictions in relation to responses to drug dog sightings. However, when merging categories for 'consumed some of the drugs I had' and 'consumed all of the drugs I had', a higher proportion of males than females reported consuming drugs (13% vs. 3%, *p*=0.026). See *Appendix E.42* for full statistics.

Table 4.47: Responses to drug dog sightings at the last festival (% of respondents)

Variable	(%)
Did you see drug detection dogs at the LAST music festival you attended?	*n*=1674
Yes	28.2
No	50.3
Don't know/can't remember	21.5
When you saw the drug detection dogs, did you have illicit drugs on you?	*n*=470
Had illicit drugs on my person	40.4
Did not have illicit drugs on my person	56.6
Don't know/can't remember	3.0
When you saw the drug detection dogs, what did you do?[a]	*n*=189
Nothing, just hoped for the best	64.0[b]
Just avoided the police and drug dogs	47.1
Consumed some of the drugs I had	7.9
Consumed all the drugs I had	1.6
Gave them to a friend (who carried them in for me)	1.1
Dropped them on the ground	0.5
Other	5.3

[a]Multiple responses were allowed so the total may exceed 100%.

[b]Only 44% (*n*=84) selected this response option exclusively. This indicates that while they hoped for the best, they also engaged in other behaviours to avoid detection.

What proportion of respondents did drug dogs identify correctly?

Among those who saw drug dogs at the last festival (including those not in possession of illicit drugs) (*n*=467, missing=5), 10 respondents reported being stopped due to a 'positive identification' from a dog (*Table 4.48*). Of those who had illicit drugs on their person at the time (*n*=190), the proportion positively identified by dogs was 3%. According to the participants who were 'positively identified' by a dog, police did not detect any illicit drugs, despite half of them having illicit drugs on their person at the time.

Fisher's Exact test identified a significant difference between genders in relation to the proportion being stopped due to a positive identification (males=4%; females=1%, p=0.027). Bivariable analyses also revealed a significant difference between jurisdictions in the proportion being stopped (WA=1%, VIC=4%, p=0.039), but not between festival types (one day vs. multi-day). Full statistics are available in *Appendix E.45*.

Table 4.48: Identification by a drug detection dog at the last festival (among those who saw drug dogs there)

Variable	(%)
Stopped by police due to an 'identification' by a drug dog	*n*=467 2.1 (*n*=10)
Stopped by police due to an 'identification' by a drug dog (among those who had illicit drugs on their person at the time)	*n*=190 2.6 (*n*=5)
Outcome of being stopped due to an 'identification':	*n*=10
They DID NOT find drugs (because I had no drugs on me)	50.0
They DID NOT find drugs (even though I had drugs on me)	50.0

Qualitative interviews: Festivalgoer views on drug detection dogs

Participants in the qualitative interviews (*n*=20) were asked to provide their views on drug dogs at festivals. They were asked about their level of support for the strategy, their perceptions of its efficacy, and its influence on their drug-taking behaviour. The overwhelming themes identified were that participants opposed drug dogs, and perceived them to be ineffective and to trigger risky drug use practice.

Ineffectiveness

The primary reason participants believed drug dogs were ineffective was because they did not think they deterred illicit drug use. A key theme identified was that drug dogs were perceived as more of a challenge than a deterrent. One participant explained that while they deterred her from carrying drugs into the festival herself, they did not deter her from using

drugs on the day. She believed this strategy was essentially hopeless, because drugs will continue to get used at festivals, they will just get into the festival in different ways (to avoid risk of detection by dogs). For example:

> *Well I'm sure they stop some people, but not anybody I know. We still get them in, but maybe in different ways. For example, the dogs deter me personally from bringing them in, but I get my boyfriend to take mine in instead or someone else will take a larger amount in so I don't have to. So I think the drugs are still getting in, but perhaps in different ways. And ultimately they can't stop everyone. They will never be able to search everyone's bags properly and most people carry it in their clothes somehow and they can't strip search everyone. The dogs will never be able to single everyone out. When there are large packs of people and maybe fifty per cent of that pack has drugs on them, it might be one unlucky person who gets caught. There will never be a day where there are, say, thirty thousand people at a festival and no one is on drugs. Never.*
>
> *[P02, female, 25yrs, WA]*

> *They would never ever deter me from taking drugs, no. To be honest, I think they only deter a very very very small percentage of people that go to festivals, if any. I've never had anyone say to me they aren't going to take drugs because of sniffer dogs, if people want to take them they are going to do it in my opinion and experience.*
>
> *[P10, male, 19yrs, WA]*

Participants described their strategies for smuggling drugs in, which reduced the efficacy of the strategy. Examples include checking the Facebook page beforehand (where festivalgoers commonly post public warnings about police activity at the event), sending spotters ahead, strategic entrance line selection/positioning, or simply waiting until the dogs had left for the day. Most were of the view that drug dogs could be avoided by taking certain precautions, again suggesting they were viewed as more of a challenge than a deterrent. Nonetheless, one participant conceded there was always some inherent risk:

… If I was to arrive at a festival that had sniffer dogs, I would wait for them to be focused on someone else and strategically choose a line or gate that I could get around them. It is always a risk, but you can also get out of it … You either just suck it up and line up, being careful of your position, or you wait it out until they are completely gone from the area. In the past I have checked the event on the Facebook page to see if there has been posts stating if they are present or not.

[P04, female, 19yrs, WA]

I call friends who I know are already there and get a rundown on the number of dogs versus lines. We then come up with a plan on whether we move ahead, conceal better or wait. We may all drop or rack some lines to reduce the amount we have to carry in, it really depends … but usually there's some in the group not too fussed and will carry extra for those concerned and we can protect those people [the carriers] by putting them in the middle so they are more shielded.

[P20, male, 21yrs, VIC]

Other reasons for perceived inefficacy included the perception dogs can only smell cannabis (thus not carrying cannabis reduces the risk), they have high false positive rates, don't catch higher-level criminal suppliers and manufacturers, and are not cost-effective. For example:

I have only seen the dogs a few times. However, especially being in Perth, we don't expect the dogs can smell anything but weed. And, in all the cases that people have been caught, they always have weed on them as well. I personally just don't bring weed in to avoid a bad situation. I understand that what comes into an event needs to be monitored, however, drugs coming into a music festival will never be stopped. It's a part of the whole lifestyle/day.

[P11, female, 19yrs, WA]

I think it's a colossal waste of money with the potential to impact people quite negatively. From what I have read, the false positive rate is quite high … As far as I can see, the use of sniffer dogs has had limited to no impact on the amount of people taking drugs at festivals.

[P14, female, 35yrs, VIC]

Another participant was more ambivalent. While drug dogs had deterred her, she had always observed high rates of use and availability when they operated. Thus, she rationalised that

deterring a small proportion of drug users was essentially futile. She also believed the amount of resources dedicated to this strategy was disproportionate to the problem, and it was less about reducing harm than enforcing the law. Ultimately, she believed the negatives outweighed the positives:

> *It's hard to say if they're effective or not. I've only seen them at one-day festivals and there always seems to be a heck of a lot of drugs at those festivals!! Based on that, I'd say no they're not. But based on my behaviour, yes they are. For harm reduction, they're probably not effective as people take their drugs before they go in. I guess drugs are illegal so the dogs finding them and stopping that is achieving what it's meant to. I just don't think targeting people who take a few pills or MD [MDMA] caps to a festival is going to stop drugs. I'm not sure what the point of stopping personal users is if the supply remains large. It seems to me like a lot of resources for not a huge problem.*
>
> *[P15, female, 33yrs, VIC]*

Iatrogenic effects/leads to risky drug-related practices

Participants described a variety of iatrogenic effects they had either lived, observed or heard about. The predominant problem discussed was panic consumption, which was linked primarily to fear of receiving a criminal record, followed by not wanting to waste money spent on the drugs or go without drugs at the festival. One participant suggested that, for the drug dog strategy to be consistent with a harm minimisation approach, personal use should be decriminalised. They also highlighted the risk that patrons often present intoxicated and may thus think irrationally when confronted with the threat of detection. For example:

> *I think they are a stupid idea, because if I were ever in the situation where I thought I was about to be caught, when I'm drunk I'm probably going to think it's a smart idea to just take what I have on me there and then, which is a reason why people have died at festivals. I think that if they are going to use sniffer dogs for harm minimisation, they shouldn't put the fear into people of being arrested and getting a criminal record. They should just find the drugs on people and then confiscate them and that's that. The reason myself, and probably many others, would take all their drugs at once is because they are scared of jail and a criminal record. Obviously they don't*

want their drugs to be confiscated either because that would be a waste of money, but for me, that aspect wouldn't make me swallow them all at once.

[P10, male, 19yrs, WA]

Strongly oppose. I've heard a lot of stories of people smashing [i.e. swallowing] their drugs before they get into festivals or once they see the dogs because they're scared of the consequences of being caught with drugs, which is obviously very ineffective due to the risk it imposes on festivalgoers who are carrying. But they've never really affected my decision to carry drugs.

[P06, male, 24yrs, WA]

Other iatrogenic effects described by participants included negative reputational impacts for those searched publicly, and the hostile, traumatic nature of searches. For example:

I had a friend who had his car searched at Dragon Dreaming [festival] last year after a dog was passed over it. He had no substances on him and was subjected to a lengthy search (*and what bordered on bullying from the police) whilst he had his wife and six-month-old baby in the car. I am concerned about the impact of people being identified for a search in public, where they may be seen by other people who form an assumption that they must be carrying drugs.*

[P14, female, 35yrs, VIC]

Another participant described a dangerous concealment method involving a young man swallowing six bagged ecstasy pills. He described his friend's panic while trying to retrieve them. Despite this seemingly distressing experience, this strategy was described as "not hard, just super scary". This case highlights the extreme lengths people go to smuggle drugs into festivals:

I haven't actually dealt with that because usually jumping from sides and everything [i.e. usually jumps fences so bypasses security checks]. However, I know people who do go and do silly stuff just because they are so scared of dogs, like swallowing them and vomiting, or private area strapping, and just all kinds of stuff. Yeah, it's not hard, just super scary. One of the guys was pretty much crying, scared shitless. It's just scary knowing plastic, and whatever it is, is inside you. And he tried to vomit it, but he couldn't get it out. And when he did it was pretty gross and really scary because you can pretty much feel it going up his throat barely making it out. This guy had them in a basic plastic sleeve you usually find a stick of weed in. Sealed airbag plastic thing. Not too sure what it is called ... Not something you want to see … He swallowed like six pills.

[P09, male, 17yrs, WA]

Other iatrogenic effects included preloading/bingeing beforehand, switching from cannabis to more risky synthetic drugs, unfairly targeting and stigmatising certain groups, and creating an atmosphere of anxiety which does not foster HR and negatively impacts the event. For example:

From what I've heard they're not effective, they don't stop people taking drugs so I don't think they should be used and ruin the start of everyone's day because everyone is panicked and anxious about seeing them.

[P03, female, 23yrs, WA]

...from anecdotal evidence unfairly target/profile younger/ethnic patrons.

[P13, male, 34yrs, VIC]

Given the small number of respondents who reported being 'positively identified' by drug dogs in the quantitative survey (n=10), it was not possible to investigate claims of unfair targeting.

Drug-checking

As highlighted in the literature review, in recent years, drug-checking at Australian festivals has been hotly debated. While advocates have argued that drug-checking has been operating successfully in European countries for many decades and can decrease the risk of drug-related harms, opposing parties have argued that the strategy is not feasible in Australia and will increase risk. Arguments about feasibility have since been addressed by two successful trials at festivals in the ACT (2018–19) (The STA-SAFE consortium, 2018). In relation to claims these services will increase the risk, accumulating evidence suggests these services can successfully deter the use of high-risk drugs (Barratt, Bruno, et al., 2018; Byrne, Gock, Cowling, & Faunce, 2018; Gerace et al., 2019; Johnston et al., 2006; Measham, 2019; Mema et al., 2018; Sage, 2016; The STA-SAFE consortium, 2018). Despite increasing support and evidence of efficacy, only one Australian jurisdiction has trialled drug-checking at the time of writing. To add to the evidence base for this intervention, this section addresses the following questions (in relation to the last festival attended):

- How confident were respondents in their knowledge of the content of their drugs?
- How likely is it that respondents would have accessed a drug-checking service had it been available?
- What features would be favourable in terms of service design?
- How would an undesirable test result have influenced their drug-taking behaviour?

How confident were festivalgoers about the content of their drugs at the last festival attended?

Respondents who reported using an illicit drug at the last festival were asked a range of questions to determine whether a drug-checking service would have been a desirable and worthwhile intervention. The first step was to determine the extent to which they were concerned about and confident in the content of their drugs. Given past use of drugs from the same batch is likely to affect these responses, respondents were also asked whether they had tried the drugs before; the results are presented accordingly (*Table 5.63)*. Those who had only used non-prescribed pharmaceuticals, solvents (e.g. nitrous oxide) and/or cannabis were excluded from this analysis.

Those reporting past use of drugs from the same batch reported higher levels of confidence and lower levels of concern about the content. However, even among those who reported no prior use, 59% reported being very confident or somewhat confident, while 45% were concerned or very concerned. Only 5% reported being ‘very concerned’.

Table 4.49: Concern about and confidence in illicit drug content (excluding solvents, pharmaceuticals and cannabis) in association with the last festival attended

	Used from same 'batch'	Not used from that 'batch'	Total	*p*
Concern re drug content (%)	*n*=653	*n*=131	*n*=784	
Very concerned	4.3	5.3	4.5	
Somewhat concerned	23.7	39.7	26.6	0.003**
Not very concerned	41.8	29.8	39.8	
Not concerned at all	28.9	24.4	28.2	
Different concern for each drug	1.2	0.8	1.1	
Confidence re drug content (%)	*n*=653	*n*=131	*n*=784	
Very confident	30.9	13.7	28.1	
Somewhat confident	53.4	45.0	52.0	<0.001***
Not very confident	11.6	22.9	13.5	
Not confident at all	2.5	16.0	4.7	
Different concern for each drug	1.5	2.3	1.7	

Note. Respondents were excluded from the analysis if they were not sure if they had used drugs from the same batch, and if they had only used cannabis, solvents or pharmaceutical drugs. *p<0.050; **p<0.010; ***p<0.001.

Correlates of concern/confidence about ecstasy/MDMA content at the last festival

Given ecstasy/MDMA was by far the most commonly reported drug, further analyses were conducted to identify characteristics associated with concern and confidence about content. Key findings are summarised in *Table 4.50* (see *Appendix E.47* for full statistics). Male gender, past use of drugs from the same batch and more frequent ecstasy use were associated with lower odds of concern about content. Male gender, living in Victoria, past use of drugs from the same 'batch' and more frequent recent ecstasy use were associated with greater odds of being confident about the content.

Table 4.50: Correlates of confidence in, and concern about, drugs sold as 'ecstasy/MDMA' (adjusted odds ratios and significance levels)

	Concerned about ecstasy content	Confident in knowledge of ecstasy content
Age		
16-17		1.253
18-19	#	1.698
20-21		1.312
22-25		1.566
Over 25		1.000
Gender		
Male	0.720*	2.295***
Female	1.000	1.000

	Concerned about ecstasy content	Confident in knowledge of ecstasy content
Jurisdiction		
VIC	#	1.726**
WA		1.000
Festival type		
One-day	#	#
Unknown		
Multi-day		
Past use from same 'batch'		
Don't know	0.390*	1.409
Yes	0.491**	3.504***
No	1.000	1.000
Frequency of past year ecstasy use		
Once a week or more	0.462**	3.004**
About once a month	0.425***	1.695*
Every few months	0.546**	2.139**
Once or twice a year	1.000	1.000

Note. Response options for concern/confidence about drug content were dichotomised (not very and not at all concerned/confident= 0; very and somewhat concerned/confident=1). *p<0.050; **p<0.010; ***p<0.001
#Dropped from the model because p>0.25.

Summary

How concerned/confident were participants about the content of their illicit drugs (excluding cannabis, solvents and pharmaceuticals)?

Key findings

83. Some 68% of those who used unregulated illicit drugs at the last festival reported they were *not* concerned about the content and 80% reported confidence in their knowledge of the content. Only 5% reported being very concerned and not at all confident.

84. Male gender, use of drugs from the same batch and more frequent past-year ecstasy use were associated with lower odds of being concerned about the content and greater odds of having confidence in the content of their ecstasy. Living in Victoria was also associated with greater odds of confidence in the content.

How likely is it that respondents would have used a drug-checking service at the last festival they attended, and what are the barriers?

The second step in investigating the feasibility of drug-checking services involved asking respondents how likely they would have been to use it had it been available at the last festival they attended. Despite concern about drug content being low (31%), a large majority reported they would definitely or probably have used a drug-checking service; very few respondents said they definitely would not have (*Table 4.51*).

The most commonly reported barrier was fear of police watching them, stopping them or pursuing them afterwards (*Table 4.51*). Many also reported they trusted their source or past experiences with that batch so didn't think it was necessary. Fear of negative treatment/judgment by staff was also common.

Table 4.51: Likelihood respondents would have used a drug-checking service had one been available for the last festival attended

	(%)
Would you have accessed a service?	*n*=841
Definitely	61.1
Probably	20.6
Maybe	10.7
Probably not	6.1
Definitely not	1.1
Don't know	0.5
For those who did not select 'definitely', why not?	*n*=324
Fear of police watching me, stopping me and/or pursuing me after	52.2
I trust my source so not necessary	34.9
Because I had already used/tried drugs from that batch so knew what to expect	27.8
Because someone I know had already tried that batch so knew what to expect	26.5
Fear of negative treatment/judgment by staff	22.5
Fear of other people seeing/social stigma/embarrassment	17.3
Don't care that much about the drug content	14.5
I wouldn't want to miss any of the festival	13.6
Other	4.0

Note. Among those who reported using an illicit drug at the last festival attended (excluding those who only reported using solvents, pharmaceuticals and cannabis).

Correlates of likelihood of using a drug-checking service if available at the last festival

As evident in *Table 4.52*, no variables in the model significantly predicted likelihood to have accessed drug-checking among those reporting ecstasy use at the last festival attended. However, male gender bordered on being significantly associated with higher odds of doing so. Thus, further analysis was performed on various different aggregations of the data (‘definitely’ versus ‘definitely not/probably not’; ‘definitely’ versus ‘definitely not’; ‘definitely/probably/maybe’ versus ‘probably not/definitely not’. Regardless of the split, no significant results were identified. A complete case analysis also returned no significant results.

Table 4.52: Correlates of definite or probable likelihood of using a drug-checking service among those reporting ecstasy use associated with the last festival attended (multivariable logistic regression – MI model)

Variable	Level	N	Would access	Would not	Bivariable			Multivariable		
			82.4%	17.6%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	91	82.4	17.6	0.923	0.414-2.061	0.846	1.141	0.494-2.632	0.758
	18-19 years old	204	85.8	14.2	1.189	0.582-2.424	0.635	1.359	0.652-2.830	0.413
	20-21 years old	196	84.7	15.3	1.090	0.536-2.218	0.812	1.136	0.550-2.350	0.730
	22-25 years old	213	76.5	23.5	0.642	0.327-1.260	0.198	0.674	0.339-1.341	0.261
	Over 25 years old	79	83.5	16.5	1.000			1.000		
Gender	Male	466	84.5	15.5	1.439	0.994-2.082	0.054	1.459	1.000-2.129	0.050
	Female	317	79.2	20.8	1.000			1.000		
Jurisdiction	VIC	390	83.8	16.2	1.224	0.847-1.770	0.282	#		
	WA	393	80.9	19.1	2.000					
Festival type	One-day	524	81.3	18.7	0.749	0.482-1.162	0.197	0.711	0.449-1.126	0.145
	Inconsistent selection	48	81.3	18.8	0.746	0.329-1.693	0.484	0.650	0.280-1.513	0.318
	Multi-day	211	85.3	14.7	1.000			1.000		
Used drugs from that 'batch' previously	Don't know	50	70.0	30.0	0.471	0.219-1.013	0.054	0.492	0.226-1.070	0.073
	Yes	608	83.2	16.8	1.002	0.599-1.676	0.995	1.032	0.613-1.746	0.898
	No	125	83.2	16.8	1.000			1.000		
Frequency of past year ecstasy use	Once a week or more	96	81.3	18.8	0.807	0.397-1.640	0.554	#		
	About once a month	310	82.9	17.1	0.903	0.510-1.610	0.727			
	Every few months	256	81.3	18.8	0.807	0.451-1.444	0.470			
	Once or twice a year	121	84.3	15.7	1.000					

Note. Response options for likelihood to access a drug-checking service at the last festival were dichotomised (definitely, probably and maybe=1; probably not and definitely not=0; don't know=excluded). A complete case analysis had 32% (n=254), which were deemed MAR. MI was used to address missing data for this analysis. Model $\chi 2$ (9)=18.370, p=0.031. Adjusted R square=0.023 (Cox & Snell), 0.038 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.959; n=783. #Dropped from the multivariable model because p>0.25.

Summary

How likely were respondents to have accessed a drug-checking service had it been available at the last festival attended?

Key findings

85. Despite high levels of confidence (70%) about the content and low levels of concern (29%), 80% reported they would have accessed a drug-checking service. Only 1% said they definitely would not have.

86. The most common reason for not definitely accessing a service was fear of police watching them, stopping them or pursuing them afterwards (51%), followed by trusting their source so didn't think it was necessary (34%), had tried drugs from that batch so knew what to expect (26%), or they trusted a friend's experience with drugs from that batch (25%).

87. In the multivariable analysis, no variables significantly predicted likelihood of ecstasy users reporting willingness to use a hypothetical drug-testing service at the last festival.

What features would be desirable in a drug-checking service?

Questions were asked to determine the preferred design features of a drug-checking service.

Preferred location

Most reported they would consider both onsite and offsite services (*Table 4.53*). However, some said they would only consider onsite or offsite; only 5% said they would not consider any service. When asked about their preferred option, almost half reported onsite and about a third reported offsite.

Table 4.53: Preferred locations for accessing a drug-checking service

	Total
Locations would access a service	*n*=940
I would consider both onsite and offsite options	60.4
Onsite (at music festivals)	20.4
Offsite (before the festival or in the days/weeks leading up to it)	14.0
I would not consider using the service at all	5.1
Preferred location	*n*=887
Onsite (at music festivals)	48.4
Offsite (before the festival or in the days/weeks leading up to it)	33.6
No preference	13.6
Don't know	4.4

Correlates of preference for an offsite drug-checking service

Preference for one-day festivals was associated with greater odds of preferring offsite drug-checking, while living in Victoria was associated with lower odds (*Table 4.54*).

Table 4.54: Correlates of preference to access an offsite drug-checking service (multivariable logistic regression)

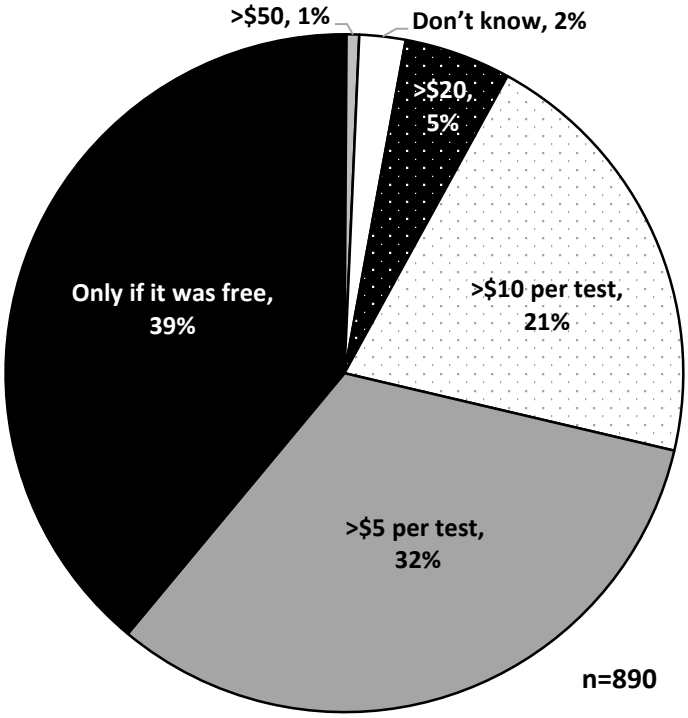
Variable	Level	N	Offsite	Onsite	Bivariable			Multivariable		
			40.8%	59.2%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	85	47.1	52.9	1.548	0.838-2.860	0.163	0.892	0.464-1.717	0.733
	18-19 years old	181	45.3	54.7	1.443	0.849-2.451	0.175	1.006	0.572-1.770	0.982
	20-21 years old	180	35.6	64.4	1.961	0.562-1.644	0.885	0.854	0.485-1.503	0.583
	22-25 years old	192	40.6	59.4	1.192	0.703-2.019	0.514	1.157	0.665-2.014	0.606
	Over 25 years old	85	36.5	63.6	1.000			1.000		
Gender	Male	429	38.0	62.0	0.752	0.556-1.017	0.064	0.749	0.545-1.031	0.077
	Female	294	44.9	55.1	1.000			1.000		
Jurisdiction	VIC	379	28.5	71.5	0.335	0.246-0.455	<0.001***	0.438	0.306-0.626	<0.001***
	WA	344	54.4	45.6	1.000			1.000		
Preferred festival type	No preference	39	53.8	46.2	2.935	1.499-5.747	0.002*	2.344	1.168-4.701	0.016*
	One-day	343	51.6	48.4	2.682	1.954-3.681	<0.001***	1.852	1.282-2.674	0.001*
	Multi-day	341	28.4	71.6	1.000			1.000		

Note. Response options were dichotomised (prefer onsite=0; prefer offsite=1; no preference=excluded). Model $\chi 2$ (8)=68.167, p<0.001. Adjusted R square=0.090 (Cox & Snell), 0.121 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.984; n=723. *p<0.050; **p<0.010; ***p<0.001.

Acceptable cost

About two-fifths of respondents reported they would only access the service if it were free. However, about a third would pay up to $5 (*Figure 4.51*).

Figure 4.51: Acceptable cost for accessing a drug-checking service (among illicit drug users who would consider accessing a service)



Correlates of willingness to pay to access a drug-checking service

Being aged 16–17 and 18–19 were associated with lower odds of willingness to pay than being over 25 years old (*Table 4.55*).

Table 4.55: Correlates of willingness to pay to access a drug-checking service (multivariable logistic regression)

Variable	Level	N	Would pay	Would not pay	Bivariable			Multivariable		
			60.9%	39.1%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	105	49.5	50.5	0.382	0.214-0.682	0.001*	0.398	0.221-0.717	0.002*
	18-19 years old	230	57.0	43.0	0.515	0.309-0.856	0.010*	0.530	0.317-0.885	0.015*
	20-21 years old	222	64.9	35.1	0.718	0.428-1.203	0.208	0.722	0.431-1.210	0.216
	22-25 years old	229	61.6	38.4	0.623	0.374-1.039	0.070	0.626	0.375-1.044	0.073
	Over 25 years old	100	72.0	28.0	1.000			1.000		
Gender	Male	521	62.2	37.8	1.135	0.863-1.492	0.366	#		
	Female	365	59.2	40.8	1.000					
Jurisdiction	VIC	456	63.6	36.4	1.258	0.960-1.648	0.096	1.138	0.860-1.506	0.364
	WA	430	58.1	41.9	1.000			1.000		
Preferred festival type	No preference	62	61.3	38.7	0.944	0.545-1.635	0.836	#		
	One-day	424	59.2	40.8	0.865	0.653-1.145	0.310			
	Multi-day	399	62.7	37.3	1.000					

Note. Response options were dichotomised (would only access if it were free=0; were willing to pay something=1). Model $\chi 2$ (5)=14.77, p=0.011. Adjusted R square=0.017 (Cox & Snell), 0.022 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.568; n=886. #Dropped from the model because p>0.25. *p<0.050; **p<0.010; ***p<0.001.

Summary

What features would be desirable in a drug-checking service?

Key findings

88. The majority reported they would consider both onsite and offsite service options. However, 20% would only consider onsite and 14% would only consider offsite.

89. After controlling for other variables, a preference for multi-day festivals and living in Victoria was associated with lower odds of having a preference for offsite drug-checking.

90. About two-fifths would only access the service if it were free. Roughly a quarter would pay more than $5 and only 6% would pay more than $10.

91. After controlling for other variables, younger age (16–19) was associated with lower odds of willingness to pay.

How would drug-checking results have influenced their behaviour?

Respondents who used an illicit drug at the last festival were asked how they would have responded to drug-checking results which indicated their drugs did not contain what they thought. Almost a fifth reported they would not have consumed the drugs under any circumstances and three-fifths reported they would not have consumed the drugs if they contained something very dangerous. Most would have also warned their friends. Concerningly, a few respondents who entered 'other' responses reported they would sell the drugs on. The full range of responses is provided in *Table 4.56*.

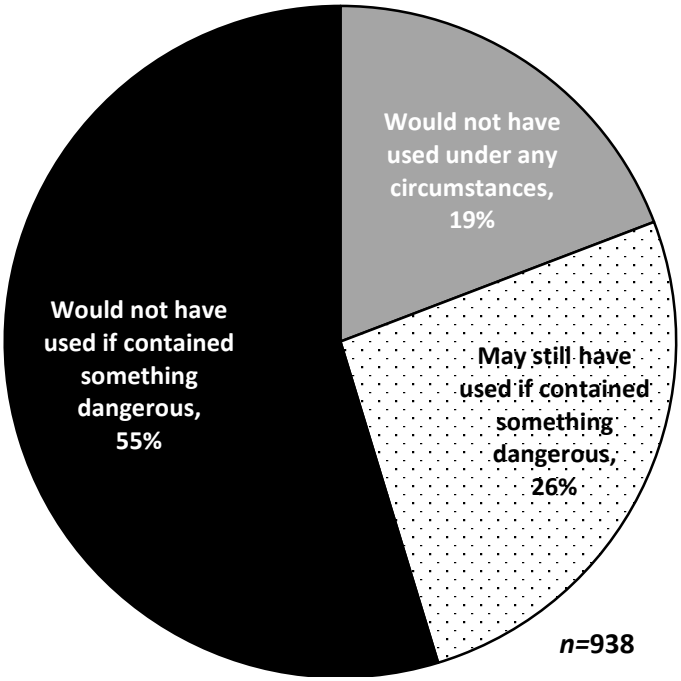
Table 4.56: Responses to a drug-checking test result indicating the drugs did not contain what they thought (% of respondents)

	***n*=938**
I would not have consumed it under any circumstances	19.2
I would not have consumed it if the results indicated it contained something very dangerous	60.8
I would not have consumed it if the results indicated it contained something unknown	31.0
I would have consumed it if it contained another known recreational drug	35.1
I would have researched the content and considered still using it	40.1
I would have warned my friends	59.6
I would have informed the supplier	37.4
I would have consumed less	10.2
I would have been more cautious	39.7
Don't know	4.9
Other	1.5

Note. Multiple response options were allowed and no response options were made exclusive (i.e. a respondent could select 'would not contain under any circumstances' and 'would not consume if contained something dangerous').

To get a clearer view, responses listed in *Table 4.56* were recoded into three mutually exclusive categories (*Figure 4.52*). Overall, these results suggest a quarter of respondents may have put themselves at risk of harm despite being warned by a drug-checking service. However, of these 245 respondents, 44% reported they would have been more cautious and 12% reported they would have consumed less.

Figure 4.52: Responses for drug-checking results recoded into three categories



Correlates of reporting they would not have consumed drugs at all or if contained something dangerous

As evident in *Table 4.57*, being aged 16–17 was associated with lower odds of reporting they would not consume their drugs. Put differently, 16–17-year-olds were at greater odds of potentially still consuming their drugs despite being advised they contained something dangerous.

Table 4.57: Correlates of belief would not have consumed drugs at all or if contained something dangerous (multivariable logistic regression)

Variable	Level	N	Would not use	May still use	Bivariable			Multivariable		
			74.0%	26.0%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	116	63.8	36.2	0.451	0.245-0.831	0.011*	0.456	0.243-0.855	0.014*
	18-19 years old	242	72.7	27.3	0.683	0.391-1.192	0.179	0.695	0.394-1.226	0.209
	20-21 years old	233	78.1	21.9	0.914	0.516-1.618	0.757	0.888	0.498-1.582	0.686
	22-25 years old	240	73.8	26.3	0.720	0.411-1.258	0.248	0.694	0.395-1.220	0.205
	Over 25 years old	103	79.6	20.4	1.000			1.000		
Gender	Male	541	74.3	25.7	1.041	0.774-1.399	0.791	#		
	Female	393	73.5	26.5	1.000					
Jurisdiction	VIC	477	76.1	12.2	1.252	0.934-1.678	0.132	1.223	0.869-1.720	0.249
	WA	457	71.8	13.8	1.000			1.000		
Festival type	One-day	614	74.6	25.4	0.974	0.696-1.362	0.876	0.594	0.342-1.030	0.063
	Inconsistent/unknown	63	63.5	36.5	0.577	0.321-1.036	0.065	0.836	0.566-1.236	0.370
	Multi-day	257	75.1	24.9	1.000			1.000		

Note. Responses were dichotomised (those who did not select 'would not consume under any circumstances' or 'would not contain if contained something dangerous'=0; those who did=1). Model $\chi 2$ (7)=14.530, p=0.043. Adjusted R square=0.015 (Cox & Snell), 0.023 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.744; n=934. #Dropped from the model because p>0.25. *p<0.050; **p<0.010; ***p<0.001.

Qualitative views on drug-checking services

Participants in the pre-survey interviews (*n*=20) were asked to describe their views on/level of support for drug-checking, likelihood of using it and the potential influence of the results.

Level of support and impact

There was unanimous support for drug-checking, with many commenting on the types of positive impacts it could have. However, a couple of participants expressed concern about potential adverse effects, and one participant believed festivals may not be ideal service locations.

The main positives described related to the opportunity, and encouragement, to make more informed decisions about drug use. One participant described his frustration with festivalgoers who he believed naively use drugs with little awareness about purity variation and with little regard for potential consequences. His frustration seemed to stem from concern that drug-related deaths may jeopardise future events:

> *Yes, I think it an excellent idea because I hate seeing fricken [freaking] people who just buy pills and take them without knowing the consequences. When I see a person die from drug overdose at festival it really pisses me off because people think ecstasy is all the same, but most pills can contain substances such as speed, ketamine, etc. They all think it's just MDMA, but it isn't. It really ruins the fun when someone dies because the festival organiser will consider not doing it again because they don't want to risk a person life.*
>
> *[P07, male, 19yrs, WA]*

Another participant believed implementing testing could help 'normalise' drug-checking, which was perceived as a positive step towards HR:

> *I do believe that onsite testing would help to establish pill testing as a normal behaviour amongst users.*
>
> *[P13, male, 34yrs, VIC]*

One participant reflected on her experience with using reagent testing kits, noting results had led her to discard undesirable drugs. She claimed to routinely test drugs pre-purchase and avoid suppliers who refuse pre-purchase testing. This case highlights some primary and secondary impacts that awareness of and engagement in drug-checking could have on the ways people use and obtain drugs:

... yes, I think it would be great if this was implemented at festivals. I've been using reagent testing myself for about eight years. I have thrown things out that didn't test as they were supposed to. And now we try to test before buying and avoid buying from people who won't let us test stuff.

[P14, female, 35yrs, VIC]

She went on to add that drug-checking could positively influence the wider drug market by 'exposing' misrepresented drugs and thus reducing market demand/supply of these drugs:

... And I actually think that if it became more widespread there is the potential for positive impact on the market, e.g. people refuse to buy without testing or if they do purchase something from someone they know and then test it and the results are not as expected, they may feed this back to their dealer – I know I would!

[P14, female, 35yrs, VIC]

Other perceived positives included the opportunity for professionals to provide brief interventions and promote HR behaviours, disseminate warnings and monitor the market for the purpose of informing clinical management. For example:

The other aspect that I like about testing is that it provides an opportunity for the tester to open up discussion with the user whilst they wait for test results – about precautions they can take, pointing out other test results they have on display, promoting harm reduction messages. And I think it offers great potential for medical practitioners to understand more about what is on the market and potentially risky adulterants.

[P14, female, 35yrs, VIC]

I think if more drug-checking occurred, we would get more warnings about which pills we shouldn't take which can only be a good thing? Then the word would spread of course.

[P17, female, 27yrs, VIC]

Despite unanimous support, a few participants expressed concern about potential adverse impacts. For example, two suggested there was potential for public desensitisation to warnings about dangerous drugs. However, one participant based that view on the premise that drugs identified as dangerous would be confiscated, which could dilute trust in and engagement with services. For example:

I did actually hear about this and had major discussion about this with some boys. I think it is a really good idea, but not everyone would do it or even take it because what if they are just 'ALL' not safe and they just end up confiscating it all anyway, people wouldn't get replaced with another pill? So that to me would work for a while and then later on slowly decrease in the amount of people. I think it's good in a sense for those people who actually care a lot about what they take and value their safety, but others would just be thinking about the money …

[P09, male, 17yrs, WA]

Another participant suggested there could be some misuse of the service with regards to dosage results being used for competitive purposes. As noted in the literature review, this type of competitive behaviour has already been linked to one drug-related festival death:

Yes, I think this is very interesting. However, I'm not sure if it would end positively or negatively. As I can see people who would go check themselves to see if they need more or not or make it a competitive thing against friends.

[P11, female, 19yrs, WA]

Lastly, a participant expressed concern about reputational impact if seen accessing the service onsite. To mitigate this risk, she expressed a preference for offsite services. She also suggested many could present to onsite services intoxicated, which could limit their capacity to engage with the service, retain and consider the information. She also suggested the novelty of the service could negatively detract from the festival itself:

In terms of pill testing [services], I think they'd be good, but I don't know if they should be at the festival, in the days before the festival or both. My boyfriend and I were saying that we don't really want others seeing us there and knowing we take drugs. There is still going to be a stigma and perhaps fear that undercovers [police] are watching. Also a lot of people will take a pill before they get there so what good is it testing it after you've taken it? People are also drunk at the event and probably don't want to miss acts. I think there should just be a place to go anytime, not really at the event. It will be a huge novelty at first as well so I'm not sure how it would affect the event or people's drug taking.

[P02, female, 25yrs, WA]

Likelihood to access

While 85% of respondents reported they would use onsite drug-checking, some said they would first need some assurances (e.g. no legal risks, *n*=7, 35%; that the process was completely transparent, *n*=2, 10%). For example:

> *I support pill testing [services]. From what I hear, they are effective. I would use it as long as it was definitely safe from legal ramifications. I'm not really sure how that would work. I'd probably send someone else to test it for me ha ha probably send all the guys. I don't know how comfortable I would feel doing it, I'd be more comfortable with someone else doing it for me. At least the first time, so I can see how it all works, see others using it and no risks.*
>
> *[P04, female, 19yrs, WA]*

A few (15%) were more ambivalent. A participant expressed confidence in his existing methods of acquiring knowledge, although conceded they had limitations:

> *Hmmm not sure. As I said earlier, I use Pillreports. I understand that's not entirely accurate and you could even have a different pill altogether to the one in the report that looks exactly the same, but I've found it to be pretty accurate.*
>
> *[P01, male, 26yrs, WA]*

The following participant also expressed confidence in his existing methods. Although, he believed drug-checking had numerous benefits, particularly for more novice users. One hesitation that recurred in their response was not wanting to waste time, a concern which warrants consideration when considering service design/delivery:

> *I personally would utilise it maybe once just to witness the process and perhaps find out some stuff about the drugs I'm consuming that I maybe didn't know already. But I personally probably wouldn't waste my time doing it because I already take the necessary precautions myself with Pillreports, reliable sources etc. I say waste of time for lack of a better phrase, I think they're a great idea for people who have no idea what they may have bought the previous day or whatever. I think they could potentially save lives, especially for people who may have bought something dangerous. It also is a great idea because it encourages people to be more open and careful about their drug use, rather than giving people the idea that if they bring drugs to a festival, they're going to get fucked by the long dick of the law. I also say waste of time because given the amount of people who go to*

festivals and the amount of personnel they would have available to test people's drugs, I could be waiting for a really long time just to get drugs tested and be told something I probably already know – that it's relatively safe to take. Although, I have no idea how these testing facilities are operated and set up. It could be a much quicker process than I initially thought.

[P06, male, 24yrs, WA]

Two participants mentioned cost as a deciding factor, noting they would pay less than $10. While they recognised they were putting a low price on their personal safety, they maintained the view that price would deter them:

I think it's a great idea, but honestly I'm not sure I'd use it. If it was free, I would use it for sure. If the price was under $10 I probably would. If I tested drugs and they had PMA or something else awful in it, I would throw it out. Knowing what I was taking would certainly influence my behaviour and also in some cases prepare me for what I was taking. Yeah, if I pay $20 for a point of md [MDMA], I don't want to pay that much to test it. I know it's silly because it's what I'm putting into my body and I'm putting a pretty low price on finding out what it is, but price would deter me.

[P15, female, 33yrs, VIC]

Consistent with earlier comments, three participants (15%) reported a preference for offsite checking. Perceived benefits included greater privacy, not missing performances, time to replace drugs, and capturing those who consume drugs before arriving. For example:

Probably offsite to be honest … at least then I have some time to get another one [pill] instead if I need.

[P09, male, 17yrs, WA]

Because I'd rather not be seen in full view of the festival me walking into a pill testing tent. Just in case someone from work is there. Everyone has a camera these days. You never know.

[P12, male, 19yrs, VIC]

Influence of test results

Most participants (95%) believed test results would influence their drug-taking behaviour. Responses were coded into the following categories: would discard if advised they contained

something particularly dangerous (*n*=8, 40%); would research and then re-evaluate; may still consume another known recreational drug; would exercise more caution; would change their buying practices (pre-purchase testing or feedback to supplier); may become desensitised to warnings/unaffected. The following excerpt is from a participant who said he would discard their drugs if they contained something very dangerous:

> *I would 100% use them [a drug-checking service] if they were there. And if they found one of my pills to have PMA or anything harmful, I wouldn't take it for sure. I think most the people that die from taking ecstasy tablets probably isn't from MDMA itself, but from the other harmful chemicals they put in them. So I think if people were aware of what chemicals will kill them, and knew were able to find out easily what was in their pill, they would only take it if they knew it was safe. You'd have to be pretty stupid to take it after they have told you it could kill you.*
>
> *[P10, male, 19yrs, WA]*

The following expert illustrates a case in which a festivalgoer would research the content and re-evaluate. In recognition of the unregulated nature of the illicit drug market, they would not automatically rule the drug out. They also alluded to distrust of the advice provided by the hypothetical service:

> *Not necessarily. Unless I was told it contained something extremely harmful. If I found out it had more speed instead of MDMA though, for example, I'm still taking that. Especially if I've paid $35 for a pill. I imagine most pills would contain something I didn't realise. I would probably find out what it was and if it was harmful from the internet (i.e. not the tester as I assume they would advise that all drugs are harmful).*
>
> *[P01, male, 26yrs, WA]*

Similarly, another participant explained that while she would not care for the drug-checking organisation's advice, she would be interested in the scientific data. She also suggested awareness of content could have a psychological benefit when using:

> *… Personally I wouldn't go and read facts about ecstasy and what the drug association's view are (I know some people would), but if they had pill checker or pill report stating specific details, it would be very useful … Yes I think it would influence behaviour, you would be more cautious or comfortable knowing.*
>
> *[P04, female, 19yrs, WA]*

The following excerpt illustrates the potential for a restrictive deterrent effect, in that while the respondent may still use the drug, he would reconsider dosage:

> *Hahaha I wrote methamphetamine next to PMA and then backspaced it because I'm not entirely sure that I wouldn't take it ... But if I had, for example, 7 pills and they all contained methamphetamine, I would definitely reconsider how much I was going to take.*
>
> *[P10, male, 19yrs, WA]*

Lastly, a participant highlighted risks regarding desensitisation to warnings:

> *I'm not sure if it would directly affect my behaviour towards the pill – knowing what's in it. It'll probably become like smoking and you just block out all the negative aspects …*
>
> *[P09, male, 17yrs, WA]*

Summary

How would drug-checking results (indicating the drugs did not contain what they thought) have influenced respondents' behaviour?

Key findings

92. About two-fifths reported they would not have consumed the drugs under any circumstances and a further 55% reported they would not have if the drugs contained something dangerous. Thus, the remaining 26% may still have used the drugs despite being advised of the risk. However, 44% of these participants reported they would have been more cautious and 12% would have used less.

93. Three-fifths would have warned friends.

94. After controlling for other variables, being aged 16–17 was associated with greater odds of reporting considering consuming their drugs despite being advised they contained something dangerous.

95. The qualitative interviews raised some issues to consider regarding potential adverse effects relating to risk of service misuse (for competitive purposes) and desensitisation to drug warnings.

Drug amnesty bins

While not as widely debated as previously considered interventions, drug amnesty bins could provide an alternative to panic consumption (Preiss, 2016). This strategy involves placing an bin near festival entrances for patrons to safely dispose of drugs without fear of prosecution. In 2009, this intervention was trialled in WA as an Australian first following the death of Gemma Thoms, who reportedly panicked after seeing dogs (Guest, 2009). However, according to media reports, it was very poorly received, potentially due to poor design/delivery. To date, no known studies have investigated this strategy among festivalgoers. To address this gap, this section answers the following questions:

- How likely were respondents to have thrown their drugs into an amnesty bin if they were concerned about detection at the last festival attended?
- What were the potential barriers to their use?

How likely were respondents to have discarded their drugs into a drug amnesty bin?

Respondents who reported using illicit drugs at the last festival were asked if they would have discarded their drugs into a drug amnesty bin had they been concerned about police detection. Less than a quarter (24%) said they definitely or probably would have (*Table 4.58*).

The most commonly reported reason for not discarding drugs were not wanting to waste the money spent on the drugs (*Table 4.58*). Other common responses were that not having drugs would make the festival less enjoyable, and concern about police watching. The main 'other' responses involved distrust with the process and handling of drugs. For example:

> *I distrust what police may do with the data collected from bin contents (fingerprints, etc.). I would rather run the risk of taking drugs I had arrived intending to take – and I disagree fundamentally with the principle of "amnesty bins"…*
>
> *[QP293, male, 23yrs]*

Bivariable analysis revealed females were more likely to report concern about policing watching/pursuing them (p=0.007) and embarrassment from others watching/judging them (20% vs. 13%, p=0.012). (see *Appendix E.51* for full statistics)

Table 4.58: Likelihood to have discarded drugs into a drug amnesty bin at the last festival attended had they been concerned about detection (among those who used an illicit drug)

	Total %
Would you have thrown your drugs into the bin?	*n*=936
Definitely	9.4
Probably	14.2
Maybe	24.4
Probably not	33.3
Definitely not	16.2
Don't know	2.5
Why did you not select 'definitely'?	*n*=846
Don't want to waste the money spent on the drugs	79.8
Wouldn't do it unless I was extremely concerned that I would get caught	60.3
Would make the festival less enjoyable	39.5
Too much effort getting the drugs	31.1
Concerned about police watching me, stopping me and/or pursuing me	28.8
Depends which drugs I had on me	21.5
Embarrassment, judgment or stigma of others seeing me	15.7
Don't know	1.9
Other	1.5

Correlates of respondents believing they would have discarded drugs into a drug amnesty bin if concerned about detection at the last festival attended

No variables in the model significantly predicted likelihood of discarding drugs in a drug amnesty bin (*Table 4.59*).

Table 4.59: Correlates of likelihood of discarding drugs into a drug amnesty bin had they been concerned about detection at the last festival attended (multivariable logistic regression)

Variable	Level	N	Would have	Would not have	Bivariable			Multivariable		
			32.2%	67.8%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	74	25.7	74.3	0.555	0.275-1.122	0.101	0.603	0.295-1.230	0.164
	18-19 years old	182	29.1	70.9	0.660	0.373-1.168	0.153	0.697	0.392-1.239	0.218
	20-21 years old	172	41.3	58.7	1.130	0.645-1.980	0.670	1.150	0.655-2.018	0.626
	22-25 years old	179	26.8	73.2	0.589	0.331-1.048	0.072	0.588	0.330-1.047	0.071
	Over 25 years old	73	38.4	61.6	1.000			1.000		
Gender	Male	400	30.5	69.5	0.828	0.598-1.146	0.255	#		
	Female	280	34.6	65.4	1.000					
Jurisdiction	VIC	336	35.1	64.9	1.302	0.943-1.798	0.108	1.259	0.900-1.760	0.179
	WA	344	29.4	70.6	1.000			1.000		
Festival type	One-day	444	31.8	68.2	0.961	0.668-1.381	0.829	#		
	Inconsistent selection	46	34.8	65.2	1.101	0.559-2.170	0.781			
	Multi-day	190	32.6	67.4	1.000					
Total recent festivals	1-2	249	33.7	66.3	1.200	0.798-1.805	0.381	#		
	3-4	243	32.5	67.5	1.135	0.752-1.714	0.546			
	5 or more	188	29.8	70.2	1.000					

Note. Response options were dichotomised (definitely and probably=1; probably not and definitely not=0, maybe/don't know=excluded). Model $\chi 2$ (9)=32.000, p<0.001. Adjusted R square=0.046 (Cox & Snell), 0.064 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.936; n=680. #Dropped from the multivariable model because p>0.25.

Summary

How likely were respondents to have discarded their drugs into a drug amnesty bin if they were concerned about detection at the last festival attended?

Key findings

96. Of all respondents who used an illicit drug at the last festival, less a tenth reported they would have definitely discarded their drugs into a drug amnesty bin had they been concerned about detection. A further 14% said they probably would have.

97. The three most commonly reported reasons for using drug amnesty bins were because they would not have wanted to waste the money spent on the drugs (80%), they would not have used a bin unless they were extremely concerned about detection (60%), and because doing so and therefore having no drugs would have made the festival less enjoyable (40%).

98. Many also reported concern about police watching/pursuing them (29%).

99. In the multivariable analyses, no variables significantly predicted likelihood to discard drugs in a drug amnesty bin.

Attitudes towards policies/approaches

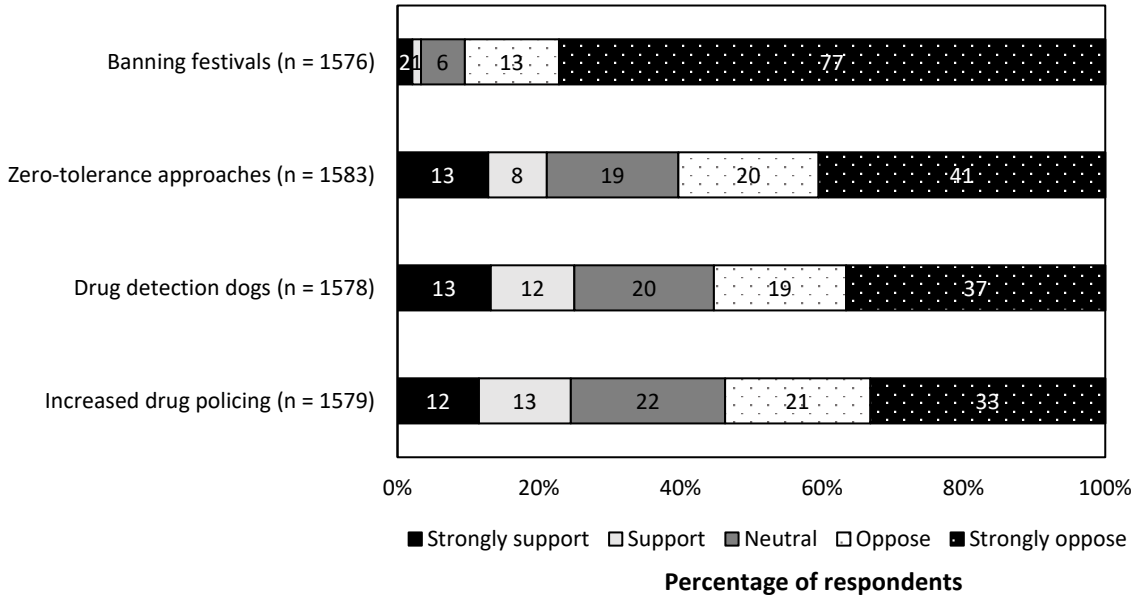
This section describes the level of support and perceived efficacy of existing and potential approaches/interventions in festival settings. It addresses the following questions:

- To what extent did respondents support punitive interventions/approaches?
- To what extent did respondents support HR-focused interventions/approaches?
- How did current policing approaches affect respondents' perceptions of police?

To what extent did survey respondents support punitive interventions/approaches?

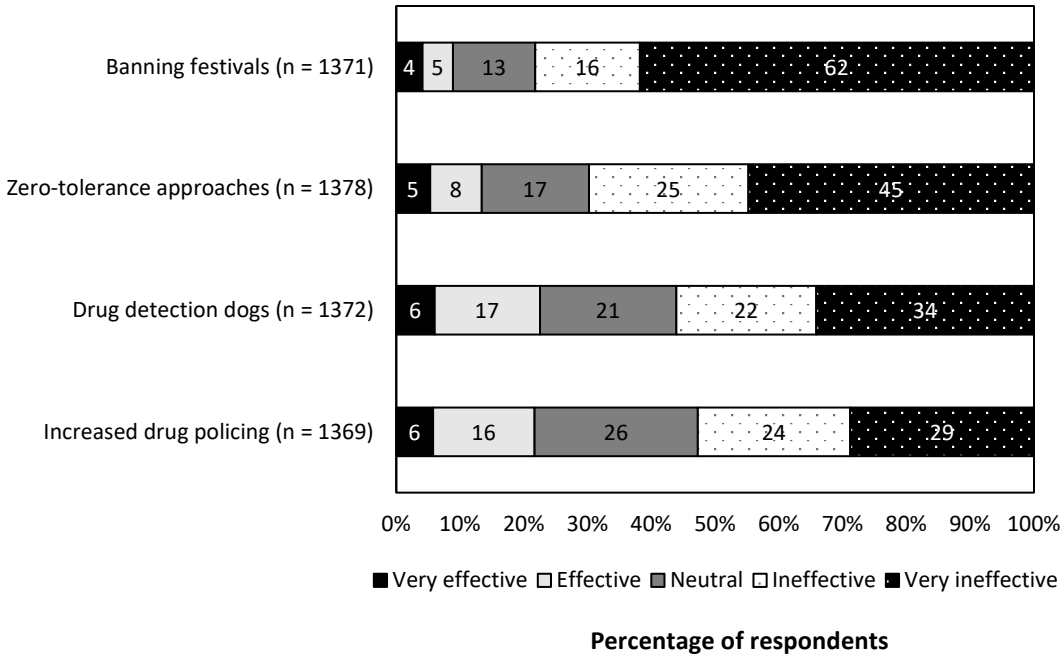
There were low levels of support for punitive strategies, such as banning/cancelling festivals, zero-tolerance approaches/policies and drug detection dogs (*Figure 4.53*).

Figure 4.53: Support for punitive drug interventions/strategies at festivals



Likewise, perceived efficacy was low for all punitive strategies (*Figure 4.54*).

Figure 4.54: Perceived effectiveness of punitive drug interventions/strategies in reducing drug-related harm at festivals



Correlates of support for drug detection dogs

Given drug detection dogs were identified as one of the most opposed strategies by both KI and survey participants, further analyses was performed to investigate correlates of support for this strategy (*Table 4.60*). The strongest predictor of support was reporting no illicit drug use associated with the last festival attended. Younger age, living in WA and preferring one-day festivals was also associated with greater odds of supporting drug dogs (relative to their respective comparison categories).

Table 4.60: Correlates of support for drug dog operations at festivals (multivariable logistic regression – support dichotomised, neutral excluded)

Variable	Level	N	Support	Oppose	Bivariable			Multivariable		
			31.1%	68.9%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	207	50.7	49.3	5.971	3.454-10.320	<0.001***	3.541	1.767-7.096	<0.001***
	18-19 years old	339	39.8	60.2	3.838	2.277-6.469	<0.001***	3.111	1.598-6.057	0.001*
	20-21 years old	282	24.8	75.2	1.915	1.109-3.306	0.020*	2.306	1.152-4.614	0.018*
	22-25 years old	296	20.9	79.1	1.537	0.886-2.666	0.126	1.906	0.947-3.836	0.071
	Over 25 years old	136	14.7	85.3	1.000			1.000		
Gender	Male	663	19.2	80.8	0.297	0.231-0.384	<0.001	0.380	0.273-0.529	<0.001***
	Female	597	44.4	55.6	1.000			1.000		
Jurisdiction	WA	637	36.9	63.1	1.753	1.362-2.210	<0.001***	1.446	1.014-2.061	0.042*
	VIC	623	25.2	74.8	1.000			1.000		
Festival type preference	No preference	90	20.0	80.0	1.302	0.735-2.305	0.365	0.864	0.425-1.757	0.686
	One-day	692	42.9	57.1	3.916	2.940-5.215	<0.001***	2.418	1.634-3.576	<0.001***
	Multi-day	478	16.1	83.9	1.000			1.000		
Used illicit drugs last festival	Did not use	489	68.3	31.7	26.490	19.073-36.791	<0.001***	22.094	15.568-31.357	<0.001***
	Did use	771	7.5	92.5	1.000			1.000		

Note. Response options were dichotomised (strongly support and support=1, strongly oppose and oppose=0, neutral/neither=excluded). Model $\chi 2$ (9)=641.62, p<0.001. Adjusted R square=0.399 (Cox & Snell), 0.562 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.296; n=1260. *p<0.050; **p<0.010; ***p<0.001.

Summary

To what extent do festivalgoers support punitive interventions/approaches?

Key findings

100. There was generally low support for punitive strategies and low perceived effectiveness.

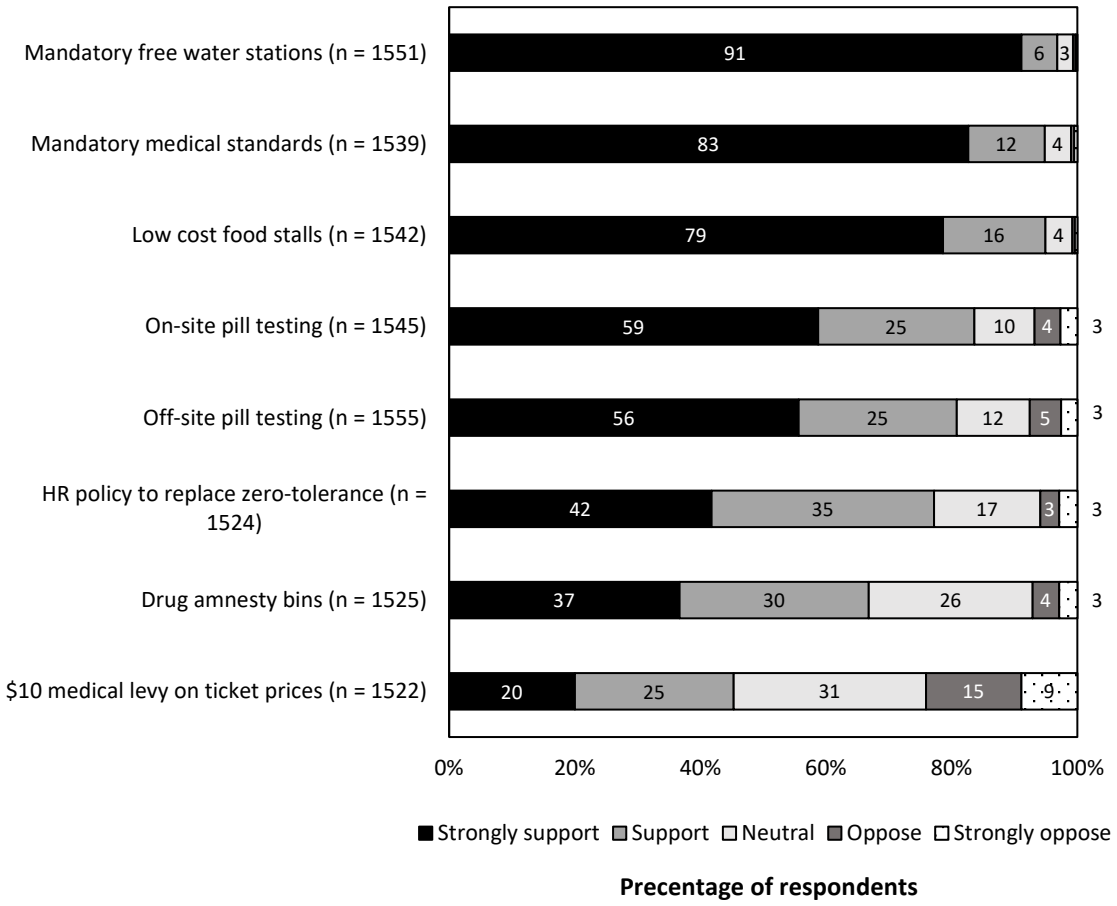
101. About a quarter of respondents supported drug detection dogs and increased drug policing, and a fifth supported zero-tolerance approaches.

102. After controlling for other variables, reporting no use of illicit drugs at the last festival was the strongest predictor of support for drug dogs (as an example of a punitive approach).

To what extent did survey respondents support HR-focused interventions/approaches?

While punitive strategies were supported by a minority, most HR-focused strategies were supported by a clear majority (*Figure 4.55*). Noteworthy results include almost unanimous support for mandatory medical standards (described in the questionnaire as legislation to ensure festivals have qualified medical professionals, not just volunteers). Moreover, almost half supported a $10 medical levy on festival tickets (proposed by KIs to ensure adequate resources are directed to the medical response). Consistent with earlier findings, most supported on and offsite drug-checking. Most also supported a festival HR policy and drug amnesty bins.

Figure 4.55: Support for harm reduction focused drug interventions/strategies



How did experiences at festivals affect perceptions of police?

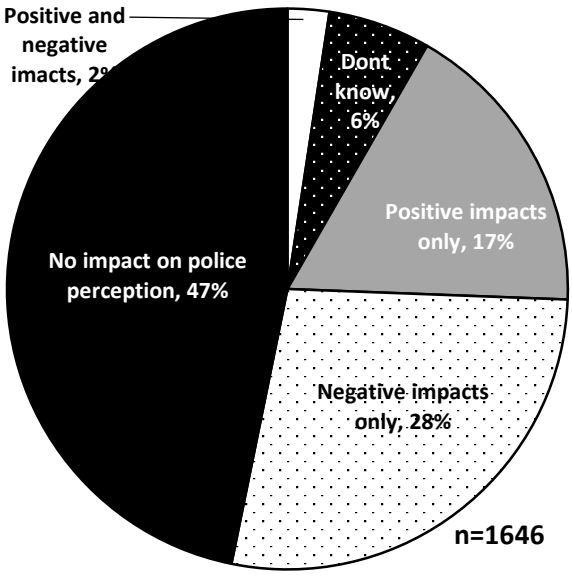
Respondents were asked how their experiences with police at festivals affected their overall perception of police. While about half reported no impact, a fifth reported they would feel less comfortable approaching police for help in the future, a sixth reported police unfairly target people, and a tenth reported that their experiences had undermined their respect for police. Conversely, there were also reports of positive impacts (*Table 4.61*)

Table 4.61: How experiences with police at festivals affected perceptions of police (%)

	***n*=1655**
It hasn't affected my perception of police	46.5
I would feel less comfortable approaching police for help	21.3
I think they unfairly target people	16.0
I think they do a good job at festivals	15.7
I think they abuse their authority	13.4
It has undermined my respect for police	10.5
I would feel more comfortable approaching police for help	8.2
It has increased my respect for police	7.2
Don't know how it has affected my perception	5.9
Other impact/s	2.8

Overall, when aggregating responses in *Table 4.61* into five mutually exclusive categories (*Figure 4.56*), roughly half reported no impact, a quarter reported negative impacts only and a smaller proportion reported positive impacts only.

Figure 4.56: Type of impact festival experiences have had on police perception



Key informants' views on the current situation and recommendations

In qualitative interviews, KIs were asked to describe existing drug policies at festivals in WA and Victoria and their perceived efficacy. When interpreting this section, remember that KIs' attitudes may serve varying motives depending on their involvement in the industry.

Descriptions of festival drug policy

Descriptions of existing festival policies were coded into three themes, discussed below.

Zero tolerance, but with HR

Most KIs (70%) identified drug policies as conservative, zero-tolerance approaches, but noted organisers commonly implement various HR measures as well. There was a perception that policies are largely determined by macro-level political factors, namely the conservative political climate, but good event organisers generally do the best they can within the confines of the law. For example:

> *Festivals have to take a hard-line approach to drugs given the political atmosphere and government policy of abstinence and zero tolerance. So they have to be seen to ban drugs by having police at the front gate, security checks, etc. Their websites often will have drugs listed in their 'banned' list, but they will also engage crowd care officers, first aid and services like Red Frogs or Red Cross to provide 'chill out' zones, as they know that their patrons will take drugs anyway…*
>
> *[KI-14, deidentified, government/regulation, WA]*

> *Festivals don't bury their heads in the sand over the issue, rather they try to offer the safest environment possible with first aid, ambulances, patron welfare staff and security.*
>
> *[KI-29, deidentified, event management, WA]*

Ineffective

Another theme identified was that existing policies were generally ineffective, although there were exceptions. For example, one KI expressed discontent with policies at the macro level (e.g. current laws and emphasis on policing), but believed micro-level policies were more progressive (e.g. permit conditions):

> *Ummm gosh what would be the most apt word – I don't know – uh atrocious? I don't know. The policy response is ineffective I suppose is the first word to use, so police-led … I mean there's policy in the sense of what*

exists as current laws and regulations that then play out in context of music festivals, then there's also policy at the more micro level when you're talking about particular conditions that are placed on festival organisers in order to get a licence to run the festival. At that level, the news is really good. Australian festivals are incredible in terms of – and some in particular more than others – the best festivals have an extraordinary level of first aid and paramedic support onsite and a person experiencing symptoms of drug overdose for example – actually sorry, to use a specific example, when Georgina Barter collapsed at Harbourlife, which is a festival here in Sydney in 2014, there was a paramedic attending to her within 45 seconds which is extraordinary. So clearly, in terms of provision of paramedic services and first aid services, we're clearly doing something right… there's some really great stories and I think festival organisers in very many cases are like the real heroes in terms of what they have been able to implement in very difficult – well not difficult – but in a context where other kinds of regulatory agencies are not being so productive, let's say.

[KI-03, Will Tregoning, Executive Director, Unharm, NSW]

Another KI explained they were not necessarily opposed to promoting a zero-tolerance policy, but believed the associated policing was ineffective. They also alluded to a link between increased levels of policing and increased drug-related deaths:

I don't think you can have anything but a zero-tolerance [policy] – it's how you police it … NSW police are probably the most active at events, actively with lots of searches and drug dogs and that sort of thing, yet unfortunately they probably have more deaths than anywhere else. There's maybe a relationship there …

[KI-01, deidentified, government/regulation, WA]

One KI identified the conservative political climate as a key barrier to change:

Oftentimes politicians are fighting hand over fist to be toughest on drugs, which in turn creates further harm. It would seem that advocating for a sensible approach is akin to political suicide.

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

More progressive in Victoria, but a long way to go

Throughout the interviews, there were suggestions that Victoria was more progressive in regards to HR. One KI working for a HR organisation noted lack of funding and recognition as two key challenges:

> *Victorian drug policy is probably the most liberal in Australia, but still has a long way to go. Victoria seems to have the biggest music festival scene in the country and has good, though underfunded and under-recognised drug policy initiatives at most festivals.*
>
> *[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]*

Perceived effectiveness of festival drug policies

Key informants who completed the online version of the interview were asked how effective they thought current drug policy was (on a 5-point scale) in terms of minimising the risk of drug-related harms at festivals. Of the 16 who responded, more than two-thirds nominated 'ineffective' or 'very ineffective' (44% and 25% respectively), a quarter were neutral (25%), and one nominated 'very effective'. The reasons why KI held these particular views are described in greater detail below.

Ineffective

Subthemes included that current drug policies are ineffective at reducing risk and have iatrogenic effects (91%); are ineffective at deterring illicit drug use (64%); are out of touch and don't acknowledge drug use is inevitable (45%); and focus on law, rather than health, and decrease the capacity for collaborative HR efforts (36%). For example:

> *Current policy has been comprehensively proven unable to reduce prevalence of drugs in any context, including festivals. It only increases risk due to poor information, no control of drug ingredients, dosage or quality, no ability to limit dosages or combinations taken by individuals or test for conditions people may have that would make using a particular drug dangerous. In addition, the focus on arrests creates harm in terms of police records and intrusive searching (e.g. strip searching) of people who are not in possession of drugs. Incidence of drug-related medical issues at events has not been lower when heavy policing e.g. with sniffer dogs has been present.*
>
> *[KI-15, deidentified, director event company, industry, national]*

Patrons pre-load, sniffer dogs are not overly effective and can only work for short periods, and they mainly serve to scare patrons into swallowing their pills rather than taking them slowly over a longer period.

[KI-12, Greg Denham, Harm Reduction Australia, VIC]

Lack of testing available. Policies can lead people to overdose when they see police in fear of being caught in possession.

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

Several KIs expressed the view that existing approaches were based on outdated and unrealistic philosophies/ideals. They claimed there was resistance to change, suggesting those in positions of power were unwilling to properly consider the evidence and new ways of thinking. For example:

It neither dissuades consumers from using drugs, nor keeps them safe when they do. The worst of both worlds, it is philosophy and morality driven.

[KI-11, David Caldicott, Health on and offsite, ACT]

The policymakers are so out of touch with the industry, patrons and conditions, they have little effect on the end results. In fact, I would go so far as to say, in many cases, they make the problem more prevalent and the effects worse. Policymakers need to remove the draconian approach to drug management at festivals and take a proactive and cooperative approach in order to reduce the overdoses and deaths.

Scare tactics don't promote the right messages. It is a social fact that people will do drugs so let's support them to take it easy and know about the impacts their drug use can have.

[KI-17, deidentified, AOD agency, WA]

It has not stopped a number of recent deaths. More could be done around education and prevention. Expecting kids to "just say no to drugs" is ridiculous and does not work.

[KI-22, deidentified, event crowd and risk management, government/regulation, NSW]

Interestingly, one KI from law enforcement expressed the view that deaths were not necessarily reflective of failure (arguing risk is inherent). Instead, this KI believed failure reflected an imbalance and lack of collaboration between law enforcement and health, and that decriminalising drug use would reduce risk:

There will be harms wherever there is drug or alcohol use. So harms in themselves are not an indication of failure. Partnership between health service provision and law enforcement is essential. We have this already, but the playing field is uneven. So long as drug laws see drug users as drug criminals, it is difficult for health services to negotiate understandings with law enforcement, with the aim of keeping people safe.

[KI-08, deidentified, law enforcement, NSW]

Lastly, a KI from the government sector believed zero tolerance was inconsistent with our national drug policy and unrealistic:

Uh well I think zero tolerance isn't a harm minimisation approach, and we know with drugs, if you push them underground, they'll pop out somewhere else.

[KI-06, Jenny Payet, government/regulation, WA]*

Neither effective nor ineffective

Responses were coded into: too difficult to measure their impact to determine effectiveness; harms cannot be easily addressed by policies; nothing more can be done; and HR initiatives are effective, but policies led by law enforcement are ineffective. For example:

Many harms relate to lack of knowledge of drug effect and harms, which is hard to change with policy.

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

I believe that there is not much more that can be done inside these festivals to eliminate the drug-taking behaviours and the related harm that they cause.

[KI-02, deidentified, government/regulation, WA]

A KI from the law enforcement sector conceded that drug policy may "influence" harm, but argued the variable nature of the illicit drug market, and various factors at play, make it difficult to measure policy impacts:

It is hard to assume either way. Effectiveness is the degree to which something is successful in producing a desired result, in this case minimising the risk of drug-related harm at these events. Without knowing the volume/type/quality of drugs available at each event, it is really difficult to measure. An event which has no adverse effects from drug use may be due to the fact that: 1. Supply was lower than previous events. 2. Adulterants

used were safer than have been in other drugs. 3. Law enforcement or the presence of health professionals may have been more effective. 4. Demographic of people may not have been able to afford the drug. This is to name a few, effectiveness may be influenced by one, two or more factors which can vary from event to event. Drug policy may also had an influence, but the bottom line is, because the drug market is so dynamic, I think it is almost impossible to compare events and isolate why drug related harm occurs more so at one event over another.

[KI-10, de-identified, law enforcement, WA]

The following KI cited the challenge for HR initiatives to operate in a context of 'zero-tolerance' policies:

While there exists good grass roots and peer based initiatives, these are largely underfunded and under resourced and often have to battle with other aspects of drug policy (law enforcement) for best practice.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

Effective

The KI nominating 'very effective' based their view the prevalence of problems:

The number of drug-related incidents at the events, when compared to the total number of attendees, are minuscule.

[KI-29, deidentified, event management, WA]

Strategies perceived as effective

Key informants were then asked which specific interventions/strategies they perceived as effective at reducing drug-related harms at festivals. Most strategies reported could best be described as HR-based, although a couple of KIs (7%) perceived punitive approaches as more effective. Responses were coded into the following 10 categories.

Peer-based initiatives (more trustworthy and non-judgmental)

Peer-based initiatives were cited most (*n*=18, 62%). Key informants linked the efficacy of peer-based initiatives with festivalgoers viewing them as trustworthy and non-judgmental. Consistent with comments made by festivalgoers in the qualitative interviews, formal onsite services (e.g. medical tents) were noted as less approachable. For example:

Peer support groups *are effective as they can often communicate more effectively with festivalgoers than authority figures such as police or medical personnel.*

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

Peer-based initiatives work far better in being non-judgemental and providing sound advice to punters. I believe this also has a positive effect of actually TRUSTING people with their decisions and with knowledge. A lack of trust in people creates an 'us and them' paternal situation and doesn't seem to be a very sustainable method of approaching drug harms.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

Having first aid onsite, and peer support groups *like Red Frogs, Crowd Care, save-a-mate* (*Red Cross), Green Team etc. are effective.*

[KI-14, deidentified, government/regulation, WA]

The preventative benefits (not shared by onsite medical services) were also highlighted:

Any organisation or service that is not "official" (*such as police or medical) where patrons can have drugs tested or talk to peers* (*like DanceWize) also tend to be more effective in reducing drug-related harm than increased medical staff who only deal with it once it has become an issue.*

[KI-13, deidentified, event manager, industry, national]

Onsite medical is great for cleaning up the mess, but it is also essential to have good prevention and harm reduction on hand.

[KI-08, deidentified, law enforcement, NSW]

While 'rovers' were commonly seen as effective, their role/expertise varies and thus crosses several categories (e.g. peer support, medical, HR):

Confidential onsite medical, peer support groups *and roving AOD harm reduction teams, testing stations.*

[KI-17, deidentified, AOD agency, WA]

Drug-checking (*as an integrated service)*

About half (*n*=14, 48%) identified drug-checking as a potentially effective strategy. Perceived benefits included an opportunity to engage with qualified professionals who could provide HR information and help them make more informed decisions about usage/dosage:

Pill testing would be effective as it has been proven in Europe. It would also give them an opportunity to tell the patron about possible side-effects of the drug they plan on taking, how much they should take, how long to wait before they take their next dose, and when they should seek medical help.

[KI-14, deidentified, government/regulation, WA]

One KI noted the potential to positively influence the festival micro-market. However, he believed drug-checking should be expanded beyond festivals in recognition that illicit drug use occurs in many settings. He discussed the benefits a fixed site could have:

… it definitely should be at festivals because you can influence the micro market there and because you can interact with people at the point of consumption. It's really the only way I think to provide something of value that's going to give them enough incentive to come to a service like that to then have conversation about how they use illicit drugs or even how their drug use is working out for them in their lives and whether they may need to access some support services – all that kind of thing. So it's crucial that they be there, but also yeah it doesn't make sense to like reinforce that stereotype that illicit drug use is unique to music festivals, you know because heaps of illicit drug use is happening in other settings and also if they are going to music festivals, if they are able to access that information in advance then they might be able to acquire an even greater level of consideration to their illicit drug use at the event.

[KI-03, Will Tregoning, Executive Director, Unharm, NSW]

One KI commented on the level of sophistication he thought was required:

… full drug testing using gas chromatographs.

[KI-12, Greg Denham, Harm Reduction Australia, VIC]

Two KIs expressed concern about drug-checking been seen to condone drug use, but ultimately supported a trial to develop an evidence base in Australia:

I mean if they take the drug and they say it's the real thing again it's a double edged sword – are you condoning an illegal practice … It is a tricky one – I guess it stops some of the really bad reactions or interactions when they take something that's mixed with god knows what and it stops them ending up in the ED … I think you need to actually have the evidence to support whether it is effective or not. I mean we can all make assumptions

based on observations, but are they correct observations, you have to actually look at that and get some evidence and the only way you can do that is if you do trial it. The same with bar cages to stop underage drinkers – it's more dangerous to actually have a bar cage than not to.

[KI-02, deidentified, government/regulation, WA]

Another KI thought a trial should occur over an entire festival season to yield valid results:

I would like to see a trial and how people come forward, but it would probably need to be an extended trial. If you do it at only one festival people are probably going to be nervous and may not use it. They need to be confident that the system is there for their benefit. You would probably need a season or half a dozen festivals so they get confident that they won't get drugs confiscated and they won't get prosecuted and those sorts of things.

[KI-01, deidentified, government/regulation, WA]

Onsite medical services (*n=12; 41%)*

Onsite medical services were described as being effective because they provide immediate medical care to patrons and reduce the burden on local health services. Two WA-based KIs suggested festival organisers did not prioritise the health component and that this should be better regulated. One said:

I think they actually have to take that responsibility, that if they are putting on an event there is minimal impact on the community and health services and any of the emergency services. Because, you know, they are a finite resource and we're all pretty stretched at the moment. I think the event organisers make a lot of money and should take some responsibility for ensuring a safe environment and the safety of their patrons.

[KI-02, deidentified, government/regulation, WA]

One KI proposed a medical levy on festival tickets[1] to guarantee event organisers have a minimal level of resources for the medical response, which would then improve overall standards of care:

Okay so when tickets are sold for concerts I think here should be a medical levy, so at the moment it's kind of like the budget is tallied up and the profit margin is made and then whatever is left is looked on as the portion that

[1] In response to this comment, the online survey asked participants about their level of support for a $10 medical levy.

goes to the medical response and that's usually limited, so what I've advocated is you know, and it depends on the scale of your event I suppose, but say you had a $10 levy for example, then that levy is purely to go towards the medical response and that way you could be guaranteed if it's a large event you've still got enough money to give a good medical response and if it's a small event then you can still give the medical response, it will just be smaller based on the smaller numbers.

[KI-05, deidentified, government/regulation, WA]

Drug amnesty bins (*n=9, 31%)*

Drug amnesty bins were perceived as effective in terms of deterring some drug use (by encouraging disposal), enabling identification of substances on the market, and providing an alternative to panic consumption when drug dogs are operating. For example:

Drug detection dogs are effective. However, when they are used in an ambush situation they have a negative impact by forcing kids to consume all their drugs at once in panic. An open approach that gives kids time to make a decision and potentially some amnesty bins would have a better effect on reducing the number of drug-related problems later in the event.

[KI-13, deidentified, event manager, industry, national]

Amnesty bins will deter some [people from using illicit drugs] and can also be useful in identifying substances currently used.

[KI-27, deidentified, government/regulation, WA]

One KI acknowledged amnesty bins were ineffective when trialled in WA, but linked this with poor design:

It's probably not such a bad thing at least if someone is nervous there's an option there they could then get rid of [their drugs] without ingesting them … when they had the trial here before, they had the bins set up in a covered area so no one knew what was going on there and everyone had to go past it and that was pretty well ineffective and all that did was delay the entrance to the festival and was almost a disaster because of the late entry.

[KI-01, deidentified, government/regulation, WA]

HR information/education

About a quarter of KIs (*n*=7, 24%) identified HR education as an effective strategy, but there were no recommendations for delivery. However, as previously noted, many endorsed peer-support services for preventative/educational efforts:

> *The most effective approach to reduce risk is through harm reduction approaches … information about proper water, food intake, info about having time out, strategies to prevent overheating.*
>
> *[KI-12, Greg Denham, Harm Reduction Australia, VIC]*

In post-survey interviews, this KI suggested disseminating education "kits" to patrons upon entry:

> *I went to Rainbow Serpent at the beginning of this year and I don't know you get an [HR] kit or something at the beginning – why don't they put something in there? Put some information in there as you go through the entry …*
>
> *[KI-12, Greg Denham, Harm Reduction Australia, VIC]*

Environmental interventions

While critical in terms of prevention, only a fifth (*n*=6, 21%) nominated environmental interventions, such as free water, shade and chill out zones:

> *… Good access to fresh clean water, chill out areas…*
>
> *[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC*]*

> *Rovers, onsite medical, peer support, harm reduction education, chill out zones - quiet space + free water, drug-checking, no promotion of alcohol.*
>
> *[KI-24, deidentified, health on and offsite, NSW]*

> *Onsite medical is great for cleaning up the mess, but it is also essential to have good prevention and harm reduction on hand.*
>
> *[KI-08, deidentified, law enforcement, NSW]*

Drug policing strategies

Two KI believed the punitive nature of policing was an effective deterrent. They strongly opposed 'softer' approaches (e.g. decriminalisation), instead supporting harsher penalties. They believed the risks associated with illicit drug use were greater now which meant the stakes also needed to be (to deter use):

In my honest opinion, I think that people how they're coming about and saying you know legalise this, legalise that, I think that's all bullshit. I think these kids just need to grow up and take some responsibility for what they're doing and there needs to be some more stuff out there that people can actually speak to. I think at field day they had a couple of arrests right, and there's nothing unusual about having seventy to eighty people thrown out of a festival when you've got twenty to thirty thousand people for drugs, that's nothing uncommon, but the big thing is if these present to court for drug possession at a festival, give them a criminal record. You only have to do that ten to twenty times and people will think very carefully about what they're doing. They're going to get pissed off you know, but the reality is there's just so much stuff out on the market now. It's not like it was ten years ago, you know, you were quite limited with the things you'd see come into the festivals, whereas now there's just so much crap that kids are just going that's looks like ecstasy because so and so has told me that's ecstasy, but before you know it it's got traces of rat poison and it's got all sorts of shit in it.

[KI-07, Josh Green, Phoenix Entertainment, industry, national]

Yeah, to me the education side is the most important thing, stricter penalties for the people caught inside and put it out there that four people were arrested and charged and when they go to court four people were given two years' jail time.

[KI-04, deidentified, festival security, national]

An onsite medical expert believed drug dogs had merit, but conceded they lacked empirical support and thought amnesty bins should accompany them:

Generally support the use of drug dogs in a measured and responsible way. I am aware that there is limited evidence for their efficacy, but I think they have a role. I would like to see more warning of drug dog use combined with amnesty bins which can then be used for scientific analysis.

[KI-28, Buck Reed, onsite medical, national]*

Mixed approach – drug policing and HR

A few (10%) believed a good balance of drug policing and HR was the best approach. One KI from law enforcement suggested some personalities resonate best with education/HR, while others respond better to punitive threats:

Although I am from an enforcement background, I do believe that a combination of interventions is required to reduce drug-related harm. Some people argue that law enforcement has little effect, but I disagree because for some people health education is ineffectual. This is why a combination of strategies is required because as individuals we all have different 'triggers' that motivate us to do something. Also, enforcement has a higher priority of targeting the dealer rather than the user, although users do get caught. In short, people will respond to drug dogs, bag checks etc. because they do not want to break the law, some people will respond to amnesty bins because they may decide that taking illicit drugs is bad or illegal or unhealthy, others will also respond to peer support groups *as they may be swayed that drug taking has too much risk …*

[KI-10, deidentified, law enforcement, WA]

Similarly, two others supported a prohibition policy, but thought safety nets were also required:

I don't think I can comment on individual strategies, but I think it needs to be a combined approach outside and inside the venue. There needs to be strategies to try to prevent illicit drugs from being brought into the venue, but there also needs to be strategies inside to try to reduce the risk from those drugs that make it in.

[KI-18, deidentified, environmental health officer, government/regulation, WA]

Well I think you can have that policy of no drugs, but I think we have to have a safety net and I don't think we have it.

[KI-05, deidentified, government/regulation, WA]

Drug training for festival staff

One KI thought training festival staff (particularly security) to identify and assist at-risk patrons was an effective strategy. There were suggestions that a perceived lack of security training has increased risk. However, the casual nature of employment and language barriers in this field were identified as challenges in implementing such training:

I think the training of security personal is crucial. Some do it really well and some don't, but my experience has been that some security staff give really inappropriate advice to concert-goers and some of that advice is there are sniffer dogs when you get there so if you've got anything board you should consume it now so that kind of stuff is inappropriate. So there should be

training for them, and this is a problem with security staff, because they tend to be very casual people employed for festivals, they tend to be non-English speaking … so I just think the training of the security staff is really important to give consistent messaging about what should happen. Yeah and even having basic training on how to identify people in the crowd who might be in trouble, considering that they are scattered all through the festival and they could be the ones to identify people …

[KI-05, deidentified, government/regulation, WA]

Decriminalisation for personal use

While KIs mentioned decriminalisation at various other points in the interviews, it was only identified by one KI in response to this question:

Decriminalisation of drugs for personal use would help …

[KI-10, deidentified, law enforcement, WA]

Strategies perceived as ineffective

Key informants were asked what interventions/strategies they considered ineffective. Most responses involved punitive approaches. Responses were coded into the following six categories.

Drug policing strategies (*n=24, 83%)*

Drug detection dogs were perceived as ineffective given the lack of evidence demonstrating efficacy at deterring/detecting illicit drugs, and concern about iatrogenic effects:

On a personal level, I do not understand the logic of how drug dogs are intended to reduce harm, and I have not seen evaluations supporting this approach. If researchers could work alongside law enforcement to get some good evaluations done, that would be excellent. It is important that we better understand what high visibility policing of drugs using dogs does, and whether it reduces harm inside parties, and whether any such benefits are outweighed by the harms that occur when people respond to dogs by swallowing all their drugs at the party gates.

[KI-08, deidentified, law enforcement, NSW]

A noteworthy comment from the post-survey interviews was that dogs could be effective for searching the grounds for illicit drugs before patrons arrive:

I have shifted in that the use of dogs would be useful prior to event to detect pre-stashed drugs.

[KI-27, deidentified, government/regulation, WA]

Bag checks were described as ineffective because most festivalgoers do not hide drugs in bags, and like other policing strategies, the intimidating nature of these checks may encourage pre-loading and risky methods of internal concealment. For example:

It's so difficult to detect and search, I mean some get found but the majority probably don't. It's just too easy to conceal it really … most people come to festivals these days and don't have anything, especially if the weather is warm they usually just come with a pair of shorts and a top, not even a bag, apart from the girls. So there's not a lot to get searched these days, but they still get drugs in.

[KI-01, deidentified, government/regulation, WA]

Drug detection dogs, bag checking (*most know not to hide their drugs in their bag), zero tolerance approaches, criminalisation.*

[KI-14, deidentified, government/regulation, WA]

Repressive approaches (*n=4, 14%),*

Responses termed 'repressive approaches' included those which could be seen as attempting to stop festivalgoers doing what they want (using drugs). KI suggested such approaches were ineffective as festivalgoers will still use drugs, only more dangerously:

Anything that is oppressive, mistrusting or aggressive toward people who use drugs, merely for the fact that they want to use a drug … Initiatives which do not treat drug use as a moral evil that must be eradicated at all costs are far better than those with a moral agenda at heart. Drug dogs, bag checks etc. create an oppressive environment and create incentives for people to find work arounds. These work-arounds are often more dangerous than if people were educated.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

All except medical and peer support, because none of them stop people doing what they want to do, they only make it more dangerous.

[KI-15, deidentified, director event company, industry, national]

Drug amnesty bins

While some KI thought amnesty bins were ineffective (*n*=4, 14%), there was no opposition to them. This strategy was viewed more neutrally than drug policing strategies, because they were not seen to increase risk:

> *Amnesty bins are not overly effective, but I'm not opposed to having them at festivals, as long as they are in a discreet location away from the gates and police, where patrons can go past if they want to.*
>
> *[KI-14, deidentified, government/regulation, WA]*

One KI questioned their efficacy because she did not think festivals thought rationally when confronted with the threat of drug dogs:

> *Well certainly our experience is that kids panic if they see the sniffer dogs and they will down [swallow] the pills … for some reason they will not throw them on the ground, they do not put them in the amnesty bins, they just freak and down them.*
>
> *[KI-05, deidentified, government/regulation, WA]*

Not wanting to waste the money spent on drugs was also identified as a barrier to discarding drugs (also strongly supported by the quantitative data):

> *Police have tried the sniffer dogs and they're tried amnesty bins, but no one is going to throw it down into a bin if they've paid good money for it.*
>
> *[KI-02, deidentified, government/regulation, WA]*

Banning/shutting festivals down

A few KI (10%) were asked to comment on threats made in recent years relating to shutting festivals down if they do not 'clean up their act'. KI argued this would be ineffective because it would simply push the scene underground, therefore decreasing patron access to important onsite support services, and an increase in underground events could actually increase the burden on local services, such as law enforcement (locating, shutting down) and emergency health services (because problems may have otherwise been managed onsite). For example:

> *I don't think banning is the answer because then it goes underground and you've got the underground raves again. I mean, you're actually encouraging it to go to the opposite extreme. I think they could impose more sanctions on the event organisers to try and be more compliant to try and control it more effectively and that would probably be the only way there*

could be an impact, but I don't think banning is the answer. Just because they would go underground, and that to me would increase the risks of more deaths because you're not going to have any first aid help there. It will be free-for-alls, and basically, unfortunately, outside of the metropolitan area there aren't a lot of health resources.

[KI-02, deidentified, government/regulation, WA]

One KI reflected on the 90s underground rave scene and suggested the same problems will resurface if regulated festivals cease to exist. Another KI believed there were already indications of a resurgence of underground events in response to increased drug policing:

Yeah, but if you go to a festival they're trying to provide value for money. It's the safest place to go and take your pills. Why? Because they've got X amount of first aid there, they've got ambulances on site, and they've all that sort of stuff. Who's to say they don't go back home and take those pills, and there have been stories like that where people have died back at home, you know they've taken gear at home and there have been no resources… Yeah and if we go back to [the] 80s, this is my background, the 80s and 90s when they were doing the illegal warehouse parties, and they're starting to come back, the police don't have the resources to chase people around. And it's just a never-ending circle because if they go back and look at that all of a sudden we're going through this whole issue of underground music.

[KI-04, deidentified, festival security, national]

Drug-checking

In contrast to the majority, two KI (7%) thought drug-checking was ineffective because it could condone drug use and result in liability issues if deaths occurred. One KI had particularly strong views on this strategy, arguing that it would perpetuate existing social norms around illicit drug use. They expressed concern for the long-term health of festivalgoers who use illicit drugs and argued that future approaches should try and break the social norm, not reinforce it:

Pill testing, I mean, so I walk in and I have two tablets and they test them and go yeah they're okay. I walk inside, I take my two tablets and in four hours' time I'm dead. Whose head does that fall on when I've been told they're okay to take?

[KI-04, deidentified, festival security, national]

> *I don't agree with it because I think it encourages that it's okay … you're not condoning it, but you know you're providing an outlet for someone to come and get their drugs tested, to say it's okay take these drugs, get fucked off your head, destroy your brain cells and you know see how you're going in ten years' time … I think it's about breaking the social norm trend because it's not just festivals where kids are doing this stuff, it's happening every night of the week in nightclubs, it's happening every night when they're just out at the pub in general. Um, you know, I think there's a bigger problem and it's not the music festivals, it's a social norm …*
>
> *[KI-07, Josh Green, Phoenix Entertainment, industry, national]*

Self-managed strategies

Finally, one KI expressed the unique view that strategies, such as free water stations, were ineffective because they were not properly utilised:

> *The ineffective interventions in reducing drug-related harm are the self-managed intervention such as water stations, which people do not make full use of and as a result offer very little benefit in reducing drug-related harm.*
>
> *[KI-20, deidentified, operations team leader, health onsite, WA]*

Recommendations for future drug policy/management of drug use at festivals

Finally, KIs who completed the online survey were asked to provide recommendations for management of drug use at festivals. Seven key themes were identified, which were largely consistent with recurrent themes throughout the qualitative interviews.

Accept the reality – drug law reform

The most common recommendation was for drug law reform (n=12, 53%). As mentioned previously, many KIs believed macro-level change was needed for effective micro-level (festival) change. They argued that the reality of drug use needs to be acknowledged and responded to accordingly. Different models were recommended, including legalising and regulating:

Government need to radically change their approach. Accept that demand for drugs exists. Prohibition has never worked. The government should be manufacturing and supplying drugs so that they can control what consumers are getting. The current policy leaves consumers to the mercy of unscrupulous dealers. I accept that these views are contentious, but it's the only way forward that I can see.

[KI-29, deidentified, event management, WA]

The only way harm can be significantly reduced is legalisation coupled with very tight control on purchase, ingestion, manufacture, etc. In this way people could be prevented from taking drugs that are more dangerous than the drug they are hoping to have bought, people could be tested for conditions making taking a drug dangerous, they could be tested for recent drug use and denied the drug, and so on.

[KI-15, deidentified, director event company, industry, national]

Some KIs recommended decriminalising drugs:

It is difficult for festivals to introduce any effective drug policies without the support of government and enforcement agencies. As mentioned, pill testing and decriminalisation of personal supplies would reduce drug-related harm.

[KI-14, deidentified, government/regulation, WA]

… I think the education model being used in Portugal is a good example of how this can be done. Decriminalisation of 'party drugs' …

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

Other KI did not propose a specific model, but highlighted the failure of prohibition:

Accept that drugs have become a part of everyday life, be it at a pub, nightclub, festival or home and form policy that reduces the harm from drugs and not tries to eliminate them. Prohibition didn't work in the first half of the twentieth century, surely they can learn from that … The biggest problem with drug 'management' at music festivals is that the authorities will only apply the law and refuse to offer solutions that acknowledge patrons will inevitably bring drugs to the festival and take them. There are very few solutions for drug management available to event organisers that

are outside police/authorities as we have no power to implement these controls. In most cases, they are reactive, not proactive.

[KI-13, deidentified, event manager, industry, national]

Good policy needs to accept first and foremost that people like to take drugs and that is ok. The problem isn't drug-taking, the problem is the way some people take drugs, the kind of knowledge they have about those drugs, the production of those drugs and various other problems caused largely by prohibition.

[KI-25, Nicholas Wallis, DanceWize and Harm Reduction Victoria board member, VIC]

Trial drug-checking

Trialling drug-checking was recommended by ten KI (43%). Some cited international evidence to support their recommendation, whereas others believed empirical support was limited, hence the need for trialling. For example:

A trial of pill testing would be a good initiative for Australia – it has shown effectiveness in some other countries.

[KI-09, Anna Gifford, Alcohol and Drug Foundation, VIC]*

The evidence base for drug-checking appears sketchy. Obviously this is not something that can be proven with an RCT [randomised controlled trial]. But in order to get a conversation happening with government health and law enforcement agencies, in the face of the generally conservative political status of illicit drugs issues, really strong and 'respectable' research is required …. Users knowing what is in their drugs would seem a useful way to address overdose and toxicity-related harms. Whether drug-checking works, either at events or otherwise, is yet to be ascertained, although it would appear logical enough. Many questions and variables remain though – e.g. how badly does the person want to use the drug (despite what the results of the drug-checking may have been)? How much did they invest in buying the drug? Do they understand what drug-checking can and can't do? What level of risk are they prepared to take? If their own drug does not seem safe to use, what do they do instead – not take any drugs? buy drugs on the dance floor? ... hence the difficulty knowing if this is something that risk-averse governments will want to allow or enable.

[KI-08, deidentified, law enforcement, NSW]

Another KI recommended drug-checking due to the belief that keeping people safe the most important goal:

> *Drug testing centres. At the end of the day we want the kids to stay alive. They make their own choices and take risks, as is their right.*
>
> *[KI-22, deidentified, event crowd and risk management, government/regulation, NSW]*

Improve onsite HR efforts

Several recommendations (*n*=5, 22%) were made for improving onsite HR efforts, such as reviewing guidelines, increasing the level of medical and peer support, improving preventative environmental interventions and implementing drug training for staff. For example:

> *There probably needs to be greater supervision (not necessarily law enforcement) to ensure that patrons are safe and behaving reasonably. I am unsure of the qualifications of private security personnel at these events but they should receive appropriate training to identify people under stress. Crowd density in hot conditions may also have to be scrutinised for crowd safety.*
>
> *[KI-10, deidentified, law enforcement, WA]*

> *Have onsite drug workers who can deal with person [on] drugs and question about how to take them and the number of drugs.*
>
> *[KI-16, deidentified, medical coordinator, Health onsite, NSW]*

> *These fenced areas serve to separate the under-agers from the licensed areas. These areas are dangerous for a number of reasons yet they continue to be enforced by police and Racing, Gaming & Liquor.*
>
> *[KI-14, deidentified, government/regulation, WA]*

> *Drug law reform. Drug-checking. Safe party guidelines incl: Rovers, Onsite medical, Peer support, Harm reduction education, Chill out zones – quiet space + free water, Drug-checking, No promotion of alcohol.*
>
> *[KI-24, deidentified, health on and offsite, NSW]*

Importantly, consistent with conclusions made in the literature review (see *Conclusions drawn from the MGM literature*), a KI, who has acted as medical director of festivals and now holds an academic teaching position in this field, identified lack of regulation as a major problem in this industry:

Effective and correctly trained medical teams are essential to safety and I don't believe their presence supports drug use. There are currently no standards or accreditation for medical coverage at festivals and this poses a major risk to the industry.

[KI-28, Buck Reed, onsite medical, national]*

Improve drug education

Some KIs (*n*=5, 22%) recommended improving access to honest and accurate drug information. One KI thought education needed to better resonate with young people, and cited the Erowid (2018) website as an example of a good education platform:

Pragmatic drug education that focuses on the positive, neutral and negative effects of drugs (similar to Erowid) that helps people see that different drugs might be more harmful (or more appropriate) to certain settings. A person taking 25I-NBOMe thinking it will be like ecstasy is not going to have a good time. I think the education model being used in Portugal is a good example of how this can be done.

[KI-21, Stephen Bright, Southern Dual Diagnosis Services at Monash Health, VIC]*

There needs to be more education as to the effects of illicit drug use, possibly outside festivals to properly inform those who are at risk of taking them. Possible mitigation strategies to deal with drug-related harm and the long-term consequences that these behaviours can result in.

[KI-20, deidentified, operations team leader, health onsite, WA]

Change the culture

Four KI (17%) recommended approaches aiming to shift drug culture. There were references to both wider societal culture and festival subculture. One KI argued that targeting efforts at a single context (i.e. music festivals) was not helpful, suggesting the wider culture needs to be addressed:

The problem begins way before the user is at the music festival – it is an attitude or subculture that needs to be addressed.

[KI-10, deidentified, law enforcement, WA]

…the problem is the perception that festivals are to blame. The reality is that people will continue to use drugs and harm will occur regardless of festivals. Demonising festivals, or even trying to establish some causal link between festivals and drug use (as this survey does) will not help the situation.

[KI-29, deidentified, event management, WA]

Stop drug detection dog operations (n=4, 17%)

Key informants were asked about recommendations towards the end of the interview, and it appeared many had little more to say about their views on this strategy, other than operations should be ceased. However, there were more references to panic consumption and a perceived lack of deterrence:

Don't scare people into taking all their drugs at once with the presence of drug detection dogs.

[KI-17, deidentified, AOD agency, WA]

Throwing more drug detection dogs and police [at festivals] does not deter people from taking drugs.

[KI-22, deidentified, event crowd and risk management, government/regulation, NSW]

Improve collaboration between sectors

Consistent with comments made throughout, one KI recommended improving collaboration between different sectors:

Good communication and relationships between police, festival managers/promoters, medical, volunteers …

[KI-24, deidentified, health on and offsite, NSW]

One KI commented on the "lack of cohesion" between different police divisions. She indirectly suggested police divisions should adopt a unified HR goal at festivals:

… what frustrates me is that there often seems to be a lack of cohesion between the various police operations onsite because local officers, especially in regional areas, that do patrols within the festival often take a community-focused approach to their policing. You know, being aware of harm minimisation, not really being overly concerned if they smelt someone smoking a joint, but being more conscious of anti-social behaviour. So, you know, there might be that kind of police operation happening at the very

same festival where, at the roadside upon entry, a specialist diversion police operation or whatever is doing a roadside search where people are coming in and feeling violated after being strip searched. So there often seems to be, within the police, divisions and a lack of cohesion in terms of the strategic goals and there's a lack of awareness of harm minimisation and the role of harm reduction within that broader model so that's something that I'm hyperconscious of ...

[KI-26, Stephanie Tzanetis, Program Coordinator, Dancewize, VIC]*

Festivalgoer recommendations

At the conclusion of the pre-survey interviews, participants were asked whether they could recommend ways to reduce the risk of drug-related harm at festivals. Several suggestions echoed the views of KIs, including legalisation and regulation, decriminalisation, improved collaboration of sectors, improving environmental interventions (increasing availability of water and shade in particular), initiatives to shift the bingeing culture, introducing drug-checking, ceasing drug dog operations, improving drug education, and accepting the reality that drug use is inevitable and embracing HR. However, they also had some unique suggestions, which included addressing legal and privacy concerns with onsite medical services, promoting looking out for mates rather than discouraging them from seeking help, and better public awareness of the true causes of drug-related deaths. One participant gave numerous recommendations, but the strongest related to drug law reform:

I ultimately think that legalisation and regulation is the way that we have to go if we really want to reduce drug-related harm. The illicit nature of the drug market causes a lot more harm than most of these substances on their own. If the money that was spent on law enforcement went towards (realistic) education and harm reduction services along with support services for those who do get into troublesome use, I think we'd be in a far better place. At the very least, we should be looking at the Portuguese model of decriminalisation for personal use. In the interim, police and festivals engaging in a positive rather than punitive way would be helpful. Some of the festivals here really do have to toe the zero-tolerance line as well and I think that's problematic for them to be able to deliver appropriate messages to people about what to do when they get into trouble. I think there is a bit of an element of bingeing culture, both drinking and drug-related, that Australia needs to address culturally. This is probably one of the tougher things. And the, I don't really know what to call it, but 'don't be a pussy' sort

of attitude that invades some social circles (particularly male). I read in a comments section after one of the Stereosonic deaths a girl saying the guy who died had been behind her in the first aid queue and his mates came and gave him shit about it, so he left.

[P14, female, 35yrs, VIC]

The following participants focused more on education and knowledge:

I don't really know other than monitoring the drugs and like education about pills and their effects ... Going for a binge weekend and taking ten and getting a stutter for the rest of your life, or whatever the side effect, is the last thing you want. So youth knowledge maybe …

[P09, male, 17yrs, WA]

My general opinion is people are caring less about what they're taking and taking more of it … I think educating people on what drugs are and what they do (negative and positive) is helpful. I would be interested to know if there have been any other deaths at festivals and what they're related to. I don't think drugs are going anywhere …

[P15, female, 33yrs, VIC]

The following participant felt strongly that the reality needed to be acknowledged and approaches shifted accordingly:

People to talk to that know what you are going through if you are stressing out while under the influence. Stop treating drug use at festivals as such a taboo thing … people take drugs at festivals even if they don't take them in life. Be supportive and do what you can to be ready for it. Stop trying to scare people, rather educate them in a down-to-earth way and take the issue for what it is, don't turn a blind eye and have judgement, just understand.

[P04, female, 19yrs, WA]

The following excerpts relate mainly to recommendations for improving environmental approaches. In response to a traumatic incident experienced by one participant, she recommended improved security training and consideration of exit points:

Umm just that I think it should be law that there be water stations all throughout events ... not just because of drugs, but because they're in summer, people are dancing in the sun and drinking alcohol. Surely it should be a normal safety precaution? I've been at a festival where they made me pour my bottle of water out because I was going from the over 18 section to the general section and it was like thirty-seven degrees! That's ridiculous. Also, I was at the front of the pavilion watching an act and it was too hot so I tried to get out a side door exit, but security wouldn't let me! They made me walk through the crowd where I had to push people to get out for like ten minutes. I almost passed out. A girl died the day before in NSW, surely they thought "oh this girl is struggling, I should probably let her out this door"!

[P02, female, 25yrs, WA]

... maybe more water stations, more selections of food and cheaper prices, drug testing stations, but I'm not sure how much they would get used and yeah just more casual support. Maybe more pop up youth centres like headspace?

[P05, female, 18yrs, WA]

Chapter 5: Discussion

Consistent with earlier chapters, this discussion is structured into four themes. Within each theme, key findings are discussed in relation to the existing research and their implications are considered. Following this, there is further consideration of how theoretical frameworks can be applied to festival planning, and the study's strength and limitations are outlined. The discussion closes with an evidence matrix summarising the recommendations for interventions in this field. A table outlining priority recommendations is also provided.

Theme 1: Drug use prevalence, patterns and practices

One of the objectives of this study was to document the prevalence of drug use and drug use patterns and practices in a sample of festivalgoers from WA and Victoria. The key topics explored were normalisation, polydrug use, risk and protective practices, and obtaining and supplying practices. As illuminated in the literature review, many of these topics had been completely unexplored within the context of attending contemporary festivals in Australia, while others had received very little attention.

Sample prevalence

Before discussing prevalence, it is important to re-emphasise that a non-probability sample was recruited, so the findings cannot be seen as reliable estimates of the prevalence of drug use among the wider population of Australian festivalgoers. However, comparisons with other studies, as done below, improves the interpretability and validity of findings. The issue of representativeness will be revisited later in the discussion (see *Study strengths and limitations*).

While contemporary festivals are known to feature substantial substance use, only one Australian study had actually examined how commonly drugs are used in these settings, and it was limited to a select range of illicit drugs (Hughes et al., 2017). Thus, findings presented here extend the literature and identify correlates associated with different types of drug use which may assist targeting interventions.

A large majority of survey respondents (88%) reported using a drug (excluding tobacco) associated with the last festival they attended. Alcohol was the leading drug used (82%), followed by ecstasy (51%), cannabis (31%), ketamine (9%) and LSD (8%).

Intentional NPS use was rare (<2%), but the most common NPS reportedly used were DMT and hallucinogens from the 2C-x family. This finding is consistent with other national and international studies showing that 2C-x drugs were among the most popular NPS used (Fox et al., 2018; Peacock et al., 2018). Overall, almost two-thirds (62%) of respondents reported illicit drug use – comparable to the 65% reported by Hughes et al. (2017). While these studies have similar methodological limitations (e.g. self-reported, non-representative data), multiple large purposive samples that produce similar findings provide greater confidence in the validity of these studies. Moreover, although there were some differences in the categorisation of drug types (e.g. hallucinogens were considered individually in the present study), rates of use for individual drugs like ecstasy, cannabis and cocaine were again very similar (see *Table 4.7*). Overall, while drug use may be a part of life for many young people, it appears festivals were settings where a majority of Australian music festival participants use illicit drugs. This is a reality, and an opportunity for intervention, which warrants consideration. The implications of these findings will be considered after discussing other key findings in this theme.

Correlates of drug use at the last festival attended

The literature review identified festivals and associated drug use as being heterogeneous, and highlighted variables (e.g. festival type and jurisdiction) with potentially substantial influence on patterns and practices of drug use. Consistent with expectations, the multivariable analyses identified various correlates which paint a more nuanced picture of drug use associated with the last festival respondents attended.

Jurisdictional differences

Multiple strong jurisdictional differences were identified. For example, Victorians were significantly more likely to report use of ketamine (A*OR*=43.9, 18% vs. <1%), meth/amphetamine (A*OR*=5.4) and cocaine (A*OR*=2.1) than Western Australians at their last festival attended. The only drug which Western Australians were more likely to use was pharmaceutical stimulants (A*OR*=4.9). These results may reflect availability differences across jurisdictions, given similar differences have been observed consistently in the Australian EDRS (Peacock et al., 2018; Stafford & Breen, 2017). For example, in the same reporting year, EDRS data showed recent use of pharmaceutical stimulants was far more common in the WA sample than the Victorian sample (65% vs. 34%), while the reverse was true for recent use of ketamine, cocaine and methamphetamine (18% vs. 72%, 38% vs. 56%, and 18% vs. 50% respectively). These jurisdictional differences highlight the importance of key stakeholders being aware of local drug trends to inform event/medical planning. For example, ketamine is much riskier when consumed with alcohol, so education about this type

of polydrug use is more useful in Victoria. Victorian medical personnel should also be more alert to symptoms of ketamine and methamphetamine intoxication. Lastly, given KIs commonly associated anti-social behaviour with methamphetamine use (and 15% of Victorians in the current study reported use), the risk of encountering aggression may warrant closer consideration in security/staff briefings. Overall, these findings suggest that event planning phases should include a routine consult with experts who have knowledge of local drug trends. One source of information could be their local Drug Trends team, including recent Drug Trends Bulletins, although there may be a 6–12 month lag in reporting (https://ndarc.med.unsw.edu.au/project/ecstasy-and-related-drugs-reporting-system-edrs).

Interestingly, various jurisdictional differences identified in bivariable analyses disappeared after controlling for other variables. For example, Victorians were no longer at greater odds of reporting use of cannabis, nitrous oxide or hallucinogens; rather, attendance at multi-day festivals was the strongest predictor. This is consistent with links between multi-day festivals and psychedelic use (discussed more below). These observations likely reflect differences in the festival industry, namely that Victoria features far more multi-day festivals than WA (and was thus a confounding variable).

Gender differences

A variety of gender differences were observed in relation to drug use associated with the last festival attended. With the exception of a small number of drugs (e.g. pharmaceutical stimulants and benzodiazepines), males were more likely than females to use every drug type and had higher overall rates of illicit drug use (*AOR*=1.8). This finding is consistent with Martinus et al. (2010) study of Scottish festivalgoers, which found males almost twice as likely to report illicit drug use. It is also consistent with Australian population-based data, which has consistently found males about 1.5 times more likely to report illicit drug use (Australian Institute of Health and Welfare, 2016). However, while a significantly higher proportion of males reported illicit drug use, females reported using comparable quantities (discussed further in *Individual drug patterns*). Additionally, females may be physiologically more vulnerable to adverse effects of some illicit drugs, such as ecstasy (Allott & Redman, 2007; Liechti et al., 2001; Simmler et al., 2011). Thus, greater prevalence of use among males does not necessarily equate to greater harm. Festival-based interventions should be informed by evidence on gender differences in both prevalence and patterns of use, and sex differences in physiology/pharmacokinetics.

Festival type differences

As expected, multi-day festivalgoers were significantly more likely than single-day festivalgoers to report use of most drugs, particularly hallucinogens (A*OR*=12.8), nitrous

oxide (A*OR*=5.2) and cannabis (A*OR*=2.9). Multi-day festivalgoers also had higher overall rates of illicit drug use (A*OR*=2.7). These findings likely reflect differences in the styles of multi-day festivals (which are often 'transformational', i.e. they synergise well with psytrance music and aid self-insight), geography (often in regional locations featuring desirable environmental stimuli for psychedelic use), duration (greater 'window of opportunity', more likely to use drugs to manage cycles of ups and downs) and sociospatial elements. As discussed in the literature review, Dilkes-Frayne (2016) ethnographic research identified campsites as ideal spaces to engage in social drug use rituals (e.g. to share joints while winding down) and learn about/try new drugs (wide expertise and availability to draw on in a porous layout encouraging interaction). Fox et al. (2018) study of multi-day festivals in Colorado also suggested festival environments encourage drug experimentation due to availability within the grounds. However, only one previous study reported the prevalence of drug use at a multi-day festival (Hesse et al., 2010), and while prevalence of cannabis use was comparable to that in the present study (52% and 50% respectively), other illicit drug prevalences were much lower (e.g. LSD=1% vs. 25%, ecstasy=3% vs. 63%). These marked differences likely reflect the style of festival studied in Hesse et al. (2010); Roskilde Festival (Denmark) is an all-ages event which attracts families. Thus, not all multi-day festivals will feature higher rates of use than one-day festivals. Importantly, as wastewater studies, festivalgoer surveys and MGM data suggest, other factors such as age restrictions, subculture attracted, musical genres, event style and location can influence the nature and extent of drug use. Moreover, higher rates of use at multi-day festivals do not necessarily equal higher rates of harm. Drug use could be more spaced out at multi-day events and different types of people may attend (e.g. more experienced/informed users, those with an interest in HR).

The findings regarding festival type differences have some specific implications for HR interventions. Firstly, given a third of survey respondents reported using a psychedelic drug at multi-day festivals, if the festival features other characteristics which could attract psychedelic use (e.g. EDM genres, ≥18), onsite psychedelic peer-support services could be useful. As revealed in the literature review, studies of these services suggest they can unburden medical services, and may be more approachable than more 'official' medical services (Carvalho et al., 2014; Ruane, 2015). Secondly, a higher rate of nitrous oxide use was associated with multi-day festivals (21% vs. 4% at single-day festivals), probably because patrons can retreat to campsites where nitrous oxide can be shared easily. Thus, festival campsites should be considered key spaces for disseminating HR information related to this drug, such as tips for avoiding vitamin B12 deficiency – a known complication of recreational nitrous use (Chiang, Hung, Wang, Lee, & Yang, 2013; Stockton, Simonsen, &

Seago, 2017). The findings also suggest campsites provide a unique opportunity to disseminate HR advice on other drugs commonly used at these events (e.g. psychedelics).

Age differences

Younger respondents (aged 16–19 years, but particularly 16–17-year-olds) were less likely to report using ecstasy, cocaine and amphetamines, and had lower overall rates of illicit drug use than festivalgoers aged over 25. However, ecstasy was still the most commonly reported illicit drug used in these younger age groups, with 36% of 16–17-year-olds and 46% of 18–19-year-olds reporting use. While statistical differences in age were not reported in previous festival studies, Martinus et al. (2010) noted lower rates of illicit drug at a UK festival among those <18 versus those aged 18–24 (20% vs. 32%), and Lim et al. (2010) reported a negative age correlation for past month illicit drug use among Australian festivalgoers. Although younger festivalgoers in the present study were less likely to report illicit drug use, they may represent a high-risk group. As will be discussed later, younger festivalgoers were found be at greater odds of engaging in various risky practices. Additionally, over two decades ago, Lenton et al. (1997) warned that the risk of drug-related harms may increase as these events become more mainstream, and younger, less experienced people join the scene. While there are no known studies investigating age difference in terms of morbidity/adverse effects, the literature review (see *Table 2.11*) found a third of known Australian drug-related festival deaths were among 17–19-year-olds (n=7). Thus, the findings presented in this thesis, consistent with the existing literature, suggest interventions should target younger people newer to the scene to encourage them to adopt responsible/informed practices early in their drug-using careers and to help establish a growing HR culture. However, since higher rates were observed in older age groups, it is important to target festivalgoers at all stages of their drug-using career. Issues related to complacency about risk and shifting market trends across drug-using careers warrant attention (discussed further later).

Musical preferences

Lastly, those with a preference for EDM were significantly more likely to report use of all drug types (except cannabis) and had higher rates of any illicit drug use. This is consistent with the literature review, which found most Australian festival deaths (71%) occurred at EDM festivals (see *Patterns in festival deaths*). It is also consistent with studies which have investigated musical preferences and drug use (Duff et al., 2007; Lim et al., 2008). Combined, the findings suggest EDM festivals should be considered higher risk for illicit drug use during event planning. However, it is worth noting that most festivals currently feature some EDM, given its predominance in popular music culture. Thus, to be more precise, those festivals featuring only EDM, and/or those featuring particularly hardcore

EDM genres (e.g. hardcore techno, hard house and trance) should be considered higher risk. This recommendation is consistent with the finding that 60% of the Australian festival deaths occurred at hardcore EDM events and bush doof-style events. That said, a significant minority of deaths occurred at mainstream metropolitan festivals, often which featured some EDM acts and warm temperatures. This highlights the importance of considering a range of factors which increase risk. While these findings could be used to argue for increasing drug policing at EDM festivals, findings from the present study and other studies (Hughes et al., 2017) suggest drug policing inadvertently increases risk, so this would not be advised. Rather, increased safety measures (e.g. higher levels of onsite medical services) are recommended.

These prevalence data have several implications. Firstly, the high rates of illicit drug use identified here, and similar rates in Hughes et al. (2017), call into question the efficacy of current policing approaches, which are often portrayed as being highly effective at deterring drug use (e.g. Mullaney, 2015). Secondly, while recognising issues with representativeness, the evidence points towards very high rates of drug use at festivals that warrant medical and environmental HR responses, but should also be seen as a unique opportunity for preventative intervention (e.g. with education). Thirdly, the findings raise questions about the extent to which illicit drug use is normalised within Australian festival culture. Indeed, the literature review identified accumulating evidence suggesting ecstasy use is becoming normalised in p (e.g. Duff, 2005; Wilson et al., 2010), and the present research explored this possibility. Although there are critics of normalisation of drug use (e.g. Shiner & Newburn, 1997), if normalised, policies and approaches to drug use at festivals must be re-evaluated.

Indications of normalisation

The present study explored key components of normalisation as outlined in (Parker et al., 2002). Findings regarding four components are summarised first, followed by comparisons with other normalisation data, and evidence regarding differentiated normalisation and its implications.

Key components of normalisation

The research produced strong indications that illicit drug use at Australian festivals was normalised. For example, there was high perceived availability (only 2% thought it would have been very difficult to access illicit drugs at the last festival), most respondents had used in these settings recently, about half reported always or mostly using in these settings, almost everyone believed illicit drug use was a normal feature of attending festivals, and only 13%

reported being very unlikely to use illicit drugs at festivals in the future. Additionally, almost a third reported first-time use of ecstasy at festivals.

Comparison with normalisation findings in the literature

While no known studies have investigated key components of normalisation specifically within the context of attending festivals, a recent US study reported "nearly all [respondents] unanimously [sic] reported normalization of DOA [drugs of abuse] at music festivals" (Fox et al., 2018, p. 1) – consistent with 96% of respondents reporting normalisation in the present study. Additionally, in an earlier Australian study of aspects of normalisation in festival attendees, Wilson et al. (2010) found high perceived general availability (56% reporting ecstasy as easy to obtain) and high rates of recent illicit drug use (>50%). However, they claimed drug use was concentrated in people who had high contact with other illicit drug users, providing support for 'differentiated normalisation' – a growing view that normalisation only occurs among particular groups within a population (Pennay & Measham, 2016; Shildrick, 2002). While there were some indications of differentiation in the present study, it was less evident than in Wilson et al. (2010). However, Wilson et al. (2010) investigated drug use among people who attend festivals, not drug use at festivals themselves. This distinction is crucial, because setting factors are important. For example, the present study found higher drug usage rates at festivals than on normal nights out. Overall, while there was a minority in the present study (21–29%) who had not used illicit drugs at festivals, did not think they could easily access drugs and had few friends who used illicit drugs, providing some evidence for differentiated normalisation, most lifetime drug abstainers perceived illicit drug use at festivals as normal, suggesting widespread awareness and acceptance.

Implications of the normalisation data

Two main conclusions can be drawn from the normalisation data. Firstly, while there may be a degree of differentiated normalisation, illicit drugs were strongly integrated into festival culture within this sample. While recognising limitations with representativeness, the data suggests illicit drug use has become a mainstream activity for most people when they attend festivals. Secondly, the results suggest illicit drug use is more normalised in festival settings than other recreational nightlife settings, evident by higher perceived drug availability and usage rates than studies on clubs/bars, and higher frequency of use at festivals than other settings (as found in the present study).

It should be noted that the present study did not investigate 'cultural accommodation of illicit drugs' at festivals (the fifth component of normalisation outlined in Parker et al.

(2002)), because this component relates to how accepted/reflected illicit drug use is in wider society. Thus, in the case, it would relate to how reflected illicit drug use at festivals is in popular culture, policy, etc. However, the media review (see *Media coverage of festivals/policy discourses*) illustrated the prominence of the topic in media/policy discourses, and illicit drug use is widely reflected in cultural portrayals of festivals, such as films. Some recent examples include the 2018 motion picture *The Festival* and Netflix productions *XOXO* and *Someone great*, which all portray ecstasy use as a normal part of attending festivals. Thus, one could argue for widespread cultural accommodation of illicit drug use at festivals in the Western world.

The data pertaining to normalisation of drug use in the festival context presented in this study has a variety of implications for interventions. In concert with other researchers (e.g. Duff, 2005), if illicit drug use has become normalised (in this case, at festivals), it calls into question the efficacy of past prevention efforts and poses the question of whether the population may be impervious to future prevention efforts due to an already ingrained belief that illicit drug use is normal and acceptable at festivals. Normalisation means, firstly, that more resources should be dedicated to HR than demand and supply control. Secondly, that preventative efforts may need to be reconceived to better resonate with young people and encourage re-evaluation of existing beliefs. Thirdly, that more progressive HR approaches, and approaches which challenge risky cultural norms related to patterns of drug use (e.g. polydrug use), should be a priority (e.g. Duff, 2005). While in recent years there have been significant efforts to implement more progressive approaches (e.g. drug-checking), increased political support and willingness is needed for trials to be expanded (discussed further in *Conclusions*). Importantly, the argument that drug-checking will condone and normalise illicit drug use is weakened if illicit drug use is already normalised, as the evidence here suggests. Essentially, a more realistic and pragmatic approach is needed that focuses on encouraging more controlled and considered use, while simultaneously reconceiving preventative efforts. New initiatives should employ innovative methods to deliver accurate information (that resonates with lived experiences) to the hundreds of thousands of young Australians who attend festivals.

In addition, the data suggests festivals present unique opportunities for HR interventions and education which could extend to reducing harm in other venues (e.g. nightclubs). Consistent with other studies (Hesse et al., 2010), the data suggests uptake and reuptake of drugs is common at festivals. This has two implications. Firstly, targeted efforts should be directed at those new to the scene and using drugs for the first time. Secondly, festivalgoers should be educated on recent drug trends so those returning to drug use do not

rely on outdated information to inform decisions. Disseminating information in advance of the event (e.g. via the festival website, Facebook and emails), as well as at the event, may allow festivalgoers to make more careful decisions while not drug affected.

There are, however, limitations to consider. Firstly, while the data provide strong preliminary indications of normalisation of illicit drug use at festivals, this was the first known study of this phenomenon. It would therefore be useful to see whether the results are replicated in future studies. Future studies should also investigate any further advancements and/or reconceptualisations of the normalisation thesis.

Patterns

Polydrug use

Polydrug use may increase the risk of short and long-term harms (Gouzoulis-Mayfrank & Daumann, 2006). Thus, understanding the prevalence and correlates of polydrug use is important for informing interventions to prevent this practice and/or reduce associated harms. Concerningly, among respondents who used a drug at their last festival (excluding tobacco, but including alcohol), more than two-thirds reported using more than one drug and the median number of drugs used was three. The proportion reporting polydrug use in the present study was similar to the proportion reported in Hughes et al. (2017) (see *Table 4.14*), identical to the proportion reported in Boys et al. (1997) study of Australian raves (both 68%), and slightly lower than reported in Barrett et al. (2005) study of a Canadian rave (68% vs. 80%).

The literature review found previous published studies had not delineated festival-specific polydrug use combinations. It was important to address this gap in the literature to inform education targeting festivalgoers and clinicians treating festivalgoers. While significant diversity in polydrug use patterns was identified in the present study (over 300 unique drug combinations), particularly at multi-day festivals, about half reported a combination of ecstasy, alcohol and/or cannabis use (see *Table 4.12*). In contrast to earlier rave culture, alcohol was the most common drug mixed (90% of illicit drug users reported alcohol use), followed by ecstasy. In the literature review, Boys et al. (1997) expressed concern that warnings about mixing alcohol with other drugs were not be heeded by a minority of rave attendees sampled (18%). This is interesting to reflect on 20 years later, when concurrent alcohol use was reported by an overwhelming majority of festivalgoers and played a central role in the mix of substances used. This cultural shift of adding alcohol to the mix raises concern about health risks associated with mixing CNS depressants and

stimulants, given evidence this mix can increase toxicity (Farooq, Bhatt, & Patel, 2009; Hernandez-Rabaza et al., 2010), have unpredictable effects on the body (Mikula et al., 2009), and mask effects, thus encouraging re-dosing. Other festival/rave researchers have expressed concern about alcohol-stimulant co-administration (e.g. Barrett et al., 2005). Additionally, as evident in the media coverage of festival deaths (see *Table 2.12*), mixed-drug toxicity was commonly cited as the cause of death. It should be noted, however, that the data from the present study does not show the timeframe in which the drugs were consumed, and the concurrent blood concentration of each drug may have varied considerably, influencing risk. Nevertheless, self-estimating pharmacokinetics is problematic and using multiple drugs of unknown content/dosage within short timeframes like festivals could heighten the risk of adverse reactions.

One drug combination in particular warrants attention. In the review of the MGM literature and KI interviews, the combination of GHB and alcohol was identified as a problematic mix due to the risk of potentiation, dangerous symptom combinations and the associated burden on EMS (Dutch & Austin, 2012; Krul & Girbes, 2011). Less than 1% of the sample (n=19) reported using both GHB and alcohol at the last festival, but most GHB users (76%) also used alcohol. Given the low frequency of GHB use identified in this sample, finding ways to target networks of GHB users could be more effective and appropriate than more generalised education campaigns targeting festivalgoers.

Correlates of illicit polydrug use

A multivariable analysis with illicit polydrug use (i.e. using more than two illicit drugs) as the dependent variable revealed associations with male gender, more frequent festival attendance, a preference for EDM, and attendance at multi-day festivals. Attendance at a multi-day festival was the strongest predictor of illicit polydrug use (AOR=2.7), likely for reasons including the larger window of opportunity multi-day festivals afford, use of cycles of ‘uppers’ and ‘downers’ to maintain energy and manage comedowns/sleep, and socio-spatial issues pertaining to campsites. However, the data do not explain the extent polydrug use was pre-planned. Previous researchers noted that alcohol often preceded the use of other drugs, and may increase the probability of polydrug use due to lowered inhibitions (Barrett et al., 2005; Boys et al., 1997). While individual drug-using sequences are unclear from the quantitative data, qualitative data provide some support for this explanation, with multiple participants reporting hasty opportunistic polydrug use. The issue of opportunistic drug use and vulnerability to polydrug use when using alcohol warrants attention, given the risks noted earlier. Specifically, there are implications for education regarding increased unpredictability and toxicity associated with polydrug use and encouraging

conscious/considered planning of drug use, including being mindful that you are more likely to make riskier decisions when alcohol-affected. The take-home message should be not to mix any drugs when unaware of the potential interaction effects, which is further compounded by the impure nature of illicit drugs and ongoing risk of misrepresented NPS. Delivering these messages via peer education programs in festival campsites and through digital technologies before and during the festival could be of value in deterring risky polydrug use.

Both quantitative and qualitative data were consistent with the typical pattern of polydrug use described in other studies (Barrett et al., 2005; Boys et al., 1997). This pattern involves alcohol being used at all times, stimulants used most often before and during festivals, and drugs with depressant properties used most often after festivals. However, there were also cases of pre-festival depressant use and post-festival stimulant use. Indeed, 9% of one-day festivalgoers reported using ecstasy after the last festival, and qualitative accounts revealed the end of the festival did not mark the end of the partying for everyone. The qualitative analysis revealed how 'pre's' were an important part of the day, involving alcohol and stimulant use to both relax and 'amp up'. Pre-drinking was also described as a way to save money, extend the party and plan for the day. Post-festival drug use was more variable, with suggestions younger festivalgoers are more inclined to 'kick on' to after-parties with further stimulant use, while older festivalgoers may opt for more relaxing gatherings with depressant drugs. Pre- and post-festival activities should be considered when targeting interventions. Additionally, the earlier review of festival deaths suggested these cycles of uppers and downers, and attempts to counteract effects, may contribute to lethality. While using a depressant to counteract a stimulant may aid sleep, trying to sleep off adverse effects can be dangerous, and toxicology sometimes revealed a 'cocktail of drugs', often including benzodiazepines, in deceased festivalgoers (e.g. Scott, 2019). The risks associated with self-medicating to counteract unwanted drug effects warrant attention. While in some cases alleviating symptoms like anxiety and insomnia via depressant drug use may be medically beneficial, it is likely the associated risks are not fully understood and/or considered by festivalgoers. Future research should explore festivalgoers' self-management of drug effects, and future education campaigns should raise awareness of self-medicating risks and encourage pre-planning of comedowns with natural strategies (e.g. set bedtime, gradual wind-down, breathing/meditation exercises).

Individual drug patterns

Few published articles delineate festival-specific details of use for individual drugs. However, a greater understanding of what forms are used and amounts being used is

important for understanding risk and informing interventions. Alcohol and ecstasy were the primary drugs used by survey respondents, and are therefore discussed in detail below.

Alcohol

The median number of reported standard alcoholic drinks per festival day was 10; 89% of research participants exceeded the recommend maximum of four standard drinks, which increases the risk of injury according to 2009 Australian guidelines (National Health and Medical Research Council, 2018). The present study is the first to examine amounts of alcohol used in association with contemporary Australian festivals, so no direct comparisons are possible; however, alcohol consumption in the present study was higher than that reported at other recreational events. For example, Barrett et al. (2005) reported an average of 6.4 drinks at the last Canadian rave, and Duff and Rowland (2006) reported that Australian clubbers/ravers reported an average of 6–7 drinks on their last occasion of drinking. The higher amounts observed in the present study likely relate to setting factors (e.g. festivals are longer, out-of-the-ordinary events).

Polydrug users drank more alcohol than alcohol-only users (see *Figure 4.10*). This could reflect simulant effects masking depressant effects, allowing polydrug users to drink more over a longer duration; polydrug users drinking alcohol to counteract stimulant effects; and/or polydrug users being a 'harder-partying' group with respect to all substances, including alcohol. Whatever the explanation, this finding highlights the need for HR education on alcohol–illicit drug co-use.

While respondents in the present study reported drinking similar amounts before and during festivals, 'pre-drinks' typically take place over a shorter space of time, suggesting bingeing was more common before festivals, perhaps to avoid onsite price premiums. Binge drinking during 'pre-drinks' has also been documented in other Australian studies of partygoers (Pennay, 2012). As previously discussed, this sequence of drinking alcohol first may have negative repercussions for the trajectory of drug use. Initiatives targeting pre-drinking which highlight the negatives of this practice, such as dehydrating early, headaches, and deleterious effects on mood/memory and decision-making, may have merit. Drinking interventions could encourage festivalgoers to optimise their experience by pacing themselves so they can enjoy and remember the day.

Although males drank more alcohol in absolute terms, a higher proportion of participating females were classified as 'high-risk' drinkers according to the 2001 NHMRC guidelines (*Appendix E.20*). While the current guidelines are the same for males and females (National Health and Medical Research Council, 2018, currently under review), evidence

suggests females are more vulnerable to alcohol toxicity (Alfonso-Loeches, Pascual, & Guerri, 2013), so while females drank less, they were not necessarily at lower health risk. An unsurprising finding was that a higher proportion of females drank wine, while a higher proportion of males drank beer – an accepted Australian cultural norm, but one which could be challenged, given wine's higher alcohol concentration, allowing it to be consumed more rapidly and cause higher toxicity. This is an area which could be investigated in future research.

Ecstasy

The median number of ecstasy pills/tablets the survey respondents reportedly used at one-day festivals was 2.8, higher than earlier studies of Canadian raves (1.1 pills) (Barrett et al., 2005), Dutch house parties (2 pills) (Van De Wijngaart et al., 1999) and a large-scale Australian dance party (2.5 pills) (Irvine et al., 2006). This median is also higher than the median typical amount reported in the EDRS in the same data collection year, although capsule use was the same (*Mdn*=2) (Stafford & Breen, 2017). People reporting mixing forms also reported the highest use (*Mdn*=5 pills/caps). Unfortunately, other studies did not report on capsule forms so no further comparisons were possible. Overall, the data suggest festivalgoers in this sample were using ecstasy at high levels. While recognising these are long events (~8–10hrs), which commonly also entail pre- and post-event drug use; higher use poses greater risk of toxicity and adverse effects. Thus, HR education should encourage smaller doses and increased awareness of the implications/risks of nonlinear pharmacokinetics (De La Torre et al., 2000; Mueller et al., 2008), shifting purity trends, the risk of misrepresentation and delayed onset. Something akin to The Loop's 'crush/dab/wait' campaign in the UK (The Loop, 2015), which encourages starting small and waiting before redosing, should be established. Again, HR efforts could be significantly aided by expanding sophisticated drug-checking trials so festivalgoers can make more informed decisions about usage/dosage (discussed further later).

Patterns of ecstasy use across the day also warrant consideration. At one-day festivals, 16% of the total sample (or 33% of ecstasy users) reported using ecstasy before arriving, 50% used during the festival and 9% after leaving (18% of ecstasy users). While no contemporary studies have examined pre/post-festival patterns of use, these rates are higher than observed in Boys et al. (1997) study of Australian 'rave' attendees (6% before, 23% during, 1% after). However, Boys et al. (1997) included attendees of underground and commercial raves. Thus, higher pre-festival use in the present study could reflect increased pre-loading practices in response to drug policing at events now. Indeed, people attending commercial 'raves' in the mid-90s did not face the current threat of drug detection dogs, and

underground raves were not policed, so patrons were unlikely to pre-load to avoid detection. However, Fernandez-Calderón et al. (2011) study of underground ravers in Spain observed very similar pre/post rates to the current study (17% before, 53% during, 13% after), suggesting pre-event ecstasy use may be common regardless of policing. Indeed, qualitative accounts in the present study found festivalgoers also use ecstasy beforehand to amp up and enjoy pre-event rituals such as snorting lines together, which is difficult to do in private onsite. However, both the qualitative and quantitative data suggest some festivalgoers used ecstasy beforehand specifically to avoid detection by drug dogs, while some used a portion of their ecstasy beforehand to reduce potential penalties. Thus, a mix of factors motivated pre-event ecstasy use, but shifts in policing have likely altered patterns of use (discussed further in *Drug detection dogs*). Overall, the data suggest substantial pre- and post-festival ecstasy use, which should be considered when targeting interventions. For example, given a third of ecstasy users reported use before arriving, offsite drug-checking in the day/s preceding the festival (in addition to onsite) could be implemented to try to influence consumer behaviour before it happens. This is consistent with recommendations following the 2018 ACT trial (The STA-SAFE consortium, 2018). In addition, pre- and post-festival HR messages could emphasise how pre-loading can negatively affect the trajectory of the day and how post-festival use increases the risk of experiencing adverse effects due to increased toxicity, exhaustion and sleep deprivation.

The ecstasy market has been diversifying rapidly in recent years, and increasing availability of non-pill forms has important implications for risk and risk reduction (Rigg & Sharp, 2018). While in the present research traditional pills remained the most popular form at one-day festivals, pills and capsules were equally popular at multi-day festivals. However, since data collection for this study, national monitoring systems have observed an increasing trend in the use for non-pill forms, suggesting newer forms may be even more popular among festivalgoers now (Peacock et al., 2018). Crystal and powder forms were also more popular at multi-day festivals, perhaps due to better privacy options making administration easier (e.g. campsites). Some concerns were raised in the present study regarding perceptions of safety associated with different ecstasy forms. Specifically, a strong theme that emerged within the qualitative data was that participants trusted the purity of non-pill forms. Some participants essentially believed crystals equalled pure MDMA, and some younger participants actually thought ecstasy and MDMA were entirely different drugs. This misinformation is concerning, because non-pill forms can also be adulterated/misrepresented. Indeed, NPS misrepresented as MDMA crystal capsules were linked to several deaths in Melbourne in 2017 (Energy Control International, 2017). Additionally, DanceSafe in the USA found powder/crystal forms were no purer than pills

they tested (Saleemi et al., 2017). Due to the increasing popularity/availability of non-pill forms, research investigating users' beliefs alongside forensic testing of the purity of different forms would be worthwhile. A clearer understanding of differences in content/potency and associated risks is needed to provide appropriate HR advice. In the meantime, there is a need to debunk myths (e.g. crystals=pure MDMA) which could lead to a false sense of security.

As noted in the literature review, ROAs were not reported in previous studies of festival-type events, although, like forms of ecstasy, they were perhaps of less relevance in the past. While ROAs do have risk implications of their own (e.g. onset of effects and intensity of the high (Winstock, 2017), the increasing risk of NPS misrepresentation and the diversifying ecstasy market means there is now a greater need to understand how ecstasy is being used. While most participants in the current study reported swallowing ecstasy, snorting was also common (25% at one-day festivals; 41% at multi-day festivals), particularly among males. This has HR implications, given those who snort drugs sold as ecstasy are at heightened risk of overdose, because certain NPS (e.g. 25-I-NBOMe) are significantly more potent through this route (Erowid). The EDRS data provides further support of snorting as a popular ROA, with 58% of crystal users and 43% of pill users reporting snorting recently (Stafford & Breen, 2017). Thus, awareness about the risks associated with ROAs, particularly that snorting can increase risk of overdosing on unknown NPS, should be increased. Additionally, a greater understanding of the appeal of different ROAs could help better inform interventions. The qualitative data analysed here suggested that snorting lines was viewed as a fun pre-event ritual, and was perceived to give better dosage control than swallowing.

Practices

Risk practices

As mentioned earlier, no known Australian studies had investigated protective and risk practices associated with using drugs at festivals. This information is critical for informing HR interventions, and can provide indications of enthusiasm for HR which can then be built on.

Illicit drug users reported engaging in a variety of practices which could increase the risk of harm (*Mdn*=4). One particularly concerning finding (which was discussed in Grigg et al. (2018a)) was that 48% of those who used ecstasy pills reported double dropping at the last festival. Three correlates of this practice warrant consideration. Firstly, the finding that

more frequent ecstasy users were more likely to report double dropping may reflect a perceived or actual tolerance to MDMA among regular users. It also raises the question of whether regular ecstasy users become complacent about dosing, which could be problematic in an unpredictable drug market. Secondly, almost a third of double droppers were female, and females may be at greater risk of adverse effects from MDMA use (Allott & Redman, 2007; Liechti et al., 2001; Simmler et al., 2011). Thirdly, that capsule users were less likely than pill users to report double dropping could reflect a perception that capsules are more potent than pills. However, it is possible some consumers purchased crystalline or powder MDMA then packaged capsules themselves. A perceived increase in control over dosage could reduce the desire to double drop, or in contrast, may increase confidence in double dropping.

These findings about double dropping, in combination with current market trends (e.g. increasing purity, ongoing risk of NPS misrepresentation), suggest this practice should be addressed specifically within a festivalgoer education campaign. These findings may also provide further grounds for expanding and evaluating drug-checking services. However, unlike the 2018 ACT trial (The STA-SAFE consortium, 2018), the findings presented here suggest services should chemically analyse both content and dose. While analysing dose has some unique considerations/limitations (which will be discussed later), this type of testing has been successfully carried out at UK festivals (https://wearetheloop.org/testing). Recently, The Loop detected extremely high-dose pills circulating at a festival and disseminated real-time, potentially lifesaving warnings to festivalgoers (Burke, 2018).

A few other reported risk factors are worth considering. Firstly, while recognising no intervention is 100% effective, the data suggest roadside drug testing is not deterring everyone from drug driving. While 5% of survey respondents reporting drug driving may seem a low prevalence, drug driving is a high-risk behaviour (illicit drugs were detected in about two in five of all drivers killed in the past five years in Victoria and WA drivers in 2015 (Road Safety Commission, 2016)) so further preventative efforts may be warranted. Given Duff and Rowland (2006) found most rave and club-goers drove for convenience or for lack of alternative options, expanding public transport options as a countermeasure may help. For example, government guidelines could encourage organisers to include public transport options in ticket prices or free/low cost shuttle bus options (already done for some events). Additionally, addressing drug-driving risks in festivalgoer education campaigns could help deter this practice. Secondly, the finding that 6% of participants consumed no water or isotonic fluids during the festival raises concern about awareness of the risks of dehydration. Thirdly, given one in five participants reported not sleeping for more than 24

hours, there are implications for raising awareness about the negative sequela of sleep deprivation on cognition and mood (Bosker, Kuypers, Conen, & Ramaekers, 2010; Pirona & Morgan, 2010). While it is unclear to what extent lack of sleep was due to a desire to keep partying and/or inability to sleep due to stimulant effects, one in four ecstasy users reported sleeping problems, suggesting there is value in providing advice on sleep management (discussed further in Sleeping *problems*) and raising awareness about the links between drug use and acute and persistent sleep disturbances (McCann, Sgambati, & Ricaurte, 2009; Ogeil, Rajaratnam, Phillips, Redman, & Broadbear, 2011; Pirona & Morgan, 2010; Schierenbeck, Riemann, Berger, & Hornyak).

Gender differences

Gender differences mean gender-targeted messaging should be considered when designing interventions. For example, a higher proportion of females than males reported not eating and drinking properly, whereas a higher proportion of males than females reported double dropping and going 24 hours or longer without sleeping. Thus, females engaged in less obvious – and thus less easily identified and addressed – risk practices than males. Again, given the pharmacokinetic evidence suggesting females are at greater risk than males of adverse effects, campaigns should emphasise the importance of proper hydration and nutrition in minimising health risks, particularly for females.

Insights from the qualitative data

Some additional risk behaviours were identified in the qualitative data. For example, participants reported returning to their tents alone when they were feeling unwell, which they subsequently believed exacerbated problems. While not explored quantitatively, this finding warrants consideration given this behaviour was flagged as a risk factor in the review of festival deaths (see *Risk factors identified in media reports*). Specifically, media accounts of festival deaths suggested that, in several cases, the deceased had returned to their tents, often alone, to recover. This behaviour is problematic because the combination of isolation and extreme temperatures places vulnerable festivalgoers at heightened health risk. This behaviour should be discouraged, and instead patrons encouraged to seek medical attention or relax in a chill-out zone where at-risk patrons can be monitored. Another response to this problem could be to deploy high-visibility campsite rovers to locate at-risk patrons and place a medical facility in close proximity to camps (as Dilkes-Frayne (2016) recommended). A relevant finding from the quantitative survey is that when asked about difficulties experienced at the last festival, 3% said they needed help but were unsure where to go. This suggests festivalgoers need advice on what to do when feeling unwell and better awareness of onsite support. In addition to on-foot rovers with easily identifiable clothing, depending

on the scale of the event, medical buggies could rove festivals and campgrounds to alert festivalgoers of their existence and transport those at risk to medical stations. Indeed, mini ambulances were described as crucial in the MGM literature (Grange et al., 2014). While recognising many festivals have poor mobile coverage and limited phone charging opportunities, festival smartphone apps could feature a help/emergency call function with built-in location detection to aid both festivalgoers and first responders (similar to the Emergency+ app: emergencyapp.triplezero.gov.au).

Protective practices

Although various risk practices were reported, respondents also reported actively seeking information about the content of their illicit drugs and engaging in a variety of other practices they believed would decrease the risk of harm (*Mdn*=6). For example, one in ten reported using a reagent testing kit, while half who used ecstasy pills looked on Pillreports.net. Other notable practices included starting with a smaller amount (26%), taking magnesium for muscle cramps (10%) and taking 5-HTP (6%) in an attempt to mitigate adverse effects of potential MDMA-related serotonin depletion. While no other Australian studies have explicitly investigated protective practices, Day et al. (2018) studied methods for sourcing information about content and found 6% of festivalgoers reported lifetime use of a reagent testing kit, and most had sought information about drug content from friends. While the proportions reporting some perceived protective practices are encouraging and demonstrate enthusiasm for HR, some lack empirical support. Four of these practices deserve closer consideration.

Whilst it is encouraging that some respondents were trying to test the contents of their drugs, as discussed in the literature review, colour reagent testing kits only provide indications of content and have various critical limitations which decreases their utility, such as inability to detect all substances and provide information on dose (Schneider, Galettis, Williams, Lucas, & Martin, 2016). Fox et al. (2018) also found some festivalgoers did not perceive illicit drug use as risky because reagent testing indicated their drugs were ‘pure’. Thus, to discourage testers developing a false sense of security, there is merit in raising awareness about the limitations of home testing kits and how to interpret the results conservatively.

The value of 5-HTP is also uncertain. KIs involved in this project expressed concern about the lack of evidence for the efficacy of 5-HTP in counteracting adverse effects of MDMA serotonin depletion. Moreover, one KI noted the possibility that 5-HTP use could inadvertently increase risk due to the potential for drug interactions leading to serotonin

syndrome. Indeed, an earlier Australian study expressed concerns about increasing use of substances like 5-HTP to either counter adverse effects of ecstasy or enhance the positive effects (Copeland, Dillon, & Gascoigne, 2006). The authors concluded there was a need for HR education to warn people who use ecstasy about mixing 'serotonin-enhancing substances' (e.g. ecstasy/MDMA, 5-HTP and SSRI anti-depressants). As there is still no conclusive evidence about whether and how 5-HTP can be used effectively and safely, this need for education remains.

The third practice to consider is starting with a smaller amount (i.e. a test dose). While this is certainly a positive step, respondents were not asked how long they waited before re-dosing. In hindsight, information about that timeframe would have been valuable because some drugs have slower onsets of action. The problem is festivalgoers may re-dose, thinking their pill contains a low dose of MDMA, when it actually contains a different, potentially more potent drug with a slower onset. Indeed, overdoses have reportedly occurred when people have consumed PMA (misrepresented as ecstasy) and re-dosed after thinking the pills were 'weak' (Caldicott et al., 2003) . Thus, raising awareness about recommended minimum timeframes for redosing could help ensure festivalgoers' HR efforts are not in vain. Again, a campaign akin to 'crush/dab/wait' is recommended (The Loop, 2015).

Lastly, the value of Pillreports.net warrants consideration. While the qualitative data revealed many respondents considered it a positive HR resource, its value is contested. For example, Vrolijk, Brunt, Vreeker, and Niesink (2017) recently investigated the reliability of the website by comparing subjective user reports on Pillreports.net with objective, validated reports on the DIMS database. They found 15% of reports contained information which they considered inaccurate and dangerous. Additionally, while not addressed by Vrolijk et al. (2017), there is strong potential for misidentification, which can occur when two pills have similar colours and logos, or manufacturers copy the appearance of well-known 'good' pills but give them entirely different content. Moreover, with the shift to non-pill forms, a significant portion of the market is not captured on Pillreports.net due to the lack of identifiable features. These issues notwithstanding, the website currently acts as the best available warning system for people who use ecstasy in Australia. Given the eagerness of respondents to seek information to protect their safety, and the fact two drug-checking trials have already occurred in the ACT, an online warning system with objective results should be established to enable Australians to access more reliable HR information. It could also publish drug seizure test results. While a new initiative, The Prompt Response Network, claims to be working towards establishing a warning system

(https://nccred.org.au/emergingdrugs/), and anecdotal reports suggest willingness in Victoria to translate police seizure data into real-time alerts for public health clinicians/workers, no such system exists yet. Until an online warning system is established, awareness of the limitations of Pillreports.net should be raised.

Insights from the qualitative data

The qualitative data also raised concerns about perceived protective behaviours with questionable efficacy. Many festivalgoer interviewees believed that past experience with drugs from the same batch, using reagent testing kits, purchasing drugs from a trusted source and/or use of certain forms of drugs (e.g. crystal forms of ecstasy) could almost entirely negate risk. These beliefs suggests some festivalgoers use drugs under an illusion of safety and thus neglect other, more validated protective practices (e.g. using a test dose, proper hydration). Other researchers have commented on similar types of misconceptions (Fox et al., 2018). While the data suggest festivalgoers care about reducing risk, it is critical they understand that positive past experiences with drugs and suppliers does not dispel risk. These misconceptions should be addressed in targeted educational campaigns and validated HR strategies should be encouraged.

Gender differences

Again, future HR efforts may benefit from considering gender differences. In the present study, a significantly higher proportion of females reported discussing an emergency plan in case they were feeling unwell, while a higher proportion of males reported testing their drugs. The former finding reflects barriers to seeking help. As discussed in the literature review, at least one male was reportedly encouraged to abandon the medical line by his friends (Begley & Arlington, 2015). This gender-based observation relates to broader issues of masculinity in society; men's unwillingness to seek help is well documented (e.g. Seidler, Dawes, Rice, Oliffe, & Dhillon, 2016; Vogel, Heimerdinger-Edwards, Hammer, & Hubbard, 2011). While recognising gender issues cannot be addressed in isolation (e.g. at festivals only), festival-based campaigns should seek to dispel the belief that getting help is 'weak', and encourage males to actively look out for/support other males.

Conclusions from the data on protective practices

Ultimately, these results suggest that while festivalgoers wanted to have fun and 'let loose', most were not (entirely) recklessly hedonistic and actively tried to reduce risk. This is partly evident in the higher median number of protective than risk practices. Thus, consistent with Martinus et al.'s (2010a) study of festivalgoers, and other studies of partygoers (e.g. Pennay, 2012), the data support the idea of controlled/calculated hedonism/intoxication, suggesting there are opportunities to build on festivalgoers' enthusiasm for HR. However, future efforts

should channel this enthusiasm into validated HR responses and provide nuanced advice about contentious strategies, such as colour reagent testing and using certain forms of drugs (e.g. crystals). As noted in the literature review, a social norms approach may be an effective individual behaviour change approach which could encourage positive behaviours and correct misconceptions about risk (Martinus et al., 2010; Wiedermann et al., 2014). That said, consistent with other Australian studies of partygoers (e.g. Barratt, Allen, & Lenton, 2014; Pennay, 2012), the qualitative data suggested there were exceptions, with one respondent being unapologetically reckless, reporting a desire to get 'fucked up' with little regard for their actions/personal safety. Thus, it is likely there is a minority impervious to messages about self-moderation.

MDMA water awareness guidelines

The literature review identified hyponatremia as a key health risk associated with MDMA use. Thus, ecstasy users in the present study were asked how much water they thought they should drink in a festival environment (with dancing) while using MDMA. Only 41% of ecstasy users were aware of the recommended water guidelines (500 ml per hour while active); 27% underestimated and 26% overestimated. Alarmingly, one in five thought they should drink as much water as possible. While both under- and over-hydration are hazardous, the latter raises concern about awareness of water intoxication risks. Interestingly, a KI in the study expressed the belief that simply being aware of the guidelines was inadequate, because people who use ecstasy need a more sophisticated understanding of the impact of MDMA on the body (e.g. regarding sweating, sodium levels and electrolytes) so they can more effectively manage their hydration. These findings have implications for HR education regarding water intake. Specifically, there should be consideration of the pros and cons of providing more comprehensive education. As discussed in the literature review, van Dijken et al. (2013) cautioned that most sports drinks contain insufficient electrolytes to counter risks when using MDMA. Recognising the unlikeliness of soup stalls being established at festivals, van Dijken et al. (2013) suggested designing protocols about consuming isotonic fluids and food. Signage accompanying onsite water stations and integrating this information into a festivalgoer campaign could be two ways of raising awareness of such protocols. Finally, given van Dijken et al. (2013) found a quarter of females sampled at a festival had mild hyponatremia (males=3%), and mortality from this condition mainly occurs in females, interventions should emphasise the greater physiological risk to females.

Obtaining drugs

While Australian police have reported an upwards trend in females carrying drugs into festivals in body cavities (Hansen, 2017), and research has identified buying drugs inside festivals as a potential consequence of drug policing (Hughes et al., 2017), no research had investigated methods for obtaining and carrying illicit drugs among Australian festivalgoers. Results presented here therefore address gaps in the literature and raise questions about the efficacy of current policing approaches.

Of those using illicit drugs at the festival, 72% reported carrying drugs into the festival themselves, a quarter reported organising/obtaining drugs once inside and a fifth reported organising before, but obtaining inside (e.g. someone else carried the drugs for them). A third of survey respondents reported obtaining drugs inside festivals to avoid police detection. This provides support for Hughes et al.'s (2017) identification of buying drugs inside the festival as a consequence of drug policing. These findings about purchasing drugs onsite raise concern about risk due to unknown drug contents, due to less opportunity for sourcing information and making informed decisions about use or dose. This concern is compounded by the finding that more than half those who obtained drugs inside obtained them from unknown person/s. These concerns are warranted, given a recent UK drug-checking pilot found festivalgoers who obtained drugs onsite were twice as likely to have been sold a misrepresented drug (Measham, 2019). Another finding worth noting is that the most common reason for obtaining drugs onsite was because the opportunity presented itself, another indication of high availability inside festivals.

Methods of carrying drugs have both policing and health implications. Most respondents did not carry their drugs in bags/wallets, which undermines the efficacy of bag checks. Moreover, the qualitative data suggested festivalgoers adjust their methods of carrying drugs according to the level of policing on the day (after receiving reports from 'spotters', Facebook pages, etc.). Essentially, festivalgoers are unlikely to present to the gates with drugs in their wallet/bag if there is a strong perceived threat. Qualitative accounts revealed highly creative and complicated methods of concealment which are unlikely to be detected by standard security checks. Two of the more concerning concealment methods were carrying drugs internally (reported by one in 10 females) and swallowing concealed drugs to retrieve once inside (via purging, reported by 1%). These internal concealment methods have clear health risks, such as inadequate packaging leading to drugs being absorbed by the body, the inability to purge the drugs or accidentally swallowing drugs hidden in the mouth. Indeed, KI provided reports of festivalgoers presenting to EDs when unable to remove drugs concealed internally. Additionally, at least one festivalgoer was

rushed to hospital after accidentally swallowing drugs he hid in his mouth upon seeing dogs (McClellan, 2015). Further, there have been media reports of young females caught concealing large amounts (up to 400 MDMA capsules/tablets) internally (Deutrom & Graham, 2018; Sutton, 2019). If this concealment trend continues at festivals, it is likely there will be future health incidents involving the complications described above.

The qualitative data suggests most participants thought the threat of detection was low and that one would have to be very unlucky to be caught. Multiple participants expressed the view that festival security lacks capacity to search every bag/wallet, and police with drug dogs lack capacity to search every person emitting a drug scent. One participant even suggested it was unfair the occasional 'unlucky' person was caught when most people around them were also in possession of drugs. This strongly contrasts with police warnings advising festivalgoers they will be caught if they bring drugs (Mack, 2017).

These results, coupled with high perceived availability and use of drugs discussed earlier, call into question the efficacy of current police deterrent and detection strategies. Not only did most carry their own drugs in undetected, they could easily access more drugs once inside. Although a minority reported internal concealment, risky concealment methods are a potentially harmful iatrogenic effect of policing. It should be considered whether such effects outweigh any deterrent effect in minimising overall harm. As discussed further in the *Drug detection dogs* section, drug dogs deterred drug use in only 4% of survey respondents. While hiding drugs internally may have been a response to any type of drug policing at the festival, this behaviour was significantly more common among those expecting dogs to be present on the day. Additionally, anecdotal reports suggest some festivalgoers believe concealing drugs internally prevents drug dogs from scenting them (Hansen, 2017).

Correlates of obtaining illicit drugs onsite have risk and policy implications. Younger age was highly predictive of obtaining drugs inside the festival (16–17-year-olds were 7.7 times as likely to do this as over-25s). Females, Victorians and multi-day festivalgoers were also more likely to obtain drugs onsite than males, Western Australians and single-day festivalgoers respectively. Interpretations of why younger festivalgoers were more likely to obtain drugs onsite include that they were more novice users without a regular supplier, they were more concerned about detection, or were first-time opportunistic users. This raises concern, because younger festivalgoers are likely to be particularly vulnerable to purchasing misrepresented drugs and experiencing problems due to inexperience and low tolerance. Indeed, Measham (2019) found those obtaining drugs onsite were younger and twice as likely to be sold misrepresented drugs. This vulnerability should be considered by policymakers and HR workers. That multi-day festivalgoers were more likely to obtain illicit

drugs onsite is consistent with notions of there being more opportunities to access/use drugs at these events (Dilkes-Frayne, 2016) and increased ability to smuggle drugs in. Overall, there is a need for safety nets to reduce risk associated with onsite buying. Onsite drug-checking linked to a systematic warning system is one possibility. Additionally, given there is no strong evidence that policing effectively deters drug use, but there is accumulating evidence to suggest current drug policing increases risk, there are grounds for revaluating the role of police at festivals. The qualitative interviews suggested benefits of a community-focused approach (police there to help, not to enforce drug laws), particularly since current approaches were found to cause negative perceptions of police (discussed later in *Punitive approaches*).

Supplying drugs

Eighteen per cent of respondents supplied illicit drugs at the last festival in some form. Although this figure seems high, it is lower than reported in Hughes et al. (2017) (22%). Consistent with Hughes et al. (2017), ecstasy was the most common drug sold, followed by cannabis. While acknowledging both studies have methodological limitations, together they point to substantial drug supply activity among festivalgoers. However, while Hughes et al. (2017) did not ask about the nature of supply, the present study found most activity could be described as 'social supply' (Duffy, Schaefer, Coomber, O'Connell, & Turnbull, 2006), given a third were simply carrying drugs for nervous friends, 88% were supplying drugs to known person/s and only 9% were supplying for profit. Nevertheless, these findings raise concern about 'social suppliers' putting themselves at a risk of a serious drug supply charge when they believe they are simply helping their friends. This suggests festivalgoers need education about how even low-level social supply is dealt with in law. Moreover, one KI explained that a supply charge is not the worst possible outcome of social supply, referencing two instances where festivalgoers supplied drugs to a friend who died after taking them. They thus emphasised that beyond criminal charges, social suppliers risked custodial sentences. Indeed, the media timeline (*Table 2.14*) documents Rebecca Hannibal's conviction for her role in facilitating the purchase of ecstasy pills which led to her friend's death, and Rebecca's friend who supplied her received a minimum 12-month custodial sentence (Hall, 2015). Thus, social suppliers should be aware of the risk they face – both criminally and in terms of enduring social and psychological ramifications – if their friends were harmed. That said, closed social supply markets are believed to be less harmful than open markets, because they can act a buffer between the end user and more criminal elements of the drug market (Lenton et al., 2016). This raises questions about whether policing and prosecution efforts should ignore low-level dealers or social suppliers, because

deterring them could have unintended consequences. For example, law enforcement could force otherwise law-abiding festivalgoers, who originally sourced drugs from within their social networks, to enter more criminal and dangerous illicit drug markets. Festivalgoers should be well informed of the risks associated with supplying drugs to friends.

Of those who sold drugs for profit at the last festival (9% of suppliers), two-fifths reported they would have sold at the festival regardless of the type/level of policing, although a third may have been influenced by drug detection dogs. However, the sample size was very small (n=26) and it is possible drug suppliers were less likely to participate in this survey, complete the question or pick a response that could contribute to evidence for increased policing. Therefore, supply and supply for profit could be underrepresented in this data, and the validity of responses is unknown. Nevertheless, these findings raise questions about the need to re-evaluate the value of existing deterrent approaches. While recognising there will always be a demand for drugs at festivals (e.g. from those who didn't score in time or want more drugs), the demand could be minimised if festivalgoers were not scared of carrying their own drugs in, highlighting the need for reconsideration of current approaches (further discussion in *Theme 4: Drug-related interventions*).

While younger age was the variable that best predicted obtaining illicit drugs at festivals, older age best predicted supplying drugs at festivals. However, this does not necessarily mean older festivalgoers were preying on or even supplying to younger festivalgoers. Further analyses revealed significantly more older festivalgoers (>25 years old) simply offered drugs to friends who did not have any, while significantly more younger respondents (16–17 and 18–19-year-olds) were selling for profit. This is consistent with other studies which have found motives for supplying drugs shift over time, with more people attempting to profit when younger (often due to lower income), but primarily helping out friends when older (Lenton, Grigg, Scott, Barratt, & Eleftheriadis, 2015). Multi-day festival attendance was the second-best predictive variable for obtaining illicit drugs at festivals – again consistent with the notion of their more engrained illicit drug markets.

Theme 2: Reasons for using drugs/positive effects

Another objective of this research was to explore motivations and positive effects associated with using drugs at festivals. As discussed throughout, the positive elements are largely ignored in the public debate about drug use at festivals. Additionally, very little academic attention has been paid to pleasurable drug use at contemporary festivals. As argued previously, continuing to ignore the fundamental reasons why people use drugs is

detrimental to HR efforts. For example, a complete failure to acknowledge the 'fun' side of drug use presents a biased picture unlikely to resonate with most festivalgoers' lived experiences. For many years now, drug policy advocates have been calling for a frank discussion about the reality of drug use at festivals, and smarter ways to approach the issue, to prevent future harms (Jones, 2013b; Tregoning, 2014b). This discussion needs to include evidence about the true extent of drug use and associated pleasures.

Motivations/reasons for use

With the exception of a few drugs which had more specific functions (e.g. aiding sleep), the most common reasons participants in this study reported using drugs was 'for fun'. As expected, certain classes of drugs were more commonly associated with certain motivations. For example, psychostimulants were more commonly used to increase energy, depressants were used to relax, wind down and sleep, and hallucinogens were used to enhance stimulus at festivals. Across the board, enhancing social interaction and enhancing the music rated highly. These findings are consistent with those of other studies, which found drugs are primarily used in these settings to enhance energy and the social and sensory experience (Engels & Ter Bogt, 2005; Fox et al., 2018; Lenton & Davidson, 1999).

The present study investigated some novel festival-specific motivations. For example, one in two ecstasy users nominated the cost of alcohol at festivals as a reason for using ecstasy, while about one in five reported using ecstasy rather than alcohol to avoid queues for alcohol/toilets. While previously there have been anecdotal reports of festivalgoers using illicit drugs due to the cost of alcohol and queues (Burfitt, 2018; Wolfe, 2018), and Dilkes-Frayne (2014) tracing of a drug use event revealed the participant was motivated to use ecstasy based on negative past experiences with alcohol at festivals (e.g. wasting money, time queuing), this is the first known quantitative empirical evidence. While one might deduce from these findings that lowering alcohol prices (or permitting higher-strength alcohol to make drinking more cost-effective) and minimising queuing times could reduce the desire to use ecstasy, this is not necessarily the case, because festivalgoers reported other reasons for using ecstasy. Additionally, reducing rates of ecstasy use would not necessarily reduce overall rates of harm. While no known deaths have been linked solely to alcohol intoxication at Australian festivals, higher alcohol use can lead to other forms of harm. Indeed, KIs who worked in crowd control expressed the view that ecstasy and cannabis users create a far more positive, social and manageable atmosphere than alcohol-affected patrons. Likewise, other KIs claimed alcohol intoxication was already the primary problem they encountered at festivals. Moreover, alcohol has been ranked as more harmful than ecstasy and other illicit party drugs (Bonomo et al., 2019; Nutt et al., 2010). Thus,

alcohol policies should not be loosened as a method of reducing the overall harm from drugs at festivals. However, alcohol licensing bodies should be aware that while low-alcohol content policies may be designed to decrease alcohol-related harm, they may inadvertently encourage illicit drug use. On the other hand, queues for water and toilet facilities should be shortened because they may discourage proper hydration and increase harm (e.g. dehydration and hyperthermia). The level of sanitation in toilets was also identified as a deterrent for hydration, suggesting more effective maintenance is required. Government guidelines should emphasise this link between queues/toilet sanitation and hydration and provide clear advice to festival organisers.

As mentioned in the literature review, other researchers have cautioned against focusing entirely on functional explanations (e.g. increased energy) and emphasised the importance of contextual pleasure in gaining a deeper understanding of drug-related behaviour (Duff, 2008). Thus, in the present study, motives were also investigated qualitatively. While the emergent themes were largely consistent with the quantitative data, the quantitative methods in this thesis were largely unable to capture respondents' strong emotional draw towards using illicit drugs at festivals due to the intensely pleasurable experiences they could bring. Festivals were described as creating unique spaces where friends and likeminded people come together to share an experience characterised by excitement, freedom, friendship, music and sensory overload. The expression of everyone being 'loved up' recurred throughout the interviews, and was closely linked to ecstasy use. Additionally, interviewees described feelings of freedom and happiness when walking into large green open spaces with bright lights, best friends and pumping music which could be felt (not just heard), surrounded by positive excited energy. Many respondents looked forward to these events months in advance and reminisced fondly about their experiences long after they occurred. New friendships were formed and existing friendships were strengthened based on festival experiences while using drugs, particularly ecstasy. Consistent with findings in Dilkes-Frayne (2014), these new connections and deeper connections persisted beyond the festival and thus had a long-term positive effect on their social wellbeing.

Comparisons between ecstasy and alcohol often arose when participants described reasons for using illicit drugs. Ecstasy was often described as having the positive effects one seeks in alcohol, but without the same drawbacks. For example, participants explained how ecstasy allowed them to truly immerse themselves in the moment without inhibition, while still remaining in control and remembering the experience the next day. They were also able to communicate with confidence, and still clearly articulate themselves. While both males

and females reported a preference for the effects of ecstasy, females in particular reported using ecstasy to avoid the messy effects of alcohol, such as loss of control (mental/physical) and memory. Females felt safer and less likely to make decisions they would regret when using ecstasy compared to alcohol. Participants reported concerns not only about how others perceived them, but about how they perceived themselves; they wanted to maintain self-control and self-respect. This is consistent with Martinus et al.'s (2010a) notion of controlled hedonism/intoxication. Ultimately, while festivalgoers viewed festivals as opportunities for escapism and excess, there was a desire among most for control/containment, which many thought was better achieved through using ecstasy. There may be benefits in acknowledging and building on these values in future HR initiatives.

Another strong theme identified in the qualitative data was that ecstasy was better suited to festivals than alcohol. Participant accounts provided a deeper understanding of the convenience of illicit drugs. For example, they explained how quickly and easily they could 'drop a pill or tab', as opposed to having to walk around with drinks all day which get spilled in crowds or while dancing. Indeed, the convenience and conspicuousness of illicit drug use at festival-type events was noted in previous studies (Barrett et al., 2005; Dilkes-Frayne, 2014). Participants also described the frustration of having to join a lengthy queue (often with no shade) to pay for drink tickets, queue again to collect the drinks, and soon after queue again to access unsanitary portable toilets, then repeat. With festival tickets often costing upwards of $150, respondents understandably did not want to waste hours of their day queuing up and missing performances. Additionally, drinking all day in the sun reportedly led to nausea and headaches, as well as abdominal fullness, which does not mix with skimpy summer festival fashion. Ultimately, both the effects of illicit drugs and convenience made them popular choices over alcohol. That said, paradoxically, the quantitative data showed illicit drug users tended to drink more alcohol than alcohol-only users, but also that their alcohol use was less about 'drinking to get drunk' and more about 'taking the edge off' and winding down after the festival.

Ultimately, the qualitative data revealed the depth of pleasurable experiences derived from drug use at festivals, which were firmly rooted within the festival context, and started well before the festival occurred and persisted longer after it ended. Consistent with views of other researchers (Duff, 2008; Duff et al., 2007; Hunt & Evans, 2008), interventions could benefit from greater consideration of the complex social and psychological benefits of controlled used of illicit drugs in these contexts, and more generally in contemporary youth culture. Campaigns which shift the focus to salutogenesis (and use a broad social norms approach that builds on enthusiasm identified for HR and promotes protective practices,

controlled drug use and positive life experiences at festivals, while also correcting misconceptions about safety) may be more effective than fear-based campaigns or 'scare tactics' focused entirely on extreme outcomes, which do not resonate with lived experiences and are thus not well received (Bleeker, 2008; Duff et al., 2007). This may be particularly true for the psychedelic drug-using community, which views drug use as positive and life-enhancing (Ruane, 2018). In summary, while it is critical festivalgoers are informed of the risks of drug use, campaigns that also focus on building positive life experiences, friendships and memories through informed and controlled drug use should be considered. Essentially, rather than remaining "trapped in a logic of risk and risk avoidance" (Duff, 2008, p. 391), it is perhaps time to also consider innovative approaches which recognise the broader experiences of drug use which extend beyond adverse outcomes and fleeting sensory pleasure.

Positive effects

Respondents were asked what positive effects they experienced in association with each drug used at the last festival attended. However, it should again be emphasised that polydrug use was very common in this sample, which creates problems when trying to attribute effects to individual drugs that may have synergistic effects. Nevertheless, consistent other studies (e.g. Fox et al., 2018), certain classes of drugs were commonly associated with certain positive effects (e.g. psychostimulants with energy, depressants with relaxation and improved sleep, and hallucinogens with enhanced senses, spirituality/introspection, enhanced creativity and mind expansion). Across the board, euphoria/happiness and enhanced social interaction rated highly.

Consistent with the qualitative comments mentioned earlier, ecstasy use was associated with twice as many positive effects as alcohol (*Mdn*=3 vs. 6), and had the highest median number of positive effects of all drugs. Interestingly, while 91% of ecstasy users attributed happiness to ecstasy, only half of alcohol users did. The only positive effect for which alcohol rated higher was 'relaxation' (42% vs. 20%). Overall, the results suggested respondents attributed numerous positive effects to ecstasy use, more so than any other drug.

Other less common but noteworthy positive effects associated with illicit drugs were enhanced sex and decreased aggression. About two in five ecstasy, cannabis and LSD users reported decreased aggression, while about one in four reported enhanced sex. These findings are consistent with Fox et al. (2018), who found one in four festivalgoers reported using drugs, particularly ecstasy, to enhance sex. Similarly, Engels and ter Bogt (2004) found factors related to sex ranked third in their hierarchy of motives for using ecstasy

among rave attendees. The relationship between drugs and sex has received significant academic attention, and is likely to vary between individuals and drugs (Palamar, Griffin-Tomas, Acosta, Ompad, & Cleland, 2018). For example, while some may use drugs for stamina or arousal, others may wish to deepen emotional connection. While some drugs can evoke a strong physical desire for sex (e.g. methamphetamine), others trigger a stronger emotional desire. Indeed, experiences on ecstasy are often described as being more sensual than sexual (Kennedy, Grov, & Parsons, 2010; McElrath, 2005). While there is conflicting evidence regarding the extent to which ecstasy acts as risk factor for unsafe sex (Kennedy et al., 2010; McElrath, 2005), it has been linked with sex with people and in positions regretted later (Kennedy et al., 2010), and high rates of unsafe casual sex have been reported among national EDRS samples (Peacock et al., 2018). Understanding all dimensions of the psychological appeal of illicit drugs, including sexuality/sensuality, could inform HR initiatives. For example, brief interventions provided as part of onsite drug-checking trials could address issues related to sexual health (Bang-Ping, 2009; Kumsar, Kumsar, & Dilbaz, 2016; Zemishlany, Aizenberg, & Weizman, 2001).

Decreased aggression was not identified as a positive effect of illicit drug use in the literature review. While a significantly greater proportion of males than females in this sample reported decreased aggression (and 44% of ecstasy users), one in four females did too. Thus, decreased aggression should be more broadly acknowledged as a positive effect which may add to the psychological appeal of certain illicit drugs, particularly in this context. This finding is also consistent with KIs' views regarding ecstasy and cannabis users being easier to manage than alcohol users (less aggressive, more social/happy). Thus, while evidence from this study and other studies (Hughes et al., 2017) suggests current policing at festivals has a limited deterrent effect, law enforcement should be aware that a potentially adverse effect of deterring ecstasy and cannabis use could be more anti-social behaviour associated with alcohol use. That said, while ecstasy may decrease aggression acutely, low serotonin in the days following may have the opposite effect (Reid, Elifson, & Sterk, 2007). Consideration of comedowns/adverse effects will be discussed under the next theme.

Theme 3: Drug-related harms/adverse effects

The many positive drug-related effects participants reported need to be considered alongside the negative ones. As revealed in the literature review, to date the existing literature on adverse events following drug use at festivals has focused on extreme cases (predominantly deaths), and mainly consists of individual case studies, or small case series, describing clinical features, treatment interventions and outcomes. Only two international studies had

surveyed festivalgoers about adverse effects, and both had methodological limitations. For example, Martinus et al. (2010) investigated drugs in general, in a survey that suffered from onsite sampling limitations (selection bias, unable to capture adverse effects after being surveyed) and only reported a handful of adverse effects (10% vomiting and heatstroke, 6% fighting and unsafe sex and 4% collapsing). Meanwhile, Fox et al. (2018) qualitatively interviewed festivalgoers onsite, but it was unclear whether the data was festival-specific and there was very superficial consideration of a small number of effects. Thus, a primary objective of the present study was to investigate types and severities of adverse effects associated with the use of different drugs at festivals. This type of survey data is important because deaths and hospitalisations do not provide the complete picture of harm, and more frequent, less severe adverse outcomes deserve more attention and could be opportunities for early intervention.

For all drugs, adverse physical effects were most commonly reported, followed by psychological and then social effects. However, adverse physical and psychological effects were roughly equal for LSD, reflective of respondents reporting 'a bad trip'. While ecstasy was associated with the greatest number of positive effects (*Mdn*=6), it was also associated with the greatest median number of negative effects (*Mdn*=3). Interestingly, alcohol had a median of only one complaint. While these finding may seem contradictory to previous comments regarding perceptions of ecstasy having fewer adverse effects than alcohol, several factors may explain this discrepancy. For ecstasy, the most common adverse effects associated with ecstasy use were bruxism (69%), comedowns (56%), increased body temperature (27%) and sleeping problems (26%). In contrast, alcohol was associated with hangovers (51%), nausea/vomiting (27%), headaches (17%) and memory loss (15%). While all of these effects were framed as "negative effects" in the survey, the proceeding questions investigating the severity of negative effects revealed ecstasy users may not view effects such as bruxism and comedowns as negative; rather, they are more likely perceived as an expected and manageable part of the overall experience. Indeed, this view was supported by the qualitative data. Secondly, adverse effects of ecstasy use may be perceived as preferable to adverse effects of alcohol (e.g. festivalgoers may prefer to grind their teeth than vomit, and they may prefer comedowns over hangovers). Put differently, it may be that the trade-off of effects is more desirable for ecstasy. A few common adverse effects associated with ecstasy are considered more closely below.

Comedowns

While government campaigns have traditionally provided extreme depictions of comedowns from ecstasy use (e.g. crying, depression), the qualitative data suggested they vary

considerably between individuals and instances of use. Most respondents described comedowns as being mild, expected and easily managed. Sometimes they experienced no comedown at all. The few who described more pronounced depressive symptoms linked them to bingeing behaviours (e.g. excessive ecstasy use, polydrug use and sleep deprivation). This finding is consistent with evidence suggesting subacute effects related to cognition and mood in the days following ecstasy use may be confounded by polydrug use and drug-induced sleep deprivation (Pirona & Morgan, 2010). For some, the comedown crept up on them days later (e.g. they noticed themselves feeling more irritable and negative). Several respondents reported learning to anticipate these effects and remember they would pass. The type/level of comedown management varied, with some describing intricate pre- and post-festival self-care routines, involving diet changes, supplements and exercise, while others simply opted to rest and spend the following day in front of the TV. Most had at least booked the following day off work to recuperate. Interestingly, one respondent described the comedown with his friends as one of his favourite parts of attending festivals, because it was a time for relaxing and reminiscing about the day. Ultimately, the varied nature of adverse drug experiences described has implications for how some of these 'negative' effects are framed, because the fear-based government campaigns which have operated in the past, featuring extreme depictions of comedowns, are unlikely to resonate with many ecstasy users' lived experiences. However, given bruxism and comedowns were so commonly experienced, campaigns educating ecstasy users on validated pre- and post-festival self-care routines to mitigate the risk of developing more pronounced symptoms, such as anxiety and/or dental erosion, could be beneficial.

Sleeping problems

The high proportion of respondents reporting sleeping problems after the last festival and the high proportion reporting risky bingeing/sleeping practices warrant consideration. Specifically, these findings suggest a need to raise awareness about links between drug use, acute and persistent sleep disturbances, cognitive ability and mood (Bosker et al., 2010; McCann et al., 2009; Ogeil et al., 2011; Pirona & Morgan, 2010; Schierenbeck et al., 2008). The issue of sleep management is also important, given indications in the present study and in media coverage of festival deaths that festivalgoers self-medicate with depressants to aid sleep and comedowns, which may increase risk of drug interactions and mask symptoms which merit medical assessment. Thus, to reduce risks associated with self-medicating and festivalgoers developing more pronounced psychological sequela after attending events, education should be provided on how to effectively manage the ups and downs safely and naturally. While recognising there is a wealth of information on the internet, simple validated

protocols with holistic health advice on sleep, nutrition and exercise pre- and post-festival could encourage more concerted and effective self-care.

Overheating

One in four ecstasy users reported an observable increase in their body temperature, and hyperthermia is one of the biggest health concerns in these settings. Therefore, education on effective cooling strategies and observable 'red flag' symptoms (e.g. red and dry skin) could reduce the risk of overheating leading to hyperthermia. Moreover, environmental cooling strategies, such as cool chill-out zones which are visibly inviting (e.g. bean bags, free water), stage misters, walk-through misting tents and appropriately situated free water stations could help reduce the risk of overheating. In planning phases, attention should be given to socio-spatial elements and creating assemblages which encourage cooling (e.g. locating shade and water throughout the site, with ample signage). Consistent with Dilkes-Frayne (2016), the qualitative data suggested key risk areas include walkways between stages and to the camping grounds, and crowded stage areas. As demonstrated in the results (see *Negative assemblages*), examining/hypothesising positive and negative assemblages for staying cool could be a highly useful exercise during event planning phases.

When asked about the severity of effects, 46% of ecstasy users said they experienced only positive effects, and a further 26% reported unexpected effects that were not necessarily bad. Thus, only 31% reported experiencing effects they considered negative, and these were almost entirely mild. Overall, for ecstasy users, and all illicit drug users, only 3% described the severity as moderate and less than 1% as severe. It could therefore be concluded that, for the vast majority of illicit drug users, the positives outweighed the negatives. Indeed, the median number of positive effects far exceeded the negative effects for all drug types.

Gender differences and other correlates

At the bivariable level, a higher proportion of females than males reported various adverse effects attributed to ecstasy (e.g. vomiting, shaking, anxiety, paranoia and irritability). Additionally, in multivariable analyses, being female and being younger age were associated with greater odds of experiencing a negative physical effect. This is consistent with evidence that females experience more intense and more adverse effects (Allott & Redman, 2007; Liechti et al., 2001; Simmler et al., 2011). However, the only variables in the multivariable analysis significantly associated with a negative psychological effect (investigated as a whole) were using drugs when in a bad mindset and not eating properly. A higher proportion of females than males reported these risk factors. The former predictor is unsurprising given respondents already had a negative psychological 'set', while not eating may have affected

general mood and the pharmacokinetics of the drug (e.g. increased and/or more rapid absorption) (Singh, 1999). The qualitative data suggested not eating properly can be intentional and/or accidental. Rushing/lack of organisation on the day, cost, limited food options and lines for food may discourage eating, while some may intentionally fast to avoid abdominal fullness for aesthetic reasons (e.g. to look good in their summer festival attire), to avoid nausea and to try to heighten the acute drug effects. Future revisions of jurisdictional event guidelines should encourage varied and affordable food options. A more nutritious option akin to $2 sausage sizzles could be effective. Education campaigns should also raise awareness about these potential risk factors, encourage planning ahead and eating a healthy diet, and discourage drug use when in a negative headspace. Again, this information could be included in a simple pre/post self-care protocol, which could be delivered via digital technologies. Lastly, given males and females were found to use comparable amounts of ecstasy, raising awareness about the physiological vulnerability of female ecstasy users may encourage more responsible dosage consideration and self-care.

Further insights from the qualitative data

The qualitative data were largely consistent with the quantitative data in terms of severity (mostly mild) and the types of adverse effects of ecstasy use. However, the qualitative data provided more contextual understanding of how adverse experiences unfolded for participants in real conditions. For example, there were reports of respondents returning to their tent to recover from overheating/dehydration, but exacerbating symptoms due to heat/exhaustion while walking and the warm conditions inside the tent. Given returning to camp to recover was identified as a risk factor in the review of drug-related deaths (see *Risk factors identified in media reports*), festivalgoers should be encouraged to attend a monitored chill-out zone or seek medical assessment instead. Designing these services with special areas for at-risk patrons desiring privacy may improve access.

The qualitative data also revealed that psychological symptoms were often linked to the highly stimulating festival environment and dense crowds. One participant described frightening perceptual disturbances which were exacerbated by being trapped in the main stage crowd. Given one in 10 ecstasy users reported anxiety/panic at the last festival, organisers could consider environmental interventions such as ‘crowd lifeguards’ (and promoting hand signals to alert lifeguards) and appropriate peer-support spaces for those experiencing psychological problems that do not require formal medical support. While crisis intervention services may only be appropriate at large transformational festivals featuring substantial psychedelic use (Carvalho et al., 2014; Ruane, 2015), easily accessible ‘safe spaces’ which are private, cool, calm and have crisis support/information available

could encourage improved mental health self-care and reduce burden on medical services. Framing these spaces in ways that don't attract stigma, such 'calm hubs' or 'relaxation hubs', may increase willingness to use them. For example, Munn et al. (2016) described a space called 'the Sanctuary' which is part of an integrated health and wellbeing zone at Shambhala festival, Canada. Such spaces can serve multiple functions, including disseminating HR information, identifying and supporting at-risk patrons, and being a safe place to discharge patients from onsite medical services (Munn et al., 2016). Thus, this type of multi-purpose chill-out space is recommended as a key HR strategy at festivals.

Conclusions from the findings on adverse effects

This study captured high-frequency, less severe adverse effects experienced by festivalgoers and discussed their implications for environmental and education interventions to reduce risk of more severe complications in future. However, given the current context of recent festival deaths, the first priority of HR education efforts should be on raising awareness of high-risk acute conditions (e.g. hyperthermia) and symptoms which merit medical assessment. However, given most festivalgoers experienced only positive or mild adverse effects, it is important to emphasise that traditional fear-based campaigns should be avoided. Education needs to be reconceived in ways that resonate with festivalgoers and account for a wider spectrum of experiences (positive and negative), while still getting key safety messages across. Rather than focusing entirely on risk avoidance, messages could promote health, happiness and positive life experiences. Severe complications involving hyperthermia/hyponatremia should be acknowledged as rare but more likely to occur in warm festival conditions. In addition to HR education on high-risk conditions and red flag symptoms, consistent with previously discussed findings, other priority areas are raising awareness of current market trends (e.g. NPS misrepresentation, high-purity ecstasy), discouraging risky practices (e.g. polydrug use, double dropping), promoting informed/considered use (safer dosing, hydration management) and encouraging help seeking (getting help is not 'weak'). Having a balanced 'look out for your mates' type campaign, integrating all these priority areas, could foster a safer festival culture. Another possibility could be to have two campaigns: one focusing on risk avoidance and addressing key priority areas (e.g. 'look out for your mates') and one focusing on promoting health and positive life experiences (e.g. 'make it count') to cover both angles.

Based on findings regarding adverse effects, secondary priorities could include HR advice on less severe, but more common adverse effects with the potential to develop into more pronounced health sequelae (e.g. comedowns > depression/anxiety, sleeping problems > sleep disturbances, teeth grinding > dental erosion). While no research has investigated the

prevalence of these issues among festivalgoers, Van De Wijngaart et al. (1999) found 32% of Dutch ravers reported developing health issues such as depression over time. Another secondary priority is more comprehensive education/HR advice on the most commonly used drugs, drugs associated with the highest number of adverse effects, and/or those most difficult to manage (e.g. alcohol and ecstasy).

Theme 4: Drug-related interventions

As already demonstrated, the management of drug-related issues at Australian festivals has been a highly contentious issue in recent years (see *Table 2.14*) due to increasing frequency of drug-related festival deaths (see *Table 2.11*). The most common approach currently involves promoting a zero-tolerance drug policy, supported by policing with drug detection dogs. While a variety of HR measures are also employed, existing drug policies limit the capacity (legally and financially) to improve and expand (or remove) strategies which could make events safer. As the debate continues, it is imperative to build on the evidence base regarding the efficacy of both existing approaches (e.g. drug dogs) and potential efficacy of new approaches (e.g. drug-checking). It is hoped the findings discussed below contribute to more evidence-informed responses.

Access and barriers to onsite first aid

The review of the MGM literature demonstrated the vital role of onsite medical services. Yet, the review also raised concerns about clinical governance, and the media coverage suggested many festivalgoers who died did not seek medical attention before falling critically unwell. Thus, a primary objective of this study was to explore access and barriers to onsite medical services among festivalgoers.

Overall, the research revealed reluctance to seek help from medical services. Firstly, of survey respondents who experienced moderate to severe negative effects at the last festival, only two (4%) reported seeking onsite medical attention, and only one sought offsite care. The most commonly reported barriers to seeking help were fear of negative treatment/judgment from staff (59%), legal issues (53%), others seeing/embarrassment/stigma (42%) and parents being notified (31%). One in 10 also reported negative past experiences with onsite medical services as a barrier. Secondly, about one in four reported that they would have felt uncomfortable accessing onsite medical services for a problem related to their illicit drug use at the last festival they attended. A common ‘other’ response was not wanting to inconvenience/burden their friends. Thirdly,

one in 10 said they had considered seeking help at a festival in the past, but didn't because they decided the issue wasn't serious enough (52%), were concerned about legal issues (33%), negative treatment by staff (26%) and/or parents/family being notified (24%).

The qualitative data were similarly mixed with respect to the level of comfort in accessing onsite medical services. While some expressed the view that onsite medical services are only there to help, others were very sceptical, lacked faith in the professionalism and competency of medical services (which they thought were often staffed by volunteers), thought they would exacerbate their symptoms/distress, judge them, preach to them (religion and anti-drugs) and could result in legal problems, family problems and bans from future events. There were also comments that the respondent's psychological state at the time acted as a barrier (e.g. scared/paranoid, unaware they could seek help).

Overall, the data suggested a significant minority of festivalgoers do not seek help when they need it. Barriers to seeking help should be lowered via reviewing onsite medical protocols/regulations which might engender negative perceptions, and campaigns to shift negative perceptions towards onsite medical services. The former will be considered first.

The data suggest staff conduct and competency warrant consideration. Whilst one would expect people in medical/helping roles to intrinsically practice empathic approaches, the data suggests this is not always the case. While it is unknown how common poor conduct is in practice, negative perceptions nonetheless act as a barrier. Given the importance of onsite medical services being approachable and calming in times of crisis, organisations should screen out staff with strong anti-drug views or judgemental approaches, and provide training on expressing empathy. The data suggest faith-based services present problems for some festivalgoers. While recognising some churches do great work in reducing drug-related harm (e.g. Sydney's Uniting Medically Supervised Injecting Centre), their success probably reflects lack of branding as a church and not preaching religion (Hegarty, 2019). Thus, to avoid deterring festivalgoers, onsite medical services should never preach religion. The issue of incompetence is harder to address and goes to issues discussed in the literature review regarding the lack of regulation and standardisation in the field (see *Conclusions drawn from the MGM literature*). The review of the MGM literature and jurisdictional guidelines in WA and Victoria highlighted a need for existing medical guidelines/policies to be reviewed (discussed further in the *HR-based approaches* section).

Targeted efforts are required to shift perceptions of onsite medical services and address other barriers identified above. A campaign could aim to:

- increase awareness/transparency in the help-seeking process to build trust in services (via assurances about competency, confidentiality and legal risk). Consideration should be given to promoting medical services as 'amnesty zones' where police do not patrol;
- promote earlier help-seeking via messages such as 'if you're not sure, let the friendly medical staff do a quick assessment'; and
- encourage festivalgoers to look out for each other – as noted previously, the perception that getting help is 'weak' needs to be rectified.

The data suggest that in some cases people are too drug-affected to recognise they need help or can get help, or too drug-affected to articulate it, highlighting the importance of friends looking for out each other. This also highlights the importance of support rovers identifying at-risk patrons. These messages could be built into a broader 'look out for your mates' campaign, as discussed previously.

Help-seeking campaigns may also benefit from considering age and gender differences. After controlling for other variables, being underage (16–17) and being female significantly predicted feeling uncomfortable about seeking help. Younger age also significantly predicted fear of legal issues, parents being notified and negative treatment. These findings have implications for policies for treating minors. For example, perhaps legal guardians should only be contacted under certain conditions to reduce the risk of deterring young people (e.g. when their condition is serious). Lastly, the finding that females were more likely to report feeling uncomfortable contrasts with previous comments regarding males avoiding seeking help. One interpretation could be that females have a greater internal fear of judgment, but greater external support from friends, while males may be more prone/vulnerable to peer pressures on the day. This again highlights the importance of addressing cultural stigmas, as discussed previously.

Access and barriers to harm reduction strategies

Besides medical services, various preventative/HR measures are commonly implemented at festivals. However, most of these strategies are not mandated and are therefore inconsistently implemented across festivals. Thus, the present study explored the extent to which different strategies were observed at the last festival attended. However, a few issues warrant consideration when interpreting the data. Firstly, the festivals attended may have varied considerably in their approaches to HR. Indeed, the qualitative data suggest some festivals were perceived as quite progressive and HR-focused, while others may have simply aimed to meet the minimum standards required for local government approval. Secondly, a lack of

observation does not necessarily mean these strategies were not in place – respondents may not have remembered or noticed them. Thirdly, simple observations provide little information about the quality of strategy implementation. For example, festivalgoers may observe water stations, but struggle to use them due to queues or inaccessible locations. Thus, respondents were also asked whether they experienced any difficulties in utilising HR measures. Overall, the data provides broad indications of respondents' awareness of strategies designed to make their festival experience safer, and points to areas which could be improved.

The median number of HR strategies observed was five (from a list of 11). Unsurprisingly, most respondents observed mandated strategies, such as first aid services and free water stations (each 82%), but other vital strategies were less consistently noted. For example, only about half reported observing chill-out areas (52%) and roving support staff (46%), and one in six observed information about drug safety. Water sprinklers and cooling tents were less commonly observed (16% and 10% respectively). While preventative cooling interventions may not be applicable in cooler months, most festivals occur in the Australian summer, suggesting there is room for improving cooling methods. When asked about actual problems experienced, about a third reported difficulty accessing food and toilet facilities, a quarter reported difficulty accessing free water and finding a shaded area to sit down, a fifth reported feeling uncomfortable from overcrowding and overheating, a tenth felt unwell and had difficulty getting to an exit, and 3% needed help, but were unsure where to go. While 3% may seem trivial, only 4% of survey respondents experienced moderate or severe drug effects. Thus, it is critical that the small minority that need help can access support easily.

Ultimately, while a range of HR strategies were observed, the data suggests there is considerable room for improvement. This finding is consistent with the earlier review of jurisdictional guidelines, which concluded further HR guidance was needed to produce more consistent standards of safety. Priorities are toilet facilities (number of toilets and cleanliness), water availability (number of outlets, locations and provision of cups/bottles), monitored chill-out spaces, roving support, affordable food options, environmental cooling strategies and information on drug safety. Consideration should also be given to mandating validated HR strategies. To improve awareness of strategies, festival organisers should promote them via the festival Facebook page, website and smartphone application. For example, in the days preceding the festival there could be Facebook posts promoting strategies, and on the day there could phone app alerts (e.g. "Feeling warm? Go take a break in one of our chill-out zones where you can access free water – marked below on the map").

Lastly, it is important to emphasise that it is not enough to simply implement strategies. Organisers must consider sociospatial factors to ensure festivalgoers are aware strategies exist, and feel comfortable accessing them and can do so easily. Dilkes-Frayne (2016) explained the value of examining when and how people travel across the festival to inform interventions. Specific recommendations included establishing HR strategies adjacent to festival stages (for those wishing to avoid isolation/group separation) and at campsites (for those wishing to escape stimulation), and ensuring any future trials of drug-checking include a station within the campground (in addition to the main stage area, because drugs are commonly obtained/used in campgrounds). Considering sociospatial issues, hypothetical assemblages and movements through the event when designing the layout is thus recommended to create a more enabling environment for HR.

Drug detection dogs

Given how hotly debated this strategy has been, and the evidence about the appropriateness of this strategy at festivals, a primary objective of this research was to investigate responses to the expected presence, and sightings, of drug dogs at the last festival attended.

Deterrent effect of drug detection dogs

One of the primary responses of interest was the deterrent effect. The findings suggest that, the expected presence of drug dogs did not deter the vast majority (96%) of festivalgoers in this sample who were intending/wanting to use drugs from using illicit drugs at the last festival they attended. Rather, the threat of drug dogs resulted in a variety of alternative responses to avoid detection.

Unintended effects of drug detection dogs

Consistent with previous studies (Dunn & Degenhardt, 2009), the most common response to the expected presence of drug dogs (among those who wanted to take drugs) was concealing their drugs well (48%). Many respondents also reported taking precautions to minimise the risk of encountering drug dogs (e.g. sending spotters ahead, 20%), whereas some avoided personal risk altogether by getting their friends or partners to carry their drugs for them (15%) or by buying drugs inside the festival grounds instead (11%). The last finding provides further support for Hughes et al. (2017) who identified buying drugs inside the festival as a potential consequence of this policing strategy. As mentioned previously, this response is concerning given festivalgoers purchasing drugs onsite are less likely to have information about those drugs. There is also a heightened risk of purchasing misrepresented drugs, because preference may be given to quick, inconspicuous transactions. This concern is

supported by Measham's (2019) finding that onsite purchases were twice as likely to be misrepresented. The finding that some respondents got others to carry their drugs in for them again suggests some festivalgoers are putting themselves at risk of a serious drug supply charge when they are only trying to help their friends. This finding also raises questions about how many supply prosecutions resulting from drug policing in this context involve 'social supply' (Lenton et al., 2016; Moyle et al., 2013). The finding that 10% decided to take drugs they considered less easily detected provides confirmation of suspicions that some festivalgoers switch from using drugs like cannabis to potentially more risky synthetic drugs which they perceive as less likely to be detected (Hughes et al., 2017; Jarvis, 2014). While some participants reported taking a smaller quantity of drugs to the festival (7%), which has implications for minimising the risk of harm (and providing evidence of 'restrictive deterrence'), closer investigation revealed most (63%) concomitantly reported behaviours which plausibly increase risk, such as taking drugs before arriving (5%), buying drugs inside the festival (23%), taking less easily detected drugs (33%) and getting friends to carry drugs for them (10%).

As discussed previously, other unintended effects which may have resulted from the use of drug detection dogs included hiding drugs internally and swallowing them to retrieve inside the festival (e.g. via vomiting). Internal concealment was significantly more common among those expecting drug dogs to be present, and raises serious concerns about future medical complications associated with this apparently emerging practice.

Another finding supporting previous research (Dunn & Degenhardt, 2009; Hickey et al., 2012) was that 10% of those in possession of illicit drugs reported swallowing them when sighting dogs at the last festival attended. While it is unclear whether this was panic consumption or planned behaviour in that situation, rapidly consuming drugs intended to be spaced across the day increases the risk of overdosing (Mulligan, 2013). It may also increase the risk of experiencing adverse effects like hyperthermia, given drugs would almost certainly be consumed during the afternoon, when temperatures are likely to be highest (Kiyatkin, Kim, Wakabayashi, Baumann, & Shaham, 2014; Kiyatkin & Ren, 2016). There are thus implications for addressing panic consumption in previously proposed 'look out for your mates' campaigns. Festivalgoers should be advised to discourage their peers from panicking and plan alternative responses (e.g. remain calm or discard drugs in amnesty bins – discussed further later). Another more radical approach proposed and/or supported by many KI interviewed, and recommended for consideration by the NSW Coroner as part of the inquest into six festival deaths (Grahame, 2019), is decriminalising small amounts of illicit drugs for personal use. Indeed, while not specific to festivals, such an approach has

been successfully implemented in Amsterdam with their 'five pills policy' (no legal or civil penalties if found in possession of five or fewer pills), which is supported by drug-checking stations (Glazer, 2015; Mammoser, 2015). While this five pills policy was met with opposition from conservative politicians, the city authorities believe this approach encourages people to use more responsibly and seek help when needed, and thus improves public health outcomes. Interestingly, while not framed as a form of decriminalisation, recent legislative changes in NSW mean festivalgoers can receive on-the-spot fines, rather than court attendance notices, for drug possession offences. While this avoids the risk of a criminal record, concerns have been expressed that it actually represents a harsher criminal response because most people who attend court without prior records would have the charge dismissed anyway (Gotsis, 2018). Given the present study found concern about wasting money was a common barrier to discarding drugs when concerned about detection (*Table 5.71*), the threat of a fine could pose similar risks to a criminal record (e.g. panicked responses). Thus, if decriminalisation is ever considered, the financial penalties should be designed carefully.

Detection from positive drug dog identifications

Ninety-seven per cent of respondents who had illicit drugs on their person when they saw dogs at the last festival went undetected. Moreover, the 3% positively identified by drug dogs still managed to carry their drugs into the festival grounds, because police performing the searches were unable to detect them. Thus, no respondents in this sample reported being detected at the last festival attended due to this policing strategy. The failure to detect drugs raised questions about whether the drugs were hidden internally. Interestingly, police recently warned female festivalgoers, who they claimed are increasingly hiding their drugs internally, that they will still be detected and prosecuted, even though they did not explain how this would be possible given current search powers do not allow searches of body cavities (Hansen, 2017). However, further analysis to explore this possibility revealed festivalgoers were carrying their drugs in underwear or a bag/wallet. These successful evasions raise questions about the efficacy of current police search protocols. While one might then argue for increasing police search powers, given the legal ambiguities (Meagher, 2009), and opposition from civil liberties and legal groups (Malins, 2017; New South Wales Council for Civil Liberties, 2018; The Law Society of New South Wales, 2016), a more appropriate response would be to re-evaluate whether searches should take place at all. Moreover, if an argument was made to extend powers to allow cavity searches (to increase detection ability and deter internal concealment), this could trigger an increase in patrons opting to swallow concealed drugs and purge them inside the festival. This iatrogenic effect

is arguably the most dangerous method of smuggling drugs, and should therefore be considered in future debate about policing. While acknowledging this method was rare in this cohort, there may have been underreporting due to stigma and/or distrust of how the data would be used. Overall, the findings presented here call into question the efficacy of this policing strategy for drug detection at festivals.

Some limitations should be considered in relation to the findings on drug detection dogs. Firstly, it is unknown how close respondents were to drug dogs. Accordingly, the detection rate should be interpreted with caution as some respondents may have been out of the dogs' range, and there may have been too few dogs to pursue everyone emitting a drug scent. Secondly, when interpreting the deterrent effect, it is important to consider the possibility respondents were drawing on different past experiences with this policing strategy at festivals, which could have presented varying levels of risk (e.g. two dogs and one queue poses more risk than one dog and two queues). Therefore, varying perceptions of risk associated with this policing strategy may have influenced responses. Future researchers could collect data about levels of expectation (e.g. how many dogs they expect, when they will be patrolling) and how they affect responses. Thirdly, it is possible festivalgoers with less interest in completing this survey were deterred more effectively. Notwithstanding these limitations, the present study extends the existing literature, being the first in Australia to investigate actual behavioural responses to the expected presence, and sighting, of drug dogs in the context of the last festival attended.

In summary, almost all festivalgoers surveyed reported being undeterred from drug usage by the expected presence of drug detection dogs. Instead, a variety of strategies to avoid detection were reported, many of which could place festivalgoers at greater risk of experiencing drug-related harms. The findings also call into question dogs' ability to detect drugs at festivals. In the face of mounting evidence of both ineffectiveness and iatrogenic effects, the use of drug dogs at Australian festivals should be ceased.

Drug-checking

The present study sought to add to the growing body of literature about the value of drug-checking in festival settings. Respondents who reported illicit drug use at the last festival were asked a range of questions to determine whether this intervention would have been desirable and worthwhile to them.

Concern/confidence about drug content

The first issue investigated was the extent to which respondents were actually concerned about, and confident in, the content of their drugs at the last festival attended. Of those who used an illicit drug (excluding solvents, pharmaceuticals and cannabis), 68% reported they were not concerned about and 80% that they were confident in their drugs' content. Very few (<5%) reported being very concerned. Interestingly, another recent Australian survey of festivalgoers (with data collection in the same year) found much higher levels of concern (53%) (Day et al., 2018). While it is unclear why festivalgoers in the present study were less concerned, it could reflect differences in sample demographics or past experiences. For example, in the present study, males, those with past use of drugs from that batch and those with more frequent past year ecstasy use were less likely to be concerned and more likely to be confident in the content of their ecstasy. The qualitative data also suggested high confidence was linked to past experiences/batches, trust in suppliers and Pillreports.net, perceived tolerance and particular forms (e.g. crystals). The implications are that patrons should be educated about the limitations of non-scientific methods of quality checking, made aware of variability between/within batches, and the risk of complacency should be communicated to frequent users.

Likelihood of accessing drug-checking

Although a minority of respondents who used illicit drugs reported concerns about content, 82% reported they would (definitely or probably) have accessed drug-checking if available for the last festival attended; only 1% said they definitely would not have. Other Australian studies found similar engagement likelihood (Barratt, Bruno, et al., 2018; Day et al., 2018). These findings suggest while that most respondents in this study were not highly concerned, they were still keen to be better informed. Among those indicating reluctance, the most commonly reported barriers were legal concerns (52%), trust in suppliers (35%), and trust in personal or a friend's past use drugs from that batch (28% and 27%). Thus, to encourage engagement, festivalgoers need education (as part of drug-checking brief interventions and more general festivalgoer campaigns) about the limitations of non-scientific checking methods (e.g. trust in suppliers/past use). However, given half were deterred from drug-checking by the possibility of police intervention, there is also a need for formal police cooperation/legal amnesty. An official public service announcement (PSA) from police declaring the service an 'amnesty zone' could alleviate concerns (as per overdose events and needle/syringe exchanges, where police only attend in the case of severe violence or death (Better Health Channel, 2019)).

Interviewees raised some potential problems associated with drug-checking. Firstly, there was concern that if drug-checking services consistently warned that all drugs tested were dangerous, and this did not resonate with lived experiences, there could be a desensitising effect. This risk should be considered when determining how test results and brief interventions are delivered. There was also concern about dosage results being used for competitive and marketing purposes. Indeed, the media review found at least one Australian festival death was linked to a competitive drug consumption game (McClellan, 2015). One possibility to reduce this risk could be categorising dosage, so warnings about high-dose pills are still provided. Also, importantly, if dosage results are provided, festivalgoers should be cautioned about limitations (e.g. batch variability, individual idiosyncratic responses to MDMA, non-linear dose response curves, etc.).

Design features

Respondents were asked questions to identify preferred drug-checking design features. The majority reported they would consider both on and offsite service options. However, some would only consider on or offsite (20% and 14% respectively). This is consistent with Barratt, Bruno, et al. (2018), who found onsite drug-checking was more appealing (94% vs. 85%). Those who preferred multi-day festivals were more likely to prefer onsite services. This is consistent with comments throughout regarding multi-day festivals featuring a more engrained illicit drug market. Understandably, if drugs are likely to be obtained onsite, the preference would be to have testing onsite. Additionally, there is more time to engage with a service at multi-day festivals, whereas there is very limited time at one-day festivals because patrons typically rush from one performance to another (Barratt, Bruno, et al., 2018). The qualitative data revealed various other perceived pros and cons associated with off and onsite drug-checking. Advantages of offsite drug-checking in the day/s preceding the event were:

- greater privacy – some respondents held concerns about stigma and public recognition as an illicit drug user, particularly in a culture of social media and camera phones;
- less chance of attracting new users/‘condoning’ use;
- the ability to engage with potential consumers while not drug-affected, in less rush and thus better able to consider the results/advice;
- time to replace undesirable drugs before the event, thus reducing the risk of purchasing more misrepresented drugs onsite; and
- an opportunity to issue pre-festival drug warnings, which is particularly important given how common pre-festival drug use was.

On the other hand, onsite services can:

- act as a safety net for onsite selling where consumers may have limited access to peer reviews and digital resources;
- reduce the risk of unscrupulous suppliers capitalising on high demand and selling misrepresented drugs (Barratt, Bruno, et al., 2018);
- influence the micro-market by allowing real-time warnings about drugs circulating at the festival – in the UK, a festival drug-checking pilot was associated with a 95% hospital admission reduction rate (Measham, 2019); and
- encourage a culture that cares about HR (by having a visible presence and allowing the spread of accurate HR information at the festival).

Establishing fixed-site drug-checking was also recommended following the 2018 Canberra trial (The STA-SAFE consortium, 2018). Ultimately, data from the present study suggest drug-checking should be available both on and offsite to capture the greatest proportion of the population and yield the most benefit.

Drug warnings should be disseminated via both digital technologies and traditional methods (given mobile phone coverage is often poor at festivals and batteries may die). Some options are:

- a display chart similar to ANKORS at Shambhala festival in Canada (Munn et al., 2016);
- electronic billboard warnings (on nearby roads and onsite) – billboards have been used effectively in Amsterdam to issue drug warnings (Pearl, 2014);
- a PSA, as done by festival deejays in the US (Jones, 2013a); and
- a specially designed smartphone application that provides real-time alerts/notifications when dangerous drugs are detected.

Again, to broaden the benefits to the general public, a sophisticated digital warning system is recommended. Moreover, to address high confidence and low concern, paired messages should aim to raise awareness that:

- drugs from the same batch can vary considerably in content and dose, and 'copycat pills' sometimes circulate;
- shifting ecstasy purity/potency trends may increase the risk of overdosing; and
- increasing detection of NPS means ongoing risk of drug misrepresentation, placing illicit drug users at risk of overdosing on an unknown substance.

In terms of cost, the data suggested most respondents were willing to pay a small amount (≥$5), but a substantial minority would be deterred by any cost. Interestingly, Barratt, Bruno, et al. (2018) found 93% would be willing to pay something (vs. 61% here). This difference might be explained by the inclusion of 16 and 17-year-olds in the present study. Unsurprisingly, younger respondents were significantly less willing to pay, perhaps reflective of lower income. Younger respondents were also more likely to purchase drugs onsite, suggesting they may be at greater risk of purchasing misrepresented drugs and thus more vulnerable to harm. This interpretation is supported by Measham (2019), who found people buying onsite were younger and twice as likely to purchase misrepresented drugs. Based on these findings, to avoid disadvantaging those who may benefit most from testing, services should ideally operate free of charge or via a voluntary donation system. While raising awareness of risk could increase willingness to pay, ultimately the intervention would appeal most broadly and would be most equitable if free.

Responses to test results

To investigate potential HR effects of drug-checking, respondents were asked how they would respond if their drugs did not contain what they thought. Encouragingly, 19% reported they would not have consumed the drugs under any circumstances, and a further 55% would not have if they contained something very dangerous. Thus, only 26% may still have used the drugs despite being advised of the risk, and there is evidence of restrictive deterrence among these respondents (i.e. reduced risk associated with use). For example, about half reported they would have been more cautious, 40% would have researched the content/effects to inform their decision, and 12% would have reduced their dose. Moreover, 61% of all respondents would have warned friends. Overall, the data provide support for this intervention having a strong deterrent and HR effect which could extend beyond those personally accessing the service. These findings are consistent with an accumulating body of evidence supporting the efficacy of this intervention having a deterrent and restrictive deterrent effect (Byrne et al., 2018; Martins et al., 2017; Measham, 2019; Mema et al., 2018; Sage, 2016; The STA-SAFE consortium, 2018). Additionally, benefits of testing beyond individual behaviour change should be acknowledged, such as improved ability to monitor the market (Butterfield, Barratt, Ezard, & Day, 2016; Trans European Drugs Information (TEDI) workgroup, 2011).

Younger age was also identified as a potential risk factor for ignoring warnings. Specifically, 16–17-year-olds were less likely to report being deterred from using their drugs when advised they contained something very dangerous, possibly reflective of lower income and reduced opportunity to source replacement drugs. This potential vulnerability should be

considered by clinicians when tailoring brief interventions. One possibility could be to include some gentle and non-judgmental motivational interviewing in which the clinician emphasises the relative magnitude of the risks and the financial loss to tip the balance towards discarding the drug (Rollnick, 2008).

Drug amnesty bins

As noted previously, drug amnesty bins have the potential to deter panic consumption and reduce overall drug consumption by encouraging festivalgoers to discard their drugs without legal ramifications (Guest, 2009; Preiss, 2016). In 2009, this intervention was trialled in WA in response to a festival death; however, it was poorly received, for reasons which were unclear (Guest, 2009). While one KI suggested the proximity to police was probably a barrier, there have been no empirical studies of this intervention. Thus, the present study sought to explore the potential value of this intervention and identify barriers which could be removed to improve efficacy in the future.

Less a tenth of respondents reported they would have definitely discarded their drugs into a drug amnesty bin had they been concerned about detection at the last festival attended. Most (80%) reported they would not want to waste the money spent on the drugs, and 40% said discarding the drugs would make the festival less enjoyable; 29% indicated concern about police watching/pursuing them. The results therefore suggest that even if legal concerns were alleviated, most still would not discard their drugs. While barriers related to wasting money and going sober seem formidable, one approach could be to prompt festivalgoers to consider the trade-off (e.g. is the cost of a couple of a pills worth risking an overdose?) However, the qualitative data suggested such messaging could be seen as condescending, and therefore more neutral information which addresses legal concerns may be preferable (e.g. 'if you're worried, you can safely discard your drugs here. This is a legal amnesty zone. Police will not watch or pursue you'). However, optimal conditions of legal amnesty would need consideration, and it is likely some festivalgoers would distrust this intervention regardless. Importantly, the qualitative data also revealed general confusion regarding this intervention which would need addressing. Specifically, respondents were unclear about when they could safely discard drugs. For example, when a dog is sniffing or approaching them, is it too late? There was also suspicion that fingerprints could be taken from discarded drugs. Thus, complete transparency about how and when festivalgoers can discard drugs, and police handling of discarded drugs, could improve attitudes towards this intervention.

Although prevention efforts should not replace HR efforts, it is worth being aware of the sober festival movement. Some festivals implement interventions to support sober festival experiences, such as Soberoo, a space which has been formally operating at Bonnaroo since 2009 and many festivals across the US (with varying names) (Erbentraut, 2015; Ferreira, 2016; Meadow, 2015a). The community groups running these sober spaces host meetings and promote messages such as "music is my drug". Similarly, Shambhala festival in Canada has a sober camping space and hosts daily meetings (Munn et al., 2016). Increasing Australian festivalgoer awareness of this movement could shift the cultural norm of needing drugs to have fun by prompting consideration of the benefits of drug-free experiences; however, this choice is likely to remain a minority one, as elsewhere. Additionally, it is critical any such messaging has a principle of 'pro-choice'. Anything seen as trying to impose on people's free will, or implying that sober is superior, is unlikely to be received well by those who already use drugs.

Overall, while a minority agreed that they would discard drugs in certain situations, the results suggest attitudes towards this intervention could be improved. Indeed, there was no strong opposition to this intervention among KIs or festivalgoers in this study, and many recognised the potential benefits of amnesty bins (e.g. avoiding panic and monitoring the market). Additionally, even if this intervention only appealed to a minority in cases of extreme concern, it has the potential to save lives. However, the data suggest festivalgoers need pre-warning. A pre-festival police PSA, and information disseminated via the festival's social media accounts, could inform festivalgoers and encourage planned responses to drug policing. For example, "if you find yourself at risk of detection at the festival, don't panic! If police have not already confronted you, you can discard your drugs in an amnesty bin and avoid any legal and health risks. The bins will not be watched and you will not be refused entry to the festival". Future researchers could examine ideal design and conditions of legal amnesty.

Attitudes towards policies/approaches

Finally, the present study sought to explore festivalgoer attitudes towards types of drug policies/interventions at festivals. It is hoped that, as the drug policy debate continues, festivalgoers are considered a key source for understanding which interventions and approaches are effective in reducing the risks of drug-related harm.

Punitive approaches

Survey respondents expressed low support for punitive strategies, and perceived them to have low efficacy. One in four supported drug dogs and increased drug policing, and one in five supported zero-tolerance approaches. Moreover, only 6% perceived these approaches as very effective at reducing harm. Unsurprisingly, not using an illicit drug at the last festival was the strongest predictor of support for drug dogs. While low support for drug dogs was largely expected, particularly in a survey which may have attracted festivalgoers with an interest in HR, such attitudes should be considered alongside the accumulating evidence of their ineffectiveness. As noted in the literature review, earlier rave studies emphasised that policies are thought to be successful when recognised as "legitimate, rather than imposed" (Etzioni, 1998, pp. 26, cited in; Glover, 2003). On this premise, findings here suggest punitive approaches to festival-based drug use are likely to be ineffective.

Beyond being ineffective in achieving its primary objective, the present study identified consequences of punitive drug policing at festivals which warrant consideration. In addition to contributing to risky drug use practices, 28% of respondents believed their experiences at festivals had harmed their overall perception of police. The data suggest consequences of punitive drug policing include hesitance to seek help from police and lack of respect for police among festivalgoers. The long-term ramifications of growing disillusionment towards law enforcement should be considered alongside other iatrogenic effects when evaluating the overall effectiveness of existing drug policing approaches.

Based on findings presented here, a re-evaluation of drug policies/policing at festivals considering these important trade-offs is recommended. Policymakers may benefit from revisiting the historical evolution of raves in Australia and elsewhere to learn about the problems associated with punitive and reactive approaches (see *Conclusions/cautionary lessons*). For example, Hier (2002) cautioned against user-pays policing ratios (recently established in NSW) which push promoters to operate outside the law. Additionally, following the 2019 inquest into festival deaths in NSW (to which the candidate gave written and oral evidence), the coroner recommended major changes in drug policies and policing at festivals, such as redefining illicit drug use as primarily a health rather than a legal issue, ceasing drug dog operations, establishing on and offsite drug-checking, considering decriminalising (and even regulating some) illicit drugs for personal use, and policing at festivals in non-punitive ways (Grahame, 2019). Given the large number of national and international experts who provided evidence to this inquest, the recommendations would ideally be considered by all levels of government. Yet, discouragingly, governments often

ignore such recommendations (e.g. Gemma Thoms; (Mulligan, 2013)), and a response to the NSW festival deaths inquest is yet to emerge.

HR-based approaches

While few respondents supported punitive approaches, most HR-based strategies were supported by a clear majority. For example, three-quarters of respondents believed an HR policy should replace zero tolerance. Although some event organisers have publicly expressed support for HR policies (Aubrey & Sakkal, 2019; Pentreath, 2016), comments in the media and interviews with industry KIs in the present study suggest organisers are unlikely to make such shifts in the current political/legal climate. As KIs noted in the qualitative data, micro (festival) policy changes require macro political/legal changes. Indeed, the WA government guideline's initial emphasis on the law (about knowingly permitting premises to be used for drug use) sets a strong tone and likely discourages event organisers from implementing certain HR strategies. Additionally, an organiser of Victoria's Rainbow Serpent festival, Tim Harvey, recently criticised governments for creating "a very difficult drug landscape" and suggested problems at festivals reflect "30 years of failed drug policy" (Aubrey & Sakkal, 2019). Very similar views were expressed by most KIs interviewed in the current study, with most ultimately recommending the need for drug law reform (legalisation or decriminalisation) and/or a shift towards drug use being considered as a health issue. Without any high-level influence, festival organisers will continue to feel limited in their capacity to make policy changes for fear of being seen as condoning illicit drug use. Again, the NSW coroner has recommended government establish laws and policies which redefine illicit drug use at festivals as primarily a health, rather than legal issue (Grahame, 2019). Such a shift could provide the necessary macro-level change needed to shift to a consistent HR policy at festivals. It is perhaps worth noting that although different possibilities for macro-level change are noted above, this discussion and forthcoming recommendations do not focus on macro-level law/policy change because it outside the scope of the study which is focused specifically on contemporary music festivals. Instead, macro-environment factors are considered more broadly and specifically in relation to their influence over micro-level festival policies.

Given drug-related festival deaths are occurring worldwide (see *Table 2.11*), it is worth being aware of international movements. International media coverage suggests Canada's government has already shifted towards HR drug policies, with the federal government issuing its own HR advice ahead of the festival season (Health Canada, 2018). While much of the US applies zero tolerance policies similar to Australia's, US academics have shown how punitive drug laws (e.g. the 'RAVE Act') have inadvertently increased

drug-related harms at festivals and have recommended a shift towards HR approaches (e.g. Anderson, 2014). Governments facing similar issues/concerns (e.g. being seen as condoning drug use, liability issues regarding drug-checking) may benefit from communicating with other governments who have already shifted their drug policies.

Consistent with other Australian studies (e.g. Barratt, Bruno, et al., 2018), most festivalgoers in the present study supported onsite and offsite drug-checking. Most KIs also supported trialling this intervention. Given the accumulating evidence supporting the efficacy of this intervention, trials should be expanded and evaluated in other Australian jurisdictions. The NSW coroner also recommended piloting on and offsite drug-checking services (Grahame, 2019). Evidence suggests the following design features should be considered:

- integration into a model of coordinated event health care;
- trained analysts using laboratory-grade equipment to analyse drug contents. This information should then inform an interaction between a trained expert and the potential consumer about their drug use and reducing risk, including that not using drugs is the safest option and no drugs are safe. As explained previously, this interaction has been shown to deter the use of particularly dangerous drugs;
- amnesty bins, so those confronted with undesirable results can immediately discard the drugs;
- immediate warnings issued to festivalgoers, authorities, health care providers and the general public about high-risk drugs detected;
- technologies that have capacity to test both content and dose, given shifting purity trends (Mounteney et al., 2018; Peacock et al., 2018) and deaths linked to high-purity MDMA (McGowan, 2019a); and
- both on and offsite options, given their respective benefits discussed previously.

Almost all survey respondents supported legislation to ensure festivals have mandatory medical standards, and only a fifth opposed a $10 medical levy on festival tickets to ensure the medical response is adequately resourced. These findings suggest that while many respondents did not feel comfortable accessing medical services at the last festival, almost everyone valued high standards of onsite medical care. Given problems identified in the literature review (see *Conclusions drawn from the MGM literature* and *Government guidelines*), and the fact the WA coroner's recommendations (2013) had not been implemented at the time of writing, festivals in WA and NSW are unlikely to have consistently high standards of medical care. Inadequate onsite medical services have also been linked to NSW festivalgoer deaths (Maddox & Thompson, 2019), so problems

regarding medical regulation exist in other jurisdictions as well. Thus, based on all sources of evidence considered for this study, a comprehensive review of onsite medical regulation is recommended in all jurisdictions. This review should consider the MGM literature and include a review of the overall level of regulation, training requirements (festival/drug specific and general qualifications), resource planning (staff composition and medical equipment) and patient record documentation (to predict future needs). It is critical to ensure the jurisdictional guidelines include medical advice that mandate a consistently high standard of care (tailored to the size and style of festival being hosted). HLC models (compared to first aid-only models) have been proven to reduce hospital transfer rates (Archer, Beaumont, May, Dargan, & Wood, 2012; Dutch & Austin, 2012; Lund & Turris, 2015) and improve pre-hospital care (Dutch & Austin, 2012; Friedman et al., 2016), and may thus improve patient health outcomes. Standardised deidentified patient records should be used to establish a national database (similar to the MGM registry established in Canada (Lund, Turris, Amiri, Lewis, & Carson, 2012)) to better predict staff numbers/composition so wait times are minimised and those in need are not deterred (linked to at least one death). Private waiting booths should be available in case queues do form, and lanyard pagers could be provided to the patient's friends when there is poor mobile coverage to avoid any perceived burden on friends. Moreover, as Turris and Lund (2017) recommended, systematic documentation of festivalgoer mortality/morbidity would produce a clearer picture of harm and risk factors, which can then inform medical planning, HR and legislative/policy issues.

Importantly, although regulation of onsite medical services needs improving, it is critical to avoid demands which impose unreasonable costs; this could result in event cancellations and help push the scene underground. However, adequate resources must be directed to and within the medical response (e.g. appropriate staff composition). A potential solution is to redirect resources from drug policing. While recognising the important role police play in terms of crowd control, accumulating evidence suggests drug policing is increasing the risk of harm, so the role of police and level of resources they receive should be re-evaluated.

Conclusions regarding festival policies

This study adds to the growing body of literature which calls into question the efficacy of existing punitive drug policies/policing in festival contexts and provides support for more progressive HR approaches. However, high-level political intervention is required for police/event organisers to make such changes. Given the comprehensive nature of the 2019 NSW inquest into festival deaths, the coroner's recommendations should be considered by other state governments. In the meantime, improved collaboration between health and law

enforcement sectors (with a mutual goal of harm reduction) is recommended. As discussed in the literature review (*Intervention frameworks drawn from MGM*), Lund and Turris (2017) proposed adopting a 'chain of survival' framework when planning festivals in response to a perceived disconnect between key stakeholders which creates fragmentation and increases risk of mortality/morbidity. They note that such a model articulates different "domains of responsibility" (p. 440) and works towards more consistent, collaborative and evidence-based event planning. The value and feasibility of adopting this type of planning framework as best practice should be investigated. Consideration of other theoretical tools/frameworks referred to throughout this thesis, which give primacy to context, is also recommended.

Theoretical frameworks for event planning

The literature review explained how the application of theoretical frameworks can enhance understanding of how drug use experiences unfold, and how harms are both created and mitigated within specific contexts. These frameworks are useful resources for event planning.

Risk/enabling environment

At the end of chapter 1, risk factors identified in the literature (and interventions to counter risk) were situated within a generative risk/enabling framework to provide a snapshot of evidence (*Table 2.7*). Table 5.1 below extends the original table by incorporating contributions from the present study. This framework could be used as a simple and practical resource during event planning, and for broader reviews of how drugs are dealt with in festival settings. This framework highlights macro-environmental factors that may exert influence over micro-environmental factors/policies, which is particularly germane for the festival context, where major structural/systemic barriers limit the capacity for change. Overall, there is value in viewing festivals as unique 'risk/enabling environments' where macro-level changes may be needed to enable micro-level changes, and where micro-level changes may be needed to enable positive individual behaviour change. However, as explained previously (see *Rhode's risk environment, adapted to enabling environment),* a key limitation is the inability to delineate causal pathways between environmental factors and drug-related harms, which is better addressed by assemblage thinking or event tracing.

Table 5.1: The risk/enabling environment framework: Examples relating to drug-related harms/deaths at festivals based on all sources of evidence[a]

	Micro-environment (event level)	**Macro-environment**
Physical Risks	Sale/promotion of alcohol (can encourage polydrug use)* Warm summer weather (> risk of hyperthermia)* Lack of shade (> risk of hyperthermia)* Overcrowding (> risk of hyperthermia, difficulty navigating to safety)* Loud music (can potentiate drug effects) Music genre/tempo (can encourage fast paced dancing, > risk of hyperthermia)* Lack of music genre variation (no downtime if always fast BPM) Not enough water stations (can discourage hydration, > risk of hyperthermia)* Lines for water (can discourage hydration, > risk of hyperthermia)* Lines for toilets (can discourage hydration, > risk of hyperthermia)* Poor sanitation of toilets (can discourage hydration, > risk of hyperthermia)* Lines for medical services (can discourage help seeking)* Lack of drug safety messages / peer support (less informed culture, less engrained HR)* Lack of signage for support (reduces likelihood to seek help)* Poor consideration of socio-spatial issues during event planning (not an enabling environment for HR)* Lack of private space to administer drugs (rushed/guessed dosages – issue for crystals) Lack of transport to/from the festival (encourages drug driving)* Lack of phone chargers (lose touch with friends > isolation/anxiety > unable to call transport/help)* Laser light shows, circus-like visuals (can overstimulate vulnerable, e.g. those on psychedelics)	Australian climate Dark net markets (> access and variability in purity/potency – could have >200mg ecstasy pills from Europe in WA now) Shifting trends in ecstasy purity/potency/forms (high purity widely available now, > risk of overdose) Increasing detection of NPS (ongoing risk of NPS being misrepresented as drugs like ecstasy and LSD)
Interventions	No alcohol promotion or special deals* Dedicated chill-out zones (shaded, comfortable, inviting, monitored by peers, information/HR disseminated)* Multiple shaded areas where festivalgoers can escape sun (venues with natural shade are ideal, otherwise artificial shade must be created)* Good ventilation* Quiet areas to escape loud noise, ability to exit loud areas (e.g. tents/pavilions need multiple exits)* Consideration of tempo when planning the line-up (mix up the tempo)* Increase awareness about onsite support utilising digital technology* Multiple water stations and separate line at bars for FREE cool water/ice cup** Routine cleaning/restocking of toilets* Drug safety signs (e.g. water guidelines at water stations)** Socio-spatial approach to event planning (create an enabling environment for HR)* Promotion of HR messages such as 'crush, dab, wait' (to address rushed dosing)**	

	Micro-environment (event level)	Macro-environment
	Phone charging stations (so friends can keep in contact)* Rovers trained to identify at risk people* Supportive, non-stigmatising space for people suffering psychological problems (e.g. 'calm' hubs)*	
Social Risks	Australian festival culture – normalisation of illicit drug use (more novice users)** Situational disinhibition (excess use > risk of harm)* Peer norms – 'double dropping', polydrug use, and drug use games/competitions ('hardcore' culture)** Friends discouraging others to seek help / 'don't be a pussy attitude'* Negative perceptions of medical services (discourages help seeking behaviours)** Judgmental and authoritative attitudes by onsite staff (discourages help seeking)** Illicit drug use stigma / self-stigmatisation (discourages help seeking behaviour)* Lack of awareness of drug trends / effects / HR* Lack of awareness of water guidelines** Spread of misinformation on cause of deaths ('overdose' assumes normal dose safe)* Reliance on invalidated methods of quality checking (e.g. crystals=pure, Pillreports, reagent testing)** Lack of peer norms (e.g. water guidelines) – different to the earlier rave culture / less engrained HR culture* Onsite dealing (suppliers risk criminal charges, customers > risk of being sold misrepresented drugs)** Security guards and other staff being unable to identify at-risk persons* Using psychedelics at festivals without adequate knowledge or support (can cause psychedelic crises in settings like festivals)*	Australian culture – wider societal normalisation International scene – dominance of EDM which has historical links with illicit drug use International culture – normalisation of drug use in dance music culture (e.g. references to 'molly' in popular music lyrical) Issues regarding masculinity and help seeking in society Commercialisation of festivals – shifted into mainstream Stress/pressure for Gen Y –need for escapism Increasing leisure behaviour Media and moral panic (leading to reactive responses to deaths e.g. increased policing)
Interventions	Campaigns which promote benefits of controlled drug use and target risky cultural practices (e.g. polydrug use, double dropping)** Onsite interventions like Soberoo (encourages drug-free experiences)* Social norms approaches to individual behaviour change* Promote messages like 'look out for your mates' and 'it's not weak to get help'** Interventions so friends are not 'inconvenienced' by unwell friends (e.g. lanyard pagers to encourage help seeking)** Screen medical staff for anti-drug views, train to show empathy and compassion* Promote medical services as being non-judgmental (we just want to help you)** Honest/accurate drug information about drug effects and deaths (utilise digital technologies to improve delivery)* Education about limitations to existing methods of quality checking (drug-checking is one way to spread accurate scientific information)** Efforts to create a culture that cares about HR / responsible drug use* Festival Facebook pages and smartphone app promoting normative HR messages* Peer-based interventions and rovers disseminating information*	Mass media and social marketing of harm reduction

	Micro-environment (event level)	Macro-environment
	Onsite drug-checking with warnings (safety net for onsite dealing)* All festival staff complete online training /screening to identify at risk festivalgoers and what to do next* Onsite psychedelic support services (appropriate for transformational festivals)*	
Economic Risks	Cost of alcohol (too low or too high) – illicit drugs cheaper (although illicit drug use ≠ greater risk of harm)* High cost of food (not eating may affect pharmacokinetics)* High cost of water (discourages hydration)* High cost for policing/security (lack of resources dedicated to onsite medical and HR)* Cost of tickets (limits funds for food, transport, etc.) Cost of drug-checking for individuals (cost would deter young people in particular)*	Wider economy – cashed up FIFO workers (WA mainly) with high disposable income to spend on alcohol and other drugs Uncertain economic times (need for escape/fun)
Interventions	Free ample water stations strategically placed* Low-cost food options (akin to $2 sausage sizzle, but healthier)* Subsidised or free drug-checking (to avoid disadvantaging younger festivalgoers)* Redirect resources from drug policing into HR/medical*	
Policy Risks	Zero-tolerance drug policies (limit capacity for HR, > risky drug use practices, resistance to drug-checking)** Policing to patron ratios (high cost of policing = reduced resources for HR, may force festivals to cancel thus contributing to growing underground scene)* Onsite drug policing with drug detection dogs (linked to panic consumption deaths and risky practices, displaces criminal activity onsite, riskier onsite purchases)** Contradictory/confusing drug policy on festival websites Stopping and searching for drugs of vehicles on way to venue (criminalisation harms, pre-loading)* Lack of legislative guidance for medical – higher level of care (HLC) models not mandated (lack of consistency of case, poorer pre-hospital care, reduced public health outcomes)* No systematic documentation or minimum dataset for medical providers (reduced planning capacity, reduced ability to promote key HR to prevent deaths)*	Drug laws – wider conservative political climate limiting capacity for progressive approaches (e.g. drug-checking) Australian sniffer dog operation expansion Reactive policy responses which inadvertently increase risk
Interventions	Shift to an HR festival policy – health and law enforcement work together with mutual goal of keeping festivalgoers safe** Shift to viewing festival drug use as primarily a health rather than legal issue (reflect this is laws/policy)* Lower police ratio policies – shift to a 'community policing' approach* Decriminalising personal use to reduce risky practices (e.g. see Amsterdam's five pill festival policy)* Implement and promote drug amnesty bins as an alternative to panic consumption** Improve government guidelines (more guidance of environmental/HR and medical planning – consider workability of national guidelines since events often multi-state)* Better medical regulation – mandate HLC models at large-scale festivals (improved standards/consistency of care = better pre-hospital care and public health outcomes)* Establish a national minimum dataset for MGM medical providers (national database to inform planning)*	National monitoring/warning systems (e.g. DIMS in the Netherlands) Decriminalising illicit drug use OR Legalising and regulating illicit drug use (= no risk of consuming something unknown, dosage information, no risk of arrest, etc.)

	Micro-environment (event level)	Macro-environment
	Systematically document drug-related festival deaths – use information to inform medical planning / HR and education*	

[a]This table is adapted from Rhodes (2009) table relating to HIV and injecting drug use.
*The present study made contributions to the evidence-base on these risk factors/interventions or data from the present study supported these interventions. **major/unique contributions from the present study.

Assemblage thinking/ANT

As explained earlier (see *Drug assemblages*), assemblage thinking can illustrate how drug experiences (good and bad) unfold. Drug experiences can be examined or traced to investigate how people, substances and spaces assemble in ways which sometimes increase risk, and sometimes decrease risk. Event tracing could be particularly useful for examining adverse outcomes such as deaths. Instead of putting the onus on 'structure' (e.g. zero tolerance and drug dogs) or the 'subject' (e.g. a 'risk taker'), the focus could shift to the assemblage. Building on recommendations made by Dilkes-Frayne (2016), festival planners should consider when, where and how patrons may travel across the festival to identify ways to alter the environment to mitigate harm (or enable HR). In summary, assemblage thinking can be applied before the festival for event design purposes, and after the festival for examining how problems unfolded.

Study strengths and limitations

While many studies have investigated club and rave culture, relatively few have focused on drug use at contemporary music festivals. Moreover, the literature review illuminated multiple gaps in the existing research. The present study directly addressed many of these gaps and is unique in both its depth of documenting drug use at festivals and attempts to explain it and devise responses. It represents the largest, most comprehensive study of drug use associated with Australian music festivals to date. The study extends existing knowledge about the prevalence of drug use and polydrug use at festivals; deterrent, detection and iatrogenic effects of festival policing with drug detection dogs; and the desirability, feasibility and preferred design features of drug-checking services. Moreover, it makes entirely unique contributions to contemporary festival research with respect to drug use patterns and practices; knowledge of water guidelines while using MDMA; positive drug experiences; reasons for using individual drugs; and access/barriers to HR and onsite medical services. While these contributions to the evidence base can be used to inform

policy and practice responses, a variety of limitations should be taken into account when interpreting the results and their implications.

Representativeness (purposive sample)

Like other studies of hidden populations, including Hughes et al. (2017), this study recruited a purposive sample, rather than a probability sample. Hence, these findings cannot be reliably generalised to the wider population of Australian festivalgoers. However, as noted previously, multiple large purposive samples that produce similar findings provide greater confidence in the validity of these studies. Further, population-based surveys have problems (e.g. low response rates making inferences unreliable, systematic exclusion issues) which mean drug use may be underrepresented/reported (Barratt et al., 2017; Chalmers, Lancaster, & Hughes, 2016; Keiding & Louis, 2016; Zhao, Stockwell, & Macdonald, 2009). Additionally, while not all festivalgoers will access Facebook (where the study was advertised) or be inclined to take part, it is the case that 89% of young Australians aged 18–29 report daily social media use, and Facebook remains the dominant platform (ABS, 2017b, 2018).

Another sampling consideration is that festivalgoers with an interest in illicit drug issues and/or who desire change may have been more inclined to participate than those with more neutral views. This may have biased the results towards higher levels of drug consumption and greater support for non-punitive policy approaches. However, to minimise this potential bias, advertisements, the website and the information and consent form clearly emphasised that all festivalgoers were invited to take part, not just drug users, to have their say on issues which may directly or indirectly affect them (see recruitment materials and website FAQ in the appendices: e.g. *D.1, D.3, D.8*). The fact that hundreds of festivalgoers who had never used illicit drugs were recruited (n=348, 18%) provides some support for the efficacy of this approach. Additionally, while the prize draw was not intended to act as an incentive for participation, it may have helped attract those with more neutral views on drug-related issues.

Data validity (retrospective self-report)

Given the online sampling method employed, it was impossible to objectively verify responses regarding drug use (e.g. via urine screening) or festival attendance. However, web survey methodology offered many advantages, such as being entirely anonymous, enabling thousands to participate, and avoiding sampling limitations associated with trying to collect data at festivals (e.g. selection bias – missing people who were dancing or too intoxicated;

inability to report on what happened later in the day). Additionally, most epidemiological studies of people who use drugs must rely on self-report, and such reports can typically be trusted, especially under conditions of anonymity and when computerised (no interviewer) (Darke, 1998; Gnambs & Kaspar, 2015; Ramo, Liu, & Prochaska, 2012). While there was an incentive to participate (a lottery prize draw), the survey itself was lengthy (*Mdn*=23 minutes), so it is unlikely respondents completed it with false data simply to enter the draw. To counteract this possibility, respondents were asked to name the last festival they attended and respondents who named events which could not be verified, or did not fit the criteria, were excluded.

Single point in time (last festival attended)

While cross-sectional surveys have various advantages over other survey designs, such as being quick and inexpensive, they also have disadvantages (Kuntsche, Dietze, & Jenkinson, 2014; Kuntsche & Labhart, 2014; Lewis-Beck, 2004). For example, the dataset provides a single snapshot in time that may be vulnerable to biases related to the last festival attended (e.g. an atypical experience) and retrospective recall bias. However, focusing on the last festival attended (in the preceding 12 months) maximised memory recall and provided a recent and comprehensive account of individual festival experiences, which allowed quantitative analysis of correlates and overall frequencies. Another Australian festival study (Hughes & Moxham-Hall, 2017) employed more novel methodology involving a smartphone application which allowed close to real-time logging of multiple drug use and police experiences at night venues and festivals. The authors concluded this method had benefits because it collected "multiple and comparable data points, and the ability to gain richer data on behaviour…" (Hughes & Moxham-Hall, 2017, pp. 10-11). However, the authors also noted data security issues and recruited a very small sample (*n*=38). While recognising the potential benefits of prospective logging/diary methods, it is possible festivalgoers would be less willing to engage in this type of protracted method than a short one-off survey which does not require downloading to their phone. Nevertheless, smartphone application technology and data collection beyond a single point in time are increasingly common in the social sciences (Kuntsche et al., 2014) and should be considered for future research on drug use and festivals.

Time lag between data collection and interpretation of results

Lastly, the time lag between data collection and consideration of the results is a major limitation. Three years passed between data collection and thesis submission, and (inevitably) illicit drug markets have changed. For example, consistent with international trends (European Monitoring Centre for Drugs and Drug Addiction, 2016), national monitoring systems have detected significant shifts in the ecstasy/MDMA market, including increased use/availability of non-pill forms, decreased price and perceived increased purity (Peacock et al., 2018). One interpretation of these market changes is that festivalgoers are using higher-purity ecstasy now; ecstasy may also be more desirable/affordable and thus used by more festivalgoers and in larger quantities. However, other factors may have deterred use. For example, recent festival deaths have attracted significant media attention and public/political debate, which may have caused some to re-evaluate their drug use. The level of preventative/HR measures may have also been increased in response to recent deaths. Overall, the shifting Australian and international context could have influenced the prevalence and patterns of drug use at festivals, and associated harms, and should thus be considered in the interpretation of the findings presented herein.

Summary of implications/recommendations

Table 5.2 provides a comprehensive summary of recommendations based on a critical evaluation of all sources of evidence discussed in this thesis. Following this, *Table 5.3* outlines eight priority recommendations which should be urgently considered by all stakeholders, including government, health services, event organisers and law enforcement.

Table 5.2: Summary of recommendations for harm reduction and health promotion at Australian music festivals

Theme	Evidence section	Recommendation/s
PREVALENCE DATA	Frequency of illicit drug use	All policy responses and interventions need to accept and take into account that illicit drug use is an inherent part of the music festival experience for a majority of people who attend music festivals.
	Jurisdictional differences	Given significant differences identified in the use of some drugs (e.g. ketamine), event organisers and key stakeholders should be aware of local drug trends to inform event/medical planning. In event planning phases, consulting services aware of local drug trends, the local Drug Trends team and reviewing recent Drug Trends Bulletins is advised (https://ndarc.med.unsw.edu.au/project/ecstasy-and-related-drugs-reporting-system-edrs).
	Gender differences	Interventions should be informed by gender-based differences. While more males reported drug use/polydrug use, females reported consuming comparable amounts of illicit drugs. Education campaigns should raise awareness of gender-based physiological vulnerabilities to harm.
	Festival type differences	Event organisers and key stakeholders should consider planning for higher rates of drug/polydrug use and more diversity in the types of drugs used (e.g. more psychedelics) at multi-day festivals (excluding family-oriented events). Multi-day festivals, particularly those featuring psytrance genres, should consider having specially trained psychedelic peer-support services available onsite who should work closely alongside medical services. HR information should be disseminated throughout festival campsites (e.g. nitrous oxide and vitamin B12 deficiency advice, hallucinogen information and where to get help onsite). Rovers should disseminate HR information and resources to campsites early in the day when large groups are gathered and still sober enough to engage and retain information.
	Age differences	Interventions should be tailored to festivalgoers at different points in their drug-using careers. As festivals and associated drug culture become increasingly mainstream, it is important to target young people new to the scene to inform them of market trends and encourage them adopt responsible drug use practices early. However, it is also important to target more experienced users with respect to risk of complacency, dosage decisions and shifting drug trends, particularly since reuptake of drug use at festivals may be common.
	Musical preferences	EDM-focused festivals, particularly those featuring more hardcore genres, should be treated as being associated with higher likelihood of illicit drug use and polydrug use when planning the event and medical response.
	Normalisation	There should be acknowledgment that illicit drug use is largely normalised within Australian festival culture. Thus, a more realistic/pragmatic approach is recommended which dedicates more resources to HR than demand and supply control. Approaches which challenge risky cultural norms related to patterns of drug use (e.g. polydrug use and alcohol as part of the polydrug use mix) and more progressive approaches, such as drug-checking, should be trialled. Additionally, preventative efforts should be reconceived in ways that will better resonate with young people and encourage re-evaluation of existing beliefs.
PATTERNS DATA	Polydrug use	Polydrug use should be a key area of focus for HR efforts, particularly at EDM festivals and multi-day festivals. Specific areas which warrant attention include opportunistic polydrug use and the potential vulnerability to polydrug use when using alcohol, increased awareness of interaction effects, ongoing risk of misrepresented drugs/NPS, self-medicating, managing cycles of ups and downs safely, and the risk of masking effects which merit medical assessment. Delivering these messages via peer education programs in festival campsites and through digital technologies could be of value in deterring risky polydrug use.

Theme	Evidence section	Recommendation/s
	Alcohol use	Interventions should target pre-drinking behaviours (e.g. bingeing), encourage a re-evaluation of the pros/cons of bingeing, and aim to shift the balance by focusing on how it can negatively affect the trajectory of the day (e.g. headaches, bad decisions, loss of memory). Increasing awareness about the risks associated with mixing alcohol with other drugs is also important. More comprehensive and nuanced education beyond 'do not mix' may be better received.
	Ecstasy	Future interventions targeting ecstasy, such as drug-checking, should consider pre- and post-event use, in addition to onsite use. Increasing popularity of non-pill forms and common perceptions of increased purity/safety suggest research/data is needed to compare different forms and provide appropriate HR advice. HR education encouraging reconsideration of dosages and increased awareness of the implications/risks of nonlinear pharmacokinetics is warranted, as are the ongoing risks of increasing purity, misrepresentation and issues pertaining to delayed onset of effects. Campaigns could be substantially aided by integrated drug-checking trials which involve brief interventions. Addressing different ROA risks may also be worthwhile given snorting was common and may increase potency of some NPS circulating. Something akin to the UK's 'crush/dab/wait' should be considered to encourage safer dosing/use.
PRACTICES DATA	Risk behaviours	The findings on double dropping, in combination with current market trends, suggest it may be worth targeting this practice in future festivalgoer HR campaigns. Associated issues to address include warnings about variability of batches, shifting trends and NPS misrepresentation. Other key risk behaviours which should be addressed include bingeing/sleep deprivation, polydrug use and poor hydration management. HR campaigns should advise festivalgoers what to do and what not to do when feeling unwell at festivals (e.g. do not return to your tent; seek medical assessment or go to a monitored chill-out space). Campsite interventions should be designed to reduce risk/enable HR; sociospatial elements and assemblages should be considered. Efforts should be made to make campsites more habitable/shaded to decrease risk of hyperthermia. On-foot rovers and small medical buggies (depending on event size) should patrol campsites to identify/assist at-risk persons. A phone app with a help/emergency call function with built-in location detection to aid festivalgoers and first responders would be ideal. Gender differences (e.g. females not eating or drinking properly) should be considered in future interventions.
	Protective behaviours	Festivalgoer enthusiasm for engaging in HR should be leveraged. However, future efforts should channel enthusiasm into more validated HR practices and provide more nuanced advice about contentious strategies, such as colour reagent testing, 5-HTP and using certain forms and/or batches. A social norms approach could encourage positive behaviours and correct misconceptions which may lead to a false sense of security.
	Water guidelines	It is critical for HR campaigns to raise awareness of the water intake guidelines while using ecstasy. Consideration should be given to the pros/cons of providing more comprehensive education/advice to allow ecstasy users to more effectively manage hydration (e.g. understanding the role of sweat, sodium, etc.) Campaigns should be informed by current medical advice and include hydration protocols with clear and easily remembered advice. Festivals should also be designed to enable effective hydration management (e.g. appropriate food and fluids easily accessible, cooling techniques, etc.).

Theme	Evidence section	Recommendation/s
	Drug sourcing/methods of getting drugs into festivals	Iatrogenic effects of drug policing identified regarding internal methods of carrying drugs into festivals, coupled with high perceived availability and high opportunistic drug sourcing inside, provide grounds for re-evaluating the appropriateness of existing drug policing strategies at festivals. Findings also suggest there should be a safety net in place to counteract risks associated with onsite purchasing, particularly since younger festivalgoers were more vulnerable to sourcing drugs onsite. Again, onsite drug-checking linked to a systematic warning system for high-risk substances should be trialled. Importantly, any media release of the results of this research pertaining to methods for carrying drugs internally should include clear legal input (e.g. explaining that drug dog searches violate civil liberties) to counteract the risk of the data being used to increase police powers, which could potentially cause more harm. Media releases should avoid disseminating smuggling ideas.
	Drug supplying	Given the prevalence of 'social supply', campaigns should educate festivalgoers on how low-level supply is dealt with in law. However, the potential consequences of deterring social supply (e.g. increased contact with higher-level criminal markets) also mean there should be a re-evaluation of how festivalgoers who engage in social supply are dealt with in law. Again, safety nets should be in place to minimise the risk associated with onsite selling (e.g. drug-checking, warning systems). Given indications of more engrained illicit drug markets at multi-day festivals, there is particular value in trialling onsite drug-checking at these events.
MOTIVATIONS & PLEASURES DATA	Reasons for using	Greater widespread consideration of the complex social and psychological benefits of controlled used of illicit drugs in these contexts is needed (e.g. by policymakers, governments, researchers). The strong preference for the convenience and effects of ecstasy over alcohol warrants further consideration by researchers and governments. While, in the current context of frequent drug-related festival deaths, the first priority of HR efforts should be about avoiding risky practices and being alert to red flag symptoms, future government campaigns should consider shifting from an entirely risk avoidance focus, to salutogenesis/health promotion (that accounts for a wider spectrum of experiences, builds on enthusiasm for HR, promotes protective practices, controlled drug use and positive life experiences at festivals, while also correcting misconceptions about safety/delivering key HR messages). Traditional fear-based campaigns which focus on extreme adverse outcomes and provide little to no HR advice are strongly advised against.
	Positive effects	Interventions which aim to deter illicit drug use should consider the possibility of increased alcohol-related harms, as well a shift in the festival atmosphere to a more anti-social and difficult-to-manage environment.

Theme	Evidence section	Recommendation/s
DRUG-RELATED HARMS/ADVERSE EFFECTS DATA	Negative/adverse effects	The first priority of HR efforts should be to raise awareness of high-risk acute health problems (e.g. hyperthermia), how to reduce risk of experiencing health problems and red flag symptoms which merit medical assessment. A 'look out for your mates' type campaign that integrates all priority areas discussed (e.g. drug trends, risky practices, help seeking) is recommended. Festival-based HR efforts could also target less severe but more common conditions which could develop into more pronounced health sequelae (e.g. comedowns > depression/anxiety, sleeping problems > sleep disturbances, teeth grinding > dental erosion). Simple validated protocols with holistic health advice on sleep, nutrition and exercise pre and post festivals are recommended to encourage more concerted and effective efforts for self-care. Given not eating and using drugs when in a negative headspace were identified as risk factors for harm, government guidelines should encourage varied and affordable food options at festivals. Education campaigns should also raise awareness/provide HR advice on these risk factors. Festivals should provide peer support spaces for those experiencing psychological problems that do not require formal medical treatment. While dedicated crisis intervention services may only be appropriate at large transformational festivals, other festivals should offer 'safe spaces' which are private, cool, calm and have some psychological support available. They should be framed in ways that don't attract stigma, such as 'calm hubs'.
INTERVENTIONS	Access and barriers to onsite first aid/medical	Barriers to seeking help need to be lowered by improving medical protocols/regulations and attitudes towards onsite medical services. Issues to address include staff conduct and competency. Those with anti-drug views should be screened out. Training in expressing empathy is recommended. Negative perceptions of onsite medical services should be addressed by increasing awareness about and the transparency of the help-seeking process (via assurances about competency, confidentiality and legal risk); promoting messages such as 'if you're not sure, let the friendly medical staff do a quick assessment'; and encouraging festivalgoers to look out for each other – the perception that getting help is 'weak' needs to be overcome. Policies for treating minors should be reviewed given that concern about parents being notified was a barrier to seeking help. To address legal concerns, establish and promote 'medical amnesty zones' in coordination with police.
	Access and barriers to harm reduction strategies	Further guidance about validated HR strategies should be included in jurisdictional guidelines, given they appear to be inconsistently implemented. Validated HR strategies should be mandated. Strategies which prevent and treat conditions linked to festival deaths should be prioritised (e.g. hyperthermia is largely context-dependent, so free cool water, ample shade and other cooling strategies are crucial). To improve awareness of strategies, festival organisers should promote them via their social media, website and smartphone app before, during and after festivals. Event organisers and key stakeholders should assess sociospatial factors to ensure festivalgoers are aware they are in place, feel comfortable accessing them and they are convenient to access. Hypothetical 'assemblage' thinking is advised. Wait periods for drinks and toilet facilities should be minimised to reduce the risk of dehydration. More frequent maintenance of toilets is advised.

Theme	Evidence section	Recommendation/s
	Drug detection dogs	All the evidence presented herein of the ineffectiveness (at deterring and detecting drugs) and iatrogenic effects of drug detection dog operations at festivals suggests their use should cease. If this strategy continues, education campaigns should discourage panic consumption and encourage alternative responses (e.g. discarding in a drug amnesty bin). Despite being poorly received in the past, drug amnesty bins should be in place as a safety net. Decriminalise possession of small amounts of illicit drugs for personal use to avoid the iatrogenic effects of drug policing. Data pertaining to internal concealment should not be used to form an argument for increasing police powers, because this may trigger increased swallowing of concealed drugs and cause even greater harm.
	Drug-checking	Governments should support organisations such as Pill Testing Australia to conduct rigorous trials of drug-checking at festivals. Both on and offsite drug-checking services, using technologies which have the capacity to test both content and dose, should be trialled. Results should inform a national warning system (digital technology should be utilised, but not relied on in settings with poor mobile phone coverage). To avoid disadvantaging younger and potentially more vulnerable users, services should operate free of charge. Younger people may also be more resistant to drug warnings, so brief interventions built into these services should consider gentle motivational interviewing techniques to emphasise the risks versus the financial and social loss (to tip the balance in favour of discarding particularly dangerous drugs).
	Drug amnesty bins	Drug amnesty bins should be implemented to counteract the risk of panic consumption associated with drug policing at the gates. However, confusion about and distrust of the strategy should be reduced by a paired police PSA.
	Attitudes towards policies/approaches / recommendations not made elsewhere	There should be a shift towards HR-based drug policy at festivals. High-level political/government intervention is recommended to make this happen. All state and territory governments should consider the recommendations from the 2019 NSW coronial inquest into festival deaths. A comprehensive review of onsite medical regulation is recommended. This should be based on the MGM literature and include the overall level of regulation, training requirements, resource planning, and patient record documentation. However, new regulation of medical services should not make events financially unviable because this will push the scene underground. Government guidelines should incorporate the outcomes of this medical review. Standardised deidentified patient records should be used to establish a national database to better predict future medical needs. Morbidity/mortality associated with festivals should be systematically documented to inform future medical/HR needs.

Note. This table acts as a summary; however, additional details pertaining to these recommendations were discussed in earlier sections of the discussion corresponding to the evidence headings.

Table 5.3: Priority areas/recommendations for reducing the risk of drug-related harm at festivals

	Key priority area/recommendation	Key issues/recommendations to be addressed by government, festival organisers and other key stakeholders
1.	**Expand and evaluate drug-checking trials, and establish a national warning system** (In the meantime, increase festivalgoers' awareness of drug trends)	• On and offsite drug-checking should be established. • Drug-checking should involve chemical analysis of both drug content and dose. • Drug-checking results should be fed into a national warning system utilising digital technologies. • Drug-checking trials should have paired campaigns/PSAs to increase trust, transparency and awareness.
2.	**Urgently cease the use of drug detection dogs** (In the meantime, ensure drug amnesty bins are available)	• Evidence of iatrogenic effects at festivals should be urgently considered by governments and law enforcement. • Until operations cease, drug amnesty bins should be implemented as an alternative to panic consumption (however, this intervention is unlikely to avert panic consumption for many festivalgoers). • Festival policing approaches and policies should shift from punitive to HR-focused.
3.	**Remove barriers to seeking medical attention**	• Festivalgoers' concerns about legal issues, competency and treatment should be alleviated (via government campaigns, health promotion advice by event organisers and medical providers). • Festivalgoers should be encouraged to seek help early. Stigma associated with help seeking should be reduced. • Regulatory barriers should be addressed (see 'review medical response').
4.	**Shift from a 'zero-tolerance' policy to a 'harm reduction' policy** (Macro-level changes required[a])	• Strong indications of normalisation should be considered by government. • Government should redefine illicit drug use as primarily a health rather than legal issue. • Resources should be directed away from supply control to HR. • Personal use of small amounts of illicit drugs should be decriminalised at festivals.
5.	**Create more 'enabling environments' for harm reduction** (Apply risk/enabling environment theory and assemblage thinking)	• The HR content of jurisdictional guidelines for festivals should be improved, including mandating validated strategies. • Jurisdictional guidelines should mandate environmental strategies which reduce the risk of health conditions linked to festival deaths (e.g. ample cool chill out areas, water misters, etc. to reduce risk of hyperthermia when warm). • Jurisdictional guidelines should encourage the use of theoretical frameworks for event planning. • Event organisers should promote onsite HR via the festival social media accounts, signs, rovers, etc. to increase awareness/use.
6.	**Improve sector collaboration with holistic event planning**	• Jurisdictional guidelines should encourage use of holistic planning frameworks by event organisers and other stakeholders, e.g. 'chain of survival'. • Event organisers should establish clear lines of communication/referral between onsite services. • Government health departments should develop online training for festival staff, including how to identify and assist at-risk patrons (language barriers should be considered in the design).

	Key priority area/recommendation	Key issues/recommendations to be addressed by government, festival organisers and other key stakeholders
7.	**Improve drug education and methods of delivery** (Implement an HR campaign over the festival season)	• Festivalgoer enthusiasm for HR should be channelled into more validated responses (via campaigns/education led by government or health/HR organisations). • Education on high-risk health conditions and risk practices, including double dropping and polydrug use, should be prioritised. • Raise awareness of shifting drug trends. Promote messages akin to 'crush/dab/wait'. • Raise awareness of limitations of non-scientific methods for quality checking. • Raise awareness of hydration guidelines. • Develop validated pre- and post-festival self-care protocols. • Target interventions to different stages of drug using careers. • Utilise digital technologies (e.g. Facebook, YouTube, and Snapchat) and traditional methods to disseminate information (before, during and after festivals).
8.	**Review the medical response at festivals and systematically document patient records and deaths** (Refer to growing body of MGM literature) *Note.* It is important to avoid placing unreasonable demands on organisers that would render these events financially unviable. This may push the scene underground and increase risk.	• Governments should review current onsite medical regulation in consultation with MGM experts. • Mandate HLC models for large-scale events. • Provide drug and festival-specific training to all staff. Ensure awareness of local trends. • Screen out people with anti-drug views – provide training on expressing empathy. • Establish clear, evidence-based protocols for managing high-risk conditions (e.g. hyperthermia). • Establish a national minimum dataset (used by all festival medical providers) to inform a deidentified national database to inform future planning. • Systematically document mortality/morbidity to inform medical/HR planning.

[a]Types of macro-level change that may allow for a greater shift towards a harm reduction policy at festivals could include regulated legal availability, decriminalisation, or a formal redefining of illicit drugs as primarily a health, rather than law enforcement issue.

Note on referencing style

The following reference list is formatted according to APA 6th edition (American Psychological Association, 2010). Many online news articles have been cited throughout this thesis. While the APA recommends using a home page uniform resource locator (URL) when citing news articles (p. 201), this reference list includes the actual URL to help readers quickly locate the articles. However, over time URLs can go 'dark'. Additionally, online news article titles are often amended in different editions, making them difficult to locate in news databases. Thus, all readers are welcome to contact me to request access to any such materials cited in this thesis.

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Appendix A: Evidence of impact

The below table documents the main requests that occurred throughout candidature which help illustrate the significance, timeliness and need for this research/evidence to further inform the Australian debate, education/campaigns, wider HR initiatives and policy. Further details, including official letters of request and email correspondence, are available upon request.

	Year	Organisation	Main details	Additional details
General data request	19/11/2018	Commonwealth Department of Health	Request for drug-related festival deaths data for Senate Hansard for Senate Estimates Question on Notice	Provided an earlier version of Table 2.11 summarising media coverage of deaths.
	2017-2018	WA Mental Health Commission	Requested data to help inform their Drug Aware Festival Facebook campaign	Provided data regarding access/barriers to seeking help which informed their 'The Medix' campaign, which ran from Nov 2017-Mar 2018: https://drugaware.com.au/about-us/current-campaigns/safer-events-and-venues/
Steering groups and advisory	2017-2018	WA Mental Health Commission	'Safer festivals and events project'	Assisted the project team in various phases, from planning through to evaluation. This included attending private meetings and attending 'Steering Group' meetings
Australian presentations	May 2016, Perth	WA Environmental Health Directorate	'Outdoor Festivals Forum' – Guest speaker request	Biannual forum for local government officers responsible for approving festivals. I presented preliminary PhD findings covering all key areas relevant to festival planning/safety.
	2017, Perth 2018, Melbourne	National Drug Research Institute, Curtin University, Perth	Annual Symposium poster presentations	Short presentations covering key areas regarding prevalence/patterns/practices, HR responses and policing strategies

	Year	Organisation	Main details	Additional details
International presentations	17-19 May 2017, Aarhus, Denmark	The 11th International Conference of the International Society for the Study of Drug Policy	Drug detection dogs at Australian outdoor music festivals: Deterrent, detection and iatrogenic effects. International	The 2018 IJDP paper was based on this conference paper/presentation.
	24-26 May 2017, Dublin, Ireland	The 10th Club Health International Conference on Nightlife, Substance Use and Related Health Issues	Double dropping down under: Correlates of simultaneous consumption of two ecstasy pills in a sample of Australian outdoor music festival attendees.	The 2018 DAR paper was based on this conference paper/presentation.
Coroner's Inquest	2019	NSW Department of Justice	Music Festival Deaths Inquest – request for expert report & oral evidence	Provided an expert report in May 2019 and gave oral evidence at the September 2019 hearings at the Coroner's Court NSW (see Expert report for the NSW Music Festival Deaths Inquest)
Special Commission of Inquiry	2019	NSW Department of Justice	Special Commission of Inquiry into the Drug 'Ice' – request for expert report	Provided a written expert report in September 2019 (see Expert report for the Special Commission of Inquiry into the Drug 'Ice')
Media	2019	Numerous media outlets	Coverage of the 2019 NSW Music Festival Deaths inquest	Findings presented as part of my inquest submission were cited in coverage (regarding double dropping and drug detection dogs)

	Year	Organisation	Main details	Additional details
	2018	The Guardian, MixMag	Findings presented in IJDP journal article on drug detection dogs were reported	(Carbines, 2018; Henriques-Gomes, 2018)
	2015-2019	Numerous media outlets, including the Herald Sun and The Australian	General requests to comment on various aspects of drug use/policy issues at festivals	Media questions mainly related to my views on drug-checking and drug detection dogs.

A.1 Expert report for the NSW Music Festival Deaths Inquest

INQUEST INTO DEATHS ARISING AT MUSIC FESTIVALS

Expert report from Jodie Grigg and Simon Lenton
National Drug Research Institute (NDRI), Curtin University
May 2019

We, Jodie Grigg and Simon Lenton, acknowledge for the purpose of Rule 31.23 of the Uniform Civil Procedure Rules 2005 that we have read the expert witness code of conduct in Schedule 7 to the said rules and agree to be bound by it.

1. Researcher background and PhD

The Institute

The National Drug Research Institute's (NDRI) mission is to conduct and disseminate high quality research that supports evidence informed policy, strategies and practice to prevent and minimise alcohol and other drug-related health, social and economic harms among individuals, families and communities in Australia.

Professor Simon Lenton, Director of NDRI

Lenton has been involved in research on ecstasy and related drugs for more than 20 years. In the late '90s, he conducted research investigating the Perth rave scene (Boys, Lenton, & Norcross, 1997; Lenton, Boys, & Norcross, 1997; Lenton & Davidson, 1999) and has been a chief investigator for the Ecstasy and Related Drugs Reporting System (EDRS, formerly the 'Party Drugs Initiative') since 2003. Lenton has also supervised Jodie Grigg's PhD research (A mixed-methods study of drug use at music festivals) since 2014.

Jodie Grigg, Research Associate and PhD Candidate at NDRI

Grigg began working for NDRI in 2010 on the Ecstasy and Related Drugs Reporting System (EDRS) and the Illicit Drugs Reporting System (IDRS). In 2012, she began coordinating the WA arm of the EDRS and in September 2014 commenced her PhD titled 'A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria'. She is currently in the final writing phases of her thesis and plans to submit it for examination in August 2019. However, she has already presented thesis findings at two international conferences and published papers in the International Journal of Drug Policy and Drug and Alcohol Review (Grigg, Barratt, & Lenton, 2018a, 2018b).

PhD thesis aims and objectives

The aims of Grigg's thesis were to: (1) Investigate the nature and extent of drug use (inclusive of alcohol, but with a focus on illicit drugs) associated with outdoor music festivals (herein termed 'festivals'); (2) Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and (3) Develop recommendations aimed at improving these strategies in Australia. More specifically, the objectives were to:

i. Document the percentage using drugs and drug use patterns and practices associated with festivals (among a sample of festival-goers in two Australian states: Western Australia and Victoria);
ii. Identify motivations and pleasures associated with using drugs at festivals;
iii. Identify the nature, extent and severity of harms associated with using drugs at festivals;
iv. Identify access and barriers to on-site medical services and other harm reduction strategies at festivals (e.g. free water, shade);
v. Identify attitudes towards and outcomes related to drug policing at festivals (e.g. drug detection dogs);
vi. Identify attitudes towards and potential access and barriers to alternative harm reduction strategies at festivals (e.g. drug-checking and drug amnesty bins); and
vii. Identify correlates of illicit drug use, different motivations for using drugs, risky drug use practices, associated harms, and different attitudes towards policies to help contribute to more evidence-informed harm reduction responses at Australian festivals.

A pragmatic mixed-methods approach was employed, involving five stepped phases: a systematic review of the literature, pre-survey interviews with key informants and festival-goers, development and launch of an online festival-goer survey (n=1967), post-survey interviews, and collation and interpretation of all data sources.

2. Drug use trends at music festivals

The below points are informed by data collected from an online survey of almost 2000 festival-goers (Grigg, In preparation). However, it is important to note there are two key limitations to consider. Firstly, a purposive, rather than probability, sample was recruited. Consequently, the findings cannot be viewed as representative of the wider population of Australian festival-goers. Secondly, the survey ran in mid-2016 and it is possible trends in drug use at festivals have since changed.

Most used an illicit drug.

Illicit drug use was reported by 62% (similar to 65% reported by the only other known contemporary Australian study to investigate illicit drug use at festivals; (Hughes, Moxham-Hall, Ritter, Weatherburn, & MacCoun, 2017)). The most common illicit drug used was ecstasy (51%), followed by cannabis (31%), ketamine (9%) and LSD (8%). New psychoactive substance (NPS) use was rare (<2%).

Strong indications illicit drug use was normalised.

There were strong indications that illicit drug use at festivals was normalised in this cohort. Almost everyone (96%) believed illicit drug use was a normal feature of attending. Even lifetime abstainers perceived illicit drug use as a normal feature and thought it would have been easy for them to obtain illicit drugs at the last festival had they wanted to.

Most festival-goers engaged in polydrug use.

Polydrug use (i.e. > 1 drug; including alcohol, but excluding tobacco) was a majority behaviour among drug users (68%) and the overall sample (60%). The most commonly identified drug combinations were: (1) alcohol and ecstasy; (2) alcohol, ecstasy and cannabis; and (3) alcohol and cannabis. Alcohol was almost always involved (90% of illicit drug users reported alcohol use).

Pre and post-festival illicit drug use was very common.

For one-day festivals, more than a third of ecstasy users used pre-festival, almost all used during and a fifth used post-festival. For multi-day festivals, half those who used ecstasy used daily.

Ecstasy users consumed multiple pills/capsules over the day.

At one-day festivals, ecstasy pills users reported using a median of three pills, capsule users reported using a median of two capsules, and those who used both pills and caps reported a median of five pills/caps.

Protective practices were common, but so were risky ones.

Almost half (48%) of those who used ecstasy pills reported 'double dropping' (i.e. simultaneously consuming ≥ two pills/caps; see paper published on this practice; (Grigg et al., 2018a)). However, most illicit drug users also actively sought information about drug content and engaged in a variety of other practices they believed would decrease health risks. For example, almost a tenth reported testing their drugs with a colour reagent testing kit and half of those who used ecstasy pills looked on the Pill Reports website.

Indications of high demand/supply inside festivals (influenced by policing).

More than three-quarters (78%) thought it would have been easy to obtain illicit drugs at the last festival attended. Of those who used illicit drugs, almost three-quarters carried their drugs in, a fifth had someone else carry drugs for them and a quarter organised and obtained drugs inside the festival. The most common reason for purchasing inside was because the opportunity presented itself, but almost a third did so to avoid the risk of detection before entering. Younger people were more likely to obtain inside the festival. Additionally, almost one in five supplied at the last festival, but the majority of this can be best described as 'social supply'. For example, almost a third of suppliers were carrying drugs for friends who were scared of detection, and more than three-quarters (88%) were supplying to known person/s.

Many who supplied for profit would have done so regardless of the type/level of policing.

Among those who reported supplying for profit at the last festival (n=28), 39% would have done so regardless of the type and level of policing on the day. However, 31% may have been influenced by drug detection dogs.

There were reports of dangerous concealment methods to avoid detection.

About 1 in 10 females who carried drugs carried them internally. There were also reports of swallowing concealed illicit drugs to purge back up once festival-goers were inside the grounds.

Most ecstasy users used for fun, to enhance social/sensory elements and to increase energy.

Unsurprisingly, the most common motives for using ecstasy were for fun (87%), to enhance the music (80%), to increase energy (71%) and to enhance social interaction (60%). Another common motive reported by almost half those who used ecstasy was because alcohol is expensive at festivals. In-depth interviews revealed a strong preference for the effects of ecstasy over alcohol, particularly in festival settings where the drug was

perceived as better suited (in terms of psychoactive effects and practicalities/convenience). Females in particular emphasised a preference for feeling in control (mentally and physically), avoiding the 'messy' effects of alcohol (e.g. blackouts, vomiting) and feeling more socially connected to those around them (deep bonds are often formed while using ecstasy). Convenience factors described included avoiding lining up for drinks/toilets, which often results in missing acts.

Moderate to severe adverse effects were rare.

Most drug users reported only positive effects. The experience of moderate to severe negative drug-related effects associated with the last festival attended was rare (3% moderate, 1% severe). The proportion was the same for alcohol only users and illicit drug users. However, minor adverse effects were common.

Further analyses revealed illicit drug use patterns may not be homogenous.

Significant differences were identified between genders, jurisdictions, festival types, musical genre preferences and ages (e.g. multi-day festivals and a preference to attend for electronic dance music were associated with higher risk of using illicit drugs).

3. Effective harm reduction strategies applicable to the music festival arena

Trial drug checking/Pill testing

Drug checking trials should be expanded.

Pill testing services (also known as 'drug checking') have been operating internationally for more than 50 years as a strategy for reducing drug-related harm (Measham, 2018b). In this time, a variety of different models have been delivered (Kriener et al., 2001), including festival-based models dating back as far as 1975 (James, Calendrillo, & Schnoll, 1975). In 2017, a global review identified 31 active drug checking services across 20 countries (Barratt, Kowalski, Maier, & Ritter, 2018).

While these services have deterred the use of potentially deadly drugs, and there is no known evidence to suggest they increase use or harms, some continue to question the efficacy and feasibility of implementing these services in Australia (Clun, 2018), particularly in festival settings (Caldicott, 2017). However, evaluations of recent festival-based services contribute to the existing body of evidence supporting the efficacy of this intervention. For example, Measham (2018a) described a range of positive outcomes following a recent pilot of drug checking at a 2016 festival in the UK. Some key outcomes included: (1) one in five drugs testing as inconsistent with the marketed content (i.e. misrepresented); (2) two-thirds of misrepresented drugs being handed in for police destruction, a further 9% reporting intention to discard the drugs themselves and a further 2% reporting intent to return the drug/s to their dealer; and (3) a 95% reduction in drug-related hospital admissions compared with the previous year when the service was not operating. Similarly, The STA-SAFE consortium (2018) released a report documenting several positive outcomes following the 2018 drug checking trial at the Groovin the Moo festival in Canberra. Some key points were that: (1) 61% were surprised by the content; (2) 18% reported they no longer intended to use the drug following engagement with the service (this included deterring the use of a drug linked to deaths in the UK and hospitalisations in New Zealand); and (3) 12% reported intent to use less.

Moreover, recent Australian cross-sectional surveys indicated these services were supported by the vast majority of festival-goers and key stakeholders sampled (Grigg, In preparation), would be utilised (Barratt, Bruno, Ezard, & Ritter, 2017; Grigg, In preparation) and have the capacity to have a deterrent and restrictive deterrent effect (Grigg, In preparation).

Thus, in response to a number of sources of evidence, trials of drug checking should be expanded and evaluated in other jurisdictions in Australia. Based on the available evidence, these services should have the following design features: (1) They should be integrated into a model of coordinated event healthcare; (2) They should involve trained analysts using laboratory grade equipment to scrutinise the sample and provide a best estimate of what it contains. This information can then inform an interaction between a trained expert and the potential drug taker about their drug use and reducing risk, including that <u>not using drugs is the safest option</u> and <u>no drugs are safe</u>. As explained previously, this interaction has been shown to decrease the likelihood of people using drugs (Grigg, In preparation; Measham, 2018b; Sage, 2016; The STA-SAFE

consortium, 2018); (3) Amnesty bins should be provided so those confronted with undesirable results have the option to immediately discard the drugs; (4) If any drug samples are found to be particularly dangerous, an immediate warning should be issued to festival-goers about high risk drugs potentially in circulation. This information can also be disseminated to authorities and healthcare providers to increase awareness about contents of pills in circulation (this pre-warning may improve clinical management and public health outcomes). Below is an example of the potential impact warnings can have:

In 2014, the Drug Information and Monitoring System (DIMS) identified an extremely dangerous pill (pink 'Supermans' containing 173mg of PMMA). In response, they issued immediate warnings on national television. No deaths occurred in the Netherlands. However, in the UK, in the absence of a national testing service and subsequent warnings, there were four deaths linked to identical pills within a fortnight of the DIMS alert (pink 'Supermans' containing PMMA) (Measham, 2018b).

Consideration should be given to testing content and dose of drugs.

In response to increasing availability of high-potency MDMA (Mounteney et al., 2018; Peacock et al., 2018), consideration should be given to using technologies that have capacity to test both content and dose. However, strategies to mitigate the risk of results being used for competitive purposes needs consideration, given at least one Australian festival death has been linked to a competitive drug consumption game (McClellan, 2015). Assessing the pros and cons of categorising dosage, so warnings about high dose pills are still provided, may be one way to minimise competition/marketing problems.

Consideration should be given trialling drug checking on and off-site.

Given illicit drug use commonly occurs pre and post festival (Grigg, In preparation), consideration should also be given to trialling off-site services. Some benefits of off-site drug checking include the opportunity to engage with potential consumers while sober, time to properly consider the results/advice, time to replace any undesirable drugs (rather than purchase on-site) and reduced chance of attracting new users/detracting from the festival. Benefits of on-site services include the ability to act as a safety net for on-site selling where consumers may have little to no information about the drug content, ability to positively influence the festival micro-market by disseminating warnings about undesirable/particularly dangerous drugs circulating, convenience for patrons (may increase uptake of the service) and potential to encourage a culture that cares about harm reduction (by having a visible presence and allowing the spread of accurate harm reduction information at the festival). Establishing fixed-site drug checking was also recommended following the 2018 Canberra trial (The STA-SAFE consortium, 2018).

Consideration should be given to using the data to establish a national warning system.

Data from drug checking should be used to establish a national warning system that utilises digital technology (e.g. electronic public service announcements; PSA, smart phone app alerts, social media alerts, etc.). However, in many festival settings, digital technology should not be relied on (e.g. when there is compromised network signal and limited power outlets to charge phones). Establishing a national warning system was also recommended following the 2018 Canberra trial (The STA-SAFE consortium, 2018).

Consider a police public service announcements and/or paired campaigns.

To improve trust and engagement with drug checking services, there of course needs to be official police cooperation. Ideally, there should be public police statements supporting the strategy and declaring drug checking areas as 'amnesty zones' not monitored by police. A PSA involving festival organisers, the police and drug checking personnel should ideally be released to help create trust and transparency about how services operate (as Grigg (In preparation) identified legal concerns as a barrier to accessing drug checking).

Drug checking services should be low cost or free.

Cross-sectional surveys conducted by Barratt et al. (2018) and Grigg (In preparation) suggest these services would appeal most broadly if they were low cost. Importantly, Grigg (In preparation) found that to avoid disadvantaging younger and potentially more vulnerable users, services should operate free of charge or via a donation system. However, education that corrects potential misconceptions about perceived safety of ecstasy use may increase willingness to pay for the service. Given evidence from Grigg (In preparation) suggested younger people may be more resistant to drug warnings, brief interventions should also consider

including motivational interviewing techniques that emphasise the risks versus the financial loss and attempt to tip the balance in favour of discarding the drug/s.

Trial drug amnesty bins

Implement amnesty bins when drug detection dogs are operating.

Drug amnesty bins should be implemented as a strategy to counteract the risk of panic consumption associated with drug policing at the gates, which has been linked to at least two drug-related festival deaths in Australia (Pedestrian, 2013; The Daily Telegraph, 2009). Additionally, cross-sectional surveys have documented cases of panic consumption in response to drug dog sightings (Dunn & Degenhardt, 2009; Grigg et al., 2018b; Hickey, McIlwraith, Bruno, Matthews, & Alati, 2012), with Grigg et al. (2018b) finding one in ten festival-goers sampled swallowed their drugs when seeing a drug detection dog at the last festival they attended (see below 'The impact of policing, including drug detection dogs, on drug use at music festivals'). It is important to note, however, that careful consideration is required to determine optimal conditions of legal amnesty at festivals, and these conditions should be completely transparent to the target population (see below 'Consider police public service announcements and/or paired campaigns').

Use data to establish a national warning system.

Drugs discarded should be forensically tested and results disseminated via a national warning system.

Consider police public service announcements and/or paired campaigns.

Grigg (In preparation) found while there were high levels of support for this intervention, there was confusion and distrust about how they operate and the level of legal amnesty (e.g. is it too late to discard drugs when a dog is approaching? Is police surveillance in place?). Similar to above comments about drug checking, confusion and distrust should be addressed via paired education campaigns and a PSA by police, which establishes transparency. Campaigns should also seek to shift the balance of pros/cons associated with disposing versus swallowing drugs. Data from Grigg (In preparation) suggest areas to address include concerns about wasting money, going sober and legal risks.

Consider interventions to shift culture.

To help address concerns/lack of willingness to attend festivals sober (identified in (Grigg, In preparation)), interventions that seek to shift the culture should be implemented. Replicating international interventions such as 'Soberoo' (Ferreira, 2016; Meadow, 2015) and campaigns/messages prompting festival-goers to consider the benefits of drug free experiences could help shift the culture. However, these interventions should have a principle of 'pro-choice' and should complement, rather than replace, harm reduction interventions for drug users (Meadow, 2015).

Improve medical services

Remove barriers to help seeking.

Grigg (In preparation) identified a number of barriers to seeking help, such as fear of legal issues, negative treatment, parents being notified, others seeing/embarrassment, inconveniencing/burdening friends and lack of faith in staff qualifications/skills. Targeted efforts are needed to remove these barriers, such as changing the operation of medical services (via protocols/regulation) and shifting attitudes towards medical services (via education/peer-led campaigns). Medical professionals who lack empathy or with strong anti-drug views should be screened out. All medical personnel should have mandated training and expertise on issues relating to illicit drug use at festivals, a mandated minimum level of training, and, ideally, should not explicitly affiliate with or preach any religion (as this was identified as a barrier to seeking help). Medical providers should use the best available evidence and predictive models to estimate staff numbers/composition so wait-times are minimised and those in need are not deterred. Private waiting booths should also be available in case lines do form. Lastly, lanyard pagers could be provided to friends when there is compromised mobile reception to avoid the perceived burden/inconvenience to friends (identified as a barrier to seeking help).

Paired help seeking campaigns should: (1) Promote messages such as 'if you're not sure, let one of our friendly medical staff do a quick assessment'; (2) Increase awareness of 'red flag' symptoms that merit medical assessment; (3) Encourage festival-goers to look out for each other – the perception that getting help is 'weak' and that others will pass judgment needs addressing; (4) Increase awareness/transparency of the help seeking

process to build trust in services; (5) Increase awareness of the location of services via festival maps on phones and clear signage; (6) Make services easily accessible, but also private and confidential for patients; and (7) strongly discourage returning to festival campsites alone when feeling unwell, and instead encourage seeking medical assessment or resting in a monitored chill-out zone (a review of international festival deaths by Grigg (In preparation) identified a trend of many deceased being found alone in their tent, car, etc.).

Review the medical response, mandate higher level of care models (see growing body of MGM literature).
A review of the mass gathering medicine (MGM) literature and jurisdictional guidelines in WA and Victoria by Grigg (In preparation) highlighted a need for existing guidelines to be reviewed. Firstly, it is critical to ensure all jurisdictional guidelines include medical guidelines that mandate a consistent, high standard of medical care (tailored to the size and style of festival being hosted). Higher level of care (HLC) models (compared to first-aid only models) have been proven to reduce hospital transfer rates (Archer, Beaumont, May, Dargan, & Wood, 2012; Dutch & Austin, 2012; Lund & Turris, 2015) and improve pre-hospital care (Dutch & Austin, 2012; Friedman et al., 2016), and may thus improve patient health outcomes.

A review of the MGM literature by Grigg (In preparation) also highlighted a need for more systematic documentation of patient records (particularly systematically documenting whether AOD use is involved) to inform predictive modelling (which can help optimise spread of resources and minimise patient wait times). Ultimately, based on a review of the literature and consultation with key informants, a review of the medical response at festivals is recommended (in all jurisdictions). This should be done in consultation with the MGM literature and should include a review of the overall level of regulation, training requirements (festival/drug specific and general qualifications), resource planning (staff composition and medical equipment) and patient record documentation. Extra attention should be given to managing high risk conditions (implicated in festival deaths) where health outcomes can depend largely on appropriately resourced on-site medical care (e.g. cooling equipment for managing hyperthermia). Evidence on local drug trends, as well as patterns of drug use/harms associated with different musical genres/festival types should be considered when planning the medical response.

Note. It is important to avoid placing unreasonable medical demands on festivals that would render the events financially unfeasible (as this could result in event cancellations and help push the scene underground). However, it is critical that adequate resources be consistently directed to the medical response (and that resources be appropriately directed within the medical response) to ensure high standards of care and improve public health outcomes. As explained below, redirecting resources from drug policing is one way higher standards of medical support could be achieved (see 'Indications illicit drug use at festivals may be normalised'). Additionally, it is worth noting that Grigg (In preparation) found 95% of festival-goers sampled supported mandatory medical standards and almost half would be willing to pay a $10 medical levy on top of ticket prices.

Deaths and patient records should be systematically documented to inform future medical planning and clinical management.
Having a national minimum dataset (used by all festival medical services) to inform a national database of patient records could help improve future medical planning.

Improve event design/environmental strategies
Data collected by Grigg (In preparation) suggest there may be room for improvement in terms of environmental planning and design, and dissemination of harm reduction resources. Although data was specific to WA and Victoria, the below recommendations likely apply in other Australian jurisdictions as well.

Implement environmental strategies aimed at reducing the risk of health conditions linked to deaths.
Strategies that prevent conditions linked to drug-related festival deaths should be treated as priority. Hyperthermia has been implicated in numerous festival deaths (Mulligan, 2013; Nadesan, Kumari, & Afiq, 2017) and is believed to be largely context-dependent (Duff, Johnston, Moore, & Goren, 2007; Kiyatkin, Kim, Wakabayashi, Baumann, & Shaham, 2014; Kiyatkin & Ren, 2016). Thus, ample free cool water stations, shade, monitored chill out zones, stage sprinklers and other cooling strategies are crucial at summer festivals. There should also be sufficient portable toilets, which are regularly cleaned/restocked of amenities to not discourage

proper hydration. On-foot rovers and small medical buggies should patrol festival campsites to identify/assist at risk persons. A phone app with a help/emergency call function with built-in location detection would also be an effective tool to aid festival-goers and first responders (ideally apps would feature technology capable of transmitting GPS coordinates and an SOS without cellular signal – such technology has already been developed (see University of Alicante (2017)). Rovers should disseminate harm reduction information and resources to festival campsites early in the day when large groups are gathered and still sober enough to engage and retain information.

Promote/increase awareness of interventions using digital technology.

To improve awareness of harm reduction strategies, festival organisers should promote them via festival Facebook pages, websites and smart phone applications. In the days preceding, there should be Facebook posts promoting strategies, and on the day, there could be regular phone app alerts (e.g. "Feeling hot? Go cool down in one of our chill out zones where you can access free water – marked below on the map").

When designing festivals, consideration should be given to sociospatial factors and assemblages of health.

It is not enough to simply have harm reduction strategies in place. Careful consideration needs to be given to sociospatial factors (See Dilkes-Frayne, 2014, 2016) to ensure festival-goers are aware they are in place, feel comfortable accessing them and are conveniently able to access then. Considering hypothetical 'assemblages' of health and movements through the event in the planning phases when designing the layout may improve event safety. Assemblage thinking is a new approach to drug problems; it has been described as a drawing together of "social, affective and material forces and entities" (Duff, 2016, p. 17). In festival settings, it is useful to draw on assemblage thinking to consider how drug-related experiences (good and bad) can unfold in real conditions.

Improve jurisdictional guidelines

Review medical guidelines.

See above (Review the medical response, mandate higher level of care models (see growing body of MGM literature).

Note. In WA, as part of the inquest into the death of Gemma Thoms at the Big Day Out festival in 2009 (Mulligan, 2013), the coroner made recommendations to address inadequate risk assessment tools in the WA guidelines (WA Department of Health & WA Environmental Health Directorate, 2009) and a lack of regulation of paramedics. Specifically, according to risk assessment tool in the 2009 guidelines (still current), large-scale festivals (such as the Big Day Out) were classified as 'medium' risk and thus did not require paramedics or properly resourced medical stations. However, neither recommendation was addressed, although national registration of paramedics has since been established (independent of these recommendations).

Include an evidence-based section on reducing the risk of drug-related harm.

In addition to clear guidance on the medical response, other evidence-based strategies should be strongly encouraged such as peer support services and crisis intervention services at multi-day festivals featuring psychedelic drug use. Where not already governed by existing legislation, consideration should be given to mandating key evidence-based harm reduction strategies.

Holistic event planning with improved sector collaboration

Consider the utility and feasibility of holistic frameworks for event planning.

MGM researchers have expressed a belief that more holistic approaches to event safety, which involve improving the collaboration of services and sectors, could improve health outcomes. Hutton, Savage, Ranse, Finnell, and Kub (2015) and Lund and Turris (2017) drew on frameworks from within the medical field to avail new insights and recommendations for festival planning. Hutton et al. (2015) employed 'Haddon's Matrix' to help examine risk factors and develop recommendations for reducing harm. This matrix is based on the public health model (drug, set and setting), but also considers contributing factors pre and post-event. Lund and Turris (2017) drew on the "chain of survival" concept (used in the medical field for managing cardiac arrest) to develop a framework for "describing, understanding and planning" (p.442) the collaboration of various key players involved in festival safety. This framework was proposed in response to a perceived disconnect between sectors which they suggested can result in underutilised resources (due to overlap) and/or

inadequate resources (e.g. assuming local emergency medical services will suffice). Those involved in event regulation and planning should consider the potential benefit and workability of these frameworks.

Shift towards a harm reduction policy

Indications illicit drug use at festivals may be normalised.

Data collected by Grigg (In preparation) provided strong indications of normalisation of illicit drug use within the festival-goer cohort sampled. It has been argued that if illicit drug use has become 'normalised' in certain populations, implications for policy need to be considered (e.g. Duff, 2005; Parker, Aldridge, & Measham, 1998). Specifically, policy makers may need to re-evaluate current approaches, acknowledging drug use as a normal feature that may need to be accommodated for. This may involve shifting from punitive and preventative approaches to more harm reduction focused approaches (Duff, 2005). Thus, based on evidence collected by Grigg (In preparation), there may be a need to shift the focus and dedicate more resources to harm reduction than to supply control/drug policing. Moreover, one could argue that zero-tolerance policies send mixed messages, limit the capacity for organisers to implement harm reduction strategies (due to fear of legal risks) and are inconsistent with Australia's harm minimisation national drug policy.

In recognition of significant changes associated with the ecstasy resurgence, Mounteney et al. (2018) also encouraged a review of responses. In their paper, they describe nine key changes associated with the resurgence, including how ecstasy use has now shifted into mainstream culture.

Consider decriminalising personal use in festival settings.

Another more radical approach proposed and/or supported by many key informants interviewed as part of Grigg (In preparation) was decriminalising small amounts for personal use at festivals. Indeed, such an approach has been successfully implemented in Amsterdam with their 'five pills policy' (no punishment if found in possession of five or fewer pills), which is supported by drug checking stations (Glazer, 2015)). While this 'five pills policy' was initially met with opposition from conservative politicians, the government ultimately recognised that taking a practical approach could encourage more responsible drug use and improve public health outcomes. This is obviously something that would need considerable public discussion and support from government and law enforcement as well as health services.

Improve drug education and methods of education delivery

Provide honest information/education that will resonate with lived experiences.

Improved 'youth friendly' education on real risks and how to counter them, which will resonate with lived experiences, is needed (i.e. not traditional government scare tactic campaigns). Accurate information should be made available about what festival-goers have actually died from to stop the spread of misinformation that all deaths are due to 'overdose' (as this inaccurately suggests a 'normal dose' is safe). This inaccurate reporting of festival deaths by mainstream media and police has been criticised by forensic pathologists, drug and health experts and alternative media outlets (Cox, 2016; Jarvis, 2015; Nadesan et al., 2017; Sferios & Wooldridge, 2014). For example, it has been argued that misrepresenting cases involving hyperthermia or hyponatremia as 'overdoses' is harmful because it inadvertently suggests standard doses are safe, when in fact, these risks exist when using normal doses. Further, this inaccurate reporting also misses key opportunities to raise awareness about real risks.

Targeted interventions for different stages of drug using.

Interventions should be tailored to festival-goers at different points in their drug using 'careers'. As festivals and associated drug culture becomes increasingly mainstream, it is important to target young people new to the scene to help them adopt responsible drug use practices early. However, it is also important to target more experienced users about risk of complacency, dosage decisions and shifting drug trends, particularly since there is evidence to suggest reuptake of drug use at festivals may be common (Hesse, Tutenges, & Schliewe, 2010).

Develop validated context-specific self-care protocols.

Campaigns educating ecstasy users on simple validated pre and post self-care routines to mitigate the risk of developing more pronounced physical and psychological sequela after attending festivals could be of benefit. Again, there are implications for raising awareness about how to safely manage 'ups and downs' without self-

medicating (e.g. with benzodiazepines). Simple validated protocols with holistic health advice on sleep, nutrition and exercise pre and post festivals could help encourage more concerted and effective efforts for self-care.

Educate on shifting drug trends, paired with harm reduction messages.

The global resurgence of ecstasy has been associated with significant changes in the market, particularly in relation to production and purity (Mounteney et al., 2018). Globally there have been reports of increasing availability of high potency ecstasy (EMCDDA, 2018; Mounteney et al., 2018), and, in Australia, high dose ecstasy pills have been detected (ACIC, 2018; Hinton, 2019) and linked to overdoses and deaths (Hinton, 2019; McGowan, 2019). Australian national monitoring systems have also reported increased availability and use of higher purity forms of ecstasy (e.g. crystals and capsules) (Peacock et al., 2018). These changes in the market increase the risk of festival-goers overdosing on high purity MDMA. To counter this risk, something akin to The Loop's crush/dab/wait campaign in the UK is recommended to encourage more considered dosage (The Loop, 2015), particularly since managing doses of crystals can be challenging in festival settings (where there may be a tendency to swallow whole crystals) (The Loop, 2015).

Improve awareness of water guidelines.

Grigg (In preparation) found a high percentage of ecstasy users were unaware of the water intake guidelines while using ecstasy. This is concerning when this condition has been linked to deaths in rave settings in Australia and elsewhere (Box, 1997; Parr, Low, & Botterill, 1997), and an international study found that at least one in four female festival-goers developed hyponatremia during a festival (van Dijken, Blom, Hené, Boer, & Consortium, 2013). Thus, festival organisers and on-site harm reduction services should aim to increase awareness of water guidelines (e.g. via signage and dissemination of harm reduction materials). Additionally, festivals should be designed to enable safe hydration management (e.g. appropriate high sodium foods on offer, easily accessible fluids, and cooling techniques to avoid excess loss of sodium, etc.).

Utilise digital technologies to disseminate harm reduction information.

Again, advances and trends in digital technology should be considered. Particularly, consideration should be given to delivering education via online social media, mass, micro and niche media platforms (e.g. music news/media outlets), and smart phone applications.

4. The impact of policing, including drug detection dogs, on drug use at music festivals

Please refer to Grigg et al. (2018b), which addresses this topic in detail. However, the key points are summarised below.

Drug detection dogs did not deter the vast majority from using illicit drugs.

As reported in Grigg et al. (2018b), the expected presence of drug detection dogs did not deter the vast majority of festival-goers (96%) from using illicit drugs at the last festival they attended. Rather, the threat of drug dogs appeared to result in a variety of alternative responses to avoid detection.

Drug detection dogs resulted in a variety of iatrogenic effects, which may increase risk.

Other responses included: concealing their drugs well (48%), getting someone else to carry their drugs (15%), buying their drugs inside the festival (11%), taking less easily detected drugs (10%) and taking drugs before entering (7%). Of those who carried drugs in (n=418), 10% concealed them internally and 1% swallowed them to retrieve inside. The reasons why these responses are likely to increase the risk of harm are discussed in Grigg et al. (2018b).

Drug detection dogs triggered panic consumption.

Of those who had drugs on their person when seeing a dog (n=189), 10% reported consuming drugs in response. No respondents reported being detected with drugs due to a positive identification.

In summary, Grigg et al. (2018b) contributed to mounting evidence of both ineffectiveness (at deterring drug use and detecting drugs) and iatrogenic effects (See also Hickey et al., 2012; NSW Ombudsman, 2006). Therefore, as urged in Grigg et al. (2018b), the use of drug detection dogs at Australian outdoor music festivals should be urgently reconsidered.

Note: It is important to emphasise that the data pertaining to internal concealment should not be used to form an argument for increasing police powers (e.g. to perform cavity searches) as this may trigger increased swallowing of concealed drugs (to purge later), arguably the most dangerous method of smuggling drugs into festivals.

5. Whether current policies on drug possession, and the policing of this issue at music festivals, is negatively impacting harm minimisation measures

Again, cross-sectional surveys of festival-goers in Australia have found existing policies on illicit drug possession and associated policing were largely ineffective at deterring illicit drug use/offending but, more importantly, encouraged a wide array of risky drug practices (Grigg et al., 2018b; Hughes et al., 2017). Some key iatrogenic effects included pre-loading/binging beforehand, dangerous methods of drug concealment, switching to potentially more dangerous synthetic drugs perceived as less likely to be detected, panic consumption, increased supply/demand inside the festival and people putting themselves at risk of more serious supply charges when they are trying to help friends nervous about carrying their own drugs. Thus, while acknowledging limitations related to representativeness, the data suggested existing policies might be increasing the overall harmfulness of drugs at festivals.

Key informants from the festival industry interviewed by Grigg (In preparation) also explained how they felt limited in their ability to implement harm reduction initiatives due to fear of being seen as condoning drug use and the associated legal ramifications. It is also clear that the introduction of new 'user-pay' policing regulations in NSW may result in an imbalanced proportion of resources being dedicated to policing, which has sparked contention and caused some festivals to announce cancellations and/or relocations to other jurisdictions (Loomes, 2019). While recognising these new policing conditions may be intended to reduce drug-related harm (by trying to limit drug supply/use), they may instead help push the scene underground, which could increase drug-related harms (e.g. due to lack of safety regulation, including less on-site harm reduction measures, more isolated locations, etc.). Moreover, festivals that continue to operate legally will have fewer resources to dedicate to harm reduction measures, such as on-site medical support.

Overall, based on the evidence discussed, and that two drug-related festival deaths have been directly linked to policing of drugs (Pedestrian, 2013; The Daily Telegraph, 2009), there are strong implications to re-evaluate existing drug policies at Australian festivals. As recommended previously in this report, a shift towards a harm reduction policy should be seriously considered.

It is again worth noting here that harms related to drug possession policies at festivals have been acknowledged in other countries such as the Netherlands, where they have responded by decriminalising personal use of ecstasy under certain conditions (Glazer, 2015).

6. Within the area of your expertise, please provide any other opinion and/or research that you consider will be relevant to the Coroner in her inquest into the death of seven young adults at music festivals from illicit drug use

Drug-related festival deaths should be systematically documented to inform future responses.

Mortality associated with music festivals does not seem to have been systematically documented by governments or healthcare providers. Thus, to gain insight into the number of drug-related deaths that have occurred in association with these events, Grigg (In preparation) conducted a search of the media to document festival deaths that have occurred in Australia and internationally (table summary available upon request). It was clear from this review that information relating to toxicology, official causes of death and contributing factors to death could be used to help inform future responses in relation to medical and environmental planning, education and harm reduction at festivals.

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A.2 Expert report for the Special Commission of Inquiry into the Drug 'Ice'

SPECIAL COMMISSION OF INQUIRY INTO THE DRUG 'ICE'

Expert report from Jodie Grigg and Simon Lenton
National Drug Research Institute (NDRI), Curtin University
September 2019

We, Jodie Grigg and Simon Lenton, acknowledge for the purpose of Rule 31.23 of the Uniform Civil Procedure Rules 2005 that we have read the expert witness code of conduct in Schedule 7 to the said rules and agree to be bound by it.

1. Researcher background and PhD

The Institute

The National Drug Research Institute's (NDRI) mission is to conduct and disseminate high quality research that supports evidence informed policy, strategies and practice to prevent and minimise alcohol and other drug-related health, social and economic harms among individuals, families and communities in Australia.

Professor Simon Lenton, Director of NDRI

Lenton has been involved in research on amphetamine type stimulants (ATS) for more than 20 years. In the late '90s, he conducted research investigating the Perth rave scene (Boys, Lenton, & Norcross, 1997; Lenton, Boys, & Norcross, 1997; Lenton & Davidson, 1999) and has been a chief investigator for the Ecstasy and Related Drugs Reporting System (EDRS, formerly the 'Party Drugs Initiative') and the Illicit Drug Reporting System (IDRS) since 2000. Lenton has also supervised Grigg's PhD research (A mixed-methods study of drug use at music festivals) since 2014.

Jodie Grigg, Research Associate and PhD Candidate at NDRI

Grigg began working for NDRI in 2010 on the Ecstasy and Related Drugs Reporting System (EDRS) and the Illicit Drugs Reporting System (IDRS). In 2012, she began coordinating the WA arm of the EDRS and in September 2014 commenced her PhD titled 'A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria'. She is currently in the final writing phases of her thesis and plans to submit it for examination in November 2019. However, she has already presented thesis findings at two international conferences and published papers in the International Journal of Drug Policy and Drug and Alcohol Review (Grigg, Barratt, & Lenton, 2018a, 2018b).

PhD thesis aims and objectives

The aims of Grigg's thesis were to: (1) Investigate the nature and extent of drug use (inclusive of alcohol, but with a focus on illicit drugs) associated with outdoor music festivals (herein termed 'festivals'); (2) Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and (3) Develop recommendations aimed at improving these strategies in Australia. More specifically, the objectives were to:

i. Document the percentage using drugs and drug use patterns and practices associated with festivals (among a sample of festival-goers in two Australian states: Western Australia and Victoria);
ii. Identify motivations and pleasures associated with using drugs at festivals;
iii. Identify the nature, extent and severity of harms associated with using drugs at festivals;
iv. Identify access and barriers to onsite medical services and other harm reduction strategies at festivals (e.g. free water, shade);
v. Identify attitudes towards and outcomes related to drug policing at festivals (e.g. drug detection dogs);
vi. Identify attitudes towards and potential access and barriers to alternative harm reduction strategies at festivals (e.g. drug-checking and drug amnesty bins); and
vii. Identify correlates of illicit drug use, different motivations for using drugs, risky drug use practices, associated harms, and different attitudes towards policies to help contribute to more evidence-informed harm reduction responses at Australian festivals.

A pragmatic mixed-methods approach was employed, involving five stepped phases: a systematic review of the literature, pre-survey interviews with key informants and festival-goers, development and launch of an online festival-goer survey (n = 1967), post-survey interviews, and collation and interpretation of all data sources.

2. What are the patterns of drug use at music festivals?

The below points are informed by data collected from an online survey of 1967 festival-goers (Grigg, In preparation). However, it is important to note there are two key limitations to consider. Firstly, a purposive, rather than probability, sample was recruited. Consequently, the findings cannot be viewed as representative of the wider population of Australian festival-goers. Secondly, the survey ran in mid-2016 and it is possible trends in drug use at festivals have since changed.

Most used an illicit drug at the last festival attended.

Illicit drug use was reported by 62% at their last festival (similar to 65% reported by the only other known contemporary Australian study to investigate illicit drug use at festivals; (Hughes, Moxham-Hall, Ritter, Weatherburn, & MacCoun, 2017)). The most common illicit ATS reportedly used was ecstasy/MDMA (51%), followed by cocaine and speed (each 8%), non-prescribed pharmaceutical stimulants and MDA (each 4%) and then crystal methamphetamine (2%).

Strong indications illicit drug use was normalised.

There were strong indications that illicit drug use at festivals was normalised in this cohort. Almost everyone (96%) believed illicit drug use was a normal feature of attending. Even most lifetime abstainers perceived illicit drug use as a normal feature (89%) and thought it would have been easy for them to obtain illicit drugs at the last festival had they wanted to (72%).

Most festival-goers engaged in polydrug use.

Among those who reported ATS use associated with the last festival (54%, n = 1056), 96% reported using more than one drug (including alcohol, but excluding tobacco) and almost two-thirds reported using more than two drugs (63%). The most commonly identified drug combinations among those using ATS were: (1) alcohol and ecstasy (28%); (2) alcohol, ecstasy and cannabis (18%); and (3) alcohol, cocaine and ecstasy (3%).

Pre and post-festival illicit drug use was very common.

Among those who last attended a one-day festival, more than a third of ecstasy users reported using ecstasy pre-festival, almost all used during the festival and a fifth used post-festival. For multi-day festivals, half those who used ecstasy used daily. Overall, unsurprisingly, the results suggested alcohol was the most commonly used drug at all stages, stimulants were most common before and during the festival, and drugs with depressant properties were most common after the festival (e.g. alcohol and cannabis). However, stimulants were also commonly used post-festival, suggesting the end of the festival did not necessarily mark the end of the partying for some festival-goers. Indeed, about one in five (18%) reported going ≥24 hours or longer without sleeping.

Ecstasy users consumed multiple pills/capsules over the day.

Among those who last attended a one-day festival, ecstasy pills users reported using a median of three pills over the day (n = 302), capsule users reported using a median of two capsules (n = 105), and those who used both pills and caps reported a median of five pills/caps (n = 91). Cocaine users reported using a median of 3 lines (n = 63) or 0.5 grams (n = 25) over the day, while speed users reported using a median of 2 lines (n = 35) or 0.5 grams (n = 16). At multi-day festivals, cocaine users reported using a median of 1 gram over the event (n=25), while speed users reported using a median of 2 grams (n = 27).

Protective practices were common, but so were risky ones.

Almost half (48%) of those who used ecstasy pills reported 'double dropping' (i.e. simultaneously consuming ≥ two pills/caps; see paper published on this practice; (Grigg et al., 2018a)). However, most ATS users also actively sought information about drug content and engaged in a variety of other practices they believed would decrease health risks (Median = 6 protective practices). For example, almost a tenth of respondents who used an ATS reported testing their drugs with a colour reagent testing kit (9%) and half of those who used ecstasy pills looked on the Pill Reports website (https://pillreports.net/).

Indications of high demand/supply inside festivals (influenced by policing).

More than three-quarters (78%) thought it would have been easy to obtain illicit drugs at the last festival attended. Of those who used illicit drugs, almost three-quarters carried their drugs in, a fifth had someone else

carry drugs for them and a quarter organised and obtained drugs inside the festival. The most common reason for purchasing inside was because the opportunity presented itself, but almost a third did so to avoid the risk of detection before entering. Younger people were more likely to obtain inside the festival. Additionally, almost one in five respondents reported supplying illicit drugs to others at the last festival, but the majority of this could be best described as 'social supply'. For example, almost a third of suppliers were carrying drugs for friends who were scared of detection, and more than three-quarters (88%) were supplying to known person/s.

Many who supplied for profit would have done so regardless of the type/level of policing.

Among those who reported supplying illicit drugs for profit at the last festival (n = 28), 39% said they would have done so regardless of the type and level of policing on the day. However, 31% said they may have been influenced by drug detection dogs.

There were reports of dangerous concealment methods to avoid detection.

About 1 in 10 females (11%) who reported using an ATS at the last festival, and carrying drugs into the festival themselves, reported they had carried them internally in a body cavity. There were also four reports of ATS users swallowing concealed illicit drugs to purge back up once they were inside the grounds (see 'Additional evidence addressing the impact of policing on drug use at music festival.' for further information about risky practices).

Most ecstasy users used for fun, to enhance social/sensory elements and to increase energy.

Unsurprisingly, the most common motives for using ecstasy were for fun (87%), to enhance the music (80%), to increase energy (71%) and to enhance social interaction (60%). Another common motive reported by almost half those who used ecstasy was because alcohol is expensive at festivals. In-depth interviews revealed a strong preference for the effects of ecstasy over alcohol, particularly in festival settings where the drug was perceived as better suited (in terms of psychoactive effects and practicalities/convenience). Females in particular emphasised a preference for feeling in control (mentally and physically), avoiding the 'messy' effects of alcohol (e.g. blackouts, vomiting) and feeling more socially connected to those around them (deep bonds are often formed while using ecstasy). Convenience factors described included avoiding lining up for drinks/toilets, which often results in missing performances. The most commonly reported motives for other ATS were 'to increase energy' and 'for fun'.

Moderate to severe adverse effects were rare.

When asked about the severity of negative drug-related effects experienced at the last festival attended, most respondents (68%) who reported using an ATS reported *only* positive effects or unexpected effects that weren't necessarily bad. The experience of moderate to severe negative drug-related effects associated with the last festival attended was rare (4% moderate, <1% severe), although minor adverse effects were quite common (27%).

Further analyses revealed illicit drug use patterns may not be homogenous.

Significant differences were identified between genders, jurisdictions, festival types, musical genre preferences and ages (e.g. multi-day festivals and a preference to attend for electronic dance music were associated with higher risk of using an ATS).

3. What harm reduction strategies have been the subject of your research, and what does your research suggest or indicate about the effectiveness of each strategy in reducing drug-related harm?

Drug checking / pill testing

Key findings from Grigg's doctoral research

Note. For the purpose of this report, the following analyses relating to drug checking were limited to participants who reported using an illicit ATS (excluding pharmaceutical stimulants) associated with the last festival they attended.

Likelihood to access

To investigate the feasibility of this intervention, respondents were asked how likely they would have been to access a drug checking service, had it been available at the last festival they attended. Among 817 respondents who reported using an ATS, the vast majority (81%) reported that they 'definitely' (61%) or 'probably' (20%) would have, 11% reported 'maybe', 6% reported 'probably not' and only 1% reported 'definitely not'.

Respondents who did not report 'definitely' (39%, *n* = 314) were asked why not to identify barriers which could be addressed when considering service design and delivery. The most commonly reported barrier was fear of police watching them, stopping them or pursuing them afterwards (52%). Many also reported they trusted their source so didn't think it was necessary (35%), had tried drugs from that batch so knew what to expect or they trusted a friend's experience with drugs from that batch (each 27%). Fear of negative treatment/judgment by staff and fear of other people seeing/judging them was also common (23% and 18% respectively). Interesting, 14% reported that they did not care that much about the content.

Potential deterrent/harm reduction effect

Respondents who used an illicit drug at the last festival were asked how they would have responded to drug-checking results which indicated their drugs did not contain what they thought. Among 816 respondents who reported using an ATS, almost two fifths (18%) reported they would not have consumed the drugs under any circumstances, a further 55% would not have consumed the drugs if they contained something very dangerous, and 27% may have still considered using the drugs even if they contained something dangerous. These results suggest a quarter may have still put themselves at risk of harm despite being warned by a drug checking service. However, of these 219 respondents, half (47%) reported they would have been more cautious, 39% reported they would have researched the content (and then re-evaluated) and 12% reported they would have consumed less. Thus, these findings provide support for a 'restrictive deterrent effect', in that cases where respondents were not immediately deterred from using by an undesirable result would none-the-less do so in a more cautious or careful way.

Recommendations relating to drug checking services

The following recommendations are based on (1) a systematic review of the literature; and (2) data collected as part of Grigg (In preparation).

Drug checking trials should be expanded.

Pill testing services (also known as 'drug checking') have been operating internationally for more than 50 years as a strategy for reducing drug-related harm (Measham, 2018b). In this time, a variety of different models have been delivered (Barratt, Kowalski, Maier, & Ritter, 2018; Kriener et al., 2001), including festival-based models dating back as far as 1975 (James, Calendrillo, & Schnoll, 1975). In 2017, a global review identified 31 active drug checking services across 20 countries (Barratt, Kowalski, et al., 2018).

While evidence indicates these services have deterred the use of potentially deadly drugs, and there is no known evidence to suggest they increase use or harms, some continue to question the efficacy and feasibility of implementing these services in Australia (Clun, 2018), particularly in festival settings (Caldicott, 2017). However, evaluations of recent festival-based services contribute to the existing body of evidence supporting the efficacy of this intervention. For example, Measham (2018a) described a range of positive outcomes following a recent pilot of drug checking at a 2016 festival in the UK. Some key outcomes included: (1) one in five drugs testing as inconsistent with the marketed content (i.e. misrepresented); (2) two-thirds of misrepresented drugs being handed in for police destruction, a further 9% reporting intention to discard the drugs themselves and a further 2% reporting intent to return the drug/s to their dealer; and (3) a 95% reduction in drug-related hospital admissions compared with the previous year when the service was not operating. Similarly, The STA-SAFE consortium (2018) released a report documenting several positive outcomes following the 2018 drug checking trial at the Groovin the Moo festival in Canberra. Some key points were that: (1) 61% were surprised by the content; (2) 18% reported they no longer intended to use the drug following engagement with the service (this included deterring the use of a high risk stimulant, n-ethylpentylone, linked to deaths in the UK and hospitalisations in New Zealand); and (3) 12% reported intent to use less.

Moreover, recent Australian cross-sectional surveys indicated these services were supported by the vast majority of festival-goers and key stakeholders sampled (Grigg, In preparation), would be utilised (Barratt, Bruno, Ezard, & Ritter, 2018; Grigg, In preparation) and have the capacity to have a deterrent and restrictive deterrent effect (Grigg, In preparation).

Thus, based on the available evidence, we recommend that trials of drug checking be expanded and evaluated in other jurisdictions in Australia. Based on the available evidence, these services should have the following design features: (1) They should be integrated into a model of coordinated event healthcare; (2) They should involve trained analysts using laboratory grade equipment to scrutinise the sample and provide a best estimate of what it contains. This information can then inform an interaction between a trained expert and the potential drug taker about their drug use and reducing risk, including that not using drugs is the safest option and no drugs are safe. As explained previously, this interaction has been shown to decrease the likelihood of people using drugs (Grigg, In preparation; Measham, 2018b; Sage, 2016; The STA-SAFE consortium, 2018); (3) Amnesty bins should be provided so those confronted with undesirable results have the option to immediately discard the drugs; (4) If any drug samples are found to be particularly dangerous, an immediate warning should be issued to festival-goers about high risk drugs potentially in circulation. This information can also be disseminated to authorities and healthcare providers to increase awareness about contents of pills in circulation (this pre-warning may improve clinical management and public health outcomes). Below is an example of the potential impact such warnings can have:

In 2014, the Drug Information and Monitoring System (DIMS) a shop- front drug testing service in the Netherlands, identified an extremely dangerous pill (pink 'Supermans' containing 173mg of PMMA). In response, they issued immediate warnings on national television. No deaths occurred in the Netherlands. However, in the UK, in the absence of a national testing service and subsequent warnings, there were four deaths linked to identical pills within a fortnight of the DIMS alert (pink 'Supermans' containing PMMA) (Measham, 2018b).

Consideration should be given to testing content and dose of drugs.

In response to increasing availability of high-potency MDMA (Mounteney et al., 2018; Peacock et al., 2018), consideration should be given to using technologies that have capacity to test both content and dose. However, strategies to mitigate the risk of results being used for competitive purposes needs consideration, given at least one Australian festival death has been linked to a competitive drug consumption game (McClellan, 2015). Assessing the pros and cons of categorising dosage, so warnings about high dose pills are still provided, may be one way to minimise competition/marketing problems. On balance at present it would seem that the benefits of warning consumers about high potency ecstasy and strategies to reduce risk outweighs the potential for some users to seek these drugs out and use them in a highly risky fashion.

Consideration should be given trialling drug checking on and off-site.

Given illicit drug use commonly occurs pre and post festival (Grigg, In preparation), consideration should also be given to trialling off-site, shop-front services. Some benefits of off-site drug checking include the opportunity to reach a greater proportion of the target population, engage with potential consumers while sober, allow potential consumers time to properly consider the results/advice and replace any undesirable drugs (rather than purchase onsite) and reduced chance of attracting new users/detracting from the festival. Benefits of onsite services include the ability to act as a safety net for onsite selling where consumers may have little to no information about the drug content, ability to positively influence the festival micro-market by disseminating warnings about undesirable/particularly dangerous drugs circulating, convenience for patrons (may increase uptake of the service) and potential to encourage a culture that cares about harm reduction (by having a visible presence and allowing the spread of accurate harm reduction information at the festival). Establishing fixed-site drug checking was also recommended following the 2018 Canberra trial (The STA-SAFE consortium, 2018).

Consideration should be given to using the data to establish a national warning system.

Data from drug checking should be used to establish a national warning system that utilises digital technology (e.g. electronic public service announcements; PSA, smart phone app alerts, social media alerts, etc.). However, in many festival settings, digital technology should not be relied on (e.g. when there is compromised

network signal and limited power outlets to charge phones). Establishing a national warning system was also recommended following the 2018 Canberra trial (The STA-SAFE consortium, 2018).

Consider a police public service announcements and/or paired campaigns.

To improve trust and engagement with drug checking services, there of course needs to be official police cooperation. Ideally, there should be public police statements supporting the strategy and declaring drug checking areas as 'amnesty zones' not monitored by police. A public service announcement involving festival organisers, the police and drug checking personnel should ideally be released to help create trust and transparency about how services operate (as Grigg (In preparation) identified legal concerns as a barrier to accessing drug checking).

Drug checking services should be low cost or free.

Cross-sectional surveys conducted by Barratt, Kowalski, et al. (2018) and Grigg (In preparation) suggest these services would appeal most broadly if they were low cost. Importantly, Grigg (In preparation) found that to avoid disadvantaging younger and potentially more vulnerable users, services should operate free of charge or via a donation system.. Given evidence from Grigg (In preparation) suggested younger people may be more resistant to drug warnings, brief interventions should also consider including motivational interviewing techniques that emphasise the risks versus the financial loss and attempt to tip the balance in favour of discarding the drug/s.

Drug Amnesty bins

Key findings from Grigg's doctoral research

Note. For the purpose of this report, the following analyses relating to drug amnesty bins were limited to participants who reported using an illicit ATS at the last festival they attended.

Likelihood to access

In this sample, there were mixed views on likelihood to utilise this intervention. Respondents who reported consuming an illicit drug at the last festival were asked if they would have discarded their drugs into a drug amnesty bin if they were concerned about being detected by the police. Among those who reported using an ATS at the last festival (n = 834), half reported they probably (33%) or definitely (17%) *would not* have, a quarter said maybe (24%) and quarter said they definitely (9%) or probably (14%) would have. Although a minority, the finding that about one in ten would have definitely discarded their drugs into a bin had they been concerned about detection suggests amnesty bins should be considered as one strategy for reducing the risk of panic consumption.

The most commonly reported barrier for not utilising the bins was not wanting to waste the money spent on the drugs (80%), followed by they wouldn't do it unless they were extremely concerned about being caught (61%), not having drugs would make the festival less enjoyable (40%), too much effort getting the drugs (31%) and concern about police watching (29%). Some also reported that it would have depended on which drugs they had on them (20%) and some reported concerns about embarrassment/judgment from others watching (16%). The main 'other' responses involved distrust with the process and police handling of discarded drugs (e.g. concern about fingerprints being taken).

Level of support

Despite hesitations about discarding drugs, most ATS users supported the strategy (61%), about a third were neutral (31%) and only 8% opposed.

Recommendations relating to drug amnesty bins

The following recommendations are based on (1) a systematic review of the literature; and (2) data collected as part of Grigg (In preparation).

Implement amnesty bins when drug detection dogs are operating.

Drug amnesty bins should be implemented as one strategy to counteract the risk of panic consumption associated with drug policing at the gates, which has been linked to at least three drug-related festival deaths in Australia (Australasian Leisure Management, 2019; Pedestrian, 2013; The Daily Telegraph, 2009).

Additionally, multiple cross-sectional surveys have documented cases of panic consumption in response to drug dog sightings (Dunn & Degenhardt, 2009; Grigg et al., 2018b; Hickey, McIlwraith, Bruno, Matthews, & Alati, 2012), with Grigg et al. (2018b) finding one in ten festival-goers sampled swallowed their drugs when seeing a drug detection dog at the last festival they attended (see below Drug detection dogs triggered 'panic consumption'.). However, it should also be noted that, in our view, ceasing the use of drug detection dogs would be more effective at reducing the risks associated with the strategy than implementing drug amnesty bins to supplement them.

It is also important to note that careful consideration is required to determine optimal conditions of legal amnesty for drug amnesty bins at festivals, and these conditions should be completely transparent to the target population (see below 'Consider police public service announcements and/or paired campaigns').

Use data to establish a national warning system.

Drugs discarded should be forensically tested and results disseminated via a national warning system.

Consider police public service announcements and/or paired campaigns.

Grigg (In preparation) found while there were high levels of support for this intervention, there was confusion and distrust about how they operate and the level of legal amnesty (e.g. is it too late to discard drugs when a dog is approaching? Is police surveillance in place?). Similar to above comments about drug checking, to increase the efficacy of this intervention, confusion and distrust should be addressed via paired education campaigns and a public service announcement by police, which establishes transparency. Campaigns should also seek to shift the balance of pros/cons associated with disposing versus swallowing drugs. Data from Grigg (In preparation) suggest barriers to address include concerns about wasting money, going sober and legal risks.

Consider interventions to shift culture.

To help address concerns/lack of willingness to attend festivals sober (identified in (Grigg, In preparation)), interventions that seek to shift the culture could be trialled. Replicating international interventions such as 'Soberoo' (Ferreira, 2016; Meadow, 2015) and campaigns/messages prompting festival-goers to consider the benefits of drug free experiences could help shift the culture of drug taking at festivals somewhat. However, it is critical these interventions have a principle of 'pro-choice' and they should complement, rather than replace, harm reduction interventions for drug users (Meadow, 2015). Further if these or similar interventions are trialled in Australia, they should be carefully evaluated to determine their effectiveness.

Onsite medical services

Key findings from Grigg's doctoral research

Note. For the purpose of this report, the following analyses relating to onsite medical services were limited to participants who reported using an illicit ATS at the last festival they attended.

Likelihood of using onsite medical services and barriers to seeking help

Ever having used onsite medical services

Of 915 respondents who reported using an ATS at the last festival they attended, 8% reported having *ever* attended onsite medical for a problem related to their illicit drug use. However, among those who had not (n = 807), more than a tenth (12%, n = 99) had considered it or thought they should have in hindsight.

The three most commonly reported reasons for not seeking help were 'decided it wasn't serious enough' (55%), 'fear of legal issues' (30%) and 'fear of negative treatment/judgment by staff' (25%). Other commonly reported reasons included 'fear of parents or family being contacted/notified' (23%), 'didn't want to miss any of the festival' (18%), 'fear of other people seeing/embarrassment' (18%) and 'couldn't be bothered' (15%). Some respondents also reported 'didn't think they [onsite medical] could help/would make it worse' (9%), 'couldn't find the first-aid tent' (6%) and 'my friends encouraged me not to' (5%).

Use of onsite medical services at the Last festival attended

Respondents were also asked how comfortable they would have felt (or actually felt) accessing an onsite medical service at the last festival they attended for a problem related to *illicit* drug use. Among 914 respondents who reported using an illicit ATS at the last festival they attended, 64% reported they would have

comfortable, 13% reported they would have felt neither comfortable nor uncomfortable and a quarter (24%) reported they would have felt uncomfortable.

The most common barriers to seeking help from onsite medical were 'fear of legal issues' (65%), 'fear of negative treatment or judgment by staff' (46%), 'fear of parents or family being notified' (39%) and 'fear of people seeing/social stigma/embarrassment' (30%). The most common responses entered into the 'other (please specify)' category were not wanting to inconvenience, worry or lose contact with their friends, distrust/lack of faith in onsite first-aid services, fear of being thrown out/banned from festivals and feeling uncomfortable accessing a religion-based service.

Recommendations relating to onsite medical services

The following recommendations are based on (1) a systematic review of the literature; and (2) data collected as part of Grigg (In preparation).

Remove barriers to help seeking.

Targeted efforts are needed to remove identified barriers, such as: (1) changing the operation of medical services (via improved protocols/regulation)[1]; and (2) shifting attitudes towards medical services (via education/peer-led campaigns). Medical professionals who lack empathy or with strong anti-drug views should be screened out. All medical personnel should have mandated training and expertise on issues relating to illicit drug use at festivals, a mandated minimum level of training to fill their role, and, ideally, should not explicitly affiliate with or preach any religion (as this was identified as a barrier to seeking help). Medical providers should use the best available evidence and predictive models to estimate staff numbers/composition so wait-times are minimised and those in need are not deterred. Private waiting booths should also be available in case lines do form. Lastly, lanyard pagers could be provided to friends when there is compromised mobile reception to avoid the perceived burden/inconvenience to friends (identified as a barrier to seeking help).

Paired help seeking campaigns should: (1) Promote messages such as 'if you're not sure, let one of our friendly medical staff quickly check you out'; (2) Increase awareness of 'red flag' symptoms that merit medical assessment; (3) Encourage festival-goers to look out for each other – the perception that getting help is 'weak' and that others will pass judgment needs addressing; (4) Increase awareness/transparency of the help seeking process to build trust in services; (5) Increase awareness of the location of services via festival maps on phones and clear signage; (6) Make services easily accessible, but also private and confidential for patients; and (7) strongly discourage returning to festival campsites alone when feeling unwell, and instead encourage seeking medical assessment or resting in a monitored chill-out zone (a review of international festival deaths by Grigg (In preparation) identified a trend of many deceased being found alone in their tent, car, etc.).

Review the medical response, mandate higher level of care models at major music festivals.

A review of the mass gathering medicine (MGM) literature and jurisdictional guidelines in WA and Victoria by Grigg (In preparation) highlighted a need for existing guidelines to be reviewed. Firstly, it is critical to ensure all jurisdictional guidelines include medical guidelines that mandate a consistent, high standard of medical care (although this should be tailored to the size and style of festival being hosted, and be economically doable and feasible, see note of caution at the end of this recommendation). Higher level of care (HLC) models (compared to first-aid only models) have been proven to reduce hospital transfer rates (Archer, Beaumont, May, Dargan, & Wood, 2012; Dutch & Austin, 2012; Lund & Turris, 2015) and improve pre-hospital care (Dutch & Austin, 2012; Friedman et al., 2016), and may thus improve patient health outcomes.

A review of the MGM literature by Grigg (In preparation) also highlighted a need for more systematic documentation of patient records (particularly systematically documenting whether AOD use is involved) to inform predictive modelling (which can help optimise spread of resources and minimise patient wait times). Ultimately, based on a review of the literature and consultation with key informants, a review of the medical

[1] The NSW music festival guidelines released in August 2019 appear to be an improvement in relation to regulation/protocols for staff and clinical management of high risk conditions (e.g. hyperthermia). However, any recommendations above not already considered when developing the new guidelines should be considered.

response at festivals is recommended (in all jurisdictions). This should be done in consultation with the MGM literature and should include a review of the overall level of regulation, training requirements (festival/drug specific and general qualifications), resource planning (staff composition and medical equipment) and patient record documentation. Extra attention should be given to managing high risk conditions (implicated in festival deaths) where health outcomes can depend largely on appropriately resourced on-site medical care (e.g. cooling equipment for managing hyperthermia). Evidence on local drug trends, as well as patterns of drug use/harms associated with different musical genres/festival types should be considered when planning the medical response.

Note. It is important to avoid placing unreasonable medical demands on festivals that would render the events financially unfeasible (as this could result in event cancellations and help push the scene underground). However, it is critical that adequate resources be consistently directed to the medical response (and that resources be appropriately directed within the medical response) to ensure high standards of care and improve public health outcomes. As explained below, redirecting resources from drug policing is one way higher standards of medical support could be achieved (see 'Indications illicit drug use at festivals may be normalised'). Additionally, it is worth noting that Grigg (In preparation) found 95% of festival-goers sampled supported mandatory medical standards and almost half would be willing to pay a $10 medical levy on top of ticket prices.

4. What barriers to seeking medical help for drug-related harms at music festivals have been identified in your research?

This response is covered above under point 3 (see Likelihood to access onsite medical services and barriers to seeking help).

5. What have you learned about the impact of policing (including drug detection dogs) on the level of drug-related harm experienced by people who use drugs at music festivals?

Key findings from Grigg's doctoral research

Please refer to Grigg et al. (2018b), which addresses this topic in detail. However, the key points are summarised below.

Drug detection dogs did not deter the vast majority from using illicit drugs.

As reported in Grigg et al. (2018b), the expected presence of drug detection dogs did not appear to deter the vast majority of festival-goers (96%) from using illicit drugs at the last festival they attended. Rather, the threat of drug dogs appeared to result in a variety of alternative responses to avoid detection.

Drug detection dogs resulted in a variety of iatrogenic effects, which may increase risk.

Other responses included: concealing their drugs well (48%), getting someone else to carry their drugs (15%), buying their drugs inside the festival (11%), taking less easily detected drugs (10%) and taking drugs before entering (7%). Of those who carried drugs in (n = 418), 10% concealed them internally and 1% swallowed them to retrieve inside. The reasons why these responses are likely to increase the risk of harm are discussed in Grigg et al. (2018b).

Drug detection dogs triggered 'panic consumption'.

Of those who had drugs on their person when seeing a dog (n = 189), 10% reported consuming drugs in response. No respondents reported being detected with drugs due to a positive identification.

Additional evidence addressing the impact of drug policing on drug use at music festivals.

Participants who had ever used an illicit drug at a music festival were also asked to indicate whether they had *ever* engaged in a range of behaviours to avoid the risk of being detected by police. Among 1065 respondents, 43% reported they had decided to take their drugs before arriving instead, 35% reported they had purchased drugs inside the festival from an unknown or untrusted source, 23% reported they had hidden drugs internally in a body cavity (e.g. mouth, vagina) to get them into the festival, 17% reported they had seen police/dogs when they arrived, panicked and consumed their drugs, 10% reported they had taken a different drug to what

they normally would have for the festival because they thought it was less detectable by police/drug detection dogs, 6% reported they had consumed a different drug to what they normally would have for the festival because they thought it was less detectable by roadside drug testing, and 3% reported they had swallowed their drugs before the festival and then retrieved them inside (e.g. via purging).

Recommendations relating to drug detection dogs

Grigg et al. (2018b) contributed to mounting evidence of both ineffectiveness (at deterring drug use and detecting drugs) and iatrogenic effects (See also Hickey et al., 2012; NSW Ombudsman, 2006). Therefore, as urged in Grigg et al. (2018b), the use of drug detection dogs at Australian outdoor music festivals should be urgently reconsidered.

Note. It is important to emphasise that the data pertaining to internal concealment should not be used to form an argument for increasing police powers (e.g. to perform cavity searches) as this may trigger increased swallowing of concealed drugs (to purge later), arguably the most dangerous method of smuggling drugs into festivals.

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Measham, F. C. (2018b). Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service. *International Journal of Drug Policy*. doi:https://doi.org/10.1016/j.drugpo.2018.11.001

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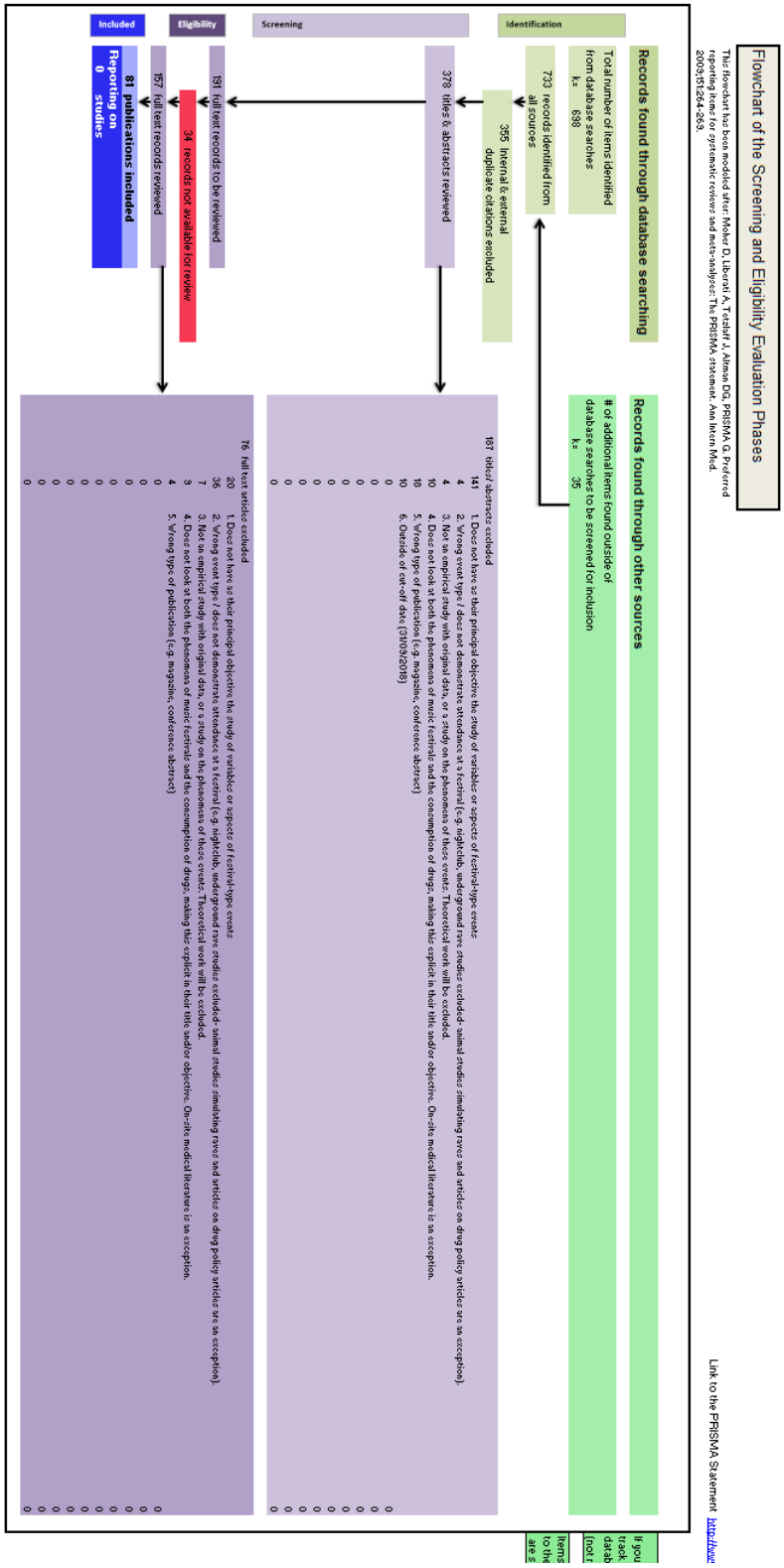
Appendix B: Thesis peer-reviewed journal articles

In 2017, the candidate presented thesis findings at two international conferences. These presentations were published in the form of peer-reviewed journal articles in 2018. Full-text articles are available upon request.

Conference presentation	**Published article reference**
The 11th International Conference of the International Society for the Study of Drug Policy (17-19 May 2017, Aarhus, Denmark)	Grigg, J., Barratt, M. J., & Lenton, S. (2018). Drug detection dogs at Australian outdoor music festivals: Deterrent, detection and iatrogenic effects. International Journal of Drug Policy, 60, 89-95. doi:https://doi.org/10.1016/j.drugpo.2018.08.002
The 10th Club Health International Conference on Nightlife, Substance Use and Related Health Issues (24-26 May 2017, Dublin, Ireland)	Grigg, J., Barratt, M. J., & Lenton, S. (2018). Double dropping down under: Correlates of simultaneous consumption of two ecstasy pills in a sample of Australian outdoor music festival attendees. Drug and Alcohol Review, 37(7), 851-855. doi:doi:10.1111/dar.12843

Appendix C: Systematic review documents

C.1 PRISMA modelled flowchart for the systematic literature review



C.2 Systematic review article categorisation

#	Journal article references	Category 1	Category 2
1	Anderson, T. L. (2014). Molly deaths and the failed war on drugs. *Contexts, 13(4)* , 48-53.	Interventions	
2	Archer, J. R. H., Beaumont, P. O., May, D., Dargan, P. I., & Wood, D. M. (2012). Clinical survey assessing the appropriate management of individuals with acute recreational drug toxicity at a large outdoor festival event. Journal of Substance Use, 17(4), 356-362. doi:http://dx.doi.org/10.3109/14659891.2011.592899	Adverse effects	
3	Armenian, P., Mamantov, T. M., Tsutaoka, B. T., Gerona, R. R. L., Silman, E. F., Wu, A. H. B., & Olson, K. R. (2013). Multiple MDMA (ecstasy) overdoses at a rave event: A case series. Journal of Intensive Care Medicine, 28(4), 252-258. doi:http://dx.doi.org/10.1177/0885066612445982	Adverse effects	
4	Barratt, M. J., Bruno, R., Ezard, N., & Ritter, A. (2018). Pill testing or drug checking in Australia: Acceptability of service design features. Drug and Alcohol Review. doi:10.1111/dar.12576	Prevalence, patterns and practices	Interventions
5	Barrett, S. P., Gross, S. R., Garand, I., & Pihl, R. O. (2005). Patterns of simultaneous polysubstance use in Canadian rave attendees. *Substance Use and Misuse, 40* (9-10), 1525-1537. doi:http://dx.doi.org/10.1081/JA-200066866	Prevalence, patterns and practices	
6	Bijlsma, L., Serrano, R., Ferrer, C., Tormos, I., & Hernández, F. (2014). Occurrence and behavior of illicit drugs and metabolites in sewage water from the Spanish Mediterranean coast (Valencia region). Science of the Total Environment, 487(0), 703-709. doi:http://dx.doi.org/10.1016/j.scitotenv.2013.11.131	Prevalence, patterns and practices	
7	Boys, A., Lenton, S., & Norcross, K. (1997). Polydrug use at raves by a Western Australian sample. *Drug and Alcohol Review, 16* (3), 227-234. doi:http://dx.doi.org/10.1080/09595239800187411	Prevalence, patterns and practices	
8	Busceti, C. L., Di Pietro, P., Riozzi, B., Traficante, A., Biagioni, F., Nistico, R., . . . Bruno, V. (2015). 5-HT(2C) serotonin receptor blockade prevents tau protein hyperphosphorylation and corrects the defect in hippocampal synaptic plasticity caused by a combination of environmental stressors in mice. Pharmacological Research, 99, 258-268. doi:http://dx.doi.org/10.1016/j.phrs.2015.06.017	Adverse effects	
9	Calle, P., Sundahl, N., Maudens, K., Wille, S. M., Van Sassenbroeck, D., De Graeve, K., . . . Blanckaert, P. (2017). Medical Emergencies Related to Ethanol and Illicit Drugs at an Annual, Nocturnal, Indoor, Electronic Dance Music Event. Prehospital and Disaster Medicine, 1-6. doi:10.1017/s1049023x17007099	Adverse effects	
10	Carvalho, M., Carvalho, F., Remiao, F., de Lourdes Pereira, M., Pires-das-Neves, R., & de Lourdes Bastos, M. (2002). Effect of 3,4-methylenedioxymethamphetamine ("ecstasy") on body temperature and liver antioxidant status in mice: influence of ambient temperature. Archives of Toxicolology, 76(3), 166-172. doi:10.1007/s00204-002-0324-z	Adverse effects	
11	Carvalho, M., De Sousa, M. P., Frango, P., Dias, P., Carvalho, J., Rodrigues, M., & Rodrigues, T. (2014). Crisis intervention related to the use of psychoactive substances in recreational settings: Evaluating the Kosmicare project at boom festival. Curr Drug Abuse Rev, 7(2), 81-100.	Interventions	
12	Chhabra, N., Gimbar, R. P., Walla, L. M., & Thompson, T. M. (2017). Emergency Department Patient Burden from an Electronic Dance Music Festival. Journal of Emergency Medicine. doi:10.1016/j.jemermed.2017.10.007	Adverse effects	
13	Chapman, K. R., Carmichael, F. J., & Goode, J. E. (1982). Medical services for outdoor rock music festivals. *Canadian Medical Association Journal, 126* (8), 935-938.	Adverse effects	
14	Cherney, D. Z., Davids, M. R., & Halperin, M. L. (2002). Acute hyponatraemia and 'ecstasy': insights from a quantitative and integrative analysis. QJM, 95(7), 475-483.	Adverse effects	
15	Clause, A. L., Coche, E., Hantson, P., & Jacquet, L. M. (2014). Spontaneous pneumomediastinum and epidural pneumatosis after oral ecstasy consumption. Acta Clinica Belgica, 69(2), 146-148. doi:10.1179/0001551213z.00000000019	Adverse effects	
16	Cohen, P. (2012). Drug policy as freedom from rationality: The prosecution of the Rototom music festival in Italy. *Drugs and Alcohol Today* , 209-212.	Interventions	
17	Day, N., Criss, J., Griffiths, B., Gujral, S. K., John-Leader, F., Johnston, J., & Pit, S. (2018). Music festival attendees' illicit drug use, knowledge and practices regarding drug content and purity: A cross-sectional survey. Harm Reduct J, 15(1), 1. doi:10.1186/s12954-017-0205-7	Interventions	

18	Dilkes-Frayne, E. (2014). Tracing the "Event" of Drug Use: "Context" and the Coproduction of a Night Out on MDMA. Contemporary Drug Problems, 41(3), 445-479. doi:10.1177/009145091404100308	Motives and pleasures	Interventions
19	Dilkes-Frayne, E. (2016). Drugs at the campsite: Socio-spatial relations and drug use at music festivals. International Journal of Drug Policy, 33, 27-35. doi:http://dx.doi.org/10.1016/j.drugpo.2015.10.004	Prevalence, patterns and practices	Interventions
20	Dore, M. H. (2002). Targeting ecstasy use at raves. Virginia Law Review, 88(7), 1583-1623.	Interventions	
21	Duff, C., & Rowland, B. (2006). 'Rushing behind the wheel': Investigating the prevalence of 'drug driving' among club and rave patrons in Melbourne, Australia. *Drugs: Education, Prevention and Policy, 13* (4), 299-312. doi:http://dx.doi.org/10.1080/09687630600625946	Prevalence, patterns and practices	
22	Dutch, M. J., & Austin, K. B. (2012). Hospital in the field: Prehospital management of GHB intoxication by medical assistance teams. *Prehospital and Disaster Medicine, 27* (5), 463-467. doi:http://dx.doi.org/10.1017/S1049023X12000994	Adverse effects	
23	Engels, R. C. M. E., & Ter Bogt, T. F. M. (2005). "Partying" hard: Party style, motives for and effects of MDMA use at rave parties. *Substance Use & Misuse, 40* (9-10), 1479-1502. doi:http://dx.doi.org/10.1081/JA-200066822	Motives and pleasures	
24	Erives, G. V., Lau, S. S., & Monks, T. J. (2008). Accumulation of neurotoxic thioether metabolites of 3,4-(+/-)-methylenedioxymethamphetamine in rat brain. Journal of Pharmacology and Experimental Therapeutics, 324(1), 284-291. doi:10.1124/jpet.107.128785	Adverse effects	
25	Fernández-Calderón, F., Lozano-Rojas, Ó., Rojas-Tejada, A., Bilbao-Acedos, I., Vidal-Giné, C., Vergara-Moragues, E., & González-Saiz, F. (2014). Harm reduction behaviors among young polysubstance users at raves. *Substance Abuse, 35* (1), 45-50. doi:http://dx.doi.org/10.1080/08897077.2013.792760	Interventions	
26	FitzGibbon, K. M., Nable, J. V., Ayd, B., Lawner, B. J., Comer, A. C., Lichenstein, R., . . . Bussey, I. (2017). Mass-Gathering Medical Care in Electronic Dance Music Festivals. Prehospital and Disaster Medicine, 1-5. doi:10.1017/s1049023x1700663x	Adverse effects	
27	Fox, J., Smith, A., Yale, A., Chow, C., Alaswad, E., Cushing, T., & Monte, A. A. (2017). Drugs of Abuse and Novel Psychoactive Substances at Outdoor Music Festivals in Colorado. *Substance Use & Misuse* , 1-9. doi:10.1080/10826084.2017.1400067	Prevalence, patterns and practices	Motives and pleasures
28	Friedman, M. S., Plocki, A., Likourezos, A., Pushkar, I., Bazos, A. N., Fromm, C., & Friedman, B. W. (2016). A Prospective Analysis of Patients Presenting for Medical Attention at a Large Electronic Dance Music Festival. Prehospital and Disaster Medicine, 32(1), 78-82. doi:10.1017/S1049023X16001187	Adverse effects	
29	Furr-Holden, D., Voas, R. B., Kelley-Baker, T., & Miller, B. (2006). Drug and alcohol-impaired driving among electronic music dance event attendees. *Drug and Alcohol Dependence, 85* (1), 83-86. doi:http://dx.doi.org/10.1016/j.drugalcdep.2006.03.012	Prevalence, patterns and practices	
30	Gilpin, N. W., Wright, M. J., Jr., Dickinson, G., Vandewater, S. A., Price, J. U., & Taffe, M. A. (2011). Influences of activity wheel access on the body temperature response to MDMA and methamphetamine. Pharmacology Biochemistry and Behavior, 99(3), 295-300. doi:10.1016/j.pbb.2011.05.006	Adverse effects	
31	Glover, T. D. (2003). Regulating the Rave Scene: Exploring the Policy Alternatives of Government. Leisure Sciences, 25(4), 307. doi:10.1080/01490400390240446	Interventions	
32	Grange, J. T., Corbett, S. W., & Downs, D. M. (2014). The games: What can the sports medicine community learn from raves? *Current sports medicine reports, 13* (3), 155-162. doi:http://dx.doi.org/10.1249/JSR.0000000000000060	Adverse effects	
33	Haaland, A., Warman, E., Pushkar, I., Likourezos, A., & Friedman, M. S. (2017). Isolated non-cardiogenic pulmonary edema - A rare complication of MDMA toxicity. American Journal of Emergency Medicine.	Adverse effects	
34	Hesse, M., Tutenges, S., & Schliewe, S. (2010). The use of tobacco and cannabis at an international music festival. *European Addiction Research, 16* (4), 208-212. doi:http://dx.doi.org/10.1159/000317250	Prevalence, patterns and practices	
35	Hier, S. P. (2002). Raves, risk and the ecstasy panic: A case study in the subversive nature of moral regulation. *Canadian Journal of Sociology, 27* (1), 33-57.	Interventions	

36	Hoegberg, L. C. G., Christiansen, C., Soe, J., Telving, R., Andreasen, M. F., Staerk, D., . . . Kongstad, K. T. (2018). Recreational drug use at a major music festival: trend analysis of anonymised pooled urine. *Clin Toxicol (Phila), 56* (4), 245-255. doi:10.1080/15563650.2017.1360496	Prevalence, patterns and practices	
37	Hughes, C. E., Moxham-Hall, V. L., Ritter, A., Weatherburn, D., & MacCoun, R. (2017). The deterrent effects of Australian street-level drug law enforcement on illicit drug offending at outdoor music festivals. International Journal of Drug Policy. doi:10.1016/j.drugpo.201	Prevalence, patterns and practices	Interventions
38	Hughes, C. E., & Moxham-Hall, V. L. (2017). The Going Out In Sydney App: Evaluating the Utility of a Smartphone App for Monitoring Real-World Illicit Drug Use and Police Encounters Among Festival and Club Goers. Substance Abuse: Research and Treatment, 11(10.1177_1178221817711419.xml), 1178221817711419. doi:10.1177/1178221817711419	Prevalence, patterns and practices	
39	Hutton, A., & Jaensch, J. (2015). Alcohol use at outdoor music festivals. *Australian Nursing and Midwifery Journal, 22* (10), 42.	Adverse effects	
40	Hutton, A., Savage, C., Ranse, J., Finnell, D., & Kub, J. (2015). The use of haddon's matrix to plan for injury and illness prevention at outdoor music festivals. Prehospital and Disaster Medicine, 30(2), 175-183. doi:http://dx.doi.org/10.1017/S1049023X15000187	Interventions	
41	Hutton, A., Ranse, J., Verdonk, N., Ullah, S., & Arbon, P. (2014). Understanding the characteristics of patient presentations of young people at outdoor music festivals. Prehospital and Disaster Medicine, 29(2), 160-166. doi:http://dx.doi.org/10.1017/S1049023X14000156	Adverse effects	
42	Iannone, M., Bulotta, S., Paolino, D., Zito, M. C., Gratteri, S., Costanzo, F. S., & Rotiroti, D. (2006). Electrocortical effects of MDMA are potentiated by acoustic stimulation in rats. BMC Neuroscience, 7, 13. doi:10.1186/1471-2202-7-13	Adverse effects	
43	Irvine, R. J., Keane, M., Felgate, P., McCann, U. D., Callaghan, P. D., & White, J. M. (2006). Plasma drug concentrations and physiological measures in 'dance party' participants. *Neuropsychopharmacology, 31* (2), 424-430. doi:http://dx.doi.org/10.1038/sj.npp.1300896	Prevalence, patterns and practices	Adverse effects
44	James, S. H., Calendrillo, B., & Schnoll, S. H. (1975). Medical and toxicological aspects of the Watkins Glen rock concert. Journal of Forensic Sciences, 20(1), 71-82.	Adverse effects	
45	Karlovsek, M. Z., Alibegovic, A., & Balazic, J. (2005). Our experiences with fatal ecstasy abuse (two case reports). Forensic Science International, 147 Suppl, S77-80. doi:10.1016/j.forsciint.2004.09.084	Adverse effects	
46	Kiyatkin, E. A., Kim, A. H., Wakabayashi, K. T., Baumann, M. H., & Shaham, Y. (2014). Critical role of peripheral vasoconstriction in fatal brain hyperthermia induced by MDMA (Ecstasy) under conditions that mimic human drug use. Journal of Neuroscience, 34(23), 7754-7762. doi:10.1523/jneurosci.0506-14.2014	Adverse effects	
47	Krul, J., Blankers, M., & Girbes, A. R. (2011). Substance-related health problems during rave parties in The Netherlands (1997-2008). PloS One, 6(12), e29620. doi:10.1371/journal.pone.0029620	Adverse effects	
48	Krul, J., & Girbes, A. R. (2011). Gamma-hydroxybutyrate: Experience of 9 years of gamma-hydroxybutyrate (GHB)-related incidents during rave parties in the Netherlands. Clinical Toxicology (Philadelphia, Pa.), 49(4), 311-315. doi:http://dx.doi.org/10.3109/15563650.2011.576253	Adverse effects	
49	Krul, J., Sanou, B., Swart, E. L., & Girbes, A. R. (2012). Medical care at mass gatherings: Emergency medical services at large-scale rave events. Prehospital and Disaster Medicine, 27(1), 71-74. doi:http://dx.doi.org/10.1017/S1049023X12000271	Adverse effects	
50	Lai, F. Y., Thai, P. K., O'Brien, J., Gartner, C., Bruno, R., Kele, B., . . . Mueller, J. F. (2013). Using quantitative wastewater analysis to measure daily usage of conventional and emerging illicit drugs at an annual music festival. Drug and Alcohol Review, 32(6), 594-602. doi:http://dx.doi.org/10.1111/dar.12061	Prevalence, patterns and practices	
51	Lajos, D., & Zoltán, Á. (2014). Comparison of drug abuse at two music festivals and the importance of health education. *Procedia - Social and Behavioral Sciences, 116* (0), 3236-3240. doi:http://dx.doi.org/10.1016/j.sbspro.2014.01.741	Prevalence, patterns and practices	
52	Lenton, S., Boys, A., & Norcross, K. (1997). Raves, drugs and experience: Drug use by a sample of people who attend raves in Western Australia. *Addiction, 92* (10), 1327-1337. doi:http://dx.doi.org/10.1111/j.1360-0443.1997.tb02851.x		

53	Lenton, S., & Davidson, P. (1999). Raves, drugs, dealing and driving: Qualitative data from a West Australian sample. *Drug and Alcohol Review, 18* (2), 153. doi:http://dx.doi.org/10.1080/09595239996581	Prevalence, patterns and practices	
54	Levy, B. A. (2004). When cute acronyms happen to bad legislation: The reducing americans' vulnerability to ecstasy "rave" act. Northwestern University Law Review, 98(3), 1251-1289.	Interventions	
55	Luckman, S. (2000). Mapping the regulation of dance parties. *Journal of Australian Studies* (64), 217-223. doi:http://dx.doi.org/10.1080/14443050009387574	Interventions	
56	Luther, M., Gardiner, F., Lenson, S., Caldicott, D., Harris, R., Sabet, R., . . . Perkins, J. (2018). An Effective Risk Minimization Strategy Applied to an Outdoor Music Festival: A Multi-Agency Approach. Prehospital and Disaster Medicine, 33(2), 220-224. doi:10.1017/s1049023x18000195	Adverse effects	
57	Lund, A., & Turris, S. (2015). Mass-gathering medicine: Risks and patient presentations at a 2-day electronic dance music event. Prehospital and Disaster Medicine, 30(3), 271-278. doi:http://dx.doi.org/10.1017/S1049023X15004598	Adverse effects	
58	Lund, A., & Turris, S. (2017). The Event Chain of Survival in the Context of Music Festivals: A Framework for Improving Outcomes at Major Planned Events. Prehospital and Disaster Medicine, 32(4), 437-443. doi:10.1017/S1049023X1700022X	Interventions	
59	Mackuľak, T., Škubák, J., Grabic, R., Ryba, J., Birošová, L., Fedorova, G., . . . Bodík, I. (2014). National study of illicit drug use in Slovakia based on wastewater analysis. Science of the Total Environment, 494–495(0), 158-165. doi:http://dx.doi.org/10.1016/j.scitotenv.2014.06.089	Prevalence, patterns and practices	
60	Mackuľak, T., Grabic, R., Gál, M., Gál, M., Birošová, L., & Bodík, I. (2015). Evaluation of different smoking habits during music festivals through wastewater analysis. Environmental Toxicology and Pharmacology, 40(3), 1015-1020. doi:http://dx.doi.org/10.1016/j.etap.2015.10.007	Prevalence, patterns and practices	
61	Martins, D., Barratt, M. J., Pires, C. V., Carvalho, H., Vilamala, M. V., Espinosa, I. F., & Valente, H. (2017). The detection and prevention of unintentional consumption of DOx and 25x-NBOMe at Portugal's Boom Festival. *Human Psychopharmacology: Clinical and Experimental, 32* (3), n/a-n/a. doi:10.1002/hup.2608	Interventions	
62	Martinus, T., McAlaney, J., McLaughlin, L. J., & Smith, H. (2010). Outdoor music festivals: Cacophonous consumption or melodious moderation? *Drugs: Education, Prevention and Policy, 17* (6), 795-807. doi:http://dx.doi.org/10.3109/09687630903357692	Prevalence, patterns and practices	
63	Mascola, L. M., Dassey, D. M., Fogleman, S. M. M., Paulozzi, L. M., & Reed, C. M. (2010). Ecstasy overdoses at a New Year's Eve rave-Los angeles, California, 2010. JAMA, 304(6), 629.	Adverse effects	
64	McCutcheon, D. S., Oosthuizen, F. J., Hoggett, K. A., & Fatovich, D. M. (2015). A bolt out of the blue: The night of the blue pills. *Medical Journal of Australia, 202* (10), 543-543. doi:doi:10.5694/mja14.01317	Adverse effects	
65	McQueen, C., & Davies, C. (2012). Health care in a unique setting: Applying emergency medicine at music festivals. Open Access Emergency Medicine, 4, 69-73. doi:10.2147/OAEM.S25587	Adverse effects	
66	Munn, M., Lund, A., Golby, R., & Turris, S. (2016). Observed Benefits to On-site Medical Services during an Annual 5-day Electronic Dance Music Event with Harm Reduction Services. *Prehospital and Disaster Medicine, 31* (2), 228-234. doi:10.1017/S1049023X16000054	Adverse effects	Interventions
67	Nadesan, K., Kumari, C., & Afiq, M. (2017). Dancing to death: A case of heat stroke. Journal of Forensic and Legal Medicine, 50, 1-5. doi:10.1016/j.jflm.2017.05.008	Adverse effects	
68	Osler, D. C., Shapiro, F., & Shapiro, S. (1975). Medical services at outdoor music festivals. Risks and recommendations. Clinical Pediatrics, 14(4), 390-395.	Adverse effects	
69	Parr, M. J., Low, H. M., & Botterill, P. (1997). Hyponatraemia and death after "ecstasy" ingestion. The Medical journal of Australia, 166(3), 136-137.	Adverse effects	
70	Parrott, A. C. (2004). MDMA (3,4-Methylenedioxymethamphetamine) or ecstasy: The neuropsychobiological implications of taking it at dances and raves. Neuropsychobiology, 50(4), 329-335. doi:http://dx.doi.org/10.1159/000080961	Adverse effects	

71	Ridpath, A., Driver, C. R., Nolan, M. L., Karpati, A., Kass, D., Paone, D., . . . Prevention. (2014). Illnesses and deaths among persons attending an electronic dance-music festival: New York City, 2013. Morbidity and Mortality Weekly Report, 63(50), 1195-1198.	Adverse effects	
72	Ruane, D. (2015). Harm reduction or psychedelic support? Caring for drug-related crises at transformational festivals. *Dancecult: Journal of Electronic Dance Music Culture, 7* (1).	Interventions	
73	Ruane, D. (2018). Field experiments: psychonauts' efforts to reduce the harm of old and new drugs at music festivals. *Drugs: Education, Prevention and Policy, 25* (4), 337-344. doi:10.1080/09687637.2017.1418836	Interventions	
74	Saleemi, S., Pennybaker, S. J., Wooldridge, M., & Johnson, M. W. (2017). Who is 'Molly'? MDMA adulterants by product name and the impact of harm-reduction services at raves. J Psychopharmacol, 31(8), 1056-1060. doi:10.1177/0269881117715596	Interventions	
75	Stagelund, S., Jans, Ø., Nielsen, K., Jans, H., & Wildgaard, K. (2014). Medical care and organisation at the 2012 Roskilde Music Festival: A prospective observational study. Acta Anaesthesiologica Scandinavica, 58(9), 1086-1092. doi:http://dx.doi.org/10.1111/aas.12342	Adverse effects	
76	Turris, S., & Lund, A. (2017). Mortality at Music Festivals: Academic and Grey Literature for Case Finding. Prehospital and Disaster Medicine, 32(1), 58-63. doi:10.1017/S1049023X16001205	Adverse effects	
77	Van De Wijngaart, G. F., Braam, R., De Bruin, D., Fris, M., Maalsté, N. J. M., & Verbraeck, H. T. (1999). Ecstasy use at large-scale dance events in the Netherlands. *Journal of Drug Issues, 29* (3), 679-702.	Prevalence, patterns and practices	Adverse effects
78	van Dijken, G. D., Blom, R. E., Hené, R. J., Boer, W. H., & Consortium, N. (2013). High incidence of mild hyponatraemia in females using ecstasy at a rave party. Nephrology Dialysis Transplantation, 28(9), 2277-2283. doi:http://dx.doi.org/10.1093/ndt/gft023	Adverse effects	
79	Van Sassenbroeck, D. K., Calle, P. A., Rousseau, F. M., Verstraete, A. G., Belpaire, F. M., Monsieurs, K. G., . . . Buylaert, W. A. (2003). Medical problems related to recreational drug use at nocturnal dance parties. *European Journal of Emergency Medicine: Official journal of the European Society for Emergency Medicine, 10* (4), 302-308. doi:10.1097/01.mej.0000104020.33339.52	Adverse effects	
80	Wiedermann, W., Niggli, J., & Frick, U. (2014). The Lemming-effect: Harm perception of psychotropic substances among music festival visitors. *Health, Risk & Society, 16* (4), 323-338. doi:http://dx.doi.org/10.1080/13698575.2014.930817	Interventions	
81	Yates, K. M., Hazell, W. C., & Schweder, L. (2001). Medical care at the Sweetwaters Music Festival. *New Zealand Medical Journal, 114* (1129), 162-164.	Adverse effects	

Note. The category three column did not fit on the page. However, the only article with a third category was Fox et al. (2017) which was also reviewed in 'Adverse effects'.

C.3 Articles which missed the cut-off date for the systematic literature review (as at 31/09/2018)

#	Journal article references published after 31/09/2018 (missed cut-off date for the systematic review)
1	Byrne, S., Gock, A., Cowling, A., & Faunce, T. (2018). Australia's first official illicit pill testing at canberra's groovin' the moo music festival: Legal hurdles and future prospects. Journal of Law and Medicine, 26(1), 54-60.
2	Friedman, N. M. G., O'Connor, E. K., Munro, T., & Goroff, D. (2019). Mass-Gathering medical care provided by a collegiate-based first response service at an annual college music festival and campus-wide celebration. Prehospital and Disaster Medicine, 34(1), 25-29. doi:10.1017/S1049023X18001103
3	Gerace, E., Seganti, F., Luciano, C., Lombardo, T., Di Corcia, D., Teifel, H., . . . Salomone, A. (2019). On-site identification of psychoactive drugs by portable Raman spectroscopy during drug-checking service in electronic music events. Drug and Alcohol Review, 38(1), 50-56. doi:10.1111/dar.12887
4	Gjerde, H., Gjersing, L., Furuhaugen, H., & Bretteville-Jensen, A. L. (2019). Correspondence between Oral Fluid Drug Test Results and Self-Reported Illicit Drug Use among Music Festival Attendees. Substance Use and Misuse. doi:10.1080/10826084.2019.1580295
5	Gjersing, L., Bretteville-Jensen, A. L., Furuhaugen, H., & Gjerde, H. (2019). Illegal substance use among 1,309 music festival attendees: An investigation using oral fluid sample drug tests, breathalysers and questionnaires. Scandinavian Journal of Public Health, <xocs:firstpage xmlns:xocs=""/>. doi:10.1177/1403494818821481
6	Krotulski, A. J., Mohr, A. L. A., Fogarty, M. F., & Logan, B. K. (2018). The Detection of Novel Stimulants in Oral Fluid from Users Reporting Ecstasy, Molly and MDMA Ingestion. Journal of Analytical Toxicology, 42(8), 544-553. doi:10.1093/jat/bky051
7	Mackulak, T., Brandeburova, P., Grencikova, A., Bodik, I., Stanova, A. V., Golovko, O., . . . Grabic, R. (2018). Music festivals and drugs: Wastewater analysis. Science of the Total Environment, 659, 326-334. doi:10.1016/j.scitotenv.2018.12.275
8	Measham, F. C. (2018). Drug safety testing, disposals and dealing in an English field: Exploring the operational and behavioural outcomes of the UK's first onsite 'drug checking' service. International Journal of Drug Policy. doi:https://doi.org/10.1016/j.drugpo.2018.11.001
9	Mema, S. C., Sage, C., Xu, Y., Tupper, K. W., Ziemianowicz, D., McCrae, K., . . . Corneil, T. (2018). Drug checking at an electronic dance music festival during the public health overdose emergency in British Columbia. Canadian Journal of Public Health, 109(5-6), 740-744. doi:10.17269/s41997-018-0126-6
10	Richeval, C., Dumestre-Toulet, V., Wiart, J. F., Vanhoye, X., Humbert, L., Nachon-Phanithavong, M., . . . Gaulier, J. M. (2019). New psychoactive substances in oral fluid of drivers around a music festival in south-west France in 2017. Forensic Science International, 297, 265-269. doi:10.1016/j.forsciint.2019.02.029
11	Turris, S. A., Callaghan, C. W., Rabb, H., Munn, M. B., & Lund, A. (2019). On the way out: An analysis of patient transfers from four large-scale north American music festivals over two years. Prehospital and Disaster Medicine, 34(1), 38-45. doi:10.1017/S1049023X18001188

Appendix D: Data collection materials

D.1 NDRI Project webpage

Drug Use at Outdoor Music Festivals Project - Home

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NATIONAL DRUG RESEARCH INSTITUTE

PREVENTING HARMFUL DRUG USE IN AUSTRALIA

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- Drug Use at Outdoor Music Festivals Project
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- Ecstasy and Related Drugs Reporting System (EDRS)
- National Alcohol Indicators Project (NAIP) bulletins
- National Alcohol Sales Data Project (NASDP) reports
- Pub Extended Trading Hours Study
- School Health and Alcohol Harm Reduction Project (SHAHRP)
- Silk Road Project
- Social Supply of Cannabis Study
- Young Australians' Alcohol Reporting System
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Drug use at outdoor music festivals project – Phase 1

This project is investigating drug use, drug policy and harm reduction at outdoor music festivals in two Australian states: Western Australia and Victoria. The findings from this project will be used to help develop recommendations aimed at reducing the risk of future drug-related harm at these events.

As part of this project, I'll be speaking directly to festival-goers to get their view on a variety of drug-related festival issues. I'll also be speaking to a range of key stakeholders; including emergency health services, law enforcement, government and the music industry. **All information collected will be confidential and anonymous.** Participants involved in Phase 1 and 3 will receive a JB Hi-Fi or iTunes gift voucher as a reimbursement for their time and those who complete the online survey will go in the draw to win a JB Hi-Fi gift voucher.

Please click on the below links to access project details, frequently asked questions or download participant information forms.

- Phase 1- Pre-survey interviews with regular festival-goers and key stakeholders (Dec. 2015) - RECRUITING NOW
- Phase 2- The online festival-goer survey (March-May, 2016)
- Phase 3- Post-survey interviews with regular festival-goers and key stakeholders (July, 2016)

To see if you're eligible or for more information, please email Jodie at NDRIfestivalproject@curtin.edu.au, SMS your interest to +61 435 956 501 or call +61 8 9266 1615.

For updates on when I'm recruiting, 'like' the project Facebook page!

http://ndri.curtin.edu.au/research/damf/[20/01/2016 2:36:38 PM]

Drug use at outdoor music festivals project – Phase 1

Phase 1- Interview details for regular festival-goers:

Interviews for Phase 1 will be conducted in December 2015 via an anonymous and secure online instant messaging application (military-grade encryption, no IP addresses or metadata collected), which is available for either your desktop or mobile device. This means you can be interviewed within the comfort and privacy of your own home, or wherever suits you best. Interviews will take approximately 1-2 hours to complete and you will be asked a range of questions related to your experiences with and attitude towards drug use, drug policy and harm reduction at music festivals. **You will be reimbursed for your time and you may use a false name.**

Phase 1- FAQ

Phase 1- Participant information form

To see if you are eligible or for more information, please email Jodie at NDRIfestivalproject@curtin.edu.au or SMS your interest to +61 435 956 501

Drug use at outdoor music festivals project – Phase 1 FAQs

Why are you doing this research?

Outdoor music festivals have become increasingly popular in Australia and internationally in recent years, particularly those with a focus on EDM. Since their emergence, these events have been consistently identified as popular contexts for alcohol and other drug use (particularly MDMA), and in recent years have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm; however, there has been some disagreement about the best way to manage drug-related issues. For example, some might support the use of drug detection ('sniffer') dogs, while others might prefer the introduction of pill testing or drug checking facilities. While these events have attracted extensive media coverage and general public and political debate, there currently exists a dearth of empirical evidence available to inform interventions.

What are the aims of this research?

- To investigate drug use at music festivals in WA and Victoria; including prevalence, patterns, reasons for using, positive and negative effects, and attitudes towards drug policy and harm reduction;
- To consider current and potential future drug policy and practice strategies aimed at reducing the risk of drug-related harm at these events; and
- To develop recommendations aimed at improving current strategies, particularly within Australia.

Is this research anonymous?

Yes. At no time will information that could identify you (such as your name or IP address) be recorded on or kept with any information you provide during the interview. You are also free to use a false name.

Do I need to live in Perth to participate?

The project is investigating drug use at outdoor music festivals in two Australian states; WA and Victoria. Unfortunately you need to live in one of these two states to participate.

Do I need to have used drugs at festivals to participate?

No, I'm still interested in speaking to you about a range of drug-related issues that might directly or indirectly affect you. It's important for me to get input from both those who choose to use drugs at festivals and those who choose not to. However, I do have a quota for non-drug using participants, therefore I will be screening for this criteria.

NDRI
national drug research institute

How long do interviews take?

Approximately 1-2 hours each, depending on the level of detail participants wish to share.

What kind of questions will you ask me?

I will ask you a variety of questions related to your personal experiences at music festivals, such as your history of attending festivals, experiences with drug use at festivals, reasons for using, positive and negative effects, any precautions you take to minimise risk, access to and barriers to help at these events, availability of harm reduction (e.g. free water, shade) and attitudes towards current and potential drug policy and harm reduction initiatives (e.g., sniffer dogs and pill testing). At the end of the interview you will also have the opportunity to provide any other general comments you might have related to festival issues not already discussed.

How many interviews would I need to participate in?

Two in total; the first interview will take place in Phase 1 (Dec 2015) and the second in Phase 3 (July 2016). However, you may withdraw your participation at any time if you do not wish to continue, no questions asked.

Why would I need to be interviewed twice?

The findings from the first interview will be used to help inform an online festival-goer survey (Phase 2) which will go live in March 2016. The purpose of the second interview is to get your input on the preliminary survey findings and discuss any potential future harm reduction initiates.

How much would I be reimbursed for my time?

Participants for Phase 1 and 3 (in-depth interviews) will receive a gift card to the value of $25 per interview (total of $50) to reimburse you for your time. The gift card will be digital and emailed directly to you. You can chose from a range of selected retailers including The Woolworths Group, JB Hi-Fi and iTunes. Participants for Phase 2 (online festival-goer survey) will go in the draw to win a $250 JB Hi-Fi gift voucher.

Would I need to provide any contact details?

I would require you to provide an email address so I can email you your gift cards and follow you up for your second interview. However, all personal details will be kept securely in a locked filing cabinet at the NDRI offices (separate to any data) and will be destroyed immediately after the interview is complete, or if I were unable to contact you at the time of follow-up.

Where are the interviews conducted?

Interviews will be conducted online via an instant messaging (IM) application, much like MSN messenger or Facebook Chat, but anonymous and secure (military-grade encryption, no IP addresses or metadata collected). Interviews cannot be tracked, intercepted or monitored. No email addresses or real names are required to sign up for the app, which is available for your desktop or mobile device. This means you can be interviewed within the comfort and privacy of your own home, or wherever suits you best. When booking your interview you will be provided with some simple instructions to help you set up!

If I decide to participate, can I change my mind?

Yes. Participants can choose to withdraw from the study at any time, no questions asked. You can also chose to skip any questions you feel uncomfortable with.

Has this research received ethics approval?

Yes (Approval number HR 144/2015). All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the Curtin University HREC. This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007). If you have any concerns and/or complaints about the project, the way it is being conducted or your rights as a research participant, and would like to speak to someone independent of the project, please contact: The Curtin University Ethics Committee by telephoning +61 8 9266 2784 or by emailing hrec@curtin.edu.au.

Who is this research funded by?

This research project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results will be used to obtain a Doctor of Philosophy at Curtin University. Click here to find out more about me.

How do I follow the progress of the study and access the results?

Please refer back to this website for updates on my progress. You can also like the project Facebook page for updates.

Website: http://ndri.curtin.edu.au/research/damf/

Facebook: https://www.facebook.com/drugsatmusicfestivals/timeline

What if I have more questions?

You are welcome to contact me at any phase of the project. I'm more than happy to discuss any questions or concerns you might have about participating or the project more generally. Please email me at NDRIfestivalproject@curtin.edu.au, SMS your question to +61 435 956 501 or call +61 8 9266 1615

Alternatively, you might want to download the participant information form, which contains more information that might answer your questions.

I have some friends that might be eligible and interested in being involved; can I tell them about this study?

Yes. While I'm only looking for a small number of festival-goers to participate in Phase 1 and 3 (in-depth interviews); there is no limit to how many people can participate in Phase 2 (the online festival-goer survey) commencing in early 2016. Please tell your friends by 'liking' the project on Facebook or getting them to email or SMS me.

Drug use at outdoor music festivals project – Phase 2

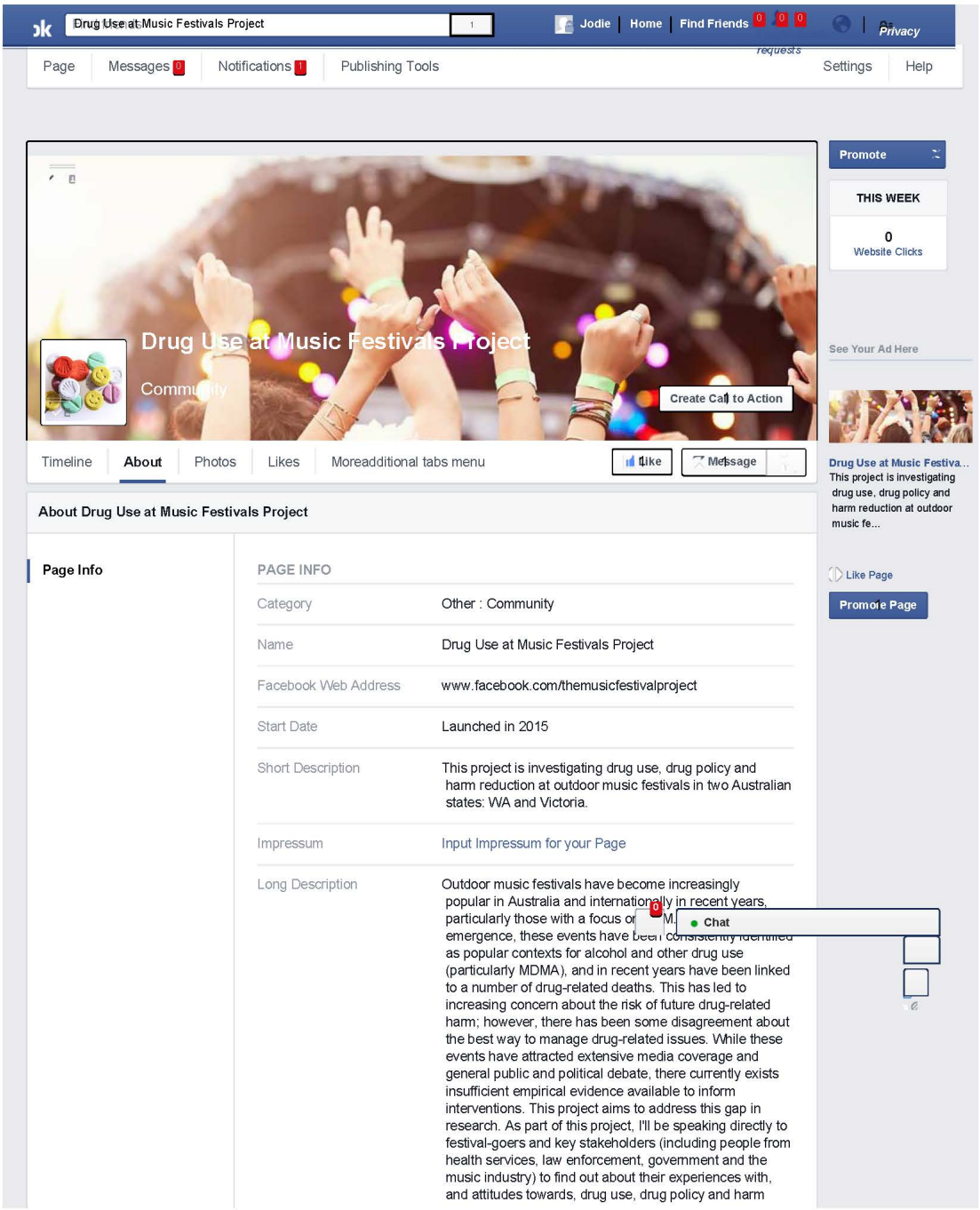
The online festival-goer survey will go live in March, 2016. The survey will take approximately 20-minutes to complete and you will go in the draw to win a $250 JB Hi-Fi voucher. Check back closer to the date for more information or 'like' the project on Facebook to see updates on when I'm recruiting!

Drug use at outdoor music festivals project – Phase 3

Confidential online interviews for Phase 3 will not be conducted until July, 2016. Check back closer to then for more information or 'like' the project on Facebook to see updates on when I'm recruiting!

D.2 Project Facebook page

Drug Use at Music Festivals Project



https://www.facebook.com/themusicfestivalproject/info/?tab=page_info[30/10/2015 2:49:54 PM]

reduction. The findings from this project will be used to develop recommendations aimed at reducing the risk of future drug-related harm at these events.

If you're a festival-goer or somehow linked to the festival industry and would like to get involved, please visit the website link below for more information and FAQ, SMS your interest to 0435 956 501, call Jodie on 9266 1615 or email NDRIfestivalproject@curtin.edu.au

This project has received ethics approval from the Curtin University Human Research Ethics Committee (Approval Number HR 172/2011).

This project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results will be used by Jodie Grigg to obtain a Doctor of Philosophy at Curtin University.

Website	http://ndri.curtin.edu.au/research/
Official Page	Enter the official brand, celebrity or organization your Page is about
Facebook Page ID	467485416770246

Skip to News Feed

Find friends | Jodie | Home | Find Friends | Friend requests | Notifications | Privacy

News Feed

Drug Use at Music Festivals Project
October 7 at 5:16pm · Edited

Like Page

FACEBOOK PAGE GUIDELINES

Please follow the below three guidelines when posting comments on or about this Facebook page. We reserve the right to remove any defamatory posts or posts that do not conform to the guidelines.

1. RESPECT- Please be courteous and respectful of other comments and points of view. Do not bully, harass or threaten other Facebook users.

2. LEGAL- Do not post any copyrighted, false, misrepresentative, offensive, illegal, defamatory, discriminatory, obscene or abusive material. Do not post any comments that directly identify yourself as engaging in any illegal activities.

3. CONFIDENTIALITY- To protect participant confidentiality, please do not post any comments that might identify yourself as a project participant and as a drug user or as engaging in any other illegal activity. Failure to do so might attract unwanted legal attention to both yourself and the project.

Boost Unavailable

Like Comment Share

Comments

Write a comment...

Press Enter to post.

GAMES YOU MAY LIKE · See All

Word Up - Word Finder
100,000 players
Play Now

Jackpot Party Casino Slots
1 million players
Play Now

SUGGESTED PAGES · See All

Hit92.9
450,557 people like this.
Like

Your EDM
1,370,509 people like this.
Like

triple j
892,140 people like this.
Like

Perth Weather Live
163,407 people like this.
Like

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Facebook © 2015

Chat

D.3 Phase 1: Recruitment poster/flyer

Drug use at music festivals survey.

- **Regularly attended music festivals, in WA or Vic, in the last 12 months?**
- **Interested in being anonymously interviewed online about your experiences with and attitudes towards drug use and drug issues?**

Then SMS your interest to 0435 956 501 or email Jodie at NDRIfestivalproject@curtin.edu.au. **You may use a false name.** For more information go to: ndri.curtin.edu.au/research/damf

You will receive a $25 e-gift card to reimburse you for your time.
You don't need to have used drugs to participate!

This study has been approved by the Curtin University Human Research Ethics Committee: HR 144/2015.

NDRI national drug research institute | Curtin University

D.4 Phase 1: Information and Consent Form (festivalgoers)

Curtin University

Drug use at music festivals

PARTICIPANT INFORMATION STATEMENT FOR FESTIVAL-GOERS

HREC Project Number:	HR 144/2015
Project Title:	A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria
Principal Investigator:	Professor Simon Lenton
Co-supervisor:	Dr Monica Barratt
Student researcher:	Jodie Grigg
Version Number:	2
Version Date:	2/12/2015

What is the project about?

Outdoor music festivals have becoming increasingly popular in Australia and internationally in recent years, particularly those with a focus on electronic dance music (EDM). Since their emergence, these events have been consistently identified as popular environments for alcohol and other drug use, and in recent years they have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm; however, there has been some disagreement about the best way to manage drug-related issues at these events. For example, some might support the use of drug detection ('sniffer') dogs, while others might prefer the introduction of pill testing facilities. While these events have attracted extensive media coverage and general public and political debate, there currently exists a dearth of empirical evidence available to inform interventions. As part of this project, I will be speaking directly to festival-goers to get their view on issues. I will also be speaking to a range of key stakeholders; including emergency health services, law enforcement, government and the music industry.

The overall aims are to: 1. Investigate drug use at music festivals; 2. Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and 3. Develop recommendations aimed at improving these strategies, particularly in Australia.

Who is doing the research?

The research is being conducted by Jodie Grigg under the supervision of Professor Simon Lenton from the National Drug Research Institute (NDRI) at Curtin University and Dr. Monica Barratt from the National Drug and Alcohol Research Centre (NDARC) at the University of New South Wales (UNSW). This research project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results will be used by Jodie Grigg to obtain a Doctor of Philosophy at Curtin University.

Why am I being asked to take part?

You have been asked to take part because you have experience attending music festivals and I would love to get your input on a range of issues related to drug use at these events. I believe it's important to speak directly to those who attend the events (you, the festival-goers!) to find out about your first-hand experiences and get your input on issues that could directly affect you and people you know.

If I agree to participate, what will I be required to do?

You would be required to participate in two online interviews (one in Dec 2015 and one in mid-2016). Interviews will take approximately 1-2 hours each, but will vary depending on the level of detail participants wish to share. The findings from the first interview will be used to help inform an online festival-goer survey which will go live in March 2016. The purpose of the second interview is to get your input on the survey findings and discuss any potential future harm reduction initiates. This would require you to provide a contact number or email to follow you up with, which would be kept securely in a locked filing cabinet at the NDRI offices (separate to any data) and would be destroyed immediately after the interview is complete, or if I was unable to contact you at the time of follow-up.

Interviews will be conducted online via an instant messaging (IM) application, much like MSN messenger or Facebook Chat, but anonymous and secure (military-grade encryption, no IP addresses or metadata collected). Interviews cannot be tracked, intercepted or monitored. No email addresses or real names are required to sign up for the app, which is available for either your desktop or mobile device. This means you can be interviewed within the comfort and privacy of your own home, or wherever suits you best. When booking your interview you will be provided with some simple instructions to set up!

What kind of questions will you ask me?

I will ask you a variety of questions related to your personal experiences at music festivals, such as your history of attending festivals, experiences with drug use at festivals, reasons for using, positive and negative experiences, any precautions you take to minimise risk, access to and barriers to help at these events, availability of harm reduction (e.g., free water, shade) and attitudes towards current and potential drug policy and harm reduction initiatives (e.g., sniffer dogs and pill testing). At the end of the interview you will also have the opportunity to provide any other general comments related to festival issues not already discussed. If you haven't used drugs at festivals, that's okay, I would still love to speak to you about a range of drug-related issues that might directly or indirectly affect you. It's important for me to get input from both those who choose to use drugs at festivals and those who choose not to.

What are the benefits associated with participation?

There may be no direct benefit to you from participating in this research. However, if you attend festivals and have an interest in drug-related issues, then this could be an opportunity for you to contribute to research which could help inform future policy and practice aimed at reducing the risk of drug-related harm at festivals, as well as similar recreational music events. Therefore, it's possible that this project could benefit you, or fellow festival-goers, in the future by making events safer for those who choose to use drugs.

You will also receive a gift card to the value of $25 per interview (total of $50) to reimburse you for your time. The gift card will be digital and emailed directly to you. You can choose from a range of selected retailers, including; The Woolworths Group, JB Hi-Fi and iTunes.

What are the risks associated with participation?

This research is unlikely to cause you any distress, although it's possible you may experience some minor psychological discomfort. This is largely due to the illicit nature of the topic (drug use), and the fact that you may need to recall negative drug-related experiences. I have been careful to make sure the questions in the survey do not cause you any distress, but if you feel uncomfortable with any of them, you may skip them. You can also withdraw at any point during the interview without any negative consequences, no questions asked. And just in case your involvement does cause you some distress, at the end of your interview I will provide you with a link directing you to free and confidential harm reduction and support service details.

I know that sometimes just thinking about certain issues can be upsetting, therefore if you choose not to be in this research, but feel distressed from considering it, then please follow the below link to view a list of national and state information and support services which are free, confidential and non-judgemental.
http://www.druginfo.adf.org.au/contact-numbers/help-and-support

Please note that if you disclose that you intend to harm yourself or others, there is an obligation to report this to the appropriate authority. There is also a risk that the researchers may be obligated to disclose illegal information if they are required to do so by law (e.g., if the researcher is subpoenaed or is required by law to make a disclosure to the police or other authority). However, the National Drug Research Institute, part of Curtin University, has been doing drug research for nearly 30 years and at no time have the police attempted to gain access to information about the individuals that have been interviewed.

What will happen to the information I provide?

The information collected in this research will be re-identifiable (identifiers removed and replaced by a code) between the first and second interview, and following the second interview, it will be made non-identifiable (anonymous). This means that I am the only one who could link your data with your contact details and following the second interview, no one, not even me, will be able to identify your information as any personal information will have been destroyed. Therefore, your involvement will be anonymous. The only exception to this is if you were to publicly post a comment on the project's Facebook page identifying yourself as a participant. It is important to note that identifying yourself as a participant in the project does not identify you as a drug user, as you do not need to be a drug user to participate. However, if you do use drugs, it is important that you do not post any comments on any public forums/social media related to this project that might identify you as engaging in any illegal behaviours to avoid the possibility of drawing legal attention to yourself and the project.

Any information I collect will be treated as confidential and used only in this project unless otherwise specified. Only my supervisor (Professor Simon Lenton) and I will have access to this data. Any electronic data will be stored on Curtin's secure networked drive and hard copy data will be locked to unauthorised access at the NDRI offices. The information I collect in this study will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed. The privacy of the information you provide will be safeguarded and only disclosed if required by law.

Again, please note that if specific information is supplied on activities dangerous to the public, I would be obliged to notify appropriate authorities. It is therefore important that you use a pseudonym (false name), and do not mention your real full name, or the name of anybody else, in the interview.

The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented.

Will you tell me the results of the research?

As previously noted, I would like to interview you twice. The first time will be before the launch of an online festival-goer survey and the second time will be after the survey to discuss the preliminary survey results. I will not able to send you the final results from this research as I will not keep any personal information after the second interview, therefore I will not be able to contact you. However, I will make the results available on the project website at the completion of the project (in September 2017).

What are my rights as a participant?

Taking part in this research is entirely voluntary. If you decide to take part and then change your mind, that's okay, you have the right to withdraw at any point during the interview. You do not have to give me a reason. You also have the right to skip any questions you do not want to answer. If you choose not to be involved or withdraw part way through, it will not affect your relationship with the University, staff or colleagues. If you choose to withdraw from the study, I will use any information collected (anonymously) unless you tell me not to. I will destroy any information I have collected from you upon your request. However, if you contact me after your second interview, your information cannot be identified, and therefore cannot be withdrawn.

Contact Information

For further information about the research, please contact Jodie at the National Drug Research Institute, Curtin University by emailing NDRIfestivalproject@curtin.edu.au, texting 0435 956 501 or calling 9266 1615

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the Curtin University HREC. This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007). If you have any concerns and/or complaints about the project, the way it is being conducted or your rights as a research participant, and would like to speak to someone independent of the project, please contact: The Curtin University Ethics Committee by telephoning 9266 2784 or by emailing hrec@curtin.edu.au.

CONSENT FORM

HREC Project Number:	HR 144/2015
Project Title:	A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria
Principal Investigator:	Professor Simon Lenton
Co-supervisor:	Dr Monica Barratt
Student researcher:	Jodie Grigg
Version Number:	2
Version Date:	2/12/2015

FOR THE PARTICIPANT TO READ

At the beginning of your interview, you will be given the opportunity to ask any questions, and following this you will be asked to respond with a 'yes' or 'no' to the below six points:

1. I have read the information statement version 2 and I understand its contents.
2. I believe I understand the purpose, extent and possible risks of my involvement in this project.
3. I voluntarily consent to take part in this research project.
4. I have had an opportunity to ask questions and I am satisfied with the answers I have received.
5. I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007) – updated March 2014.
6. I understand that I can download a copy of this Information Statement and Consent Form from the project website to keep as my personal copy.

FOR THE RESEARCHER TO COMPLETE

Participant ID	
Participant Consent	No signatures required. Electronic consent will act in place of a signature.
Date	

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has indicated their consent electronically, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name	
Researcher Signature	
Date	

D.5 Phase 1: Festivalgoer IM interview schedule

SEMI-STRUCTURED INTERVIEW SCHEDULE

This interview schedule has been developed so that I can copy/paste questions directly into the chat box. It is hoped this will make the interviews a little quicker and easier to conduct.

1 Introduction

Hi (insert pseudonym), it's Jodie here. Thanks for joining me today for the interview! How did you find the process of downloading the app? Had you heard of Wickr before?

Before we start, I just wanted to let you know that I have some interview text/questions pre-typed, ready to copy/paste into the conversation. This might make it seem like I'm typing really fast, when I'm actually not. Please don't feel rushed with your responses. Take your time, if you need to think a little before responding, that's fine. Also, try not to worry about things like spelling and grammar. It's not important. You're welcome to type as you normally would with your friends.

Can I just check whether you are on your mobile or desktop? If you're on your desktop, you can select auto-unlock in the settings. On the left panel, you just click on your username to enter settings and you should see 'auto unlock messages'... Click so it's red.

Do you have a certain time you need to be finished by so I can make sure we get through everything in time?

Okay no worries, I'll keep track of the time. I might have to let you know if we divert off topic so we don't go over, but we can come back to whatever we're discussing at the end if we have time. Is that okay?

I'll just let you know the broad structure of the interview first. So I'm going to start by explaining a few unique issues/challenges about online interviews versus face-to-face interviews and go through the consent process. Then I'll find out a little background about you, then we'll talk about your use of drugs at festivals and I'll get you to walk me through your last festival experience. Finally, we'll close with some discussion on drug policy and harm reduction. At the end, you'll also have the opportunity to make comments about anything we haven't already discussed in the interview. Does that all sound okay?

So just a few issues with online interviewing- Firstly, can I just check the self-destruct is still set to 1 day?

Secondly, given we can't see each other, I can't pick up on any non-verbal cues. If you're confused by a question or not exactly sure what I'm asking, please let me know as I'm more than happy to rephrase it or elaborate. Also, if you're uncomfortable with anything I ask, please feel free to just let me know you would prefer to skip that question.

Finally, sometimes the app experiences some time lag between sending the message and the other person receiving it (several seconds). Unfortunately this can't really be avoided. The only thing that helps is trying to send larger chunks of text, rather than breaking your text up and sending one line at a time. It's no big deal either way though.

2 Information and consent

Okay so when we booked the interview, I emailed you a copy of the participant information form to read. Can I please confirm that you have read it? Do you have any questions about the interview or the project more generally that the information form didn't answer?

Now, can you please just respond with a single 'yes' or a 'no' to the following statements and then we can get started!

1. I have read the information statement and I understand its contents; 2. I believe I understand the purpose, extent and possible risks of my involvement in this project; 3. I voluntarily consent to take part in this research project; 4. I have had an opportunity to ask questions and I am satisfied with the answers I have received; 5. I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007) – updated March 2014; and 6. I understand that I can download a copy of the Information Statement and Consent Form from the website at any time.

Great, we can start the interview now!

3 Demographics

To begin with, can you please just tell me a little bit about yourself? Having some background information can help to put everything into context a little better. So just a few lines is fine about your background and what you do is fine.

Probes: Age, Gender, Postcode/location, Relationship status, Born in Australia, if not where and when moved to aus, Speak English at home, Sexual orientation, Highest year of school, Completed any tertiary qualifications, Employment status, Current accommodation, Income legally before tax

4 Festival history/experience

Thanks for that background information! Now can you please tell me a little about your history of attending music festivals? (e.g. when you started attending and why, and which festivals are your favourite to attend)

Probes: When did you start? Which ones have you attended? Do you know roughly how many have you attended in your life and how many this year? What is your preferred genre? Which festival did you attend last?

5 General drug use

So now I'd like to find out a little about your use of alcohol and other drugs generally, so not specifically at music festivals. Can you please tell me about when you started using and your use of alcohol and other drugs currently? Again, just a paragraph is fine.

Probes: What drugs have you used and what do you use now? How often do you use drugs now? Where do you use drugs? Who do you use with?

6 Drug use at festivals

Now I'd like to move on to your use of alcohol and other drugs at music festivals specifically. Can you think of the last festival you went to (in WA) where you used illicit drugs and just walk me through your alcohol/drug use from start to end, including the process of organising/obtaining the drugs, use of alcohol/drugs before the festival, getting drugs into the festival, use of alcohol/drugs at the festival, and then any use after the festival?

Probes:
What festival was this (name & state) and when was it?
Are there any other ways you obtain drugs, such as getting them inside?
Why do you do that? How easy is it to access them inside?
Is that how you normally get them in?
How did you feel when you arrived at the festival with drugs on you/having already consumed drugs?
If you took drugs before, why did you do that, if not, why not?
What amount did you use of x?
How did you use it (e.g. swallow, snort)?
Why those drugs or those combinations?
Why did you take them in that order?
What proportion of your friends were using drugs too?
Was this all planned or spontaneous or both?
Is this how your day normally goes, do you normally just use ecstasy and use that amount? What about multi-day or camping festivals?
Have you ever sold drugs at festivals or taken drugs in for someone else? Who and why?
Do you think illicit drug use is a normal part of festivals?
What proportion of festivals you attend do you use illicit drugs at?
Do you always use at festivals?
Would you ever go to a festival and not use anything?
Have you ever had any police contact at festivals? If so, can you please describe what happened and what the outcome was?
Do you ever use illicit drugs outside of festivals?

7 Motivations for use

So now I'm interested in finding out about motivations for using drugs at (including before, during, after) festivals. So again thinking of x festival last attended, can you please tell me why you used drugs?

Probes:
Is that why you always use?
Have reasons changed at all?

8 Negative experiences/effects

At the last festival where you used illicit drugs, did you experience any kind of negative effects or drug-related problems? This can include physical, mental, social or legal problems. If not last time, have you ever experienced negative effects related to a festival?

Prompts:
Was this before, during or after?
What do you think caused that or contributed (e.g. heat, crowds, lack of food/water, too much dancing)?

9 Access to and barriers to help

Last time you experienced a drug-related problem at a festival, what did you do?
Did you seek help from first aid or anyone else last time?
Were there any barriers/anything stopping you accessing help?

Prompts:
Was this before, during or after?
Have you ever accessed help at a festival?
Would you attend on-site medical services if you weren't feeling well? How comfortable would you feel doing that?

10 Availability of HR

At the last festival you attended, how available were things that might reduce your risk of experiencing negative effects... such as free water, shade, and food? Drug information?

Prompts:
How available are they generally at music festivals in Vic?
Have you ever struggled to find water, shade or help?
What did you do when you couldn't find them?

11 Protective behaviours

Did you do anything or take any precautions to try and minimize your risk of experiencing negative effects/drug-related problems last time you took drugs at a festival?

Prompts:
For example, staying in the night before, taking vitamins/supplements, looking on pill reports or asking friends about the drug, keeping hydrated, taking half the pill first, taking breaks from dancing, etc.
Was this before, during or after?
Have you ever taken any precautions/had any strategies to avoid experiencing negative effects?

12 Drug policy and HR

The final topic I'd like to cover is current drug policy and harm reduction at music festivals.

How would you describe the current approach to drugs/ drug policy at festivals you attend in Vic? So for example, the approach taken by festival organisers and law enforcement.

Do you think there are any problems or gaps with how drugs are currently managed at festivals? How effective do you think zero-tolerance approaches to drug use are? Why?

If not covered earlier:

Sniffer dogs

Were sniffer dogs present at the last festival you attended?
Can you tell me your experience with them last time?
Does it influence your behaviour at all?
Do you think it influences other festival-goers behaviours at all? If so, in what way?
Is this how it normally happens?
Does it impact your perception of police at all? If so, how?

Pill testing

I'm sure you have heard about the use of pill testing or drug checking which exists at some music festivals internationally- where they basically give you results/feedback on the content of your drugs so you can make more informed decisions about use of that drug. I was wondering if you had any thoughts on this strategy?

Would you access drug checking facilities at music festivals if they were available?

Do you think information about the content of your drug would influence your behaviour at all? How/why not?

Future responses

I'm sure you're aware of recent drug-related deaths at music festivals in Australia in recent years, is there anything you think should/could be done differently to help minimise the risk of future harm?

In your experience, has their always been ample free water stations, shaded chill out areas, food stalls, clearly marked first aid tents, etc. Do you think anything could be improved to make the environment safer?

Amnesty bins have been trailed at some events in the past; however, media reports indicate that very few festival-goers users discarded their drugs in them. Why do you think that is? Do you think you would ever use them?

13 Other comments

That's the end of my questions, was there anything we didn't discuss that you thought we might've? Did you have any comments you wanted to make about anything we have or haven't covered in the interview?

14 Experience of online IM interview

How did you find the experience of being interviewed online via Wickr?

15 Closing the interview

So that's the end of the interview! Thank you so much for taking part. I really appreciate the thought that went into your responses. If you want to track the progress, you can check the website, Facebook or just contact me personally. I'll be in touch mid-year to see if you're willing to take part in the second interview. It would take place exactly like this, but will be shorter and I'll just be getting your input on some of the findings from the festival-goer survey and discussing any potential future harm reduction initiatives. I'll be emailing your gift card today, so please contact me if you don't receive it within the next 24 hours. Can you please just let me know if you'd prefer iTunes, JB Hi-Fi or Woolworth's group?

D.6 Phase 1: Information and Consent Form (KI)

Curtin University

Drug use at music festivals

PARTICIPANT INFORMATION STATEMENT FOR KEY STAKEHOLDERS

HREC Project Number:	HR 144/2015
Project Title:	A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria
Principal Investigator:	Professor Simon Lenton
Student researcher:	Jodie Grigg
Co-Supervisor	Dr Monica Barratt
Version Number:	1
Version Date:	27/11/2015

What is the Project About?

Outdoor music festivals have becoming increasingly popular in Australia and internationally in recent years, particularly those with a focus on electronic dance music (EDM). Since their emergence, these events have been consistently identified as popular environments for alcohol and other drug use, and in recent years they have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm, however, there has been some disagreement about the best way to manage drug-related issues at these events. For example, some support the use of drug detection ('sniffer') dogs, while others would prefer the introduction of pill testing facilities. While these events have attracted extensive media coverage and general public and political debate, there currently exists a dearth of empirical evidence available to inform interventions. As part of this project, I will be speaking directly to festival-goers to get their view on issues. I will also be speaking to a range of key stakeholders; including emergency health services, law enforcement, government and the music industry.

The overall aims are to: 1. Investigate drug use at music festivals; 2. Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and 3. Develop recommendations aimed at improving these strategies, particularly in Australia.

Who is doing the Research?

The research is being conducted by Jodie Grigg under the supervision of Professor Simon Lenton from the National Drug Research Institute (NDRI) at Curtin University and Dr. Monica Barratt from the National Drug and Alcohol Research Centre (NDARC) at the University of New South Wales. This research project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results of this research project will be used by Jodie Grigg to obtain a Doctor of Philosophy at Curtin University.

Why am I being asked to take part?

You have been asked to take part because your field of work is linked to music festivals in some capacity; whether it be emergency health services, law enforcement, event regulation or industry. Given your experience in this area, I would love to get your input on a range of drug-related issues at these events.

If I agree to participate, what will I be required to do?

You would be giving up a total of no more than two hours of your time to participate in two telephone interviews (in December 2015 and mid-2016). Alternatively, if you would prefer, an online survey alternative is also available which you can complete in your own time. The findings from the first interview/survey will be used to help inform my general understanding of drug-related issues within the festival scene. The findings will also help inform an online festival-goer survey which will go live in early 2016. The purpose of the second interview is to get your input on the preliminary survey findings and discuss any potential future harm reduction initiates. If you choose to participate via telephone, I will also ask for your consent to audio record the interview for later transcription. This will allow for a more detailed and accurate record of the interview than possible with manual note taking. It will also allow me to focus entirely on what you are saying, rather than taking notes, which also adds time to the interview.

What kind of questions will you ask me?

I'll ask you a variety of questions related to your experiences with and attitude towards drug use, drug policy and harm reduction at music festivals; including your view on what drugs are most prevalent and problematic at these events, motivations for drug use, perspectives on drug-related harms, drug policy and drug interventions. I will also ask some additional questions specific to your field of work/expertise.

What are the benefits associated with participation?

There may be no direct benefit to you from participating in this research; however, if you have an interest in drug-related issues at these events, then this could be an opportunity for you to contribute to a project aiming to better understand the reality of drug use in these environments, access and barriers to harm reduction for festival-goers and the impacts of current policing approaches. It is hoped that an enhanced understanding could help to contribute to more evidence-informed responses.

What are the risks associated with participation?

There are no anticipated risks for key stakeholders who participate in this project.

What will happen to the information I provide?

Any information I collect will be treated as confidential and used only in this project unless otherwise specified. Only the research team will have access to this data. Any electronic data will be stored on Curtin's secure networked drive and hard copy data will be locked to unauthorised access at the NDRI offices. The information I collect in this study will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed. The privacy of the information you provide will be safeguarded and only disclosed if required by law.

The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented, unless you explicitly indicate that you would prefer acknowledgement. You will have the opportunity to indicate your preference at the end of the interview/survey.

Will you tell me the results of the research?

As previously noted, I would like to interview/survey you twice. The first time will be before the launch of an online festival-goer survey and the second time will be after the survey to discuss the preliminary findings. I can also send you a copy of the final results upon request.

What are my rights participating as a key stakeholder?

Taking part in this research is entirely voluntary. If you decide to take part and then change your mind, that's okay, you have the right to withdraw at any point during the interview. You do not have to give us a reason. You also have the right to skip any questions you do not want to answer. If you chose not to be involved or withdraw part way through, it will not affect your relationship with the University, staff or colleagues. If you choose to withdraw from the study, I will use any information collected (anonymously) unless you tell us not to. I will destroy any information I have collected from you upon your request.

Contact Information

For further information about the research, please contact Jodie at the National Drug Research Institute, Curtin University by emailing her at NDRIfestivalproject@curtin.edu.au, texting 0435 956 501 or calling 9266 1615

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the Curtin University HREC. This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007). If you have any concerns and/or complaints about the project, the way it is being conducted or your rights as a research participant, and would like to speak to someone independent of the project, please contact: The Curtin University Ethics Committee by telephoning 9266 2784 or by emailing hrec@curtin.edu.au.

CONSENT FORM

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Version Number:	1
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FOR THE PARTICIPANT TO READ

At the beginning of your interview, you will be given the opportunity to ask any questions, and following this you will be asked to respond with a 'yes' or 'no' to the below six points:

1. I have read the information statement version 1 and I understand its contents.
2. I believe I understand the purpose, extent and possible risks of my involvement in this project.
3. I voluntarily consent to take part in this research project.
4. I have had an opportunity to ask questions and I am satisfied with the answers I have received.
5. I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007) – updated March 2014.
6. If participating in a telephone interview, I consent to having my interview audio recorded for later transcription.

FOR THE RESEARCHER TO COMPLETE

Participant ID	
Participant Consent	No signatures required. Verbal or electronic consent will act in place of a signature.
Date	

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has indicated their consent verbally or electronically, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name	
Researcher Signature	
Date	

D.7 Phase 1: KI online questionnaire (also acted as the phone interview schedule)

Note. A Microsoft Word export of the questionnaire is available upon request. Due to the larger size of the Word export and lack of graphics/visual elements, a PDF export was more suitable to insert here.

Information and consent page

Drug use at music festivals project

Phase 1 survey for key stakeholders

Thank you for your interest in taking part in this survey! Please read the below information which acts as a Participant Information and Consent Form. By clicking the arrow to the next page, you will be electronically indicating your consent.

What is the Project About?
Outdoor music festivals have becoming increasingly popular in Australia and internationally in recent years, particularly those with a focus on electronic dance music. Since their emergence, these events have been consistently identified as popular environments for alcohol and other drug use, and in recent years they have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm, however, there has been some disagreement about the best way to manage drug-related issues at these events. For example, some support the use of drug detection ('sniffer') dogs, while others would prefer the introduction of pill testing facilities. While these events have attracted extensive media coverage and general public and political debate, there currently exists a dearth of empirical evidence available to inform interventions. As part of this project, I will be speaking directly to festival-goers and a range of key stakeholders; including health services, law enforcement, government and the music industry.

The overall aims are to: 1. Investigate drug use at music festivals; 2. Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and 3. Develop recommendations aimed at improving these strategies, particularly in Australia.

Who is doing the Research?
The research is being conducted by Jodie Grigg under the supervision of Professor Simon Lenton from the National Drug Research Institute (NDRI) at Curtin University and Dr. Monica Barratt from the National Drug and Alcohol Research Centre (NDARC) at the University of New South Wales. This research project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results of this research project will be used by Jodie Grigg to obtain a Doctor of Philosophy at Curtin University.

Why am I being asked to take part?
You have been asked to take part because you are involved in the music festival scene in some capacity; whether it be emergency health services, law enforcement, event regulation or industry. Given your experience in this area, I would love to get your input on a range of drug-related issues at these events.

If I agree to participate, what will I be required to do?
You would be giving up a total of no more than two hours of your time to participate in two telephone interviews or online survey alternatives (one in December 2015 and one in mid-2016). The findings from the first interview/survey will be used to help inform my general understanding of drug-related issues within the festival scene, and inform an online festival-goer survey which will go live in early 2016. The purpose of the second interview is to get your input on the festival-goer survey preliminary findings and discuss any potential future harm reduction initiates.

What kind of questions will you ask me?
I'll ask you a variety of questions related to your experiences with and attitude towards drug use, drug policy and harm reduction at music festivals; including your view on what drugs are most prevalent and problematic at these events, motivations for drug use, perspectives on drug-related harms, drug policy and drug interventions. I will also ask you some additional questions specific to your field of work/expertise.

What are the benefits to me?
There may be no direct benefit to you from participating in this research; however, if you have an interest in drug-related issues at these events, then this could be an opportunity for you to contribute to a project aiming to better understand the reality of drug use in these environments, access and barriers to harm reduction for festival-goers and the impacts of current policing approaches. It is hoped that an enhanced understanding could help to contribute to more evidence-informed responses.

What will happen to the information I provide?
Any information I collect will be treated as confidential and used only in this project unless otherwise specified. Only the research team will have access to this data. Any electronic data will be stored on Curtin's secure networked drive and hard copy data will be locked to unauthorised access at the NDRI offices. The information I collect in this study will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed. The privacy of the information you provide will be safeguarded and only disclosed if required by law.

The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented, unless you explicitly indicate that you would prefer acknowledgement. You will have the opportunity to indicate your preference at the end of the survey.

Will you tell me the results of the research?
As previously noted, I would like to interview/survey you twice. The first time will be before the launch of an online festival-goer survey and the second time will be after the survey to discuss the preliminary findings. I can also send you a copy of the final results upon request.

What are my rights as a participant?
Taking part in this research is entirely voluntary. If you decide to take part and then change your mind, that's okay, you have the right to withdraw at any point during the interview or survey. You do not have to give me a reason. You also have the right to skip any questions you do not want to answer. If you choose not to be involved or withdraw part way through, it will not affect your relationship with the University, staff or colleagues. If you choose to withdraw from the study, I will use any information collected (anonymously) unless you tell us not to. I will destroy any information I have collected from you upon your request.

Contact Information
For further information about the research, please contact Jodie at the National Drug Research Institute, Curtin University by emailing her at NDRIfestivalproject@curtin.edu.au, texting 0435 956 501 or calling 9266 1615.

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the Curtin University HREC. This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007). If you have any concerns and/or complaints about the project, the way it is being conducted or your rights as a research participant, and would like to speak to someone independent of the project, please contact: The Curtin University Ethics Committee by telephoning 9266 2784 or by emailing hrec@curtin.edu.au.

I UNDERSTAND THAT BY CLICKING THE ARROW:
1. I have read the information statement above and I understand its contents.
2. I believe I understand the purpose, extent and possible risks of my involvement in this project.
3. I voluntarily consent to take part in this research project. I have had an opportunity to ask questions and I am satisfied with the answers I have received.
4. I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007) – updated March 2015.
5. I understand that I can print this information page to keep as my personal copy or I can email NDRIfestivalproject@curtin.edu.au to obtain a copy.

Background questions

Background questions

These background questions will help to determine what type of questions might apply to you in this survey and what questions should be skipped.

What is your gender?

- Male
- Female
- Transgender

Which state do you live in?

- Western Australia
- Victoria
- Other (specify)

Which area do you work in? You may mark multiple options if they apply.

- Health (on-site medical ONLY)
- Health (off-site medical ONLY)
- Law enforcement
- Government/regulation
- The music or festival industry
- AOD agency
- Harm reduction/peer support group
- Drug policy organization
- Other (specify)

What is your position title?

Please describe your current position and how it relates to music festivals.

Drug use at music festivals

Drug use at music festivals

This set of questions is investigating which drugs are most prevalent and problematic at music festivals.

Please rank these drugs (including alcohol) according to which you consider to be most prevalent at music festivals (1=most prevalent). You do not need to rank all options provided, but please rank a minimum of two.

- [ ] Alcohol
- [ ] Amyl nitrite
- [ ] Benzodiazepines
- [ ] Cannabis
- [ ] Cocaine
- [ ] Crystal methamphetamine
- [ ] Ecstasy/MDMA
- [ ] GHB
- [ ] Ketamine
- [ ] LSD
- [ ] MDA
- [ ] Magic mushrooms
- [ ] New psychoactive substances (specify)
- [ ] Nitrous oxide (aka nangs, laughing gas)
- [ ] Pharmaceutical stimulants (eg dexies, Ritalin)
- [ ] Speed
- [ ] Steroids
- [ ] Other (specify)

Please rank these drugs (including alcohol) according to which you consider to be most problematic at music festivals (1=most problematic). You do not need to rank all options provided, but please rank a minimum of two.

- [ ] » Alcohol
- [ ] » Amyl nitrite
- [ ] » Benzodiazepines
- [ ] » Cannabis
- [ ] » Cocaine
- [ ] » Crystal methamphetamine
- [ ] » Ecstasy/MDMA
- [ ] » GHB
- [ ] » Ketamine
- [ ] » LSD

- » MDA
- » Magic mushrooms
- » New psychoactive substances (specify)
- » Nitrous oxide (aka nangs, laughing gas)
- » Pharmaceutical stimulants (eg dexies, Ritalin)
- » Speed
- » Steroids
- » Other (specify)

Please explain why you think those drugs are most problematic at music festivals?

Have you observed any particular patterns or trends in drug use at festivals? (eg certain forms of drugs, common drug combinations, patterns of use before, during and after the event, different routes of administration, etc)

Do you think illicit drug use has become a normal feature of music festivals in Australia? Please provide a comment in the text box if you have anything you would like to add to your response.

- Yes
- No
- Unsure

Motivations for drug use at music festivals

Motivations for drug use at music festivals

Why do you think young people use drugs at music festivals?

Drug-related harms at music festivals

Drug-related harms at music festivals

What types of drug-related problems/harms at festivals do you witness or hear about in your field?

What factors (eg physical/social/economic/political) do you think contribute to drug-related problems/harms at these events?

Do you think there are any differences in the prevalence of drug use/drug problems between different types of festivals?

Drug policy at music festivals

Drug policy at music festivals

The next set of questions relate to drug policy at music festivals. We understand that your responses may overlap slightly with the next section on harm reduction. That is not a problem.

How would you describe drug policy at music festivals in WA and/or Victoria?

Overall, how effective do you think current drug policy is in terms of minimising the risk of drug-related harm at these events?

- Very Ineffective
- Ineffective
- Neither Effective nor Ineffective
- Effective
- Very Effective

Why?

HR strategies

Drug interventions and harm reduction

These questions relate to harm reduction at music festivals. We understand that your responses may overlap slightly with the previous section on drug policy. That is not a problem.

What interventions/strategies do you think are effective in reducing the risk of drug-related harm and why? (eg drug detection dogs, drug checking, bag checks, on-site medical, amnesty bins, peer support groups like DanceWize etc)

What interventions/strategies do you think are ineffective in reducing drug-related harm and why? (eg drug detection dogs, drug checking, bag checks, on-site medical, amnesty bins, peer support groups like DanceWize etc)

Can you identify any other problems or gaps in the way drug-related issues are currently managed at music festivals?

In recent years there have been a number of drug-related deaths at music festivals in Australia and internationally, do you have any recommendations for future drug policy and practice aiming to reduce the risk of future drug-related harm?

Music/festival industry specific questions

Music/festival industry specific questions

You have indicated that you work in the music/festival industry. The following questions are specific to that field; however, if they do not apply to your work or expertise, please just type N/A into the text box provided.

If you're involved in planning music festivals, can you please describe the steps you take and strategies you implement to address alcohol and other drug issues? Please name any key contacts or organisations you liaise

with, and any publications, such as event guidelines or codes of practice you refer to.

If you're involved in planning music festivals, do event staff receive any targeted music festival training related to drug issues before attending events? If so, please describe the nature and level of this training, whether it is a requirement and who receives it (eg security, bar staff, first aid)

EDM events and music festivals have long been associated with, and stigmatized by, drug use. Can you please describe your experience with and/or view on the culture of drugs within the festival industry?

Government specific questions

Government/regulation specific questions

You have indicated that you work in Goverment.The following questions are specific to that field; however, if they do not apply to your work or expertise, please just type N/A into the text box provided.

Within government, who has a role in the regulation and management of these events?

What publications/resources/guidelines/codes of practice exist to help with the planning of these events?

What, if any, harm reduction strategies are required at festaivals by law? (eg free water, first aid, chill out spaces, food outlets, no high strength alcohol, staff training on drug issues, max length of event)

What harm reduction strategies are recommended at festivals, but not required by law? (eg free water, first aid, chill out spaces, food outlets, no high strength alcohol, staff training on drug issues, max length of event)

Please describe how events are monitored to ensure they are adhering to relevant laws/making events as safe as possible?

Law enforcement specific questions

Law enforcement specific questions

You have indicated that you work in the field of law enforcement. The following questions are specific to that field; however, if they do not apply to your work or expertise, please just type N/A into the text box provided.

What type of law enforcement personnel (eg specific police units, undercover officers) attend music festivals? If it varies between events, please describe how you determine what type of personal will attend.

Do law enforcement personnel receive any targeted music festival training before attending events? If so, please describe the nature and level of this training and whether it is a requirement.

What are the main aims/objectives for law enforcement attending music festivals?

Please list the different types of strategies law enforcement implements at music festivals and the aims of each strategy (eg drug detection dogs, undercover officers, mounted police).

Please describe how effective you think each strategy listed above is.

What evidence exists to support the effectiveness of current law enforcement strategies implemented at music festivals? If possible, please include the current success rates of drug detection dogs at music festivals.

Health specific questions

Health specific questions

You have indicated that you work in the health field. The following questions are specific to that area; however, if they do not apply to your work or expertise, please just type N/A into the text box provided.

Please describe the level of medical care provided on-site at music festivals you attend? (eg number and type of medical personel, medical equipment on-site)

How do you determine the level of care required at each event? Is it consistent across festivals?

Do on-site medical staff receive targeted music festival training on alcohol and other drug-related problems? If so, please describe the type and level of training (eg 1 hour seminar, 1 day interactive course).

Can you please describe the patient process when accessing on-site medical care? (eg assessment, monitoring, transfer to hospital, etc)

Is there any type of evaluation of the level of care provided?

Can you think of any ways to improve on-site medical care at music festivals?

Other comments

Other comments

Do you have any other comments you would like to make about drug-related issues at music festivals that hasn't already been covered?

Recommendations

Recommendations

I'll be talking to a range of key stakeholders from health, law enforcement, government and industry; are there any questions you think I should ask people who work in these sectors?

Can you think of anyone who might be worth interviewing for this project? If so, it would be greatly appreciated if you could enter their details below.

I'll be launching an online survey for festival-goers as part of this project; are there any questions you think I should ask festival-goers or any issues you think I should cover?

Anonymity

Acknowledgement

The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented, unless you explicitly indicate that you would like acknowledgement below.

- I would prefer the data be de-identified at both individual and agency level. I understand that neither I, nor the agency/organisation I am affiliated with, will be identified in any publications or presentations.
- I would prefer acknowledgement and I am participating as an authorised spokesperson for my agency/organisation. I understand that my responses will be deemed to represent my agencies official views. **Please enter your details (your name and your agency name) in the space provided.**
- I would prefer acknowledgement; however, I am not participating as an authorised spokesperson for my agency/organisation. Acknowledgement would need to be accompanied by a disclaimer note. **Please enter your details (your name and your agency name) in the space provided.**

D.8 Phase 2: Online festivalgoer questionnaire paid Facebook advertisement

D.9 Phase 2: Online festivalgoer questionnaire developed in Qualtrics

Note. A Microsoft Word export of the questionnaire is available upon request. Due to the size of the Word export (239 pages) and lack of graphics/visual elements, a PDF export was more suitable to insert here.

5/31/2016 Qualtrics Survey Software

Information & consent form

Drug use at music festivals project

Phase 2 survey for festival-goers

Thank you for your interest in taking part in this survey! Please read the below information which acts as a Participant Information and Consent Form. By clicking to the next page, you will be indicating your consent.

What is the project about?
Outdoor music festivals have becoming increasingly popular in Australia and internationally in recent years, particularly those with a focus on electronic dance music. Since their emergence, these events have been cor environments for alcohol and other drug use, and in recent years they have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm, however, there about the best way to manage drug-related issues at these events. For example, some might support the use of drug detection ('sniffer') dogs, while others might prefer the introduction of pill testing or drug checking fac attracted extensive media coverage and general public and political debate, there currently exists a lack of empirical evidence available to inform interventions. This project aims to address this gap by drawing on the kn expertise of festival-goers themselves, as well as a range of key stakeholders such as event organisers, emergency health services and those involved in managing/regulating these events.

What are the aims of the research?
The overall aims are to: 1. Investigate drug use (including alcohol) at music festivals; 2. Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these enviro recommendations aimed at improving strategies in Australia.

Why am I being asked to take part?
You have been asked to take part because you responded to an advertisement indicating that you have attended at least one outdoor music festival recently and we would love to hear about your first-hand experiences drug-related issues at these events.

What if I DON'T use drugs?
We're calling on ALL festival-goers to complete this survey, NOT just festival-goers who use drugs. We believe it's important to hear from both those who choose to use drugs and those who choose not to - it will also he the prevalence of drug use at festivals. The survey is set up so you will automatically skip through questions that don't apply to you.

Could this research negatively affect music festivals or people who use drugs at festivals?
It is important to note that this research is being conducted for harm reduction purposes, not for or by law enforcement. The researchers do not support strategies such as banning or canceling music festivals, rather w to support the longevity of these events by contributing to more evidence informed responses aimed at minimising the risk of future drug-related harm. We believe that banning music festivals could help to push the scer fans may not have access to important harm reduction services, such as on-site medical care. It's also important to note that no festivals will be individually identified/named in any publications or presentations based or attracting stigma or legal attention to individual events.

Every effort will be made to collect the data, report on and disseminate the findings of the research in a way which is respectful of the interests of festival-goers and people who use drugs. Yet, like any research, once th can be used by others to support a variety of positions, some of which may be in agreement with, and others may be contrary to the views of the researchers or the research participants. However, overall we believe tl regarding drug use are improved when informed by research such as this, which draws on the knowledge and expertise of people who use drugs.

Who is doing the research?
The research is being conducted by Jodie Grigg under the supervision of Professor Simon Lenton from the National Drug Research Institute (NDRI) at Curtin University and Dr. Monica Barratt from the National Drug ar (NDARC) at the University of New South Wales (UNSW). This research project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results will be used by Jodie Grigg to o Curtin University.

If I agree to participate, what will I be asked to do?
You will be asked to complete an online questionnaire which we expect will take between 15-30 minutes of your time. However, the length of the survey will vary depending on whether you have used drugs at festivals, tl whether you have had certain experiences at festivals (eg. police contact, negative drug experiences, etc.).

What kinds of questions will I be asked?
You will be asked a variety of questions related to your experiences at music festivals, with much of the survey focusing on your last festival experience. You will be asked about your history of attending festivals, drug u positive and negative experiences, access to and barriers to help, any precautions you take to minimise risk, availability of harm reduction (e.g., free water and first aid), experiences with police and attitudes towards cu and harm reduction initiatives (e.g., sniffer dogs and pill testing). For festival-goers who don't use drugs, the survey is set up so you will automatically skip through sections not applicable to you.

What are the benefits associated with taking part- do I get paid?
There may be no direct benefit to you from participating in this research. However, if you attend festivals and have an interest in the management of drug-related issues, then this could be an opportunity for you to contri help inform future policy and practice at festivals, as well as similar recreational music events. Therefore, it's possible that this project could benefit you, or fellow festival-goers, in the future by making events safer.

While you do not get paid to take part, you will be given the opportunity to *enter a prize draw for a $500 JB Hi-Fi gift card.* At the completion of the survey, you will be directed to a page where you can enter your email ad the draw. It is important to note that the entry page is in no way connected/linked to your survey responses- your responses will remain completely anonymous.

What are the risks to me- is this anonymous?
There are no legal risks associated with completing this survey as *the information collected will be non-identifiable (anonymous).* This means that we do not collect individual names, Internet protocol (IP) addresses or a you to this survey. No one, not even the researchers will be able to identify your information.

The only identifiable risk is that you may experience some minor psychological discomfort. This is largely due to the illicit nature of the topic (drug use), and the fact that you may need to recall negative drug-related expe make sure the questions in the survey do not cause you any distress, but if you feel uncomfortable, you may skip them (except for some key questions which affect the structure of the rest of the survey). You can also survey without any negative consequences, no questions asked- simply close your browser. However, just in case your involvement does cause you some distress, at the end of the survey you will be provided with a confidential harm reduction and support service details. We know that sometimes just thinking about certain issues can be upsetting, therefore if you choose not to do this survey, but feel distressed from considering it, t to view a list of national and state information and support services which are free, confidential and non-judgmental.

http://www.druginfo.adf.org.au/contact-numbers/help-and-support

Who will have access to the information provided?
Only the researchers (Jodie Grigg, Prof Simon Lenton and Dr Monica Barratt) will have access to this data. Any electronic data will be stored on Curtin's secure networked drive and hard copy data will be locked to una offices. The information collected in this study will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed. The privacy of the information you provide w disclosed if required by law (but even then the survey cannot be linked to you as your responses will be non-identifiable/anonymous). The results of this research may be presented at conferences or published in profe will not be identified in any results that are published or presented.

Will you tell me the results of the research?
The results will be made available on the project website at the completion of the project (in 2017).

Do I have to take part in this survey?
Taking part in this research is entirely voluntary. If you decide to take part and then change your mind, that's okay, you have the right to withdraw at any point during the interview- simply close your browser. You also ha do not want to answer, except for some key questions that structure the logical flow of the survey. If you choose not to be involved or withdraw part way through, it will not affect your relationship with the University, stat

Does this research have ethics approval?
All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the C project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007). If you have any concerns and/or complaints about the project, the way it is being conducted or your rights a would like to speak to someone independent of the project, please contact: The Curtin University Ethics Committee by telephoning (08) 9266 2784 or by emailing hrec@curtin.edu.au.

What if I have more questions?

https://curtin.au1.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview 1/43

For further information about the research, please contact Jodie at the National Drug Research Institute, Curtin University by emailing NDRIfestivalproject@curtin.edu.au, texting 0435 956 501 or calling (08) 9266 1615.

I UNDERSTAND THAT BY CLICKING TO THE NEXT PAGE:
1. I have read the above information statement above and I understand its contents.
2. I believe I understand the purpose, extent and possible risks of my involvement in this project.
3. I voluntarily consent to take part in this research project.
4. I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007) – up
5. I understand that I can print this information page to keep as my personal copy or I can email NDRIfestivalproject@curtin.edu.au to obtain a copy.

Eligibility screening

Thank you for agreeing to participate!

This questionnaire has 12 sections and should take between 15-30 minutes of your time. However, the length can vary depending on your level of dr experiences in association with festivals. If you start the survey, but don't finish, your progress will be automatically saved so you can continue from w time you click on the survey link or enter in the URL (when using the same device and browser). While it really helps if you answer all questions, if yc with any, you may skip them. However, some key questions are required as they affect the structure of the rest of the survey. ***Please remember thai completely anonymous.***

To start with, we would like to get a few background details and determine your eligibility for the survey.

How did you find out about this survey?
- Saw an advert on Facebook
- Through a friend (including posts/tags/shares on social media)
- A poster/flyer
- Bluelight
- Tone Deaf
- Inthemix
- Radio
- Other (please specify)

Have you attended an outdoor music festival in the last 12 months?
- Yes
- No

What is your gender?
- Male
- Female
- Transgender
- Other (please specify)

What is your age?

Which state do you live in?
- Western Australia
- Victoria
- Other (please specify)

How many years have you been living in your state?

Section 1: Music festival history

Section 1: Music festival history

*For the purpose of this survey, a music festival is defined as a licensed and ticketed event focused on music and attended by thousands. They are ty and some focus on particular genres, such as electronic dance music. Many are annual at a variety of interstate locations (eg., Stereosonic, Groovin Festival). **They ARE NOT concerts, nightclub events, underground bush doofs or warehouse parties**.*

About how old were you the FIRST TIME you attended a music festival unaccompanied by a parent or guardian?

About how old were you when you first started attending music festivals REGULARLY (eg. a few times per year)?

If you don't attend music festivals regularly anymore, please select the age when you did start attending regularly.

About how many music festivals have you EVER attended in your lifetime?

- 1-2
- 3-5
- 6-10
- 11-20
- 21-30
- More than 30

About how many music festivals do you CURRENTLY attend per year?

- 1-2
- 3-4
- 5-6
- 7-10
- More than 10

The following question will ask you about music festivals you have attended recently.

*Please remember that **NO festivals will be identified/named in any publications based on this research** to avoid the risk of attracting stigm to individual events. Names of festivals are only collected to ensure it fits within our festival definition, to get a clearer picture of your festival histo accurate investigations.*

In ${q://QID52/ChoiceGroup/SelectedChoices}, which music festivals have you attended in the LAST 12 MONTHS?

Please select carefully as your responses will affect later questions.
You may add up to three other festivals, but remember concerts, nightclub events, underground warehouse parties and bush doofs are NOT included.

- Athena Music Festival
- Blazing Swan
- Blues N Roots Festival
- Blues at Bridgetown

- Breakfest
- Camp Doogs
- Castaway
- CoLAB
- Corona SunSets
- Enchanted Garden Festival
- Fairbridge Folk Festival
- Good Life (WA)
- Groovin The Moo (Bunbury)
- HyperFest
- Listen Out (WA)
- Nannup Music Festival
- Origin NYE (2015)
- Origin Presents at Belvoir (Apr 2016)
- Rottofest
- Sets in the City (Nov 2015)
- Sets on the Beach (Dec 2015)
- Sets on the Beach (Mar 2016)
- Ship-Wrecked
- Stereosonic (WA)
- Laneway Festival (Fremantle)
- Welcome to the Valley
- Wonderland
- Summer Gardens Festival
- Other 1 (please specify one festival only)
- Other 2 (please specify one festival only)
- Other 3 (please specify one festival only)
- Beyond The Valley
- Brunswick Music Festival
- Bruthen Blues & Arts Festival
- Cool Summer Festival
- Falls Festival (VIC)
- Golden Plains
- Good Life (VIC)
- Earthcore
- Groovin the Moo (Bendigo)
- Inner Varnika
- JamGrass Music Festival
- Kyneton Music Festival
- Kennedy's Creek Music Festival
- Let Them Eat Cake
- Listen Out (VIC)
- Melbourne Music Week
- Meredith Music Festival
- NYE On The Hill
- Out On The Weekend
- Paradise Music Festival
- Poison City Weekender
- Port Fairy Folk Festival
- Queenscliff Music Festival
- Rainbow Serpent Festival
- Riverboats Music Festival
- Laneway Festival (VIC)
- St Kilda Festival
- Stereosonic (VIC)
- Strawberry Fields
- Sugar Mountain Festival

- [ ] The Hills Are Alive
- [ ] UNIFY: A Heavy Music Gathering
- [ ] Summer Gardens Festival
- [ ] Other 1 (please specify one festival only)
- [ ] Other 2 (please specify one festival only)
- [ ] Other 3 (please specify one festival only)

Which of these was the LAST festival you attended?

Please select carefully as throughout the survey we will focus on and refer back to your LAST festival as selected below.

- » Athena Music Festival
- » Blazing Swan
- » Blues N Roots Festival
- » Blues at Bridgetown
- » Breakfest
- » Camp Doogs
- » Castaway
- » CoLAB
- » Corona SunSets
- » Enchanted Garden Festival
- » Fairbridge Folk Festival
- » Good Life (WA)
- » Groovin The Moo (Bunbury)
- » HyperFest
- » Listen Out (WA)
- » Nannup Music Festival
- » Origin NYE (2015)
- » Origin Presents at Belvoir (Apr 2016)
- » Rottofest
- » Sets in the City (Nov 2015)
- » Sets on the Beach (Dec 2015)
- » Sets on the Beach (Mar 2016)
- » Ship-Wrecked
- » Stereosonic (WA)
- » Laneway Festival (Fremantle)
- » Welcome to the Valley
- » Wonderland
- » Summer Gardens Festival
- » Other 1 (please specify one festival only)
- » Other 2 (please specify one festival only)
- » Other 3 (please specify one festival only)
- » Beyond The Valley
- » Brunswick Music Festival
- » Bruthen Blues & Arts Festival
- » Cool Summer Festival
- » Falls Festival (VIC)
- » Golden Plains
- » Good Life (VIC)
- » Earthcore
- » Groovin the Moo (Bendigo)
- » Inner Varnika
- » JamGrass Music Festival
- » Kyneton Music Festival
- » Kennedy's Creek Music Festival
- » Let Them Eat Cake
- » Listen Out (VIC)
- » Melbourne Music Week
- » Meredith Music Festival
- » NYE On The Hill
- » Out On The Weekend
- » Paradise Music Festival
- » Poison City Weekender
- » Port Fairy Folk Festival

- » Queenscliff Music Festival
- » Rainbow Serpent Festival
- » Riverboats Music Festival
- » Laneway Festival (VIC)
- » St Kilda Festival
- » Stereosonic (VIC)
- » Strawberry Fields
- » Sugar Mountain Festival
- » The Hills Are Alive
- » UNIFY: A Heavy Music Gathering
- » Summer Gardens Festival
- » Other 1 (please specify one festival only)
- » Other 2 (please specify one festival only)
- » Other 3 (please specify one festival only)

What genres of music do you attend music festivals for?

Please select ALL that apply

- [ ] I don't attend for any particular genre
- [ ] Pop
- [ ] Rock
- [ ] Punk
- [ ] Metal
- [ ] Hip hop / Rap
- [ ] Indi / Alternative
- [ ] Trance / Psytrance
- [ ] General EDM / Dance
- [ ] Singer-songwriter / Folk
- [ ] Breakbeats / Drum N bass
- [ ] Other (please specify)

Which is these is your FAVOURITE genre to attend festivals for?

Please select ONE response

- No preference
- » I don't attend for any particular genre
- » Pop
- » Rock
- » Punk
- » Metal
- » Hip hop / Rap
- » Indi / Alternative
- » Trance / Psytrance
- » General EDM / Dance
- » Singer-songwriter / Folk
- » Breakbeats / Drum N bass
- » Other (please specify)

What types of music festivals do you like to attend?

Please select ALL that apply

- [ ] Large scale, single day (eg. Stereosonic, Groovin The Moo)
- [ ] Smaller 'boutique', single day (eg. CoLab, Wonderland, Let Them Eat Cake)
- [ ] Large scale, multi-day camping (eg. Southbound, Falls Festival)
- [ ] Smaller 'boutique', multi-day camping (eg. The Hills Are Alive, Enchanted Garden Festival)
- [ ] 'bush doof' style, multi-day camping (eg. Rainbow Serpent, Earthcore, Blazing Swan)
- [ ] Other (please specify)

Which of these is if your FAVOURITE type of music festival to attend?

Please select ONE response

- No preference
- » Large scale, single day (eg. Stereosonic, Groovin The Moo)

» Smaller 'boutique', single day (eg. CoLab, Wonderland, Let Them Eat Cake)
» Large scale, multi-day camping (eg. Southbound, Falls Festival)
» Smaller 'boutique', multi-day camping (eg. The Hills Are Alive, Enchanted Garden Festival)
» 'bush doof' style, multi-day camping (eg. Rainbow Serpent, Earthcore, Blazing Swan)
» Other (please specify)

Section 2: General drug use

Section 2: General drug use

The following questions are about your use of drugs (including alcohol) generally- NOT specifically at music festivals. You will be asked about your u music festivals in the next section. ***Please remember, this survey is completely anonymous.***

Have you ever tried alcohol?
- Yes
- No

Have you had an alcoholic drink of any kind in the last 12 months?
- Yes
- No

How often have you had alcohol in the last 12 months?
- Every day
- 5 to 6 days a week
- 3 to 4 days a week
- 1 to 2 days a week
- 2 to 3 days a month
- Less often
- No longer drink

Have you ever tried smoking cigarettes or other forms of tobacco?
- Yes
- No

How often do you now smoke cigarettes, pipes or other tobacco products?

Please select ONE response
- Daily
- At least weekly (but not daily)
- Less than weekly

- Not at all, but I HAVE smoked in the last 12 months
- Not at all, and I HAVE NOT smoked in the last 12 months

Have you ever used an illicit drug?

*For the purpose of this survey, illicit drugs **can include pharmaceuticals not prescribed to you** like dexamphetamine and Ritalin, **inhalants** which are sold legally but used in a manner that is not intended like nitrous nitrate/rush, **synthetic cannabis**, **new psychoactive substances** like mephedrone, NBOMe and 2C-B, and **general illicit drugs** like cannabis, ecstasy, meth/amphetamine and cocaine.*

- Yes
- No

Have you used an illicit drug in the last 12 months?

Remember, illicit drugs can include non-prescribed drugs (eg dexies), inhalants (eg nangs), synthetic cannabis, new psychoactive substances (eg NBOMe), and general illicit drugs (eg ecstasy).

- Yes
- No

How likely are to you use an illicit drug in the future?

- Extremely likely
- Somewhat likely
- Neither likely nor unlikely
- Somewhat unlikely
- Extremely unlikely

Which of the following drugs have you used in the last 12 months and how often did you use them?

	Used in the LAST 12 MONTHS Select ALL that apply	HOW OFTEN used in the LAST 12 MONTHS
Marijuana/Cannabis	☐	▼
Ecstasy/MDMA	☐	▼
Meth/amphetamine *(eg. ice/crystal meth, speed)*	☐	▼
Pharmaceutical stimulants for non-medical purposes *(eg. dexamphetamine, ritalin)*	☐	▼
Cocaine	☐	▼
LSD *(acid)*	☐	▼
Magic mushrooms	☐	▼
Synthetic cannabis	☐	▼
Inhalants *(eg. nitrous/nangs, nitrates/poppers)*	☐	▼
Tranquillisers for non-medical purposes *(eg. benzos, Valium, Xanax, temazepam)*	☐	▼
Steroids	☐	▼
GHB *(fantasy, liquid E)*	☐	▼
Ketamine *(K, special K)*	☐	▼
Other opiates/opioids for non-medical purposes *(eg. morphine, oxycodone, tramadol)*	☐	▼
Methadone or Buprenorphine	☐	▼
Heroin	☐	▼
New psychoactive substances *(eg. Mephedrone, BZP, 2C-B, DMT, MDPV)*	☐	▼

In the last 12 months, when you have gone out to nightclubs, pubs and parties, HOW OFTEN have you used an ILLICIT drug?

Remember, this can also include non-prescribed drugs like dexies and inhalants like nitrous/nangs.

- Always
- Mostly
- Sometimes
- Rarely
- Never

The FIRST TIME you used ecstasy/MDMA, what occasion was it for?

- No occasion, just at home
- A private party
- Clubbing / nightclub
- Pub / bar
- A music festival
- A concert
- Other (please specify)

Don't know / can't remember

Section 4: Obtaining and supplying drugs at music festivals

Section 4: Obtaining and supplying drugs at music festivals

*The following questions are about obtaining and supplying drugs in relation to the last festival you attended. **Please remember that this research is conducted for or by law enforcement**, rather it is being conducted for the purpose of reducing harm. While this survey is completely anonymous a collected, if you're uncomfortable answering any questions in this section, you may skip them.*

Earlier you told us that you used illicit drugs DURING the last festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}. Can you please tell us how you obtained those drugs?

Please select ALL that apply

- I organised and obtained drugs BEFORE entering the festival (AND carried them in MYSELF)
- I organised drugs before entering, BUT obtained them inside the festival (someone else carried them in)
- I organised and obtained drugs INSIDE the festival grounds
- Other (please specify)

How did you carry your illicit drugs when ENTERING the festival grounds?

Please select ALL that apply

- On my person, in my underwear (eg. bra, underwear)
- On my person, in my clothing (eg. shorts, jacket)
- On my person, in my bag or wallet
- On my person, concealed internally in a body cavity (eg. rectum, vagina, mouth)
- I swallowed my drugs and then retrieved them once inside the festival (eg. excreted them, vomited them)
- In the vehicle I/we entered the festival grounds in
- Other (please specify)

Why did you obtain illicit drugs INSIDE the festival grounds?

Please select ALL that apply

- Because I was concerned about being detected with drugs by police/security before entering
- Because my partner/friend carried my drugs in for me
- Because it was easier to meet my supplier inside the festival
- Because I/we wasn't able to obtain drugs before the festival
- Because I knew it would be easy to obtain drugs inside
- Because I/we wanted more drugs than I/we already had
- Because the opportunity presented itself
- Other (please specify)

Did you obtain illicit drugs INSIDE the festival by someone already known to you or your friends?

- Yes, I/we knew them
- No, I/we did not know them
- I/we obtained from people both known and unknown

At the LAST festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}, how easy do you think it would have been for you to obtain illicit drugs inside the festival grounds?

- Very easy
- Easy
- Difficult
- Very difficult
- Don't know

Did you supply illicit drugs to anyone inside or nearby the LAST music festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}?

This includes carrying them into the festival for someone, giving them away, brokering, exchanging or selling.
Remember, prescription drugs like dexies are included.

Please select ALL that apply

- [ ] Yes, I gave drugs away for free
- [ ] Yes, I carried them in for a friend
- [ ] Yes, I carried them in for my partner (girlfriend/boyfriend)
- [ ] Yes, I brokered drugs (ie. supplied for no profit)
- [ ] Yes, I exchanged drugs
- [ ] Yes, I sold drugs (ie. supplied for profit)
- [ ] No, I did not supply drugs at all inside/nearby the festival
- [ ] Don't want to answer

Why did you supply illicit drugs?

Please select ALL that apply

- [ ] I had an excess
- [ ] To make financial profit
- [ ] A friend didn't have any so I offered
- [ ] To help a friend who was looking/wanting
- [ ] I knew there would be a high demand inside
- [ ] To help a friend/partner who was worried about carrying them in
- [ ] I had purchased drugs for a friend I was meeting inside the festival
- [ ] Other (please specify)

Was the person/s you supplied illicit drugs to already known to you or your friends?

- Yes, I/we knew them
- No, I/we did not know them
- I/we supplied to people both known and unknown

Which illicit drug/s did you supply?

This includes supplying prescription drugs to people who it wasn't intended for.

Please select ALL that apply

- [ ] Benzodiazepines (eg. Valium, Xanax)
- [ ] Pharmaceutical stimulants (eg. Ritalin, dexies)
- [ ] Cannabis (marijuana, weed)
- [ ] Cocaine
- [ ] Cystal methamphetamine (ice, meth)
- [ ] DMT
- [ ] Ecstasy/MDMA
- [ ] GHB (fantasy, liquid E)
- [ ] Ketamine (K, special K)
- [ ] LSD (acid)
- [ ] MDA
- [ ] Magic mushrooms
- [ ] Amyl nitrate (rush, poppers)
- [ ] Nitrous oxide (nangs, balloons)
- [ ] Heroin
- [ ]

- Other opiates (eg. oxycodone, tramadol)
- Speed
- Steroids (juice)
- Synthetic cannabis (eg. kronic)
- Alpha-PVP (flakka, gravel)
- 2C-x family (eg. 2C-B, 2C-I)
- NBOMe series (eg. 25B-NBOMe)
- Other (please specify)

Hypothetically, which of the following policing strategies would influence your decision on whether or not you would supply illicit drugs at music festivals in the future?

Please select ALL that apply

- Nothing, I would do it anyway
- Police with drug detection dogs
- Community policing strategies (where police work with event organisers or venue owners to put in preventative or harm reduction measures)
- Undercover police operations (plain clothes police in and around events)
- High visibility operations (around 200 police patrolling an event or area looking for antisocial or criminal behaviours, including drug or alcohol abuse)
- Public order and riot squad police (around 400 police patrolling an event)
- Other (please specify)
- Don't know

Section 9: Harm reduction strategies at music festivals

Section 9: Harm reduction strategies at music festivals

You're towards the end now! Thank you for your time and effort so far! The following questions are investigating availability of different harm reductio water and first aid) at music festivals. These questions are for ALL festival-goers.

Which of the following harm reduction strategies did you see at the LAST music festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}?

Select ALL that apply	
☐	Signs for things like free water and first aid
☐	Free water stations
☐	Cheap / well priced food stalls
☐	First aid tent / service
☐	Shaded areas to sit
☐	Dedicated chill out tents / zones / areas
☐	Walk through cooling tent
☐	Water sprinklers on stages / tents
☐	Roaming first aiders / support people
☐	Information on drug safety / drug safety messages
☐	Information on your legal rights

- ☐ Other (please specify) _____
- ☐ I didn't see any of these strategies

Which of the following PROBLEMS did you experience at the LAST music festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}?

Select ALL that apply	
☐	Difficulty accessing FREE water *(due to lines, availability or not having a bottle to fill water with)*
☐	Difficulty accessing food *(due to availability OR the price deterred you)*
☐	Difficulty finding a shaded area to sit down
☐	Difficulty accessing toilet facilities *(includes waiting for a long period)*
☐	Felt uncomfortable due to overcrowding
☐	Felt uncomfortable due to overheating
☐	Felt unwell or overwhelmed in a tent or pavilion and had difficulty getting to an exit
☐	Needed help, but was unsure where to go
☐	Difficulty accessing first aid services *(includes waiting to be seen or trouble locating the service)*
☐	Difficulty getting transport after the festival *(includes waiting for a long period)*
☐	Other (please specify) _____
☐	I didn't experience any of these problems

Section 10: Experiences with police and drug dogs at music festivals

Section 10: Experiences with police and drug dogs at music festivals

The following questions will ask you about your experiences with police and drug detection dogs in association with music festivals. ***Please rememb completely anonymous.***

Thinking of the LAST festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}, did you hear or suspect in advance of arriving at the festival that drug detection dogs would/co

- ○ Yes
- ○ No

When you heard/suspected in advance of arriving that drug detection dogs might be there, which of the following did you do?

Please select ALL that apply

- ☐ I wasn't intending on taking illicit drugs so it didn't affect me
- ☐ Nothing, I just hoped for the best
- ☐ Decided NOT to take drugs at all that day
- ☐ Planned to conceal them well
- ☐ Got someone else to carry my drugs in for me
- ☐ Decided to take drugs less easily detected by the dogs
- ☐ Decided to take a smaller quantity of drugs to the festival
- ☐ Decided to take drugs before the festival, but not during
- ☐ Decided to time my arrival to avoid them
- ☐ Decided to send a spotter ahead/call a friend to report back police activity, drug dogs, etc.
- ☐ Decided to assess the situation when I arrived and avoid them
- ☐ Decided to try and buy drugs inside the festival
- ☐ Other (please specify) _____

Did you see any drug detection dogs outside or nearby the LAST music festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}?

- ○ Yes
- ○ No
- ○ Don't know / can't remember

When you saw the drug detection dogs, did you or anyone you were with have illicit drugs on them?

Please select ONE response

- ○ Yes, I had drugs on me
- ○ Yes, a person/people I was with had drugs on them
- ○ Yes, both me and a person/people I was with had drugs on them
- ○ No, neither I nor anyone I was with had drugs on them
- ○ Don't know

When you saw the drug detection dogs, what did you do?

Please select ALL that apply

- ☐ Nothing, just hoped for the best
- ☐ Dropped them on the ground
- ☐ Consumed all the drugs I had
- ☐ Consumed some of the drugs I had
- ☐ Just avoided the police and drug dogs
- ☐ Gave them to a friend (who carried them in for me)
- ☐ Gave them to a friend (who consumed them on the spot)
- ☐ Other (please specify) _____

You indicated that you consumed your drugs when you saw the dogs. Please tell us what you consumed and how you had originally intended / planned to use those drugs.

Drug / amount consumed
(eg. 2 ecstasy pills) _____

Intended use
(eg. I was originally planning to take 1 pill at 3pm and 1 at 6pm) _____

Thinking of the LAST festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}, which of the following types of police contact did you have?

This includes before, during or after the festival.

Please select ALL that apply

- ☐ Saw police, but no police contact
- ☐ Did not see police and no police contact
- ☐ Stopped by police while driving to or from the festival
- ☐ Stopped by police (due to 'identification' by a drug dog)
- ☐ Stopped by police (without 'identification' from a drug dog)
- ☐ Other police contact (please specify) _____

What was the outcome of being stopped by police while driving to or from ${q://QID331/ChoiceGroup/SelectedChoices}?

Please select ALL that apply

- ☐ They DID NOT find drugs (because I/we had no drugs)
- ☐ They DID NOT find drugs (even though I/we had drugs)
- ☐ They DID find drugs (please specify which drug/s) _____
- ☐ I was breathalysed
- ☐ I was drug tested
- ☐ Charged with a drug possession offence
- ☐ Charged with a drug supply offence
- ☐ Charged with a drug driving offence
- ☐ Charged with a drink driving offence
- ☐ Received a fine

- [ ] The vehicle was searched
- [ ] People within the vehicle were searched, but not strip searched
- [ ] People within the vehicle were strip searched
- [ ] Appeared in court
- [ ] Asked to attend an education session
- [ ] Given a prison sentence
- [ ] Other (please specify) _____

What was the outcome of being stopped by police due to an 'identification' by a drug detection dog at/nearby ${q://QID331/ChoiceGroup/SelectedChoices}?

Please select ALL that apply

- [ ] They DID NOT find drugs (because I had no drugs on me)
- [ ] They DID NOT find drugs (even though I had drugs on me)
- [ ] They DID find drugs on me (please specify which drug/s) _____
- [ ] I was strip searched
- [ ] I was searched, but not strip searched
- [ ] My drugs were confiscated
- [ ] I was arrested
- [ ] Appeared in court
- [ ] Charged with a drug possession offence
- [ ] Charged with a drug supply offence
- [ ] Given a spent conviction in court
- [ ] Given a prison sentence
- [ ] Received a fine
- [ ] Asked to attend an education session
- [ ] Other (please specify) _____

What was the outcome of being stopped by police without 'identification' from a drug detection dog at/nearby ${q://QID331/ChoiceGroup/SelectedChoices}?

Please select ALL that apply

- [ ] They DID NOT find drugs (because I had no drugs on me)
- [ ] They DID NOT find drugs (even though I had drugs on me)
- [ ] They DID find drugs on me (please specify which drug/s) _____
- [ ] I was strip searched
- [ ] I was searched, but not strip searched
- [ ] My drugs were confiscated
- [ ] I was arrested
- [ ] I appeared in court
- [ ] Charged with a drug possession offence
- [ ] Charged with a drug supply offence
- [ ] Given a spent conviction in court
- [ ] Given a prison sentence
- [ ] Received a fine
- [ ] Asked to attend an education session
- [ ] Other (please specify) _____

How have your experiences with police operations in association with music festivals impacted your perception of police?

Please select ALL that apply

No impact

- [ ] It hasn't affected my perception of police

Negative impacts

- [ ] It has undermined my respect for police
- [ ] I would feel less comfortable approaching police for help
- [ ] I think they unfairly target people
- [ ] I think they abuse their authority

Positive impacts

- [ ] It has increased my respect for police
- [ ] I would feel more comfortable approaching police for help
- [ ] I think they do a good job at festivals

Don't know

- [ ] Don't know how it has affected my perception

Other impacts

- [ ] Other impact/s (please specify) _____

There is concern that drug policing at music festivals may cause festival-goers to engage in riskier patterns of drug use.

Have you EVER done any of the following to avoid being detected by police with drugs (on your person or in your system)?

Please select ALL that apply

- [ ] Decided to take drugs before arriving at the festival
- [ ] Bought drugs inside the festival from an unknown or untrusted source
- [ ] Seen police/dogs when you arrived, panicked and consumed your drugs
- [ ] Hidden drugs internally in a body cavity (eg. mouth, vagina) to get them into the festival
- [ ] Swallowed your drugs before the festival and then retrieved them inside (eg. via vomiting)
- [ ] Taken a different drug to what you normally would have for the festival because you thought it was less detectable by police/drug detection dogs
- [ ] Consumed a different drug to what you normally would have for the festival because you thought it was less detectable by roadside drug testing
- [ ] Other risky drug behaviour (please specify) _____

- [ ] No, none of the above

Would you have taken drugs before the festival anyway?

- ○ No
- ○ Maybe
- ○ Yes
- ○ Yes, but not as many
- ○ Don't know

Section 11: Attitudes towards drug policy

Section 11: Attitudes towards drug policies

*You're almost finished! Following this there are only some basic demographic questions. The following questions are investigating festival-goer attitu and potential future drug policies and interventions at music festivals, such as **pill testing/drug checking.***

99 Ecstasy (MDMA) Tablets
Image © 2000 Erowid.org

Thinking again about the LAST festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}, how concerned were you about the content of your illicit drugs?

For example, how concerned were you that your 'ecstasy' might contain something other than MDMA.

- ○ Very concerned
- ○ Somewhat concerned
- ○ Not very concerned
- ○ Not concerned at all
- ○ Other (eg. if you used multiple drugs and were concerned about the content of one drug, but not another)

How confident were you that you knew what your illicit drugs contained?

- ○ Very confident
- ○ Somewhat confident
- ○ Not very confident
- ○ Not confident at all
- ○ Other (eg. if you used multiple drugs and were confident about the content of one drug, but not another)

Had you or someone you know already used/tried drugs from that 'batch' prior to you using them at ${q://QID331/ChoiceGroup/SelectedChoices}?

- ○ Yes
- ○ No
- ○ Don't know

Hypothetically, if a pill testing/drug checking service was available at the last festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}, OR in the days leading up to the festiva

considered using it (if it were FREE and there were no legal risks)?

Drug checking is a service where consumers voluntarily submit samples of suspected drugs for the purposes of analysing their content and/or purity. Drugs do not get confiscated.

- Definitely
- Probably
- Maybe
- Probably not
- Definitely not
- Don't know

Why wouldn't you definitely have accessed a pill testing/drug checking service?

Please select ALL that apply

- I trust my source so not necessary
- I wouldn't want to miss any of the festival
- Don't care that much about the drug content
- Fear of negative treatment / judgment by staff
- Fear of other people seeing / social stigma / embarrassment
- Fear of police watching me, stopping me and/or pursuing me after
- Because I had already used/tried drugs from that 'batch' so I knew what to expect
- Because someone I know had already used/tried drugs from that that 'batch' so I knew what to expect
- Other (please specify)

Where would you consider using a pill testing/drug checking service?

- On-site (at music festivals)
- Off-site (before the festival or in the days or weeks leading up to it)
- I would consider both on-site and off-site options
- I would not consider using the service at all

What would be your preferred location?

- No preference
- On-site (at music festivals)
- Off-site (before the festival or in the days or weeks leading up to it)
- Don't know

How much would you be willing to pay to use a pill testing/drug checking service?

- I would only use the service if it were free
- Up to $5 per test
- Up to $10 per test
- Up to $20 per test
- Up to $50 per test
- More than $50 per test
- Don't know

Hypothetically, if you had accessed a pill testing/drug checking service for the last festival you attended and the results indicated that your drugs DID NOT contain what you thought, whic have done?

Please select ALL that apply

- I would not have consumed it under any circumstances
- I would not have consumed it if the results indicated it contained something very dangerous
- I would not have consumed it if the results indicated it contained something unknown
- I would have consumed it if it contained another known recreational drug
- I would have researched the content and considered still using it
- I would have warned my friends
- I would have informed the supplier
- I would have consumed less
- I would have been more cautious
- Don't know
- Other (please specify)

Hypothetically, if you arrived at the last festival you attended with drugs in your possession and were concerned about being detected by the police, would you have considered throwing y AMNESTY BIN?

An amnesty bin is a bin located near the entrance of music festivals where you can safely dispose of any drugs in your possession without any fear of legal consequences.

- Definitely
- Probably
- Maybe
- Probably not
- Definitely not

- Don't know

Why wouldn't you definitely use a drug amnesty bin?

Please select ALL that apply

- Too much effort getting the drugs
- Would make the festival less enjoyable
- Don't want to waste the money spent on the drugs
- Embarrassment, judgment or stigma of others seeing me
- Wouldn't do it unless I was extremely concerned that I would get caught
- Concerned about police watching me, stopping me and/or pursuing me after
- Depends which drugs I had on me
- Don't know
- Other (please specify)

To what extent do you support the following drug strategies at music festivals and how effective do you think they are in reducing drug-related harm?

	Level of support					Perceived effectiveness in reducing harm				
	Strongly support	Support	Neutral	Oppose	Strongly oppose	Very Effective	Effective	Neutral	Ineffective	Very ineffective
Zero-tolerance drug policies										
Drug detection dog operations										
Banning / canceling festivals										
Increasing drug policing at festivals										

To what extent would you support the following drug policies and interventions being implemented at festivals in the future?

	Level of support				
	Strongly support	Support	Neutral	Oppose	Strongly oppose
A harm reduction drug policy *(to replace zero-tolerance policies)*					
ON-site pill testing / drug checking					
OFF-site pill testing / drug checking					
Drug amnesty bins at festival entrances					
Low cost food stalls / tents					
Mandatory free water stations					
Mandatory on-site medical standards *(eg legislation to ensure festivals have qualified medical professionals, not just volunteers)*					
A $10 medical levy on ticket prices					

There is some debate about what type of role police should have at music festivals. Which of the following do you think would be the most appropriate level of policing at music festivals

Please select ONE response

- No police present or patrolling festivals at all
- Police patrolling for the purpose of crowd control and crowd safety, but not for illicit drug use
- Police patrolling for the purpose of all criminal behaviours, including illicit drug use
- Other (please specify)
- Don't know

Section 12: Demographics

Section 12: Demographics

*This is the FINAL SECTION! Thank you for hanging in there! In this last section we would like to get a little more background information from you. **P information you provide is completely anonymous.***

How remote is the area you live in?

- Inner city (eg. the CBD)
- Inner suburbs (eg. Subiaco or Northcote)
- Outer suburbs (eg. Midland or Ringwood)
- Regional (eg. Busselton or Bendigo)
- Remote (eg. Kalgoorlie)
- Don't know

What type of accommodation do you currently live in?

Please select ONE response

- Own house / unit
- Rented house / unit
- Parents' / family house
- Boarding house / hostel
- No fixed address / homeless (including couch surfing)
- Other accommodation (please specify)

Were you born in Australia?

- Yes
- No

What country were you born in?

What year did you arrive in Australia?

Is English the main language you speak at home?

- Yes
- No

What is the main language you speak at home?

- Italian
- Indonesian
- Greek
- Cantonese
- Dutch
- Arabic
- Mandarin
- Vietnamese
- Afrikaans
- Spanish
- Other

What is the main language you speak at home?

Are you of Aboriginal or Torres Strait Islander origin?

- No
- Yes, Aboriginal
- Yes, Torres Strait Islander
- Yes, both Aboriginal and Torres Strait Islander

Which of the following best describes your sexual identity?

- Heterosexual (straight)
- Gay male
- Lesbian
- Bisexual
- Not sure or undecided
- Other (specify)

Which of the following best describes your current marital status?

Please select ONE response

- Never married
- Married (including de facto or living with life partner)

- Separated, but not divorced
- Divorced
- Widowed

What is the highest year of school you have completed?

Have you completed a trade certificate or other educational qualification? (eg. a Bachelor Degree)

- No
- Yes

What is the highest qualification you have obtained?

Please only include completed qualifications, not qualifications you are in the process of completing.

- Trade certificate
- Non-trade certificate
- Associate Diploma
- Undergraduate Diploma
- Bachelor Degree
- Master's Degree, Postgraduate Degree or Postgraduate Diploma
- Doctorate
- Other (please specify)

What is your current employment status?

Please select ALL that apply

- Full-time work
- Part-time or causal work
- Self-employed
- Full-time student
- Part-time student
- Benefits / pension
- Unemployed (looking for work)
- Unemployed (not looking for work)
- Home duties (stay-at-home parent or carer)
- Other (please specify)

What was your main source of income in the past month?

Please select ONE response

- Wage or salary
- Self-employment
- Government pension, allowance or benefit
- Parental allowance
- Criminal activity
- No income
- Other (please specify)
- Don't want to answer

Which of the following groups would best represent your personal annual income, before tax, from all sources?

Please select ONE response

$1 - $7,799 ($1-$149/week)
$7,800 - $12,999 ($150-$249/week)
$13,000 - $20,799 ($250-$399/week)
$20,800 - $31,199 ($400-$599/week)
$31,200 - $41,599 ($600-$799/week)
$41,600 - $51,999 ($800-$999/week)
$52,000 - $67,599 ($1,000-$1,299/week)
$67,600 - $83,199 ($1,300-$1599/week)
$83,200 - $103,999 ($1,600-$1,999/week)
$104,000 - $145,599 ($2,000-$2,799/week)

Section 3: Drug use at music festivals

Section 3: Drug use at music festivals

*The following questions are about your use of drugs (including alcohol) specifically associated with music festivals. We are interested in drug use **BE** pre-event parties/gatherings or just before entering; **DURING** the festival/while inside the event grounds; and **AFTER** the festival at post-event after p or just to help you wind down/relax/sleep.*

For the purpose this survey, any drug use at a festival campsite is considered drug use DURING the festival/while inside the grounds.

Please indicate whether you have EVER used alcohol or illicit drugs for a music festival (column 1), whether you have in the last 12 MONTHS (column 2) and HOW OFTEN you have (c

Remember, illicit drugs can also include drugs like dexies, nitrous/nangs, synthetic cannabis and NBOMe.

	EVER used for a festival Includes before, during after after		Used for a festival in the LAST 12 MONTHS Includes before, during and after		HOW OFTEN for festivals In the LAST 12 MONTHS
	Yes	No	Yes	No	
Alcohol	○	○	○	○	▼
Illicit drugs	○	○	○	○	▼

Please indicate whether you used alcohol or illicit drugs for the LAST festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices} (column 1) and WHEN you consumed them (co

Remember, any drug use at a festival campsite is considered drug use DURING the festival/while inside the grounds.

	Used for the LAST festival- ${q://QID331/ChoiceGroup/SelectedChoices} Includes before, during and after		WHEN consumed for ${q://QID331/ChoiceGroup/SelectedChoices} Select ALL that apply			
	Yes	No	Before the festival	During the festival	After the festival	N/A- No use
Alcohol	○	○	☐	☐	☐	☐
Illicit drugs	○	○	☐	☐	☐	☐

Why didn't you consume ILLICIT drugs during ${q://QID331/ChoiceGroup/SelectedChoices}?

Please select ALL that apply

- ☐ I have never used illicit drugs
- ☐ I no longer / rarely use illicit drugs
- ☐ I no longer use illicit drugs at festivals
- ☐ Friends weren't using illicit drugs
- ☐ I could not obtain any illicit drugs
- ☐ I knewthere would be drug dogs
- ☐ I did not want to risk getting caught
- ☐ I saw drug dogs outside / nearby
- ☐ I was driving / designated driver
- ☐ Illicit drugs were not conducive to this festival
- ☐ I have been caught with illicit drugs at a festival in the past
- ☐ Other (please specify)

What was the MAIN reason you didn't consume ILLICIT drugs during ${q://QID331/ChoiceGroup/SelectedChoices}?

Please select ONE response

- ○ » I have never used illicit drugs
- ○ » I no longer / rarely use illicit drugs
- ○ » I no longer use illicit drugs at festivals
- ○ » Friends weren't using illicit drugs
- ○ » I could not obtain any illicit drugs
- ○ » I knewthere would be drug dogs

- » I did not want to risk getting caught
- » I saw drug dogs outside / nearby
- » I was driving / designated driver
- » Illicit drugs were not conducive to this festival
- » I have been caught with illicit drugs at a festival in the past
- » Other (please specify)

Why didn't you consume ALCOHOL during ${q://QID331/ChoiceGroup/SelectedChoices}?

Please select ALL that apply

- [ ] I was underage
- [ ] I don't drink alcohol
- [ ] I rarely drink alcohol
- [ ] Friends weren't drinking
- [ ] Alcohol is too expensive there
- [ ] I was driving / designated driver
- [ ] Alcohol wasn't sold at this festival
- [ ] Lines are too long for drinks / toilets
- [ ] Alcohol wasn't conducive to this festival
- [ ] Didn't want to mix alcohol and drugs
- [ ] Other (please specify)

What was the MAIN reason you didn't consume ALCOHOL during ${q://QID331/ChoiceGroup/SelectedChoices}?

- » I was underage
- » I don't drink alcohol
- » I rarely drink alcohol
- » Friends weren't drinking
- » Alcohol is too expensive there
- » I was driving / designated driver
- » Alcohol wasn't sold at this festival
- » Lines are too long for drinks / toilets
- » Alcohol wasn't conducive to this festival
- » Didn't want to mix alcohol and drugs
- » Other (please specify)

Earlier you told us that the LAST festival you attended was ${q://QID331/ChoiceGroup/SelectedChoices}. Can you please tell us which days of this festival you attended?

It was a ONE DAY FESTIVAL

- [ ] Day 1 of a 1 day festival

It was a MULTI-DAY FESTIVAL
Day 1= the day the festival started, NOT the day you arrived
Please select ALL days attended, not just days drugs were used

- [ ] Day 1
- [ ] Day 2
- [ ] Day 3
- [ ] Day 4
- [ ] Day 5
- [ ] Day 6
- [ ] Day 7

Did you camp at this festival?

This relates to official on-site festival campsites only, it does not include if you camped in the area.

- Yes
- No

Where did you mainly consume/ingest your drugs (including alcohol)?

- At the festival campsite
- In the main festival area
- Mix of the campsite and the main area
- Other (please specify)

Where did you spend the most time intoxicated from drugs (including alcohol)?

- At the festival campsite
- In the main festival area
- Mix of the campsite and the main area
- Other (please specify)

Which of the following drugs (including alcohol and tobacco) did you use in association with the LAST festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}?

Again, this includes drug use before, during and after the festival.
If you attended a multi-day festival, please include ALL the drugs you used over the course of the festival.

- [ ] Alcohol
- [ ] Tobacco (cigarettes)
- [ ] Benzodiazepines (eg. Valium, Xanax)
- [ ] Cannabis (marijuana, weed)
- [ ] Cocaine
- [ ] Crystal methamphetamine (ice, meth)
- [ ] DMT
- [ ] Ecstasy/MDMA
- [ ] GHB (fantasy, liquid E)
- [ ] Ketamine (K, special K)
- [ ] LSD (acid)
- [ ] MDA
- [ ] Magic mushrooms
- [ ] Pharmaceutical stimulants (eg. Ritalin, dexies)
- [ ] Nitrous oxide (nangs, balloons)
- [ ] Amyl nitrate (rush, poppers)
- [ ] Heroin
- [ ] Other opiates/opioids (eg. oxycodone, tramadol)
- [ ] Speed
- [ ] Steroids (juice)
- [ ] Synthetic cannabis (eg. Kronic)
- [ ] Alpha-PVP (flakka, gravel)
- [ ] 2C-x family (eg. 2C-B, 2C-I)
- [ ] NBOMe series (eg. 25I-NBOMe)
- [ ] Other 1 (please specify one drug only)
- [ ] Other 2 (please specify one drug only)
- [ ] Other 3 (please specify one drug only)

Please tell us about your use of ALCOHOL before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

Please refer to the below guide to help you estimate how many standard drinks you consumed.

	WHEN did you drink alcohol?		What type/s of alcohol did you drink?					Approximately how many standard drinks did you have?
	Yes	No	Beer	Wine	Pre-mix	Cider	Spirits/ post-mix	(eg. 1, 10, 20) - no ranges
Before the festival	○	○	☐	☐	☐	☐	☐	
During the festival	○	○	☐	☐	☐	☐	☐	
After the festival	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of ALCOHOL on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

Please refer to the below guide to help estimate how many standard drinks you consumed.

	WHEN did you drink alcohol?		What type/s of alcohol did you drink?					Approximately how many standard drinks did you have?
	Yes	No	Beer	Wine	Pre-mix	Cider	Spirits/ post-mix	(eg. 1, 10, 20) - no ranges
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	
» Day 1	○	○	☐	☐	☐	☐	☐	
» Day 2	○	○	☐	☐	☐	☐	☐	
» Day 3	○	○	☐	☐	☐	☐	☐	
» Day 4	○	○	☐	☐	☐	☐	☐	
» Day 5	○	○	☐	☐	☐	☐	☐	
» Day 6	○	○	☐	☐	☐	☐	☐	
» Day 7	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of TOBACCO before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use tobacco?		What type/s of tobacco did you smoke?				If you smoked cigarettes, approximately how many did you have?
	Yes	No	Cigarettes	Cigars	Pipe tobacco	Shisha tobacco	(eg. 0.5, 1, 2) - no ranges
Before the festival	○	○	☐	☐	☐	☐	
During the festival	○	○	☐	☐	☐	☐	
After the festival	○	○	☐	☐	☐	☐	

Please tell us about your use of TOBACCO on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use tobacco?		What type/s of tobacco did you smoke?				If you smoked cigarettes, approximately how many did you have?
	Yes	No	Cigarettes	Cigars	Pipe tobacco	Shisha tobacco	(eg. 0.5, 1, 2) - no ranges
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	
» Day 1	○	○	☐	☐	☐	☐	
» Day 2	○	○	☐	☐	☐	☐	
» Day 3	○	○	☐	☐	☐	☐	
» Day 4	○	○	☐	☐	☐	☐	
» Day 5	○	○	☐	☐	☐	☐	
» Day 6	○	○	☐	☐	☐	☐	
» Day 7	○	○	☐	☐	☐	☐	

Which forms of ecstasy/MDMA did you use in association with the last festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}?

Please note this relates to how the product was sold to you. Therefore, if you were sold capsules which contained crystals, you would select capsules ONLY from the list (not capsules and crystals).

☐ Ecstasy pills/tablets
☐ Ecstasy/MDMA powder
☐ Ecstasy/MDMA crystals
☐ Ecstasy/MDMA caps (powder/crystal)

Please tell us about your use of ECSTASY PILLS before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you take ecstasy pills?		HOW did you take ecstasy pills?					HOW MANY pills did you have?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	(eg. 0.5, 1, 2)
Before the festival	○	○	☐	☐	☐	☐	☐	
During the festival	○	○	☐	☐	☐	☐	☐	
After the festival	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of ECSTASY PILLS on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you take ecstasy pills?		HOW did you take ecstasy pills?					HOW MANY pills did you have?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	(eg. 0.5, 1, 2)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	

» Day 1	○	○	☐	☐	☐	☐	☐	☐
» Day 2	○	○	☐	☐	☐	☐	☐	☐
» Day 3	○	○	☐	☐	☐	☐	☐	☐
» Day 4	○	○	☐	☐	☐	☐	☐	☐
» Day 5	○	○	☐	☐	☐	☐	☐	☐
» Day 6	○	○	☐	☐	☐	☐	☐	☐
» Day 7	○	○	☐	☐	☐	☐	☐	☐

Please tell us about your use of ECSTASY/MDMA CAPS before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use MDMA caps?		HOW did you use MDMA caps?					HOW MANY caps did you have?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	(eg. 0.5, 1, 2)
Before the festival	○	○	☐	☐	☐	☐	☐	☐
During the festival	○	○	☐	☐	☐	☐	☐	☐
After the festival	○	○	☐	☐	☐	☐	☐	☐

Please tell us about your use of ECSTASY/MDMA CAPS on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use MDMA caps?		HOW did you use MDMA caps?					HOW MANY caps did you have?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	(eg. 0.5, 1, 2)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	☐
» Day 1	○	○	☐	☐	☐	☐	☐	☐
» Day 2	○	○	☐	☐	☐	☐	☐	☐
» Day 3	○	○	☐	☐	☐	☐	☐	☐
» Day 4	○	○	☐	☐	☐	☐	☐	☐
» Day 5	○	○	☐	☐	☐	☐	☐	☐
» Day 6	○	○	☐	☐	☐	☐	☐	☐
» Day 7	○	○	☐	☐	☐	☐	☐	☐

Please tell us about your use of ECSTASY/MDMA POWDER before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use MDMA powder?		HOW did you use MDMA powder?					HOW MUCH MDMA powder did you use in lines **OR** grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams (eg. 0.25, 0.5, 1)
Before the festival	○	○	☐	☐	☐	☐	☐	☐	☐
During the festival	○	○	☐	☐	☐	☐	☐	☐	☐
After the festival	○	○	☐	☐	☐	☐	☐	☐	☐

Please tell us about your use of ECSTASY/MDMA POWDER on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use MDMA powder?		HOW did you use MDMA powder?					HOW MUCH MDMA powder did you use in lines **OR** grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams (eg. 0.25, 0.5, 1)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	☐	☐
» Day 1	○	○	☐	☐	☐	☐	☐	☐	☐
» Day 2	○	○	☐	☐	☐	☐	☐	☐	☐
» Day 3	○	○	☐	☐	☐	☐	☐	☐	☐
» Day 4	○	○	☐	☐	☐	☐	☐	☐	☐
» Day 5	○	○	☐	☐	☐	☐	☐	☐	☐
» Day 6	○	○	☐	☐	☐	☐	☐	☐	☐
» Day 7	○	○	☐	☐	☐	☐	☐	☐	☐

Please tell us about your use of ecstasy/MDMA CRYSTALS before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use MDMA crystals?		HOW did you use MDMA crystals?					HOW MUCH did you use in lines **OR** grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams (eg. 0.25, 0.5, 1)
Before the festival	○	○	☐	☐	☐	☐	☐	☐	☐
During the festival	○	○	☐	☐	☐	☐	☐	☐	☐

After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of ecstasy/MDMA CRYSTALS on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use MDMA crystals?		HOW did you use MDMA crystals?					HOW MUCH did you use in lines **OR** grams?		
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams (eg. 0.25, 0.5, 1)	Answer 3
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐			
» Day 1	○	○	☐	☐	☐	☐	☐			
» Day 2	○	○	☐	☐	☐	☐	☐			
» Day 3	○	○	☐	☐	☐	☐	☐			
» Day 4	○	○	☐	☐	☐	☐	☐			
» Day 5	○	○	☐	☐	☐	☐	☐			
» Day 6	○	○	☐	☐	☐	☐	☐			
» Day 7	○	○	☐	☐	☐	☐	☐			

Please tell us about your use of AMYL NITRATE (rush, poppers) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use rush/poppers?	
	Yes	No
Before the festival	○	○
During the festival	○	○
After the festival	○	○

Please tell us about your use of AMYL NITRATE (rush, poppers) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use rush/poppers?	
	Yes	No
» Day 1 of a 1 day festival	○	○
» Day 1	○	○
» Day 2	○	○
» Day 3	○	○
» Day 4	○	○
» Day 5	○	○
» Day 6	○	○
» Day 7	○	○

Please tell us about your use of Alpha-PVP (gravel, flakka) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use flakka?		HOW did you use flakka?					HOW MUCH flakka did you use in lines **OR** grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of Alpha-PVP (gravel, flakka) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use flakka?		HOW did you use flakka?					HOW MUCH flakka did you use in lines **OR** grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of BENZODIAZEPINES before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

Benzodiazepine examples: Ativan (lorazepam), Dalmane (flurazepam), Valium (diazepam), Doral (quazepam), Halcion (triazolam), Rivotrol, Klonopin (clonazepam), Librium (chlordiazepoxide), Paxipam (halazepam), P (temazepam), Alepam, Serepax (oxazepam), Tranxene-SD (clorazepate), Xanax (alprazolam)

	WHEN did you use a benzo?		HOW did you use benzos?					What benzo brand was it and how much did you have?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify type or brand	Quantity consumed
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of BENZODIAZEPINES on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

Benzodiazepine examples: Ativan (lorazepam), Dalmane (flurazepam), Valium (diazepam), Doral (quazepam), Halcion (triazolam), Rivotrol, Klonopin (clonazepam), Librium (chlordiazepoxide), Paxipam (halazepam), Pr (temazepam), Alepam, Serepax (oxazepam), Tranxene-SD (clorazepate), Xanax (alprazolam)

	WHEN did you use a benzo?		HOW did you use benzos?					What benzo brand was it and how much did you have?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify type or brand	Quantity consumed
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of CANNABIS (marijuana) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use cannabis?		HOW did you use cannabis?			HOW MUCH did you use?		
	Yes	No	Swallow	Smoke	Vaporise	Cones	Joints	Brownies/cookies
Before the festival	○	○	☐	☐	☐			
During the festival	○	○	☐	☐	☐			
After the festival	○	○	☐	☐	☐			

Please tell us about your use of CANNABIS (marijuana) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use cannabis?		HOW did you use cannabis?			HOW MUCH did you use?		
	Yes	No	Swallow	Smoke	Vaporise	Cones	Joints	Brownies/cookies
» Day 1 of a 1 day festival	○	○	☐	☐	☐			
» Day 1	○	○	☐	☐	☐			
» Day 2	○	○	☐	☐	☐			
» Day 3	○	○	☐	☐	☐			
» Day 4	○	○	☐	☐	☐			
» Day 5	○	○	☐	☐	☐			
» Day 6	○	○	☐	☐	☐			
» Day 7	○	○	☐	☐	☐			

Please tell us about your use of COCAINE before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use cocaine?		HOW did you use cocaine?					HOW MUCH cocaine did you use in lines **OR** grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams (eg. 0.1, 0.5, 1)
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of COCAINE on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use cocaine?		HOW did you use cocaine?					HOW MUCH cocaine did you use in lines **OR** grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams (eg. 0.1, 0.5, 1)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		

» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of CYRSTAL METHAMPHETAMINE (ice, meth) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use ice?		HOW did you use ice?					HOW MUCH ice did you use in lines **OR** points?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Points
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of CYRSTAL METHAMPHETAMINE (ice, meth) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use ice?		HOW did you use ice?					HOW MUCH ice did you use in lines **OR** points?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Points
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of DMT before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use DMT?		HOW did you use DMT?					HOW MUCH DMT did you use?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify in any form
Before the festival	○	○	☐	☐	☐	☐	☐	
During the festival	○	○	☐	☐	☐	☐	☐	
After the festival	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of DMT on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use DMT?		HOW did you use DMT?					HOW MUCH DMT did you use?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify in any form
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	
» Day 1	○	○	☐	☐	☐	☐	☐	
» Day 2	○	○	☐	☐	☐	☐	☐	
» Day 3	○	○	☐	☐	☐	☐	☐	
» Day 4	○	○	☐	☐	☐	☐	☐	
» Day 5	○	○	☐	☐	☐	☐	☐	
» Day 6	○	○	☐	☐	☐	☐	☐	
» Day 7	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of GHB (fantasy, liquid E) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use GHB?		HOW did you use GHB?					HOW MUCH GHB did you use?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify in mL (eg. 1.5, 3)
Before the festival	○	○	☐	☐	☐	☐	☐	
During the festival	○	○	☐	☐	☐	☐	☐	
After the festival	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of GHB (fantasy, liquid E) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use GHB?		HOW did you use GHB?					HOW MUCH GHB did you use?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify in mL (eg. 1.5, 3)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	
» Day 1	○	○	☐	☐	☐	☐	☐	
» Day 2	○	○	☐	☐	☐	☐	☐	
» Day 3	○	○	☐	☐	☐	☐	☐	
» Day 4	○	○	☐	☐	☐	☐	☐	
» Day 5	○	○	☐	☐	☐	☐	☐	
» Day 6	○	○	☐	☐	☐	☐	☐	
» Day 7	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of HEROIN before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use heroin?		HOW did you use heroin?					HOW MUCH heroin did you use?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify in grams (eg. 0.1)
Before the festival	○	○	☐	☐	☐	☐	☐	
During the festival	○	○	☐	☐	☐	☐	☐	
After the festival	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of HEROIN on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use heroin?		HOW did you use heroin?					HOW MUCH heroin did you use?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify in grams (eg. 0.1)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	
» Day 1	○	○	☐	☐	☐	☐	☐	
» Day 2	○	○	☐	☐	☐	☐	☐	
» Day 3	○	○	☐	☐	☐	☐	☐	
» Day 4	○	○	☐	☐	☐	☐	☐	
» Day 5	○	○	☐	☐	☐	☐	☐	
» Day 6	○	○	☐	☐	☐	☐	☐	
» Day 7	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of KETAMINE (special K, K) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use ketamine?		HOW did you use ketamine?					HOW MUCH ketamine did you use in bumps **OR** mL/mg?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Bumps	mL/mg
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of KETAMINE (K, special K) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use ketamine?		HOW did you use ketamine?					HOW MUCH ketamine did you use in bumps **OR** mL/mg?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Bumps	mL/mg
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of LSD (acid) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use LSD?		HOW did you use LSD?		HOW MANY LSD tabs did you have?
	Yes	No	Sublingual (under tongue)	Buccal (in the cheek)	(eg. 0.5, 1, 2)
Before the festival	○	○	☐	☐	
During the festival	○	○	☐	☐	
After the festival	○	○	☐	☐	

Please tell us about your use of LSD (acid) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use LSD?		HOW did you use LSD?		HOW MANY LSD tabs did you have?
	Yes	No	Sublingual (under tongue)	Buccal (in the cheek)	(eg. 0.5, 1, 2)
» Day 1 of a 1 day festival	○	○	☐	☐	
» Day 1	○	○	☐	☐	
» Day 2	○	○	☐	☐	
» Day 3	○	○	☐	☐	
» Day 4	○	○	☐	☐	
» Day 5	○	○	☐	☐	
» Day 6	○	○	☐	☐	
» Day 7	○	○	☐	☐	

Please tell us about your use of MDA before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use MDA?		HOW did you use MDA?					HOW MUCH MDA did you use in lines OR grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of MDA on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use it MDA?		HOW did you use MDA?					HOW MUCH MDA did you use in lines OR grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of MAGIC MUSHROOMS before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use mushrooms?		HOW did you use mushrooms?				
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft
Before the festival	○	○	☐	☐	☐	☐	☐
During the festival	○	○	☐	☐	☐	☐	☐
After the festival	○	○	☐	☐	☐	☐	☐

Please tell us about your use of MAGIC MUSHROOMS on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use mushrooms?		HOW did you use mushrooms?				
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐

» Day 1	○	○	☐	☐	☐	☐	☐
» Day 2	○	○	☐	☐	☐	☐	☐
» Day 3	○	○	☐	☐	☐	☐	☐
» Day 4	○	○	☐	☐	☐	☐	☐
» Day 5	○	○	☐	☐	☐	☐	☐
» Day 6	○	○	☐	☐	☐	☐	☐
» Day 7	○	○	☐	☐	☐	☐	☐

Please tell us about your use of NITROUS OXIDE (nangs, balloons, whippets) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use nitrous/nangs?		HOW MANY nitrous bulbs did you use?
	Yes	No	(eg. 1, 2, 10, 25)
Before the festival	○	○	
During the festival	○	○	
After the festival	○	○	

Please tell us about your use of NITROUS OXIDE (nangs, balloons, whippets) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use nitrous/nags?		HOW MANY nitrous bulbs did you use?
	Yes	No	(eg. 1, 2, 10, 25)
» Day 1 of a 1 day festival	○	○	
» Day 1	○	○	
» Day 2	○	○	
» Day 3	○	○	
» Day 4	○	○	
» Day 5	○	○	
» Day 6	○	○	
» Day 7	○	○	

Please tell us about your use of OTHER OPIATES/OPIOIDS (for non-medical purposes) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

Types of opiates: Oxycodone/Oxycontin, Morphine, MS Contin, Tramadol, Panadeine Forte

	WHEN did you use an opiate?		HOW did you use the opiate?					What type of opiate was it and how much did you have?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Type (eg. Oxycontin)	Quantity consumed
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

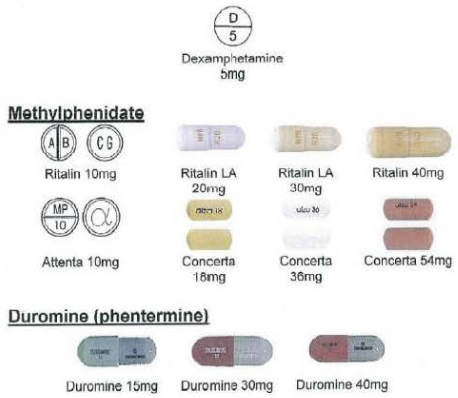
Please tell us about your use of OTHER OPIATES/OPIOIDS (for non-medical purposes) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

Types of opiates: Oxycodone/Oxycontin, Morphine, MS Contin, Tramadol, Panadeine Forte

	WHEN did you use an opiate/opioid?		HOW did you use the opiate?					What type of opiate was it and how much did you have?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Type (eg. Oxycontin)	Quantity consumed
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of PHARMACEUTICAL STIMULANTS (for non-medical purposes) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

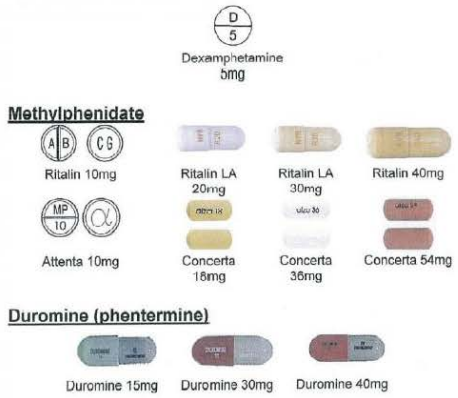
Pharmaceutical stimulants examples: Dexamphetamine (dexies), methylphenidate (Ritalin), phentermine (Duromine)



	WHEN did you use pharmaceutical stimulants?		HOW did you use pharmaceutical stimulants?					What type of pharmaceutical stimulant was it and how much did you have?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Type (eg. dex)	Quantity consumed
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of PHARMACEUTICAL STIMULANTS (for non-medical purposes) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

Pharmaceutical stimulant examples: Dexamphetamine (dexies), methylphenidate (Ritalin), phentermine (Duromine)



	WHEN did you use pharmaceutical stimulants?		HOW did you use pharmaceutical stimulants?					What type of pharmaceutical stimulant was it and how much did you have?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Type (eg. Dex)	Quantity consumed
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of SPEED before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use speed?		HOW did you use speed?					HOW MUCH speed did you have in lines OR grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams
Before the festival	○	○	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of SPEED on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}

	WHEN did you use speed?		HOW did you use speed?					HOW MUCH speed did you have in lines OR grams?	
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Lines	Grams
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐		

Please tell us about your use of STEROIDS before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use steroids?		HOW did you use steroids?					HOW MUCH did you use?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify in grams (eg. 0.1, 0.5, 1)
Before the festival	○	○	☐	☐	☐	☐	☐	
During the festival	○	○	☐	☐	☐	☐	☐	
After the festival	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of STEROIDS on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use steroids?		HOW did you use steroids?					HOW MUCH did you use?
	Yes	No	Swallow	Snort	Smoke	Inject	Shelve/shaft	Specify in grams (eg. 0.1, 0.5, 1)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	
» Day 1	○	○	☐	☐	☐	☐	☐	
» Day 2	○	○	☐	☐	☐	☐	☐	
» Day 3	○	○	☐	☐	☐	☐	☐	
» Day 4	○	○	☐	☐	☐	☐	☐	
» Day 5	○	○	☐	☐	☐	☐	☐	
» Day 6	○	○	☐	☐	☐	☐	☐	
» Day 7	○	○	☐	☐	☐	☐	☐	

Please tell us about your use of SYNTHETIC CANNABIS before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

Brand examples: K2/Spice, Kronic, Chronic, Bombay Blue

	WHEN did you use synthetic cannabis?		HOW did you use synthetic cannabis?			What brand was it and how much did you have?	
	Yes	No	Swallow	Smoke	Vaporise	Specify the brand	Quantity consumed
Before the festival	○	○	☐	☐	☐		
During the festival	○	○	☐	☐	☐		
After the festival	○	○	☐	☐	☐		

Please tell us about your use of SYNTHETIC CANNABIS on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

Brand examples: K2/Spice, Kronic, Chronic, Bombay Blue

	WHEN did you use synthetic cannabis?		HOW did you use synthetic cannabis?			What brand was it and how much did you have?	
	Yes	No	Swallow	Smoke	Vaporise	Specify the brand	Quantity consumed
» Day 1 of a 1 day festival	○	○	☐	☐	☐		

» Day 1	○	○	☐	☐	☐		
» Day 2	○	○	☐	☐	☐		
» Day 3	○	○	☐	☐	☐		
» Day 4	○	○	☐	☐	☐		
» Day 5	○	○	☐	☐	☐		
» Day 6	○	○	☐	☐	☐		
» Day 7	○	○	☐	☐	☐		

Please tell us about your use of 2C-x FAMILY (eg. 2C-B, 2C-I) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use 2C-x?		HOW did you use 2C-x?						What 2C drug was it and how much did you have?	
	Yes	No	Swallow	Sublingual/ buccal	Snort	Smoke	Inject	Shelve/shaft	Specify the drug (eg. 2C-B)	Quantity consumed (eg. 2 tabs)
Before the festival	○	○	☐	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐	☐		

Please tell us about your use of 2C-x FAMILY (eg. 2C-B, 2C-I) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use 2C-x?		HOW did you use 2C-x?						What 2C drug was it and how much did you have?	
	Yes	No	Swallow	Sublingual/ buccal	Snort	Smoke	Inject	Shelve/shaft	Specify the drug (eg. 2C-B)	Quantity consumed (eg. 2 tabs)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐	☐		

Please tell us about your use of NBOMe (eg. 25B-NBOMe) before, during and after ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use NBOMe?		HOW did you use NBOMe?						What NBOMe drug was it and how much did you have?	
	Yes	No	Swallow	Sublingual/ buccal	Snort	Smoke	Inject	Shelve/shaft	Specify the drug (eg. 25I-NBOMe)	Quantity consumed (eg. 2 tabs)
Before the festival	○	○	☐	☐	☐	☐	☐	☐		
During the festival	○	○	☐	☐	☐	☐	☐	☐		
After the festival	○	○	☐	☐	☐	☐	☐	☐		

Please tell us about your use of NBOMe (eg. 25B-NBOMe) on each day you attended ${q://QID331/ChoiceGroup/SelectedChoices}.

	WHEN did you use NBOMe?		HOW did you use NBOMe?						What NBOMe drug was it and how much did you have?	
	Yes	No	Swallow	Sublingual/ buccal	Snort	Smoke	Inject	Shelve/shaft	Specify the drug (eg. 25I-NBOMe)	Quantity consumed (eg. 2 tabs)
» Day 1 of a 1 day festival	○	○	☐	☐	☐	☐	☐	☐		
» Day 1	○	○	☐	☐	☐	☐	☐	☐		
» Day 2	○	○	☐	☐	☐	☐	☐	☐		
» Day 3	○	○	☐	☐	☐	☐	☐	☐		
» Day 4	○	○	☐	☐	☐	☐	☐	☐		
» Day 5	○	○	☐	☐	☐	☐	☐	☐		
» Day 6	○	○	☐	☐	☐	☐	☐	☐		
» Day 7	○	○	☐	☐	☐	☐	☐	☐		

The following questions ask about your attitudes and intentions related to ILLICIT drug use at music festivals. It's important to note that we make no a illicit drug use by you or within your social network. ***Again, please remember this survey is completely anonymous.***

Do you think illicit drug use is a normal feature of attending music festivals in ${q://QID52/ChoiceGroup/SelectedChoices}?

○

Yes
No
Don't know

What proportion of your friends use illicit drugs for music festivals?
All
Most
About half
A few
None
Don't know

How likely are you to use an illicit drug for a music festival in the future?
Extremely likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Extremely unlikely

In the future, how likely are you to attend a music festival WITHOUT using any illicit drugs?
Extremely likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Extremely unlikely

Section 7: Access to and barriers to support services

Section 7: Access and barriers to support services

The following questions are investigating contact you may have had with support services in relation to drug use at music festivals, as well as any pe accessing support services such as on-site first aid.

When you experienced '*${q://QID116/ChoiceGroup/SelectedChoices}*' at the LAST festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}, what did you do?

Please select ALL that apply

- Don't know / can't remember
- I did nothing
- Ate food
- Drank water
- Found shade
- Helped / monitored by friends
- Helped by roaming support (eg. Red Frogs Crew and Save-a-Mate)
- Went to the on-site First Aid Tent
- Went to the hospital emergency department
- Was admitted into hospital

- [ ] Rested / sat down
- [ ] Left the festival early
- [ ] Slowed down alcohol / drug use
- [ ] Didn't make it to the festival
- [ ] Saw my GP after the festival
- [ ] Other (please specify)

Have you EVER gone to a first aid tent/service at a music festival for a problem related to ILLICIT drug use?

- ○ Yes
- ○ No

Have you EVER CONSIDERED going to a first aid tent/service at a music festival for a problem related to ILLICIT drug use, or thought that you should have in hindsight?

- ○ Yes
- ○ No

What was it that STOPPED YOU from going to the first aid service?

Please select ALL that apply

- [ ] Not sure
- [ ] Embarrassment
- [ ] I jumped the fence
- [ ] Fear of legal issues
- [ ] Couldn't be bothered
- [ ] I was attending underage
- [ ] Bad experience previously
- [ ] Decided it wasn't serious enough
- [ ] My friends encouraged me not to
- [ ] Couldn't see / find the first aid tent
- [ ] Didn't want to miss any of the festival
- [ ] Fear of negative treatment / judgment by staff
- [ ] Fear of parents or family being contacted / notified
- [ ] Fear of other people seeing / social stigma / embarrassment
- [ ] Didn't think they could help me or thought it would make it worse
- [ ] Other (please specify)
- [ ] Don't know

Hypothetically, at the last festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}, how comfortable would you have felt (or did you feel) going to the first aid tent/service for a drug use?

- ○ Extremely comfortable
- ○ Somewhat comfortable
- ○ Neither comfortable nor uncomfortable
- ○ Somewhat uncomfortable
- ○ Extremely uncomfortable

Why wouldn't you have felt entirely comfortable going to the first aid tent/service?

Please select ALL that apply

- [ ] Fear of legal issues
- [ ] Bad experience previously
- [ ] Fear of parents / family being called / notified
- [ ] Fear of negative treatment / judgment by staff
- [ ] Fear of other people seeing / embarrassment / social stigma
- [ ] I attended the festival underage
- [ ] I jumped the fence to get in
- [ ] Other (please specify)
- [ ] Don't know

Section 5: Reasons for using drugs at music festivals

Section 5: Reasons for using drugs at music festivals

The reasons for using drugs (including alcohol) and the positive elements of drug use at music festivals are often overlooked. The following question us why you use drugs at festivals, which we hope can contribute to establishing a more balanced understanding. After this you will be asked about th negative effects you experienced at your last festival. ***If you're on a mobile device, please scroll right or turn your phone sideways to view tabl***

Please tell us why you used the following drugs in association with the last festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}.

	Reasons for using												Other reasons for using / comments
	For fun	Help relax	Increase energy	Friends were using	Enhance social interaction	Enhance the music	Enhance the visual experience	Alcohol is expensive there	Avoid lining for alcohol/toilets	Help me sleep	Help come down	Other	Please specify (there is unlimited space to type)
» Alcohol	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Tobacco (cigarettes)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Benzodiazepines (eg. Valium, Xanax)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Cannabis (marijuana, weed)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Cocaine	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Crystal methamphetamine (ice, meth)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» DMT	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Ecstasy/MDMA	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» GHB (fantasy, liquid E)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Ketamine (K, special K)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» LSD (acid)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» MDA	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Magic mushrooms	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Pharmaceutical stimulants (eg. Ritalin, dexies)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Nitrous oxide (nangs, balloons)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Amyl nitrate (rush, poppers)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Heroin	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other opiates/opioids (eg. oxycodone, tramadol)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Speed	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Steroids (juice)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Synthetic cannabis (eg. Kronic)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Alpha-PVP (flakka, gravel)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» 2C-x family (eg. 2C-B, 2C-I)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» NBOMe series (eg. 25I-NBOMe)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 1 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 2 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 3 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Section 6: Positive and negative drug experiences at music festivals

Section 6: Positive and negative drug experiences at music festivals

The following questions will ask you about the positive and negative effects you experienced from drugs (including alcohol) in association with the las attended. The negatives will be broken down into negative physical effects, psychological effects and social effects. ***If you're on a mobile device, p***

turn your phone sideways to view complete tables.

Please tell us what **POSITIVE EFFECTS** you experienced from each drug you used in association with the last festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}.

	Positive effects															Other pos
	NO POSITIVE EFFECTS	Euphoria, happiness	Relaxation	Reduced inhibitions	Increased confidence	Increased energy	Enhanced social interaction	Enhanced senses	Decreased aggression	Spirituality/ introspection	Enhanced creativity	Mind expansion	Enhanced sex	Helped/ improved sleep	Other	Please specif
» Alcohol	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Tobacco (cigarettes)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Benzodiazepines (eg. Valium, Xanax)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Cannabis (marijuana, weed)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Cocaine	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Crystal methamphetamine (ice, meth)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» DMT	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Ecstasy/MDMA	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» GHB (fantasy, liquid E)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Ketamine (K, special K)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» LSD (acid)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» MDA	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Magic mushrooms	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Pharmaceutical stimulants (eg. Ritalin, dexies)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Nitrous oxide (nangs, balloons)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Amyl nitrate (rush, poppers)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Heroin	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other opiates/opioids (eg. oxycodone, tramadol)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Speed	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Steroids (juice)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Synthetic cannabis (eg. Kronic)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Alpha-PVP (flakka, gravel)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» 2C-x family (eg. 2C-B, 2C-I)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» NBOMe series (eg. 25I-NBOMe)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 1 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 2 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 3 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Please tell us what NEGATIVE PHYSICAL effects you experienced from each drug you used in association with ${q://QID331/ChoiceGroup/SelectedChoices}.

This includes any negative effects before, during and after, including the days following.

	Negative PHYSICAL effects															Other nega
	NO NEGATIVE PHYSICAL EFFECTS	Nausea or vomiting	Chest pain	Shaking/ Tremors	Muscle twitches	Increased body temperature	Breathing problems	Increased/ irregular heart rate	Dizziness/ fainting	Headache/ migraine	Jaw clenching/ teeth grinding	Unwanted visual disturbances/ hallucinations	Sleeping problems	Comedown/ hangover	Other	Please sp
» Alcohol	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Tobacco (cigarettes)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Benzodiazepines (eg. Valium, Xanax)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Cannabis (marijuana, weed)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Cocaine	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Crystal methamphetamine (ice, meth)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» DMT	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Ecstasy/MDMA	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» GHB (fantasy, liquid E)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Ketamine (K, special K)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» LSD (acid)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» MDA	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Magic mushrooms	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Pharmaceutical stimulants (eg. Ritalin, dexies)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Nitrous oxide (nangs, balloons)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Amyl nitrate (rush, poppers)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Heroin	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other opiates/opioids (eg. oxycodone, tramadol)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Speed	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Steroids (juice)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Synthetic cannabis (eg. Kronic)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Alpha-PVP (flakka, gravel)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» 2C-x family (eg. 2C-B, 2C-I)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» NBOMe series (eg. 25I-NBOMe)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 1 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 2 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 3 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Please tell us what NEGATIVE PSYCHOLOGICAL effects you experienced from each drug in association with ${q://QID331/ChoiceGroup/SelectedChoices}.

This includes any negative effects before, during and after, including the days following.

	Negative PSYCHOLOGICAL effects															Other negati
	NO NEGATIVE PSYCHOLOGICAL EFFECTS	'high' too intense	Anxiety/ panic	Paranoia	Irritability	Confusion	Aggression	'Bad trip'	Low mood/ sadness	Memory loss	Unable to concentrate	Comedown	Shame/regret from actions while using	Shame/guilt generally from using	Other	Please specif
» Alcohol	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Tobacco (cigarettes)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Benzodiazepines (eg. Valium, Xanax)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Cannabis (marijuana, weed)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Cocaine	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Crystal methamphetamine (ice, meth)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» DMT	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Ecstasy/MDMA	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» GHB (fantasy,	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

liquid E)																
» Ketamine (K, special K)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» LSD (acid)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» MDA	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Magic mushrooms	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Pharmaceutical stimulants (eg. Ritalin, dexies)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Nitrous oxide (nangs, balloons)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Amyl nitrate (rush, poppers)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Heroin	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other opiates/opioids (eg. oxycodone, tramadol)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Speed	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Steroids (juice)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Synthetic cannabis (eg. Kronic)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Alpha-PVP (flakka, gravel)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» 2C-x family (eg. 2C-B, 2C-I)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» NBOMe series (eg. 25I-NBOMe)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 1 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 2 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
» Other 3 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Please tell us what **NEGATIVE SOCIAL effects** you experienced from each drug in association with ${q://QID331/ChoiceGroup/SelectedChoices}.

This includes any negative effects before, during and after, including the days following.

	Negative SOCIAL effects							Other negative SOCIAL effects / comments
	NO NEGATIVE SOCIAL EFFECTS	Economic problem/s	Argument with friends or partner	Argument with parents or family	Called in sick the day/s following the festival	Problems studying/working in day/s following	Other	Please specify (unlimited space to type)
» Alcohol	☐	☐	☐	☐	☐	☐	☐	
» Tobacco (cigarettes)	☐	☐	☐	☐	☐	☐	☐	
» Benzodiazepines (eg. Valium, Xanax)	☐	☐	☐	☐	☐	☐	☐	
» Cannabis (marijuana, weed)	☐	☐	☐	☐	☐	☐	☐	
» Cocaine	☐	☐	☐	☐	☐	☐	☐	
» Crystal methamphetamine (ice, meth)	☐	☐	☐	☐	☐	☐	☐	
» DMT	☐	☐	☐	☐	☐	☐	☐	
» Ecstasy/MDMA	☐	☐	☐	☐	☐	☐	☐	
» GHB (fantasy, liquid E)	☐	☐	☐	☐	☐	☐	☐	
» Ketamine (K, special K)	☐	☐	☐	☐	☐	☐	☐	
» LSD (acid)	☐	☐	☐	☐	☐	☐	☐	
» MDA	☐	☐	☐	☐	☐	☐	☐	
» Magic mushrooms	☐	☐	☐	☐	☐	☐	☐	
» Pharmaceutical stimulants (eg. Ritalin, dexies)	☐	☐	☐	☐	☐	☐	☐	
» Nitrous oxide (nangs, balloons)	☐	☐	☐	☐	☐	☐	☐	
» Amyl nitrate (rush, poppers)	☐	☐	☐	☐	☐	☐	☐	
» Heroin	☐	☐	☐	☐	☐	☐	☐	
» Other opiates/opioids (eg. oxycodone, tramadol)	☐	☐	☐	☐	☐	☐	☐	
» Speed	☐	☐	☐	☐	☐	☐	☐	
» Steroids (juice)	☐	☐	☐	☐	☐	☐	☐	
» Synthetic cannabis (eg. Kronic)	☐	☐	☐	☐	☐	☐	☐	
» Alpha-PVP (flakka, gravel)	☐	☐	☐	☐	☐	☐	☐	
» 2C-x family (eg. 2C-B, 2C-I)	☐	☐	☐	☐	☐	☐	☐	

» NBOMe series (eg. 25I-NBOMe)	☐	☐	☐	☐	☐	☐	☐	
» Other 1 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	
» Other 2 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	
» Other 3 (please specify one drug only)	☐	☐	☐	☐	☐	☐	☐	

Which of the following best describes the severity of the negative drug-related effects you experienced in association with the LAST festival you attended- ${q://QID331/ChoiceGroup/Sel

- ○ N/A, all positive effects
- ○ Unexpected effects, not necessarily bad
- ○ Negative effects, but mild
- ○ Negative effects, that were moderate
- ○ Negative effects, that were severe

What is the MAIN drug you would attribute those negative effects to?

- ○ Don't know
- ○ I think it was the mix of drugs

Can you think of anything that might have contributed to those negative effects?

Please select ALL that apply

- ☐ Went out the night before
- ☐ Wasn't with friends that I felt comfortable with
- ☐ Drank too much alcohol
- ☐ Took too much (drugs/pills)
- ☐ Mixed alcohol and/or drugs
- ☐ Took a bad pill
- ☐ Suspect my drugs weren't what I thought
- ☐ Hot weather
- ☐ Difficulty accessing shade at the festival
- ☐ Didn't drink enough water
- ☐ Difficulty accessing water at the festival
- ☐ Didn't eat enough food
- ☐ Too much dancing
- ☐ Not enough resting
- ☐ Other (please specify)
- ☐ Don't know

Section 8: Protective & risk behaviours

Section 8: Protective and risk behaviours

The following questions are investigating festival-goer behaviours which may increase or decrease the risk of experiencing drug-related harm (includ section is for all festival-goers, some response options will only be relevant to those who use illicit drugs.

Did you do any of the following in association with the LAST music festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}?

Select ALL that apply	
☐	Went out the night before the festival (moderate-big night)
☐	Used illicit drugs the night before the festival *(excludes drug use to help you sleep)*
☐	Drank 10 or more standard drinks of alcohol the night before
☐	Obtained drugs from an unknown or untrusted source
☐	Used drugs I had no user reviews on
☐	Didn't eat properly *(eg. no proper meal on the day/s)*
☐	Didn't drink ANY water during the festival (or isotonic drinks)
☐	Didn't drink ENOUGH water on the day/s *(eg. less than 9 glasses / 2.2 Litres of fluids per day)*
☐	'Double dropped' *(ie. consumed two pills at the same time)*
☐	Mixed alcohol and drugs
☐	Used more than one illicit drug
☐	Danced for a prolonged period without taking a break
☐	Stood in the sun for a prolonged period without sunscreen or a hat
☐	Drank / used drugs when I was in a bad mindset *(eg. feeling low, upset or angry)*
☐	Drove under the influence of alcohol
☐	Drove under the influence of an illicit drug
☐	Went 24 hours or longer without sleeping
☐	Other (please specify)
☐	No, I didn't do any of the above

Did you take any of the following precautions in association with the LAST festival you attended- ${q://QID331/ChoiceGroup/SelectedChoices}?

Select ALL that apply	
☐	Researched / accessed drug information online (please specify what website/s)
☐	Looked on the Pill reports website
☐	Obtained drugs from known / trusted sources
☐	Obtained information from others who had already tried that pill / drug
☐	Tested the drugs with a testing kit
☐	Started with a smaller amount (eg half a pill) to see what it was like
☐	Rested the night before *(eg. adequate sleep and no excessive alcohol / drug use)*
☐	Discussed plan with friends in case of emergency / feeling unwell
☐	Made sure I'd eaten adequately
☐	Kept hydrated with water
☐	Drank an isotonic drink *(eg. powerade)*
☐	Set myself a limit of how much I would drink / use

- [ ] Spaced my alcohol or drugs out
- [ ] Took breaks from dancing
- [ ] Avoided mixing alcohol / drugs
- [ ] Avoided using when I was in a bad mindset
- [ ] Obtained drugs from a dark net website so I had more information about the content *(eg. sites like Agora and Silk Road)*
- [ ] Took 5-HTP
- [ ] Took magnesium for muscle cramps
- [ ] Took other vitamins / supplements (please specify) _____
- [ ] Other (please specify) _____
- [ ] No, I didn't do any of the above

When using ecstasy/MDMA in environments such as music festivals which may raise body temperature (via warm weather, crowds and dancing), **how much water do you think you should drinl**

Please select ONE response

- ○ About 300ml per hour (ie. half a bottle of 600ml water)
- ○ About 500ml per hour (ie. almost a bottle of 600ml water)
- ○ About 1L per hour
- ○ You should drink as much water as possible when using ecstasy
- ○ Other (please specify) _____
- ○ Don't know

D.10 Phase 3: Information and Consent Form (festivalgoers)

Curtin University

Drug use at music festivals

PHASE 3 ONLINE INTERVIEW/SURVEY FOR FESTIVAL-GOERS
PARTICIPANT INFORMATION STATEMENT

HREC Project Number:	HR 144/2015
Project Title:	A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria
Principal Investigator:	Professor Simon Lenton
Co-supervisor:	Dr Monica Barratt
Student researcher:	Jodie Grigg
Version Number:	1
Version Date:	7/10/2016

What is the project about?
Outdoor music festivals have becoming increasingly popular in Australia and internationally in recent years, particularly those with a focus on electronic dance music (EDM). Since their emergence, these events have been consistently identified as popular environments for alcohol and other drug use, and in recent years they have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm; however, there has been some disagreement about the best way to manage drug-related issues at these events. For example, some might support the use of drug detection ('sniffer') dogs, while others might prefer the introduction of pill testing facilities. While these events have attracted extensive media coverage and general public and political debate, there currently exists a dearth of empirical evidence available to inform interventions. As part of this project, I will be speaking directly to festival-goers to get their view on issues. I will also be speaking to a range of key stakeholders; including emergency health services, law enforcement, government and the music industry.

The overall aims are to: 1. Investigate drug use at music festivals; 2. Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and 3. Develop recommendations aimed at improving these strategies, particularly in Australia.

Who is doing the research?
The research is being conducted by Jodie Grigg under the supervision of Professor Simon Lenton from the National Drug Research Institute (NDRI) at Curtin University and Dr. Monica Barratt from the National Drug and Alcohol Research Centre (NDARC) at the University of New South Wales (UNSW). This research project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results will be used by Jodie Grigg to obtain a Doctor of Philosophy at Curtin University.

Why am I being asked to take part?
You have been asked to take part because you have experience attending music festivals and I would love to get your input and interpretations of some of the key preliminary survey findings (from the Phase 2 drug use at music festivals survey). I believe it's important to speak directly to those who attend the events (you, the festival-goers!) to get your input on issues that could directly affect you and people you know.

If I agree to participate, what will I be required to do?
You can take part in this phase by 1. Completing an online survey in your own time; or 2. Participating in an online instant messaging (IM) interview. The IM app we use is similar to MSN messenger or Facebook Chat, but anonymous and secure (military-grade encryption, no IP addresses or metadata collected). Interviews cannot be tracked, intercepted or monitored. No email addresses or real names are required to sign up for the app, which is available for either your desktop or mobile device. This means you can be interviewed within the comfort and privacy of your own

home, or wherever suits you best. When booking your interview you will be provided with some simple instructions to set up!

What kind of questions will you ask me?

I will provide you with some survey results and then ask whether these are consistent with your expectations and whether you have any general comments, personal reflections, interpretations or ideas for managing drug-related issues at festivals in the future. If you haven't used drugs at festivals, that's okay- It's important for me to get input from both those who choose to use drugs at festivals and those who choose not to.

Can I share the survey findings with friends?

Unfortunately not at this phase in the project. Please treat these preliminary results as confidential- do not save, share or discuss them with anyone. The results are not due to be publicly released until 2017. If you have a friend who regularly attends festivals and might be interested in participating, please email NDRIfestivalproject@curtin.edu.au with their name and email address. A unique survey link will then be emailed directly to them so they can complete the survey online.

What are the benefits associated with participation?

There may be no direct benefit to you from participating in this research. However, if you attend festivals and have an interest in drug-related issues, then this could be an opportunity for you to contribute to research which could help inform future policy and practice aimed at reducing the risk of drug-related harm at festivals, as well as similar recreational music events. Therefore, it's possible that this project could benefit you, or fellow festival-goers, in the future by making events safer for those who choose to use drugs.

You will also receive a gift card to the value of $25 to reimburse you for your time. The gift card will be digital and emailed directly to you. You can choose from a range of selected retailers, including; The Woolworths Group, JB Hi-Fi and iTunes.

What are the risks associated with participation?

This research is unlikely to cause you any distress, although it's possible you may experience some minor psychological discomfort. This is largely due to the illicit nature of the topic (drug use), and the fact that you may need to recall negative drug-related experiences. I have been careful to make sure the questions in the survey do not cause you any distress, but if you feel uncomfortable with any of them, you may skip them. You can also withdraw at any point during the interview without any negative consequences, no questions asked. And just in case your involvement does cause you some distress, at the end of your interview I will provide you with a link directing you to free and confidential harm reduction and support service details.

I know that sometimes just thinking about certain issues can be upsetting, therefore if you choose not to be in this research, but feel distressed from considering it, then please follow the below link to view a list of national and state information and support services which are free, confidential and non-judgemental.
http://www.druginfo.adf.org.au/contact-numbers/help-and-support

Please note that if you disclose that you intend to harm yourself or others, there is an obligation to report this to the appropriate authority. There is also a risk that the researchers may be obligated to disclose illegal information if they are required to do so by law (e.g., if the researcher is subpoenaed or is required by law to make a disclosure to the police or other authority). However, the National Drug Research Institute, part of Curtin University, has been doing drug research for nearly 30 years and at no time have the police attempted to gain access to information about the individuals that have been interviewed.

What will happen to the information I provide?

Once you complete the interview/survey, no one, not even me, will be able to identify your information as any personal information will have been destroyed. Therefore, your involvement will be anonymous. The only exception to this is if you were to publicly post a comment on the project's Facebook page identifying yourself as a participant. It is important to note that identifying yourself as a participant in the project does not identify you as a drug user, as you do not need to be a drug user to participate. However, if you do use drugs, it is important that you do not post any comments on any public forums/social media related to this project that might identify you as engaging in any illegal behaviours to avoid the possibility of drawing legal attention to yourself and the project.

Any information I collect will be treated as confidential and used only in this project unless otherwise specified. Only my supervisor (Professor Simon Lenton) and I will have access to this data. Any electronic data will be stored on Curtin's secure networked drive and hard copy data will be locked to unauthorised access at the NDRI offices. The information I collect in this study will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed. The privacy of the information you provide will be safeguarded and only disclosed if required by law.

Again, please note that if specific information is supplied on activities dangerous to the public, I would be obliged to notify appropriate authorities. It is therefore important that you use a pseudonym (false name), and do not mention your real full name, or the name of anybody else, in the interview.

The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented.

Will you tell me the results of the research?

I will make the results available on the project website at the completion of the project (in late 2017).

What are my rights as a participant?

Taking part in this research is entirely voluntary. If you decide to take part and then change your mind, that's okay, you have the right to withdraw at any point during the interview. You do not have to give me a reason. You also have the right to skip any questions you do not want to answer. If you choose not to be involved or withdraw part way through, it will not affect your relationship with the University, staff or colleagues. If you choose to withdraw from the study, I will use any information collected (anonymously) unless you tell me not to. I will destroy any information I have collected from you upon your request. However, if you contact me after your second interview, your information cannot be identified, and therefore cannot be withdrawn.

Contact Information

For further information about the research, please contact Jodie at the National Drug Research Institute, Curtin University by emailing NDRIfestivalproject@curtin.edu.au, texting 0435 956 501 or calling 9266 1615

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the Curtin University HREC. This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007). If you have any concerns and/or complaints about the project, the way it is being conducted or your rights as a research participant, and would like to speak to someone independent of the project, please contact: The Curtin University Ethics Committee by telephoning 9266 2784 or by emailing hrec@curtin.edu.au.

CONSENT FORM

HREC Project Number:	HR 144/2015
Project Title:	A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria
Principal Investigator:	Professor Simon Lenton
Co-supervisor:	Dr Monica Barratt
Student researcher:	Jodie Grigg
Version Number:	1
Version Date:	7/10/2016

FOR THE PARTICIPANT TO READ

At the beginning of your interview, you will be given the opportunity to ask any questions, and following this you will be asked to respond with a 'yes' or 'no' to the below six points:

1. I have read the information statement version 2 and I understand its contents.
2. I believe I understand the purpose, extent and possible risks of my involvement in this project.
3. I voluntarily consent to take part in this research project.
4. I have had an opportunity to ask questions and I am satisfied with the answers I have received.
5. I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007) – updated March 2014.
6. I understand that I can download a copy of this Information Statement and Consent Form from the project website to keep as my personal copy.
7. I agree to treat the results as confidential. I will not save, share or discuss the findings with anyone.

FOR THE RESEARCHER TO COMPLETE

Participant ID	
Participant Consent	No signatures required. Electronic consent will act in place of a signature.
Date	

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has indicated their consent electronically, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name	
Researcher Signature	
Date	

D.11 Phase 3: Festivalgoer IM interview schedule/online questionnaire

Note. A Microsoft Word export of the questionnaire is available upon request. Due to the larger size of the Word export and lack of graphics/visual elements, a PDF export was more suitable to insert here.

10/14/2016 Qualtrics Survey Software

Information and consent page

Drug use at music festivals project

Phase 3 survey for festival-goers

Thank you for your interest in taking part in this survey! Please read the below information which acts as a ***Participant Information and Consent Form****. By clicking the arrows to the next page, you will be electronically indicating your consent.*

What is the project about?
Outdoor music festivals have becoming increasingly popular in Australia and internationally in recent years, particularly those with a focus on electronic dance music (EDM). Since their emergence, these events have been consistently identified as popular environments for alcohol and other drug use, and in recent years they have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm; however, there has been some disagreement about the best way to manage drug-related issues at these events. For example, some might support the use of drug detection ("sniffer") dogs, while others might prefer the introduction of pill testing facilities. While these events have attracted extensive media coverage and general public and political debate, there currently exists a dearth of empirical evidence available to inform interventions. As part of this project, I will be speaking directly to festival-goers to get their view on issues. I will also be speaking to a range of key stakeholders; including emergency health services, law enforcement, government and the music industry.

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Sometimes just thinking about certain issues can be upsetting, therefore if you choose not to be in this research, but feel distressed from considering it, then please follow the below link to view a list of national and state information and support services which are free, confidential and non-judgemental.

https://curtin.au1.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview 1/15

http://www.druginfo.adf.org.au/contact-numbers/help-and-support

Please note that if you disclose that you intend to harm yourself or others, there is an obligation to report this to the appropriate authority. There is also a risk that the researchers may be obligated to disclose illegal information if they are required to do so by law (e.g., if the researcher is subpoenaed or is required by law to make a disclosure to the police or other authority). However, the National Drug Research Institute, part of Curtin University, has been doing drug research for nearly 30 years and at no time have the police attempted to gain access to information about the individuals that have been interviewed.

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The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented.

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What are my rights as a participant?
Taking part in this research is entirely voluntary. If you decide to take part and then change your mind, that's okay, you have the right to withdraw at any point during the interview. You do not have to give me a reason. You also have the right to skip any questions you do not want to answer. If you choose not to be involved or withdraw part way through, it will not affect your relationship with the University, staff or colleagues. If you choose to withdraw from the study, I will use any information collected (anonymously) unless you tell me not to. I will destroy any information I have collected from you upon your request. However, if you contact me after your second interview, your information cannot be identified, and therefore cannot be withdrawn.

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I UNDERSTAND THAT BY CLICKING TO THE NEXT PAGE:
1. I have read the information statement above and I understand its contents.
2. I believe I understand the purpose, extent and possible risks of my involvement in this project.
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5. I understand that I can print this information page to keep as my personal copy or I can email NDRIfestivalproject@curtin.edu.au to obtain a copy.
6. I agree to treat the results as confidential. I will not save, share or discuss the findings with anyone.

Background questions

Background questions

These background questions will help provide some context to your responses.

What state do you live in?

- Western Australia
- Victoria
- Other

What is your gender?

- Male
- Female
- Transgender

What is your age?

Which of the following best describes your sexual identity?

- Heterosexual (straight)
- Gay male
- Lesbian
- Bisexual
- Non-binary

- Not sure or undecided
- Other (specify)

What type of accommodation do you currently live in?
Please select ONE response

- Own house / flat
- Rented house / flat
- Parents' / family house
- Boarding house / hostel
- No fixed address / homeless (including couch surfing)
- Other accommodation (please specify)

What is your current employment status?
Please select ALL that apply

- [ ] Full-time work
- [ ] Part-time or causal work
- [ ] Self-employed
- [ ] Full-time student
- [ ] Part-time student
- [ ] Benefits / pension
- [ ] Unemployed (looking for work)
- [ ] Unemployed (not looking for work)
- [ ] Home duties (stay-at-home parent or carer)
- [ ] Other (please specify)

About how many music festivals have you EVER attended in your lifetime?

- 1-2
- 3-5
- 6-10
- 11-20
- 21-30
- More than 30

What genres of music do you attend music festivals for?
Please select ALL that apply

- [ ] I don't attend for any particular genre
- [ ] Pop
- [ ] Rock
- [ ] Punk
- [ ] Metal
- [ ] Hip hop / Rap
- [ ] Indi / Alternative
- [ ] Trance / Psytrance
- [ ] General EDM / Dance
- [ ] Singer-songwriter / Folk
- [ ] Breakbeats / Drum N bass
- [ ] Other (please specify)

What types of music festivals do you like to attend?
Please select ALL that apply

- [ ] Large scale, single day (eg. Stereosonic, Groovin The Moo)
- [ ] Smaller 'boutique', single day (eg. CoLab, Wonderland, Let Them Eat Cake)
- [ ] Large scale, multi-day camping (eg. Southbound, Falls Festival)
- [ ] Smaller 'boutique', multi-day camping (eg. The Hills Are Alive, Enchanted Garden Festival)
- [ ] 'bush doof' style, multi-day camping (eg. Rainbow Serpent, Earthcore, Blazing Swan)
- [ ] Other (please specify)

Background survey findings

Background festival-goer findings

The below findings provide some key background information related to demographics and participants' festival attendance.

Demographics

- *The projected recruited a final sample of 1,967 festival-goers who met the following section criteria:*
    1. *Attended an outdoor music festival in the past 12 months;*
    2. *Aged 16 years or older; and*
    3. *Lived in WA or VIC for the past 12 months.*
- *50% were from WA and 52% were male.*
- *The median age of sample was 20.*
- *More than half the sample reported living in their parent's house (61%), followed by rental accommodation (29%).*
- *The majority were born in Australia (89%) and spoke English at home (98%).*
- *41% reported studying full-time and 30% reported full-time employment.*

Festival attendance

- *Participants reported attending a median of three festivals in the past 12 months.*
- *The most commonly reported favourite genre to attend festivals for was electronic dance music (22%), followed closely by indi/alternative (20%) and then hip-hop/rap and psytrance (each 9%).*
- *The most commonly reported favourite festival type was large-scale, single day (52%), followed by large-scale, multi-day camping (22%) and then 'bush doof' style, multi-day camping (12%).*

The following sections will provide confidential findings for nine areas.

The aim is to get your thoughts- this can include any general comments, reflections, interpretations or ideas for reducing harm.

Please note that you do not need to comment in all sections- you are welcome to skip sections if you do not wish to comment.

You can respond in as much or as little detail as you wish.

Drug use at music festivals

1. Drug use at the last festival

Survey findings (for drug use associated with the last festival attended):

Prevalence (of the overall sample):

1. *Alcohol (89%)*
2. *Ecstasy/MDMA (50%)*
3. *Tobacco (45%)*
4. *Cannabis (31%)*
5. *Ketamine (9%)*
6. *LSD (8%)*
7. *Cocaine, speed and nitrous oxide (each 7%)*
8. *Pharmaceutical stimulants, benzodiazepines and MDA (each 4%)*
9. *Magic mushrooms (3%)*
10. *Crystal methamphetamine and DMT (each 2%)*
11. *Amyl nitrate and GHB (each 1%)*
12. *NBOMe, heroin, synthetic cannabis, mescaline, steroids, methoxetamine (MXE), 2C-x, DOM, DOB (each less than 1%)*

Alcohol use:

- *Of those who attended a one-day festival and were 18 or over, 87% consumed alcohol before, 90% during and 36% after.*
- *The median number of drinks consumed over the day was 10.*

Illicit drug use:

- *The majority (60%) reported using an illicit drug, with 25% of the overall sample using before, 57% during and 20% after.*
- *96% thought illicit drug use was a normal feature of attending festivals.*
- *The most common illicit drug was ecstasy/MDMA.*
- *The most common form of ecstasy was pills (71%), followed by caps (46%), crystals (17%) and then powder (12%).*
- *Of those who used the most popular form (ecstasy pills), 33% used before, 97% during and 18% after.*
- *The median number of ecstasy pills used over the day was three.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Obtaining and supplying drugs

2. Obtaining and supplying drugs

Survey findings (related to obtaining and supplying drugs at the last festival):

How drugs used during the festival were obtained:

- *Of those who used illicit drugs during the festival, 72% reported carrying drugs in themselves, 20% had someone else carry drugs in for them, and 25% organised and obtained drugs once already inside (54% from unknown sources).*
- *The most commonly reported method for carrying drugs into the festival was in underwear (43%), followed by bags/wallets (26%), general clothing (22%), vehicles (15%) and then internally in a body cavity (8%). Five participants reported swallowing drugs before entering and then retrieving them once inside (e.g. via vomiting).*
- *The three most commonly reported reasons participants obtained drugs inside the festival were because the opportunity presented itself (39%), they wanted more drugs (31%) and concern about police detection before entering (28%).*

Perceived availability inside the festival:

- *The majority reported that it would have been easy (40%) or very easy (38%) to obtain drugs inside the festival. Only 2% thought it would have been very difficult. Some were also unsure (10%).*

Supplying drugs at the festival:

- *Of those who responded, 17% reported supplying illicit drugs in some form at the last festival.*
- *The most common form of supply was carrying them in for a friend or partner (10%), followed by giving them away for free (6%) and then brokering or exchanging drugs (each 3%). Only 2% reported selling drugs for profit.*
- *The main drug supplied was ecstasy (77% of suppliers = 12% of the overall sample), followed by cannabis (26%) and then cocaine and ketamine (each 8%).*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Reasons for using drugs

3. Reasons for using drugs

Survey findings (related to reasons for using drugs in association with the last festival):

- *The three most commonly reported reasons for using alcohol were for fun (92%), to enhance social interaction (61%) and to enhance the music (32%).*
- *The three most commonly reported reasons for using ecstasy/MDMA were for fun (87%), to enhance the music (80%) and to increase energy (71%). Other commonly reported reasons were because alcohol is expensive at festivals (45%) and to avoid lines for alcohol/toilets (22%).*
- *The three most commonly reported reasons for using cannabis were for fun (70%), to help relax (57%) and to help come down (43%).*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Drug harms

4. Drug-related harms

Survey findings (for negative drug effects in association with the last festival):

Types of negative effects associated with the last festival:

- *Of those who used alcohol, 62% reported a negative physical effect, 28% reported a negative psychological effect and 21% reported a negative social effect.*
- *Of those who used ecstasy/MDMA, 81% reported at negative physical effect, 57% reported a negative psychological effect and 28% reported a negative social effect.*
- *The most commonly reported negative physical effects from ecstasy were jaw clenching/teeth grinding (69%), comedowns (56%), increased body temperature (27%) and sleeping problems (26%).*

Severity of negative drug effects:

- *When asked about the severity of all negative drug effects (licit and illicit) taken as a whole, approximately half (52%) reported experiencing only positive drug effects, 21% reported unexpected effects that were not necessarily bad, 24% reported mild negative effects, 3% reported moderate negative effects and less than 1% reported severe negative effects.*
- *Of those who experienced moderate to severe negative drug effects, the most common drug that was attributed to those effects was ecstasy (44%), followed by alcohol (23%).*

Responses to negative drug effects:

- *Only 4% of those who experienced moderate to severe effects reported attending on-site first aid. The most common responses were resting/sitting down, drinking water and being helped/monitored by friends.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Protective and risk behaviours

5. Protective and risk behaviours

Survey findings (for 'risk/protective' behaviours in association with the last festival):

Risk behaviours:

- *Illicit drug users reported a median of four risk behaviours.*
- *Notable risk behaviours for ecstasy users include 'double dropping' (i.e. taking two pills at the same time) (48% of ecstasy pill users), going 24 hours or longer without sleeping (19%), obtaining from an unknown/untrusted source (15%), not drinking any water or isotonic drinks at all during the festival (6%) and driving under the influence of an illicit drug (5%).*

Protective behaviours:

- *Illicit drug users reported a median of six 'protective' behaviours.*
- *Notable 'protective' behaviours for ecstasy users included looking on the Pill Reports website (50% of ecstasy pill users), starting with a smaller amount to see what the drug was like (27%), taking magnesium for muscle cramps (12%), testing with a drug test kit (9%) and taking 5-HTP (6%).*

Recommended water consumption (when using MDMA):

- *When asked about the recommended water consumption guidelines while using ecstasy in the festival environment, 38% selected the typically recommended amount of 500ml per hour. The remainder selected 300ml (25%), 1L (10%) and 'you should drink as much as possible' (17%).*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Harm reduction strategies

6. Harm reduction strategies

Survey findings (for harm reduction strategies observed at the last festival):

Strategies observed:

- *Almost all festival-goers (98%) observed harm reduction strategies (median=5).*
- *The most commonly observed strategies were free water stations and on-site first-aid services (each 82%), shaded areas to sit (65%) and roaming support staff (46%).*

Problems experienced:

- *Almost three-quarters (74%) reported experiencing at least one problem at the festival (median=1).*
- *The most commonly reported problems were difficulty accessing food (34%), difficulty accessing toilet facilities (33%) and difficulty accessing free water and shade (each 23%).*
- *Other notable problems included difficulty getting transport home (18%), needed help but was unsure where to go (3%) and difficulty accessing first-aid services (1%).*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Drug detection dogs

7. Drug detection dogs

Your level of support

What is your current level of support in relation to drug detection dog operations in the context of outdoor music festivals?

Strongly support ○ Support ○ Neutral ○ Oppose ○ Strongly oppose ○

Has your level of support changed at all over time?

Survey findings (for drug dogs)

Deterrent effect:

- *Of those who heard/suspected that drug detection dogs might be present, only 3% reported that this led them to make the decision not to take drugs on the day of the festival.*
- *The most commonly reported decisions made were to instead conceal their drugs well (28%), to simply hope for the best (20%), to assess the situation when they arrived and avoid police (15%), to send a spotter ahead to report back police activity (12%) and to get someone else to carry their drugs in for them (9%).*

Response to seeing dogs:

- *Approximately one-quarter (28%) reported actually seeing dogs on the day and 41% of those reported having drugs on their person at the time. Of those who had drugs on their person, 10% reported consuming some (8%) or all (2%) of their drugs in response to seeing the dogs.*

Level of support:

- *Only one-quarter (25%) reported that they support this strategy and only 23% perceived drug dogs as effective in reducing harm.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely | A great extent | A moderate extent | A small extent | Not at all

To what extent do these findings impact your level of support?

Strongly increases support | Increases support | No impact | Decreases support | Strongly decreases support

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Pill testing / Drug checking

8. Pill testing / drug checking

Your level of support

What is your current level of support in relation to introducing a pill testing/drug checking trial in the context of outdoor music festivals?

Strongly support | Support | Neutral | Oppose | Strongly oppose

Has your position/level of support changed at all over time?

Survey findings (for pill/testing drug checking):

Level of support:
- *A majority supported introducing on-site drug checking (84%) and off-site drug checking (81%).*

Would they have accessed a service?
- *The majority of illicit drug users reported that they would have definitely (60%) or probably (20%) used a drug checking service at the last festival had it been available to them. Only 1% said they definitely would not have.*
- *Of the 40% who did not select 'definitely', the most commonly reported reasons for not definitely accessing a drug checking service were fear of police watching/intervening (51%), unnecessary as they obtained from a trusted source (34%) and unnecessary as they had already tried drugs from that batch so knew what to expect (26%).*

Where would they access a service?
- *The majority (60%) said they would consider both on-site and off-site service options, 20% said they would only consider on-site services and 14% said they would only consider off-site services.*

How much would they pay?
- *The greatest proportion (39%) said they would only access the service if it were free, 32% would pay up to $5 per test, 21% would pay up to $10, 5% would pay up to $20 and less than 1% would pay up to $50.*

How would they respond to test results?
- *When asked what they would do if a test indicated the drug did not contain what they initially thought, 19% reported they would not have consumed it under any circumstances, 61% would not have consumed it if it contained something very dangerous, 60% would have warned their friends, 37% would have informed their supplier and 40% would have been more cautious.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	A great extent	A moderate extent	A small extent	Not at all
○	○	○	○	○

To what extent do these findings impact your level of support?

Strongly increases support	Increases support	No impact	Decreases support	Strongly decreases support
○	○	○	○	○

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Support for other drug policies

9. Support for other drug policies at festivals

Survey findings:

- *A minority (21%) supported zero-tolerance drug policies. Only 13% perceived them as effective.*
- *A minority (3%) supported banning/canceling festivals. Only 9% perceived this strategy as effective.*
- *A minority (25%) supported increasing drug policing. Only 22% perceived this strategy as effective.*
- *A majority (77%) supported a harm reduction drug policy (in place of zero-tolerance).*
- *A majority (67%) supported drug amnesty bins.*
- *A majority (95%) supported introducing low cost food stalls/tents.*
- *A majority (97%) supported mandatory free water stations.*
- *A majority (95%) supported mandatory on-site medical standards (e.g. ensuring qualified medical professionals are on-site).*
- *There was mixed support for introducing a $10 medical levy on ticket prices with 45% supporting the strategy, 31% being neutral and 24% opposing the strategy.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	A great extent	A moderate extent	A small extent	Not at all
○	○	○	○	○

Please provide any comments, reflections or interpretations you wish to share in the space below (e.g. anything that surprises you, anything which is consistent with what you expected, any ideas for reducing harm).

Other comments

Other comments

Do you have any other comments you would like to make?

D.12 Phase 3: Information and Consent Form (KI)

Curtin University

Drug use at music festivals

PHASE 3 ONLINE SURVEY/INTERVIEW FOR KEY STAKEHOLDERS
PARTICIPANT INFORMATION STATEMENT

HREC Project Number:	HR 144/2015
Project Title:	A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria
Principal Investigator:	Professor Simon Lenton
Student researcher:	Jodie Grigg
Co-Supervisor	Dr Monica Barratt
Version Number:	1
Version Date:	7/10/2016

What is the project about?

Outdoor music festivals have becoming increasingly popular in Australia and internationally in recent years, particularly those with a focus on electronic dance music. Since their emergence, these events have been consistently identified as popular environments for alcohol and other drug use, and in recent years they have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm, however, there has been some disagreement about the best way to manage drug-related issues at these events. For example, some might support the use of drug detection ('sniffer') dogs, while others might prefer the introduction of pill testing/drug checking facilities. While these events have attracted extensive media coverage and general public and political debate, there currently exists a dearth of empirical evidence available to inform interventions. As part of this project, I'll be speaking directly to festival-goers and a range of key stakeholders; including health services, law enforcement, government and the music industry.

The overall aims are to: 1. Investigate drug use at music festivals; 2. Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and 3. Develop recommendations aimed at improving these strategies, particularly in Australia.

Who is doing the Research?

The research is being conducted by Jodie Grigg under the supervision of Professor Simon Lenton from the National Drug Research Institute (NDRI) at Curtin University and Dr. Monica Barratt from the National Drug and Alcohol Research Centre (NDARC) at the University of New South Wales. This research project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results of this research project will be used by Jodie Grigg to obtain a Doctor of Philosophy at Curtin University.

Why am I being asked to take part?

You have been asked to take part because you are involved in the music festival scene; whether it be emergency health services, law enforcement, event regulation or industry. Given your experience/expertise in this area, we would love to get your input on some key preliminary survey findings.

What is the aim of this phase and what will I be required to do?

The aim of this phase is to get your personal reflections and interpretations of some key preliminary survey findings and discuss any implications for potential future harm reduction initiatives. Note: The online festival-goer survey ran from May-June 2016 and asked festival-goers about their experiences with and attitudes towards drug use, drug policy and harm reduction at music festivals in their state (WA or VIC). It is expected that you would be giving up no more than one hour of your time to participate.

What are the benefits to me?

There may be no direct benefit to you from participating in this research; however, if you have an interest in drug-related issues at these events, then this could be an opportunity for you to contribute to a project aiming to better

understand the reality of drug use in these environments and the impacts of current policing approaches. It is hoped that an enhanced understanding could help to contribute to more evidence-informed responses.

Can I share the survey findings with colleagues?

This summary of key preliminary findings is designed solely for the purpose of post-survey interviews with key stakeholders. It is not intended for circulation and should be treated as confidential. Please do not save, share or discuss these findings with anyone. If you have a colleague who you think might be interested in completing the survey, please email NDRIfestivalproject@curtin.edu.au with their name, email address and a sentence on why they might be able to contribute. A unique survey link will then be emailed directly to them so they can complete the survey online.

What will happen to the information I provide?

Any information collected will be treated as confidential and used only in this project unless otherwise specified. Only the research team will have access to this data. Any electronic data will be stored on Curtin's secure networked drive and hard copy data will be locked to unauthorised access at the NDRI offices. The information collected will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed. The privacy of the information you provide will be safeguarded and only disclosed if required by law.

The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented, unless you explicitly indicate that you would prefer acknowledgement. You will have the opportunity to indicate your preference at the end of the survey.

Will you tell me the results of the research?

We can provide you with a copy of the final results upon request.

What are my rights as a participant?

Taking part in this research is entirely voluntary. If you decide to take part and then change your mind, that's okay, you have the right to withdraw at any point during the interview/survey. You do not have to give a reason. You also have the right to skip any questions you do not want to answer. If you choose not to be involved or withdraw part way through, it will not affect your relationship with the University, staff or colleagues. If you choose to withdraw from the study, we will use any information collected (anonymously) unless you tell us not to. We will destroy any information collected from you upon your request.

Contact Information

For further information about the research, please contact Jodie at the National Drug Research Institute, Curtin University by emailing her at NDRIfestivalproject@curtin.edu.au, testing 0435 956 501 or calling 9266 1615.

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC). The ethical aspects of this research project have been approved by the Curtin University HREC. This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007). If you have any concerns and/or complaints about the project, the way it is being conducted or your rights as a research participant, and would like to speak to someone independent of the project, please contact: The Curtin University Ethics Committee by telephoning 9266 2784 or by emailing hrec@curtin.edu.au.

CONSENT FORM

HREC Project Number:	HR 144/2015
Project Title:	A mixed-methods study of drug use at outdoor music festivals in Western Australia and Victoria
Principal Investigator:	Professor Simon Lenton
Student researcher:	Jodie Grigg
Co-Supervisor	Dr Monica Barratt
Version Number:	2
Version Date:	7/10/2016

FOR THE PARTICIPANT TO READ

At the beginning of your interview, you will be given the opportunity to ask any questions, and following this you will be asked to respond with a 'yes' or 'no' to the below six points:

1. I have read the information statement and I understand its contents.
2. I believe I understand the purpose, extent and possible risks of my involvement in this project.
3. I voluntarily consent to take part in this research project.
4. I have had an opportunity to ask questions and I am satisfied with the answers I have received.
5. I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007) – updated March 2014.
6. If participating in a telephone interview, I consent to having my interview audio recorded for later transcription.
7. I agree to treat the results as confidential. I will not save, circulate or discuss the findings with anyone.

FOR THE RESEARCHER TO COMPLETE

Participant ID	
Participant Consent	No signatures required. Verbal or electronic consent will act in place of a signature.
Date	

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has indicated their consent verbally or electronically, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name	
Researcher Signature	
Date	

D.13 Phase 3: KI interview schedule/online questionnaire

Note. A Microsoft Word export of the questionnaire is available upon request. Due to the larger size of the Word export and lack of graphics/visual elements, a PDF export was more suitable to insert here.

10/14/2016 Qualtrics Survey Software

Information and consent page

Drug use at music festivals project

Phase 3 survey for key stakeholders

Thank you for your interest in taking part in this survey! Please read the below information which acts as a ***Participant Information and Consent Form****. By clicking the arrows to the next page, you will be electronically indicating your consent.*

What is the project about?
Outdoor music festivals have becoming increasingly popular in Australia and internationally in recent years, particularly those with a focus on electronic dance music. Since their emergence, these events have been consistently identified as popular environments for alcohol and other drug use, and in recent years they have been linked to a number of drug-related deaths. This has led to increasing concern about the risk of future drug-related harm, however, there has been some disagreement about the best way to manage drug-related issues at these events. For example, some might support the use of drug detection ("sniffer") dogs, while others might prefer the introduction of pill testing/drug checking facilities. While these events have attracted extensive media coverage and general public and political debate, there currently exists a dearth of empirical evidence available to inform interventions. As part of this project, I'll be speaking directly to festival-goers and a range of key stakeholders; including health services, law enforcement, government and the music industry.

The overall aims are to: 1. Investigate drug use at music festivals; 2. Consider current and potential future policy and practice strategies aimed at reducing the risk of drug-related harm in these environments; and 3. Develop recommendations aimed at improving these strategies, particularly in Australia.

Who is doing the Research?
The research is being conducted by Jodie Grigg under the supervision of Professor Simon Lenton from the National Drug Research Institute (NDRI) at Curtin University and Dr. Monica Barratt from the National Drug and Alcohol Research Centre (NDARC) at the University of New South Wales. This research project is funded by a scholarship from the Australian Government Department of Health (AGDH) and the results of this research project will be used by Jodie Grigg to obtain a Doctor of Philosophy at Curtin University.

Why am I being asked to take part?
You have been asked to take part because you are involved in the music festival scene; whether it be emergency health services, law enforcement, event regulation or industry. Given your experience/expertise in this area, we would love to get your input on some key preliminary survey findings.

What is the aim of this phase and what will I be required to do?
The aim of this phase is to get your personal reflections and interpretations of some key preliminary survey findings and discuss any implications for potential future harm reduction initiatives. Note: The online festival-goer survey ran from May–June 2016 and asked festival-goers about their experiences with and attitudes towards drug use, drug policy and harm reduction at music festivals in their state (WA or VIC). It is expected that you would be giving up no more than one hour of your time to participate.

What are the benefits to me?
There may be no direct benefit to you from participating in this research; however, if you have an interest in drug-related issues at these events, then this could be an opportunity for you to contribute to a project aiming to better understand the reality of drug use in these environments and the impacts of current policing approaches. It is hoped that an enhanced understanding could help to contribute to more evidence-informed responses.

Can I share the survey findings with colleagues?
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What will happen to the information I provide?
Any information collected will be treated as confidential and used only in this project unless otherwise specified. Only the research team will have access to this data. Any electronic data will be stored on Curtin's secure networked drive and hard copy data will be locked to unauthorised access at the NDRI offices. The information collected will be kept under secure conditions at Curtin University for 7 years after the research has ended and then it will be destroyed. The privacy of the information you provide will be safeguarded and only disclosed if required by law.

The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented, unless you explicitly indicate that you would prefer acknowledgement. You will have the opportunity to indicate your preference at the end of the survey.

Will you tell me the results of the research?
We can provide you with a copy of the final results upon request.

What are my rights as a participant?
Taking part in this research is entirely voluntary. If you decide to take part and then change your mind, that's okay, you have the right to withdraw at any point during the interview/survey. You do not have to give a reason. You also have the right to skip any questions you do not want to answer. If you choose not to be involved or withdraw part way through, it will not affect your relationship with the University, staff or colleagues. If you choose to withdraw from the study, we will use any information collected (anonymously) unless you tell us not to. We will destroy any information collected from you upon your request.

Contact Information
For further information about the research, please contact Jodie at the National Drug Research Institute, Curtin University by emailing her at

https://curtin.au1.qualtrics.com/ControlPanel/Ajax.php?action=GetSurveyPrintPreview 1/14

NDRIfestivalproject@curtin.edu.au, testing 0435 956 501 or calling 9266 1615.

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I UNDERSTAND THAT BY CLICKING TO THE NEXT PAGE:
1. I have read the information statement above and I understand its contents.
2. I believe I understand the purpose, extent and possible risks of my involvement in this project.
3. I voluntarily consent to take part in this research project. I have had an opportunity to ask questions and I am satisfied with the answers I have received.
4. I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007) – updated March 2015.
5. I understand that I can print this information page to keep as my personal copy or I can email NDRIfestivalproject@curtin.edu.au to obtain a copy.
6. I agree to treat the results as confidential. I will not save, circulate or discuss the findings with anyone.

Background questions

Background questions

These background questions will help provide some context to your responses and determine what sections might apply to you.

What is your gender?

- ○ Male
- ○ Female
- ○ Transgender

Which state do you live in?

- ○ Western Australia
- ○ Victoria
- ○ Other (please specify)

Which area do you work in? You may mark multiple options if they apply.

- ☐ Health (on-site medical)
- ☐ Health (off-site medical)
- ☐ Law enforcement
- ☐ Government/regulation
- ☐ The music or festival industry
- ☐ AOD agency
- ☐ Harm reduction/peer support group
- ☐ Drug policy organization
- ☐ Other (please specify)

What is your position title?

Did you participate in a pre-survey interview or survey in early 2016?

- ○ Yes
- ○ No

Please describe your current position and how it relates to music festivals.

Background survey findings

Background festival-goer findings

The below findings provide some key background information related to demographics and participants' festival attendance.

Demographics

- *The projected recruited a final sample of 1,967 festival-goers who met the following section criteria:*
  1. *Attended an outdoor music festival in the past 12 months;*
  2. *Aged 16 years or older; and*
  3. *Lived in WA or VIC for the past 12 months.*
- *50% were from WA and 52% were male.*
- *The median age of sample was 20.*
- *More than half the sample reported living in their parent's house (61%), followed by rental accommodation (29%).*
- *The majority were born in Australia (89%) and spoke English at home (98%).*
- *41% reported studying full-time and 30% reported full-time employment.*

Festival attendance

- *Participants reported attending a median of three festivals in the past 12 months.*
- *The most commonly reported favourite genre to attend festivals for was electronic dance music (22%), followed closely by indi/alternative (20%) and then hip-hop/rap and psytrance (each 9%).*
- *The most commonly reported favourite festival type was large-scale, single day (52%), followed by large-scale, multi-day camping (22%) and then 'bush doof' style, multi-day camping (12%).*

The following sections will provide confidential preliminary findings for nine areas.

The aim is to get your input- this can include any general comments, personal reflections, interpretations or ideas/implications for future policy and harm reduction.

Please note that you do not need to comment in all sections- you are welcome to skip sections if you do not wish to comment / do not have an interest in the findings for that section.

Drug use at music festivals

1. Drug use at the last festival

Survey findings (for drug use associated with the last festival attended):

Prevalence (of the overall sample):

1. *Alcohol (89%)*
2. *Ecstasy/MDMA (50%)*
3. *Tobacco (45%)*
4. *Cannabis (31%)*
5. *Ketamine (9%)*
6. *LSD (8%)*
7. *Cocaine, speed and nitrous oxide (each 7%)*
8. *Pharmaceutical stimulants, benzodiazepines and MDA (each 4%)*
9. *Magic mushrooms (3%)*
10. *Crystal methamphetamine and DMT (each 2%)*
11. *Amyl nitrate and GHB (each 1%)*
12. *NBOMe, heroin, synthetic cannabis, mescaline, steroids, methoxetamine (MXE), 2C-x, DOM, DOB (each less than 1%)*

Alcohol use:

- *Of those who attended a one-day festival and were 18 or over, 87% consumed alcohol before, 90% during and 36% after.*
- *The median number of drinks consumed over the day was 10.*

Illicit drug use:

- *The majority (60%) reported using an illicit drug, with 25% of the overall sample using before, 57% during and 20% after.*
- *96% thought illicit drug use was a normal feature of attending festivals.*
- *The most common illicit drug was ecstasy/MDMA.*
- *The most common form of ecstasy was pills (71%), followed by caps (46%), crystals (17%) and then powder (12%).*
- *Of those who used the most popular form (ecstasy pills), 33% used before, 97% during and 18% after.*
- *The median number of ecstasy pills used over the day was three.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Obtaining and supplying drugs

2. Obtaining and supplying drugs

Survey findings (related to obtaining and supplying drugs at the last festival):

How drugs used during the festival were obtained:

- *Of those who used illicit drugs during the festival, 72% reported carrying drugs in themselves, 20% had someone else carry drugs in for them, and 25% organised and obtained drugs once already inside (54% from unknown sources).*
- *The most commonly reported method for carrying drugs into the festival was in underwear (43%), followed by bags/wallets (26%), general clothing (22%), vehicles (15%) and then internally in a body cavity (8%). Five participants reported swallowing drugs before entering and then retrieving them once inside (e.g. via vomiting).*
- *The three most commonly reported reasons participants obtained drugs inside the festival were because the opportunity presented itself (39%), they wanted more drugs (31%) and concern about police detection before entering (28%).*

Perceived availability inside the festival:

- *The majority reported that it would have been easy (40%) or very easy (38%) to obtain drugs inside the festival. Only 2% thought it would have been very difficult. Some were also unsure (10%).*

Supplying drugs at the festival:

- *Of those who responded, 17% reported supplying illicit drugs in some form at the last festival.*
- *The most common form of supply was carrying them in for a friend or partner (10%), followed by giving them away for free (6%) and then brokering or exchanging drugs (each 3%). Only 2% reported selling drugs for profit.*
- *The main drug supplied was ecstasy (77% of suppliers = 12% of the overall sample), followed by cannabis (26%) and then cocaine and ketamine (each 8%).*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Reasons for using drugs

3. Reasons for using drugs

Survey findings (related to reasons for using drugs in association with the last festival):

- *The three most commonly reported reasons for using alcohol were for fun (92%), to enhance social interaction (61%) and to enhance the music (32%).*
- *The three most commonly reported reasons for using ecstasy/MDMA were for fun (87%), to enhance the music (80%) and to increase energy (71%). Other commonly reported reasons were because alcohol is expensive at festivals (45%) and to avoid lines for alcohol/toilets (22%).*
- *The three most commonly reported reasons for using cannabis were for fun (70%), to help relax (57%) and to help come down (43%).*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Drug harms

4. Drug-related harms

Survey findings (for negative drug effects in association with the last festival):

Types of negative effects associated with the last festival:

- *Of those who used alcohol, 62% reported a negative physical effect, 28% reported a negative psychological effect and 21% reported a negative social effect.*
- *Of those who used ecstasy/MDMA, 81% reported at negative physical effect, 57% reported a negative psychological effect and 28% reported a negative social effect.*
- *The most commonly reported negative physical effects from ecstasy were jaw clenching/teeth grinding (69%), comedowns (56%), increased body temperature (27%) and sleeping problems (26%).*

Severity of negative drug effects:

- *When asked about the severity of all negative drug effects (licit and illicit) taken as a whole, approximately half (52%) reported experiencing only positive drug effects, 21% reported unexpected effects that were not necessarily bad, 24% reported mild negative effects, 3% reported moderate negative effects and less than 1% reported severe negative effects.*
- *Of those who experienced moderate to severe negative drug effects, the most common drug that was attributed to those effects was ecstasy (44%), followed by alcohol (23%).*

Responses to negative drug effects:

- *Only 4% of those who experienced moderate to severe effects reported attending on-site first aid. The most common responses were resting/sitting down, drinking water and being helped/monitored by friends.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Protective and risk behaviours

5. Protective and risk behaviours

Survey findings (for 'risk/protective' behaviours in association with the last festival):

Risk behaviours:

- *Illicit drug users reported a median of four risk behaviours.*
- *Notable risk behaviours for ecstasy users include 'double dropping' (i.e. taking two pills at the same time) (48% of ecstasy pill users), going 24 hours or longer without sleeping (19%), obtaining from an unknown/untrusted source (15%), not drinking any water or isotonic drinks at all during the festival (6%) and driving under the influence of an illicit drug (5%).*

Protective behaviours:

- *Illicit drug users reported a median of six 'protective' behaviours.*
- *Notable 'protective' behaviours for ecstasy users included looking on the Pill Reports website (50% of ecstasy pill users), starting with a smaller amount to see what the drug was like (27%), taking magnesium for muscle cramps (12%), testing with a drug test kit (9%) and taking 5-HTP (6%).*

Recommended water consumption (when using MDMA):

- *When asked about the recommended water consumption guidelines while using ecstasy in the festival environment, 38% selected the typically recommended amount of 500ml per hour. The remainder selected 300ml (25%), 1L (10%) and 'you should drink as much as possible' (17%).*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Harm reduction strategies

6. Harm reduction strategies

Survey findings (for harm reduction strategies observed at the last festival):

Strategies observed:

- *Almost all festival-goers (98%) observed harm reduction strategies (median=5).*
- *The most commonly observed strategies were free water stations and on-site first-aid services (each 82%), shaded areas to sit (65%) and roaming support staff (46%).*

Problems experienced:

- *Almost three-quarters (74%) reported experiencing at least one problem at the festival (median=1).*
- *The most commonly reported problems were difficulty accessing food (34%), difficulty accessing toilet facilities (33%) and difficulty accessing free water and shade (each 23%).*
- *Other notable problems included difficulty getting transport home (18%), needed help but was unsure where to go (3%) and difficulty accessing first-aid services (1%).*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	To a great extent	To a moderate extent	To a small extent	Not at all
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Drug detection dogs

7. Drug detection dogs

Your level of support

What is your current position/level of support in relation to drug detection dog operations in the context of outdoor music festivals?

Strongly support	Support	Neutral	Oppose	Strongly oppose
○	○	○	○	○

Has your position/level of support changed at all over time?

Survey findings (for drug dogs)

Deterrent effect:

- *Of those who heard/suspected that drug detection dogs might be present, only 3% reported that this led them to make the decision not to take drugs on the day of the festival.*
- *The most commonly reported decisions made were to instead conceal their drugs well (28%), to simply hope for the best (20%), to assess the situation when they arrived and avoid police (15%), to send a spotter ahead to report back police activity (12%) and to get someone else to carry their drugs in for them (9%).*

Response to seeing dogs:

- *Approximately one-quarter (28%) reported actually seeing dogs on the day and 41% of those reported having drugs on their person at the time. Of those who had drugs on their person, 10% reported consuming some (8%) or all (2%) of their drugs in response to seeing the dogs.*

Level of support:

- *Only one-quarter (25%) reported that they support this strategy and only 23% perceived drug dogs as effective in reducing harm.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	A great extent	A moderate extent	A small extent	Not at all
○	○	○	○	○

To what extent do these findings impact your level of support?

Strongly increases support	Increases support	No impact	Decreases support	Strongly decreases support
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Pill testing / Drug checking

8. Pill testing / drug checking

Your level of support

What is your current position/level of support in relation to introducing a pill testing/drug checking trial in the context of outdoor music festivals?

Strongly support	Support	Neutral	Oppose	Strongly oppose
○	○	○	○	○

Has your position/level of support changed at all over time?

Survey findings (for pill/testing drug checking):

Level of support:

- *A majority supported introducing on-site drug checking (84%) and off-site drug checking (81%).*

Would they have accessed a service?

- *The majority of illicit drug users reported that they would have definitely (60%) or probably (20%) used a drug checking service at the last festival had it been available to them. Only 1% said they definitely would not have.*
- *Of the 40% who did not select 'definitely', the most commonly reported reasons for not definitely accessing a drug checking service were fear of police watching/intervening (51%), unnecessary as they obtained from a trusted source (34%) and unnecessary as they had already tried drugs from that batch so knew what to expect (26%).*

Where would they access a service?

- *The majority (60%) said they would consider both on-site and off-site service options, 20% said they would only consider on-site services and 14% said they would only consider off-site services.*

How much would they pay?

- *The greatest proportion (39%) said they would only access the service if it were free, 32% would pay up to $5 per test, 21% would pay up to $10, 5% would pay up to $20 and less than 1% would pay up to $50.*

How would they respond to test results?

- *When asked what they would do if a test indicated the drug did not contain what they initially thought, 19% reported they would not have consumed it under any circumstances, 61% would not have consumed it if it contained something very dangerous, 60% would*

have warned their friends, 37% would have informed their supplier and 40% would have been more cautious.

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	A great extent	A moderate extent	A small extent	Not at all
○	○	○	○	○

To what extent do these findings impact your level of support?

Strongly increases support	Increases support	No impact	Decreases support	Strongly decreases support
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Support for other drug policies

9. Support for other drug policies at festivals

Survey findings:

- *A minority (21%) supported zero-tolerance drug policies. Only 13% perceived them as effective.*
- *A minority (3%) supported banning/canceling festivals. Only 9% perceived this strategy as effective.*
- *A minority (25%) supported increasing drug policing. Only 22% perceived this strategy as effective.*
- *A majority (77%) supported a harm reduction drug policy (in place of zero-tolerance).*
- *A majority (67%) supported drug amnesty bins.*
- *A majority (95%) supported introducing low cost food stalls/tents.*
- *A majority (97%) supported mandatory free water stations.*
- *A majority (95%) supported mandatory on-site medical standards (e.g. ensuring qualified medical professionals are on-site).*
- *There was mixed support for introducing a $10 medical levy on ticket prices with 45% supporting the strategy, 31% being neutral and 24% opposing the strategy.*

Your reflections:

To what extent is the above data consistent with your expectations?

Entirely	A great extent	A moderate extent	A small extent	Not at all
○	○	○	○	○

Please provide any comments, personal reflections, interpretations or implications you wish to share in the space below.

Music/festival industry specific questions

Music/festival industry specific questions

Thinking about your experience within the industry, do you think it's possible to influence the 'culture' of illicit drug use? If so, how do you think this could be achieved?

Government specific questions

Government/regulation specific questions

Is anything new happening in relation to the regulation of outdoor music festivals? (e.g. new policies, revisions to the guidelines, monitoring).

Law enforcement specific questions

Law enforcement specific questions

Are you aware of any plans/intentions to review/change current policing approaches (e.g. zero-tolerance, drug dog operations) at outdoor music festivals?

Other comments

Other comments

Do you have any other comments you would like to make?

Anonymity

Acknowledgement

The results of this research may be presented at conferences or published in professional journals. However, you will not be identified in any results that are published or presented, unless you explicitly indicate that you would like acknowledgement below.

- I would prefer the data be de-identified at both individual and agency level. I understand that neither I, nor the agency/organisation I am affiliated with, will be identified in any publications or presentations.
- I would prefer acknowledgement and I am participating as an authorised spokesperson for my agency/organisation. I understand that my responses will be deemed to represent my agencies official views. Please enter your details (your name and your agency name) in the space provided.
- I would prefer acknowledgement ; however, I am not participating as an authorised spokesperson for my agency/organisation. acknowledgement would need to be accompanied by a disclaimer note. Please enter your details (your name and your agency name) in the space provided.

Appendix E: Additional statistics tables

E.1 Prevalence (by gender)

Table 5.4: Drugs used in association with the last festival attended (% of respondents by gender)

Drugs used	Male *n*=1022	Female *n*=935	Total *n*=1957	*p*
Drugs used				
Alcohol	83.5	79.6	81.6	0.026*
Ecstasy/MDMA	58.8	41.4	50.5	<0.001***
Tobacco	50.5	39.7	45.3	<0.001***
Cannabis	38.2	23.3	31.1	<0.001***
Ketamine	12.5	5.7	9.2	<0.001***
LSD	11.7	4.0	8.0	<0.001***
Cocaine	9.5	5.3	7.5	0.001**
Nitrous oxide	10.1	4.6	7.5	<0.001***
Speed	9.6	5.1	7.5	<0.001***
Pharmaceutical stimulants	4.7	3.5	4.1	0.195
Benzodiazepines	4.1	3.7	3.9	0.677
MDA	4.5	2.2	3.4	0.006*
Magic mushrooms	3.7	2.6	3.2	0.146
Crystal methamphetamine	2.5	1.0	1.8	0.008*
DMT	2.6	0.7	1.7	0.001**
Amyl nitrate	1.9	0.9	1.4	0.057
GHB	1.4	1.2	1.3	0.704
2C-x family	0.9	0.4	0.7	0.211
Other opiates/opioids	0.6	0.3	0.5	#
Heroin	0.3	0.0	0.2	#
Synthetic cannabis	0.2	0.1	0.2	#
NBOMe series	0.2	0.0	0.1	#
Steroids	0.1	0.0	0.1	#
Other	0.9	0.6	0.8	0.729
No drug use at all	9.8	14.5	12.1	0.001**
Used an illicit drug (%)	70.1	52.8	61.8	<0.001***

Note. 10 respondents were excluded who did not identify as male or female. [a]These drugs were recoded from other text responses. [#]Cell sizes were too small for statistical analysis. *p<0.050; **p<0.010; ***p<0.001.

E.2 Prevalence (by jurisdiction)

Table 5.5: Drugs used in association with the last festival attended (% of respondents according to jurisdiction)

	WA *n*=978	VIC *n*=989	Total *N*=1967	*p*
Drugs used				
Alcohol	80.0	83.2	81.6	0.062
Ecstasy	49.9	51.1	50.5	0.606
Tobacco	40.4	50.5	45.4	<0.001***
Cannabis	27.5	34.5	31.0	0.001**
Ketamine	0.3	18.1	9.3	<0.001***
LSD	4.9	11.1	8.0	<0.001***
Nitrous oxide	4.3	10.6	7.5	<0.001***
Cocaine	3.7	11.2	7.5	<0.001***
Speed	1.0	13.9	7.5	<0.001***
Pharmaceutical stimulants	6.5	1.7	4.1	<0.001***
Benzodiazepines	3.1	4.8	3.9	0.054
MDA	3.2	3.8	3.5	0.418
Magic mushrooms	1.8	4.4	3.2	0.001**
Crystal methamphetamine	1.3	2.2	1.8	0.133
DMT	1.1	2.3	1.7	0.041
Amyl nitrate	0.9	1.9	1.4	0.061
GHB	0.2	2.3	1.3	<0.001***
2C-x family	0.9	0.5	0.7	0.274
Other opiates/opioids	0.4	0.5	0.5	#
Heroin	0.3	0.1	0.2	#
Synthetic cannabis	0.1	0.2	0.2	#
NBOMe series	0.2	0.0	0.1	#
Steroids	0.1	0.1	0.1	#
Other	0.4	1.1	0.8	0.125
N/A- no drugs used	12.1	12.0	12.0	0.982
Used an illicit drug	60.1	63.6	61.9	0.112

[a]These drugs were recoded from other text responses. [#]Cell sizes were too small for statistical analysis.
*p<0.050; **p<0.010; ***p<0.001.

E.3 Prevalence (by festival type)

Table 5.6: Drugs used in association with the last festival attended (% of respondents by festival type)

Drugs used	One-day *n*=1365	Multi-day *n*=440	Total *n*=1805	*p*
Drugs used (%)				
Alcohol	81.5	88.2	83.1	0.001**
Ecstasy/MDMA	48.1	62.5	51.6	<0.001***
Tobacco	41.8	60.0	46.2	<0.001***
Cannabis	25.6	50.0	31.5	<0.001***
Ketamine	3.9	28.0	9.8	<0.001***
LSD	3.2	25.0	8.5	<0.001***
Cocaine	6.1	12.7	7.7	<0.001***
Nitrous oxide	4.0	20.5	8.0	<0.001***
Speed	4.1	20.0	8.0	<0.001***
Pharmaceutical stimulants	4.2	4.3	4.3	0.950
Benzodiazepines	2.1	10.5	4.2	<0.001***
MDA	2.8	5.7	3.5	0.004*
Magic mushrooms	1.2	10.2	3.4	<0.001***
Crystal methamphetamine	1.2	3.2	1.7	<0.012*
DMT	0.5	5.9	1.8	<0.001***
Amyl nitrate	0.7	4.1	1.6	<0.001***
GHB	0.3	4.3	1.3	<0.001***
2C-x family	0.4	1.6	0.7	#
Other opiates/opioids	0.3	1.1	0.5	#
Heroin	0.2	0.2	0.2	#
Synthetic cannabis	0.1	0.2	0.2	#
NBOMe series	0.0	0.5	0.1	#
Steroids	0.1	0.0	0.1	#
Other	0.4	2.3	0.8	0.001*
No drug use at all	11.8	5.9	10.4	<0.001***
Used an illicit drug (%)	57.9	78.2	62.8	<0.001***

Note. Respondents identified with inconsistent festival selections were excluded from this table so it did not affect the validity of the results. Thus, totals in this table will not match totals in other tables.
[a]These drugs were recoded from other text responses. *p<0.050; **p<0.010; ***p<0.001.

E.4 Correlates of any illicit drug use

In the multivariable model below (see *Table 5.7*), illicit drug use at the last festival was uniquely predicted by age, gender, the number of recent festivals attended, preferred music genre to attend festivals for and the type of festival last attended.

Specifically, the odds of reporting illicit drug use among over 25 year olds was 2.1 times that of 16-17 year olds and twice that of 18-19 year old; males were 1.8 times as likely as females; respondents who had attended more than five recent music festivals were over 3 times as likely as those who had only attended 1-2 recent festivals and those who had attended 3-4 recent festivals were still 1.6 times as likely as those who had attended only 1-2; respondents who preferred to attend festivals for an EDM genre were 2.6 times as likely as those who preferred an alternative music genre; and, finally, respondents who attended a multi-day music festival were 2.7 times as likely as those who attended a one-day festival. Thus, male gender and attendance at a multi-day festival still predicted illicit drug use after controlling for a range of other variables. However, attendance at more than five recent festivals was identified as the strongest predictor of illicit drug use at the last festival.

Table 5.7: Correlates of illicit drug use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			62%	38%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	47.0	53.0	0.338	0.229-0.498	<0.001***	0.426	0.280-0.650	<0.001***
	18-19 years old	555	56.9	43.1	0.500	0.345-0.726	<0.001***	0.490	0.328-0.733	0.001**
	20-21 years old	426	69.7	30.3	0.877	0.593-1.297	0.511	0.787	0.516-1.198	0.264
	22-25 years old	408	70.8	29.2	0.925	0.623-1.373	0.700	0.802	0.524-1.226	0.308
	Over 25 years old	174	72.4	27.6	1.000			1.000		
Gender	Male	1016	59.2	40.8	2.095	1.739-2.524	<0.001***	1.815	1.483-2.223	<0.001***
	Female	928	40.8	59.2	1.000			1.000		
Jurisdiction	VIC	975	63.8	36.2	1.162	0.967-1.395	0.109	1.216	0.978-1.512	0.079
	WA	969	60.3	39.7	1.000			1.000		
Total festivals past 12 months	1-2	892	50.4	49.6	0.275	0.209-0.361	<0.001***	0.309	0.231-0.413	<0.001***
	3-4	649	67.8	32.2	0.571	0.428-0.763	<0.001***	0.599	0.441-0.813	0.001**
	5 or more	403	78.7	21.3	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	48.9	51	0.316	0.256-0.391	<0.001***	0.389	0.310-0.487	<0.001***
	Doesn't attend for any genre	353	58.6	41	0.470	0.361-0.611	<0.001***	0.551	0.416-0.729	<0.001***
	Yes	844	75.2	25	1.000			1.000		
Festival type	One-day	1350	58.0	42.0	0.382	0.297-0.492	<0.001***	0.379	0.284-0.505	<0.001***
	Inconsistent selection	160	51.9	48.1	0.410	0.272-0.617	<0.001***	0.348	0.227-0.534	<0.001***
	Multi-day	434	78.3	21.7	1.000			1.000		

Model $\chi 2$ (12)=345.53, p<0.001. Adjusted R square=0.163 (Cox & Snell), 0.222 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.233; out of total sample of 1967 cases, 1944 were included; 23 cases were excluded due to missing values for some of the variables. [#]Dropped from the multivariable model because p>0.25. *p<0.050; **p<0.010; ***p<0.001.

E.5 Correlates of ecstasy/MDMA use

In the multivariable model below (see *Table 5.8*), ecstasy use at the last festival was uniquely predicted by age, gender, the number of recent festivals attended, preferred music genre to attend festivals for and the type of festival last attended. Specifically, respondents over 25 years old were 1.7 times as likely to report ecstasy compared to 16-17 year olds; males were 1.7 times more likely than females; respondents who had attended more than five recent festivals were 2.6 times as likely as those who had only attended 1-2 recent festivals and those who had attended 3-4 recent festivals were still 1.7 times as likely as those who had attended only 1-2; respondents who preferred to attend festivals for an EDM genre were 3.1 times as likely to report ecstasy use compared to those who preferred an alternative music genre; and, finally, respondents who attended a multi-day music festival were 1.6 times as likely to report using ecstasy compared to those who attended a one-day festival. Thus, the most highly predictive variable identified in the model was a preference for an EDM genre, followed by higher levels of recent involvement in the festival scene.

Table 5.8: Correlates of ecstasy/MDMA use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			50.7%	49.3%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	36.2	63.8	0.483	0.336-0.696	<0.001***	0.606	0.409-0.899	0.013*
	18-19 years old	555	45.6	54.4	0.713	0.507-1.003	0.052	0.704	0.487-1.018	0.062
	20-21 years old	426	58.2	41.8	1.186	0.831-1.691	0.347	1.071	0.730-1.570	0.727
	22-25 years old	408	61.8	38.2	1.375	0.960-1.968	0.082	1.216	0.827-1.788	0.321
	Over 25 years old	174	54.0	46.0	1.000			1.000		
Gender	Male	1016	59.0	41.0	2.017	1.683-2.417	<0.001***	1.722	1.417-2.093	<0.001***
	Female	928	41.6	58.4	1.000			1.000		
Jurisdiction	VIC	975	51.2	48.8	1.042	0.872-1.245	0.651	#		
	WA	969	50.2	49.8	1.000					
Total festivals past 12 months	1-2	892	40.1	59.9	0.319	0.249-0.409	<0.001***	0.381	0.292-0.497	<0.001***
	3-4	649	54.5	45.5	0.571	0.441-0.741	<0.001***	0.604	0.458-0.796	<0.001***
	5 or more	403	67.7	32.3	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	35.5	64.5	0.270	0.219-0.332	<0.001***	0.319	0.257-0.396	<0.001***
	Doesn't attend for any genre	353	43.6	56.4	0.380	0.295-0.490	<0.001***	0.435	0.333-0.568	<0.001***
	Yes	844	67.1	32.9	1.000			1.000		
Festival type	One-day	1350	48.3	51.7	0.562	0.450-0.701	<0.001***	0.615	0.483-0.783	<0.001***
	Inconsistent selection	160	38.8	61.3	0.381	0.262-0.552	<0.001***	0.474	0.315-0.713	<0.001***
	Multi-day	434	62.4	37.6	1.000			1.000		

Model $\chi 2$ (11)=329.535, p<0.001. Adjusted R square=0.156 (Cox & Snell), 0.208 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.339, n=1944. #Dropped from the multivariable model because p>.25. *p<0.050; **p<0.010; ***p<0.001.

E.6 Correlates of cannabis use

In the multivariable model below (*Table 5.9*), cannabis use at the last festival was uniquely predicted by gender, the number of recent festivals attended and the type of festival last attended. Specifically, males were twice as likely as females; respondents who had attended more than five recent festivals were 1.8 times as likely; and respondents who attended a multi-day music festival were 3 times as likely to report using cannabis compared to those who attended a one-day festival. Thus, jurisdiction did not uniquely predicted cannabis use after controlling for other variables. Additionally, in contrast to ecstasy, a preference for EDM and age also did not uniquely predict cannabis use. The strongest predictor of cannabis use identified was attendance at a multi-day music festival, followed by male gender.

Table 5.9: Correlates of cannabis use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			31.1%	68.9%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	27.3	72.7	0.857	0.578-1.271	0.443			
	18-19 years old	555	31.7	68.3	1.060	0.7331.533	0.756			
	20-21 years old	426	33.1	66.9	1.129	0.772-1.653	0.531	#		
	22-25 years old	408	32.1	67.9	1.080	0.735-1.585	0.695			
	Over 25 years old	174	30.5	69.5	1.000					
Gender	Male	1016	38.3	61.7	2.045	1.678-2.493	<0.001***	1.975	1.608-2.426	<0.001***
	Female	928	23.2	76.7	1.000			1.000		
Jurisdiction	VIC	975	34.6	65.4	1.382	1.139-1.676	0.001**	0.951	0.760-1.189	0.657
	WA	969	27.7	72.3	1.000			1.000		
Total festivals past 12 months	1-2	892	26.3	73.7	0.572	0.446-0.735	<0.001***	0.555	0.427-0.722	<0.001***
	3-4	649	33.5	66.9	0.793	0.612-1.027	0.078	0.768	0.586-1.006	0.055
	5 or more	403	38.5	61.5	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	28.0	72.0	0.778	0.628-0.965	0.022*	0.965	0.768-1.212	0.758
	Doesn't attend for any genre	353	32.6	67.4	0.968	0.743-1.261	0.810	1.140	0.863-1.505	0.358
	Yes	844	33.3	66.7	1.000			1.000		
Festival type	One-day	1350	25.6	74.4	0.341	0.273-0.427	<0.001***	0.334	0.258-0.431	<0.001***
	Inconsistent selection	160	25.6	74.4	0.341	0.228-0.510	<0.001***	0.346	0.227-0.527	<0.001***
	Multi-day	434	50.2	49.8	1.000			1.000		

Model $\chi 2$ (8)=158.458, p<0.001. Adjusted R square=0.078 (Cox & Snell), 0.110 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.451, n=1944.
[#]Dropped from the multivariable model because p>0.25. *p<0.050; **p<0.010; ***p<0.001.

E.7 Correlates of cocaine use

In the multivariable model below (see *Table 5.12*), cocaine use at the last festival was uniquely predicted by age, gender, jurisdiction, the number of recent festivals attended and the preferred music genre to attend festivals for. Specifically, respondents over 25 years old were 12 times as likely to report cocaine use compared to 16-17 year olds, 6.7 times as likely as 18-19 year olds and 3.9 times as likely as 20-21 year olds; males were 1.5 times as likely as females; Victorians were twice as likely as Western Australians ; respondents who had attended more than five recent music festivals were 2.2 times as likely as those who had only attended 1-2 and 1.8 times as likely as those who had attended 3-4; and finally, respondents who preferred to attend festivals for an EDM genre were 3 times as likely to report cocaine use compared to those who preferred an alternative music genre. Therefore, while male gender and living in Victoria still predicted cocaine use after controlling for other variables, attendance at a multi-day festival did not. Overall, however, the most highly predictive variable for cocaine use was age (over 25s).

Table 5.10: Correlates of cocaine use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			7.5%	92.5%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	1.6	98.4	0.061	0.025-0.149	<0.001***	0.082	0.033-0.204	<0.001***
	18-19 years old	555	3.8	96.2	0.151	0.085-0.267	<0.001***	0.149	0.082-0.270	<0.001***
	20-21 years old	426	7.3	92.7	0.301	0.179-0.505	<0.001***	0.253	0.146-0.438	<0.001***
	22-25 years old	408	12.7	87.3	0.560	0.351-0.894	0.015*	0.473	0.288-0.777	0.003*
	Over 25 years old	174	20.7	79.3	1.000			1.000		
Gender	Male	1016	9.4	90.6	1.832	1.286-2.611	0.001**	1.538	1.059-2.234	0.024*
	Female	928	5.4	94.6	1.000			1.000		
Jurisdiction	VIC	975	10.7	89.3	2.635	1.820-3.861	<0.001***	2.059	1.343-3.156	0.001**
	WA	969	4.3	95.7	1.000			1.000		
Total festivals past 12 months	1-2	892	5.5	94.5	0.430	0.283-0.652	<0.001***	0.453	0.289-0.709	0.001*
	3-4	649	7.6	92.4	0.604	0.397-0.918	0.018*	0.551	0.353-0.858	0.008*
	5 or more	403	11.9	88.1	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	3.6	96.4	0.296	0.191-0.459	<0.001***	0.337	0.213-0.532	<0.001***
	Doesn't attend for any genre	353	6.8	93.2	0.575	0.361-0.917	0.020*	0.686	0.420-1.119	0.131
	Yes	844	11.3	88.7	1.000			1.000		
Festival type	One-day	1350	6.1	93.9	0.437	0.305-0.625	<0.001***	0.814	0.535-1.238	0.336
	Inconsistent selection	160	5.0	95.0	0.355	0.165-0.763	0.008**	0.734	0.325-1.657	0.457
	Multi-day	434	12.9	87.1	1.000			1.000		

Model $\chi 2$ (12)=151.976, p<0.001. Adjusted R square=0.075 (Cox & Snell), 0.182 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.724, n=1944. *p<0.050; **p<0.010; ***p<0.001.

E.8 Correlates of hallucinogen use

In the multivariable model below (see *Table 5.11*), hallucinogenic drug use (including LSD, magic mushrooms, mescaline and DMT) at the last festival was uniquely predicted by gender, the number of recent festivals attended, preferred music genre to attend festivals for and the type of festival last attended. Specifically, males were 2.3 times as likely as females; respondents who had attended more than five recent music festivals were also 2.3 times as likely as those who had only attended 1-2 recent festivals; respondents who preferred to attend festivals for an EDM genre were 2.8 times as likely compared to those who preferred an alternative music genre; and, finally, respondents who attended a multi-day music festival were 12.8 times as likely as those who attended a one-day festival. Thus, jurisdiction no longer uniquely predicted hallucinogenic drug use after controlling for other variables. Overall, attending a multi-day festival was by far the strongest predictor in the model.

Table 5.11: Correlates of hallucinogen use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			10.1%	89.9%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	6.3	93.7	0.351	0.197-0.625	<0.001***	0.741	0.380-1.443	0.378
	18-19 years old	555	10.3	89.7	0.597	0.366-0.973	0.038*	0.878	0.501-1.537	0.649
	20-21 years old	426	8.7	91.3	0.496	0.293-0.840	0.009**	0.571	0.315-1.034	0.064
	22-25 years old	408	12.5	87.5	0.745	0.452-1.228	0.248	0.759	0.429-1.342	0.343
	Over 25 years old	174	16.1	83.9	1.000			1.000		
Gender	Male	1016	14.0	86.0	2.579	1.863-3.570	<0.001***	2.329	1.628-3.331	<0.001***
	Female	928	5.9	94.1	1.000			1.000		
Jurisdiction	VIC	975	13.9	86.1	2.413	1.759-3.310	<0.001***	0.721	0.465-1.119	0.144
	WA	969	6.3	93.7	1.000			1.000		
Total festivals past 12 months	1-2	892	7.4	92.6	0.475	0.327-0.691	<0.001***	0.438	0.285-0.673	<0.001***
	3-4	649	11.2	88.8	0.754	0.521-1.091	0.134	0.706	0.464-1.075	0.105
	5 or more	403	14.4	85.6	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	5.2	94.8	0.311	0.214-0.452	<0.001***	0.362	0.240-0.544	<0.001***
	Doesn't attend for any genre	353	8.8	91.2	0.544	0.359-0.822	0.004*	0.601	0.379-0.952	0.030*
	Yes	844	15.0	85.0	1.000			1.000		
Festival type	One-day	1350	4.2	96.5	0.098	0.070-0.136	<0.001***	0.078	0.051-0.120	<0.001***
	Inconsistent selection	160	3.1	96.9	0.071	0.029-0.178	<0.001***	0.063	0.024-0.163	<0.001***
	Multi-day	434	31.1	68.9	1.000			1.000		

Model $\chi 2$ (12)=301.823, p<0.001. Adjusted R square=0.144 (Cox & Snell), 0.299 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.617, n=1944. *p<0.050; **p<0.010; ***p<0.001.

E.9 Correlates of ketamine use

In the multivariable model below (see *Table 5.12*), ketamine use at the last festival was uniquely predicted by age, gender, jurisdiction, the number of recent festivals attended, preferred music genre to attend festivals for and the type of festival last attended. Specifically, respondents 20-21 years old were 2.3 times as likely to report ketamine use compared to over 25 year olds; males were 1.9 times as likely as females; Victorians were 43.9 times as likely as Western Australians; respondents who had attended more than five recent festivals were over 1.9 times as likely as those who had only attended 1-2 recent festivals; respondents who preferred to attend festivals for an EDM genre were 5.7 times as likely to report ketamine use compared to those who preferred an alternative music genre; and, finally, respondents who attended a multi-day music festival were 4.2 times more likely to report using ketamine compared to those who attended a one-day festival. Thus, the most highly predictive variables for ketamine use identified in the model were living in Victoria, followed by a preference for EDM and then attendance at a multi-day music festival.

Table 5.12: Correlates of ketamine use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			9.3%	90.7%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	2.1	97.9	0.227	0.094-0.547	0.001*	0.891	0.339-2.34	0.815
	18-19 years old	555	8.6	91.4	1.004	0.547-1.841	0.991	1.946	0.981-3.858	0.057
	20-21 years old	426	13.1	86.9	1.604	0.881-2.921	0.122	2.347	1.190-4.628	0.014*
	22-25 years old	408	13.2	86.8	1.617	0.886-2.952	0.118	1.962	0.996-3.865	0.051
	Over 25 years old	174	8.6	91.4	1.000			1.000		
Gender	Male	1016	12.6	87.4	2.380	1.705-3.322	<0.001***	1.945	1.327-2.849	0.001*
	Female	928	5.7	94.3	1.000			1.000		
Jurisdiction	VIC	975	18.3	81.7	71.915	22.887-225.972	<0.001***	43.897	13.668-140.978	<0.001***
	WA	969	0.3	99.7	1.000			1.000		
Total festivals past 12 months	1-2	892	6.8	93.2	0.530	0.357-0.788	0.002**	0.522	0.325-0.836	0.007**
	3-4	649	10.9	89.1	0.887	0.602-1.307	0.546	0.780	0.491-1.241	0.294
	5 or more	403	12.2	87.8	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	3.1	96.9	0.171	0.109-0.270	<0.001***	0.175	0.107-0.285	<0.001***
	Doesn't attend for any genre	353	7.4	92.6	0.429	0.276-0.666	<0.001***	0.493	0.301-0.809	0.005**
	Yes	844	15.6	84.4	1.000			1.000		
Festival type	One-day	1350	3.9	96.1	0.105	0.074-0.148	<0.001***	0.239	0.163-0.352	<0.001***
	Inconsistent selection	160	3.8	96.3	0.100	0.043-0.231	<0.001***	0.202	0.082-0.500	0.001**
	Multi-day	434	28.1	71.9	1.000			1.000		

Model $\chi 2$ (12)=428.562, p<0.001. Adjusted R square=0.198 (Cox & Snell), 0.429 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.906, n=1944. *p<0.050; **p<0.010; ***p<0.001.

E.10 Correlates of nitrous oxide use

In the multivariable model below (see *Table 5.13*), nitrous oxide use at the last festival was uniquely predicted by gender, the number of recent festivals attended, preferred music genre to attend festivals for and the type of festival last attended. Specifically, males were 1.9 times as likely as females; respondents who had attended more than five recent festivals were 2.7 times as likely as those who had only attended 1-2 recent festivals; respondents who preferred EDM were 3.3 times as likely to report use compared to those who preferred an alternative music genre; and, finally, respondents who attended a multi-day music festival were 5.2 times as likely compared to those who attended a one-day festival. Thus, a preference for EDM and attendance at a multi-day festival were the most highly predictive variables of nitrous oxide use.

Table 5.13: Correlates of nitrous use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			7.5%	92.5%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	3.9	96.1	0.378	0.184-0.777	0.008*	0.847	0.387-1.855	0.679
	18-19 years old	555	6.5	93.5	0.641	0.350-1.172	0.148	0.875	0.455-1.686	0.691
	20-21 years old	426	8.9	91.1	0.904	0.496-1.650	0.743	1.037	0.539-1.994	0.914
	22-25 years old	408	9.6	90.4	0.967	0.536-1.778	0.937	0.952	0.497-1.824	0.882
	Over 25 years old	174	9.8	90.2	1.000			1.000		
Gender	Male	1016	10.0	90.0	2.297	1.589-3.319	<0.001***	1.895	1.280-2.804	0.001**
	Female	928	4.6	95.4	1.000			1.000		
Jurisdiction	VIC	975	11.2	88.8	3.262	2.213-4.808	<0.001***	1.562	0.971-2.513	0.066
	WA	969	3.7	96.3	1.000			1.000		
Total festivals past 12 months	1-2	892	4.6	95.4	0.365	0.236-0.565	<0.001***	0.370	0.231-0.595	<0.001***
	3-4	649	8.8	91.2	0.729	0.48501.097	0.129	0.697	0.448-1.084	0.109
	5 or more	403	11.7	88.3	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	3.1	96.9	0.245	0.154-0.390	<0.001***	0.303	0.186-0.493	<0.001***
	Doesn't attend for any genre	353	7.1	92.9	0.587	0.371-0.928	0.023*	0.715	0.439-1.116	0.179
	Yes	844	11.5	88.5	1.000			1.000		
Festival type	One-day	1350	3.9	96.1	0.156	0.109-0.224	<0.001***	0.193	0.125-0.297	<0.001***
	Inconsistent selection	139	1.3	98.8	0.048	0.012-0.199	<0.001***	0.062	0.015-0.259	<0.001***
	Multi-day	434	20.7	79.3	1.000			1.000		

Model $\chi 2$ (12)=192.529, p<0.001. Adjusted R square=0.094 (Cox & Snell), 0.229 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.959, n=1944. *p<0.050; **p<0.010; ***p<0.001.

E.11 Correlates of meth/amphetamine use

In the multivariable model below (see *Table 5.14*), meth/amphetamine (including powder/speed and crystal methamphetamine) use at the last festival was uniquely predicted by age, gender, jurisdiction, the number of recent festivals attended, preferred music genre to attend festivals for and the type of festival last attended. Specifically, respondents over 25 year olds were approximately 2.5 times as likely to report methamphetamine use compared to 18-19 year olds and 20-21 year olds; males were 1.8 times as likely as females; Victorians were 5.4 times as likely as Western Australians ; respondents who had attended more than five recent festivals were 1.6 times as likely as those who had attended 1-2 recent festivals; respondents who preferred an EDM genre were 3.0 times as likely as those who preferred an alternative music genre; and, finally, respondents who attended a multi-day festival were 2.5 times as likely as those who attended a one-day festival. Thus, living in Victoria and attending a multi-day festival were the most highly predictive variables of methamphetamine use.

Table 5.14: Correlates of meth/amphetamine use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			8.7%	91.3%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	4.7	95.3	0.238	0.129-0.440	<0.001***	0.547	0.280-1.069	0.078
	18-19 years old	555	6.1	93.9	0.313	0.185-0.529	<0.001***	0.409	0.232-0.721	0.002**
	20-21 years old	426	7.7	92.2	0.403	0.237-0.685	0.001**	0.407	0.229-0.723	0.002**
	22-25 years old	408	13.5	86.5	0.748	0.460-1.215	0.241	0.724	0.425-1.235	0.236
	Over 25 years old	174	17.2	82.8	1.000			1.000		
Gender	Male	1016	11.4	88.6	2.086	1.491-2.919	<0.001***	1.825	1.272-2.617	0.001**
	Female	928	5.8	94.2	1.000			1.000		
Jurisdiction	VIC	975	15.2	84.8	7.703	4.875-12.172	<0.001***	5.430	3.297-8.944	<0.001***
	WA	969	2.3	97.7	1.000			1.000		
Total festivals past 12 months	1-2	892	7.6	93.3	0.620	0.410-0.937	0.023*	0.622	0.396-0.976	0.039*
	3-4	649	10.5	89.5	1.006	0.670-1.510	0.977	0.929	0.598-1.444	0.744
	5 or more	403	10.4	89.6	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	4.1	95.9	0.301	0.199-0.456	<0.001***	0.330	0.213-0.511	<0.001***
	Doesn't attend for any genre	353	9.3	90.7	0.718	0.475-1.084	0.115	0.854	0.547-1.331	0.485
	Yes	844	12.6	87.4	1.000			1.000		
Festival type	One-day	1350	5.2	94.8	0.198	0.142-0.276	<0.001***	0.416	0.287-0.602	<0.001***
	Inconsistent selection	160	3.8	96.3	0.141	0.060-0.329	<0.001***	0.265	0.110-0.640	0.003**
	Multi-day	434	21.7	78.3	1.000			1.000		

Model $\chi 2$ (12)=219.930, p<0.001. Adjusted R square=0.107 (Cox & Snell), 0.239 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.241, n=1944. *p<0.050; **p<0.010; ***p<0.001.

E.12 Correlates of pharmaceutical stimulant use

In the multivariable model below (see *Table 5.15*), pharmaceutical stimulant use at the last festival was uniquely predicted by jurisdiction and age. Specifically, respondents over 25 years old were 7.5 times as likely as 16-17 year olds and 3.3 times as likely as 18-19 year olds; and respondents from Western Australia were 4.9 times as likely to report use compared to Victorians.

Table 5.15: Correlates of pharmaceutical stimulant use (multivariable logistic regression)

Variable	Level	N	Did use	Did not use	Bivariate			Multivariable		
			4.2%	95.8%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	381	1.6	98.4	0.198	0.074-0.531	0.001**	0.133	0.049-0.361	<0.001***
	18-19 years old	555	3.4	96.6	0.439	0.212-0.908	0.026*	0.302	0.143-0.641	0.002**
	20-21 years old	426	4.0	96.0	0.515	0.244-1.084	0.081	0.388	0.179-0.841	0.017**
	22-25 years old	408	6.4	93.6	0.843	0.422-1.682	0.628	0.684	0.334-1.401	0.299
	Over 25 years old	174	7.5	92.5	1.000			1.000		
Gender	Male	1016	4.7	95.3	1.345	0.855-2.114	0.199	1.279	0.805-2.033	0.289
	Female	928	3.6	96.4	1.000			1.000		
Jurisdiction	VIC	975	1.7	98.3	0.251	0.146-0.432	<0.001**	0.204	0.177-0.354	<0.001***
	WA	969	6.6	93.4	1.000			1.000		
Total festivals past 12 months	1-2	892	3.0	97.0	0.493	0.281-0.865	0.014*	0.566	0.315-1.015	0.056
	3-4	649	4.6	95.4	0.765	0.441-1.329	0.342	0.859	0.489-1.511	0.599
	5 or more	403	6.0	94.0	1.000			1.000		
EDM genre favourite to attend festivals for	No	747	3.7	96.3	0.763	0.467-1.246	0.280			
	Doesn't attend for any genre	353	3.4	96.6	0.689	0.358-1.328	0.266	#		
	Yes	844	4.9	95.1	1.000					
Festival type	One-day	1350	4.3	95.7	0.981	0.577-1.665	0.942			
	Inconsistent selection	160	2.5	97.5	0.650	0.188-1.672	0.299	#		
	Multi-day	434	4.4	95.6	1.000					

Model $\chi 2$ (8)=62.762, p<0.001. Adjusted R square=0.032 (Cox & Snell), 0.108 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.681, n=1944.
#Dropped from the multivariable model because p>.25. *p<0.050; **p<0.010; ***p<0.001.

E.13 Indicators of normalisation (by jurisdiction)

Table 5.16: Indicators of normalisation (% of respondents according to jurisdiction)

	WA	VIC	Total	p
Perceived availability inside the festival	*n*=955	*n*=963	*n*=1918	
Very easy	35.9	40.0	38.0	
Easy	40.6	38.5	38.5	
Difficult	10.4	10.4	10.4	0.286
Very difficult	2.8	1.9	2.3	
Don't know	10.3	9.2	9.7	
Lifetime use	*n*=978	*n*=989	*N*=1967	
	67.4	74.0	70.7	0.001**
Recent use	*n*=978	*n*=989	*N*=1967	
	64.3	70.6	67.5	0.003**
Frequency of use (at festivals recently)	*n*=978	*n*=989	*N*=1967	
Always	33.0	34.2	33.6	
Mostly	16.0	19.5	17.7	
Sometimes	10.5	12.2	11.4	0.006**
Rarely	7.2	8.1	7.6	
Never	33.3	26.0	29.6	
Perceive as normal feature of attending festivals	*n*=924	*n*=934	*n*=1858	
	96.5	95.5	96.0	0.255
Proportion of friends who use	*n*=943	*n*=960	*n*=1903	
All	11.7	14.0	12.8	
Most	43.9	46.1	45.0	
About half	21.2	17.4	19.3	0.033*
A few	19.9	17.6	18.8	
None	3.3	4.9	4.1	
Likelihood to use in future	*n*=963	*n*=980	*n*=1943	
Extremely likely	43.0	50.3	46.7	
Somewhat likely	19.7	29.9	19.8	
Neither likely nor unlikely	10.4	8.1	9.2	0.007**
Somewhat unlikely	8.1	7.1	7.6	
Extremely unlikely	18.8	14.6	16.7	
Likelihood to attend in future without using	*n*=962	*n*=980	*n*=1942	
Extremely likely	32.3	29.1	30.7	
Somewhat likely	20.4	20.1	20.2	
Neither likely nor unlikely	15.0	15.5	15.2	0.549
Somewhat unlikely	20.1	21.9	21.0	
Extremely unlikely	12.3	13.4	12.8	
Location of first MDMA use	*n*=601	*n*=686	*n*=1287	
Clubbing/nightclub	21.1	43.3	32.9	
A music festival	43.6	17.3	29.6	
A private party	20.0	24.2	22.2	<0.001***
At home no occasion	4.3	5.8	5.1	
A concert	4.3	2.3	2.9	
Other	7.5	7.0	7.2	

E.14 Indicators of normalisation (by gender)

Table 5.17: Indicators of normalisation (% of respondents according to gender)

	Male	Female	Total	p
Perceived availability inside the festival[a]	*n*=989	*n*=920	*n*=1909	
Very easy	42.3	33.3	37.9	
Easy	37.3	42.0	39.5	
Difficult	10.3	10.5	10.4	0.001**
Very difficult	2.1	2.6	2.4	
Don't know	8.0	11.6	9.7	
Lifetime use	*n*=1022	*n*=935	*n*=1957	
	78.2	62.6	70.7	<0.001***
Recent use	*n*=1022	*n*=935	*n*=1957	
	76.0	58.1	67.5	<0.001***
Frequency of use (at festivals recently)	*n*=1022	*n*=935	*n*=1957	
Always	39.0	27.7	33.6	
Mostly	19.4	15.9	17.7	
Sometimes	12.9	9.6	11.3	<0.001***
Rarely	6.8	8.6	7.7	
Never	21.8	38.2	29.6	
Perceive as normal feature of attending festivals	*n*=974	*n*=876	*n*=1850	
	96.0	96.0	96.0	0.992
Proportion of friends who use	*n*=991	*n*=904	*n*=1895	
All	12.5	13.1	12.8	
Most	51.3	38.1	45.0	
About half	18.3	20.6	19.4	<0.001***
A few	15.8	22.0	18.8	
None	2.1	6.3	4.1	
Likelihood to use in future	*n*=1013	*n*=922	*n*=1935	
Extremely likely	55.4	38.2	46.7	
Somewhat likely	19.3	20.2	19.7	
Neither likely nor unlikely	8.8	9.7	9.2	<0.001***
Somewhat unlikely	5.8	9.7	7.6	
Extremely unlikely	11.5	22.3	16.7	
Likelihood to attend in future without using	*n*=1012	*n*=922	*n*=1934	
Extremely likely	24.5	37.6	30.8	
Somewhat likely	20.0	20.4	20.2	
Neither likely nor unlikely	16.9	13.2	15.1	<0.001***
Somewhat unlikely	23.2	18.8	21.1	
Extremely unlikely	15.4	10.0	12.8	
Location of first MDMA use	*n*=758	*n*=523	*n*=1281	
Clubbing/nightclub	35.8	29.3	33.1	
A music festival	26.4	34.0	29.5	
A private party	22.8	21.2	22.2	0.016*
at home no occasion	4.2	6.3	5.1	
A concert	3.0	2.7	2.9	
Other	7.8	6.5	7.3	

[a]Some cases are missing due to survey drop out, not filtering the sample. *p<0.050; **p<0.010; ***p<0.001.

E.15 Polydrug use associated with the last festival (by jurisdiction)

Table 5.18: Polydrug use associated with the last festival (% of respondents according to jurisdiction)

	WA	VIC	Total	*p*
Used more than one drug (excluding tobacco) (%)[a]	*n*=860 64.2	*n*=870 71.0	*n*=1730 67.6	0.002**
Median number of different drugs used (IQR)[a]	*n*=860 2.0 (1-4)	*n*=870 3.0 (2-5)	*n*=1730 3.0 (2-4)	<0.001***
Used more than one illicit drug (%)[b]	*n*=588 53.4	*n*=629 67.1	*n*=1217 60.5	<0.001***
Median number of illicit drugs used (IQR)[b]	*n*=588 2.0 (1-2)	*n*=629 2.0 (1-4)	*n*=1217 2.0 (1-3)	<0.001***
Ten most common drug combinations (inc tobacco)	*n*=860	*n*=870	*n*=1730	
1. Alcohol only	25.3	19.1	22.2	
2. Alcohol and ecstasy	12.4	5.6	9.0	
3. Alcohol and tobacco	6.3	8.6	7.5	
4. Alcohol, tobacco, cannabis and ecstasy	8.3	6.6	7.4	
5. Alcohol, tobacco and ecstasy	7.9	6.7	7.3	#
6. Alcohol, tobacco and cannabis	2.2	4.0	3.1	
7. Alcohol, cannabis and ecstasy	3.4	2.6	3.0	
8. Alcohol and cannabis	2.3	3.1	2.7	
9. Ecstasy only	2.3	0.6	1.4	
10. Alcohol, tobacco, ecstasy and ketamine	0.1	2.1	1.1	
11. Other combinations	29.4	41.0	35.3	
Ten most common polydrug combinations (exc tobacco)	*n*=551	*n*=618	*n*=1169	
1. Alcohol and ecstasy	31.8	17.3	24.1	
2. Alcohol, cannabis and ecstasy	18.1	12.9	15.4	
3. Alcohol and cannabis	7.1	10.0	8.6	
4. Alcohol, cocaine and ecstasy	2.2	2.3	2.2	
5. Cannabis and ecstasy	3.8	0.6	2.1	#
6. Alcohol, ecstasy and ketamine	0.2	3.7	2.1	
7. Alcohol and pharm stimulants	2.7	0.5	1.5	
8. Alcohol, ecstasy and pharm stimulants	2.9	0.0	1.4	
9. Alcohol, cannabis, ecstasy and speed	0.0	2.4	1.3	
10. Alcohol, ecstasy and speed	0.0	2.3	1 .2	
11. Other combinations	31.2	48.0	41.3	

[a]Among those who used a drug (licit or illicit) in association with the last festival.
[b]Among those who had used an illicit drug in association with the last festival.
[#]Cell sizes too small for statistical analysis. *p<0.050; **p<0.010; ***p<0.001.

E.16 Polydrug use associated with the last festival (by gender)

Table 5.19: Polydrug use associated with the last festival (by gender)

	Male	Female	Total	*P*
Used more than one drug (excluding tobacco) (%)[a]	*n*=922 75.7	*n*=799 58.2	*n*=1721 67.6	<0.001***
Median number of different drugs used (excluding tobacco) (IQR)[a]	*n*=922 3.0 (2-4)	*n*=799 2.0 (1-4)	*n*=1721 3.0 (2-4)	<0.001***
Used more than one illicit drug (%)[b]	*n*=716 66.6	*n*=495 51.4	*n*=1210 60.4	<0.001***
Median number of illicit drugs used (IQR)[b]	*n*=716 2.0 (1-3)	*n*=494 2.0 (1-2)	*n*=1210 2.0 (1-3)	<0.001***
Ten most drug combinations	*n*=922	*n*=799	*n*=1721	
1. Alcohol only	15.7	29.8	22.3	
2. Alcohol and ecstasy	9.1	9.0	9.1	
3. Alcohol and tobacco	6.5	8.5	7.4	
4. Alcohol, tobacco, cannabis and ecstasy	7.7	7.1	7.4	
5. Alcohol, tobacco and ecstasy	6.1	8.5	7.2	#
6. Alcohol, tobacco and cannabis	3.4	2.9	3.1	
7. Alcohol, cannabis and ecstasy	3.8	2.1	3.0	
8. Alcohol and cannabis	2.8	2.6	2.7	
9. Ecstasy only	1.0	2.0	1.5	
10. Alcohol, tobacco, ecstasy and ketamine	1.7	0.4	1.5	
11. Other drug combinations	41.8	26.9	34.8	
Ten most common polydrug combinations (exc tobacco)	*n*=698	*n*=464	*n*=1162	
1. Alcohol and ecstasy	20.1	30.2	24.1	
2. Alcohol, cannabis and ecstasy	15.2	15.9	15.5	
3. Alcohol and cannabis	8.2	9.5	8.7	
4. Alcohol, cocaine and ecstasy	2.4	1.9	2.2	
5. Cannabis and ecstasy	2.4	1.7	2.2	#
6. Alcohol, ecstasy and ketamine	3.9	0.9	2.1	
7. Alcohol and pharm stimulants	0.9	2.6	1.5	
8. Alcohol, ecstasy and pharm stimulants	1.7	0.9	1.4	
9. Alcohol, cannabis, ecstasy and speed	1.6	1.1	1.3	
10. Alcohol, ecstasy and speed	1.3	0.6	1.2	
11. Other combinations	42.3	34.7	39.8	

Note. Respondents were excluded who did not identify as male or female.
[a]Among those who used a drug (licit or illicit) in association with the last festival.
[b]Among those who had used an illicit drug in association with the last festival.
[#]Cell sizes too small for statistical analysis.

E.17 Polydrug use associated with the last festival (by festival type)

Table 5.20: Polydrug use associated with the last festival among drug users (% of respondents by festival type)

	One-day	Multi-day	Total	*p*
Used more than one drug (excluding tobacco)[a] (%)	*n*=1204 62.1	*n*=414 82.9	*n*=1618 67.4	<0.001***
Median number of different drugs used[a] (IQR)	*n*=1204 2.0 (1-4)	*n*=414 4.0 (2-6)	*n*=1618 3.0 (1-4)	<0.001***
Used more than one illicit drug[b] (%)	*n*=790 54.1	*n*=344 77.0	*n*=1134 61.0	<0.001***
Median number of different illicit drugs used (IQR)[b]	*n*=790 2.0 (1-2)	*n*=344 3.0 (2-5)	*n*=1134 2.0 (1-3)	<0.001***
Ten most common drug combinations	*n*=1204	*n*=414	*n*=1618	
1. Alcohol only	26.4	11.4	22.6	
2. Alcohol and ecstasy	10.0	5.1	8.8	
3. Alcohol and tobacco	8.1	5.6	7.4	
4. Alcohol, tobacco, cannabis and ecstasy	7.6	5.6	7.1	
5. Alcohol, tobacco and ecstasy	8.3	3.6	7.1	#
6. Alcohol, tobacco and cannabis	2.7	4.1	3.1	
7. Alcohol, cannabis and ecstasy	3.0	3.1	3.0	
8. Alcohol and cannabis	2.4	3.4	2.7	
9. Ecstasy only	1.9	0.0	1.4	
10. Alcohol, tobacco, ecstasy and ketamine	1.0	1.2	1.1	
11. Other drug combinations	28.5	57.0	35.8	
Ten most common polydrug combinations (exc tobacco)	*n*=747	*n*=343	*n*=1090	
1. Alcohol and ecstasy	29.6	10.5	23.6	
2. Alcohol, cannabis and ecstasy	17.1	10.5	15.0	
3. Alcohol and cannabis	8.3	9.0	8.5	
4. Alcohol, cocaine and ecstasy	2.5	1.5	2.2	
5. Cannabis and ecstasy	2.8	0.6	2.1	#
6. Alcohol, ecstasy and ketamine	2.0	2.0	2.0	
7. Alcohol and pharmaceutical stimulants	2.0	0.6	1.6	
8. Alcohol, ecstasy and pharmaceutical stimulants	2.0	0.0	1.4	
9. Alcohol, cannabis, ecstasy and speed	0.5	3.2	1.4	
10. Alcohol, ecstasy and speed	1.5	0.6	1.2	
11. Other combinations	31.7	61.5	41.0	

Note. Respondents identified with inconsistent festival selections were excluded from this table so it did not affect the validity of comparisons.
[a]Among those who used a drug (licit or illicit) in association with the last festival
[b]Among those who had used an illicit drug in association with the last festival.
*p<0.050; **p<0.010; ***p<0.001.

E.18 Alcohol use patterns (one-day festivals)

Table 5.21: Patterns of alcohol use associated with the last one-day festival (by gender) (%)

	Male	Female	Total	*p*
Used in association with the last festival (aged ≥16) (%)	*n*=691 82.5	*n*=668 80.2	*n*=1359 81.4	0.287
Used in association with the last festival (aged ≥18) (%)	*n*=559 89.4	*n*=514 89.3	*n*=1073 89.4	0.938
Used in association with the last festival (<18) (%)	*n*=132 53.0	*n*=154 50.0	*n*=286 51.4	0.609
Points of use (aged ≥16)	*n*=568	*n*=534	*n*=1102	
Before	84.2	80.5	82.4	0.114
During	88.7	87.8	87.8	0.641
After	42.1	29.6	29.6	<0.001***
Combinations of points used (aged ≥16)	*n*=568	*n*=534	*n*=1102	
Before and during only	38.7	46.6	42.6	
Before, during and after	35.4	22.3	29.0	
During only	10.9	14.0	12.4	
Before only	8.3	19.7	9.0	<0.001***
During and after only	3.7	4.9	4.3	
Before and after only	1.8	1.9	1.8	
After only	1.2	0.6	0.9	
Types used- over whole day (aged ≥16)	*n*=549	*n*=522	*n*=1071	
Spirits/post-mix	60.5	67.2	63.8	0.021*
Pre-mix	49.7	54.8	52.2	0.097
Beer	64.8	17.8	41.9	<0.001***
Cider	26.6	41.6	33.9	<0.001***
Wine	6.6	19/7	13.0	<0.001***
Median standard drinks consumed (IQR) (aged ≥16)	*n*=454	*n*=420	*n*=874	
Before[a]	6.0 (4-10) *n*=453	5.0 (3-6) *n*=424	5.0 (4-8) *n*=877	<0.001***
During[a]	6.0 (4-10) *n*=234	4.0 (3-6) *n*=143	5.0 (3-8) *n*=377	<0.001***
After[a]	4.0 (2-6) *n*=519	3.0 (2-4) *n*=498	3.0 (2-5) *n*=1019	<0.001***
Whole day[a]	13.0 (9-18)	9.0 (6-12)	10.0 (7-15)	<0.001***

Note. Respondents who identified as transgender or non-binary were excluded from this table due to small sample size (*n*<10). [a]Mann-Whitney U Test was used for statistical analysis as the data was non-parametric.
*p<0.050; **p<0.010; ***p<0.001

E.19 Alcohol use patterns (multi-day festivals)

Table 5.22: Patterns of alcohol use associated with the last multi-day festival (by gender)

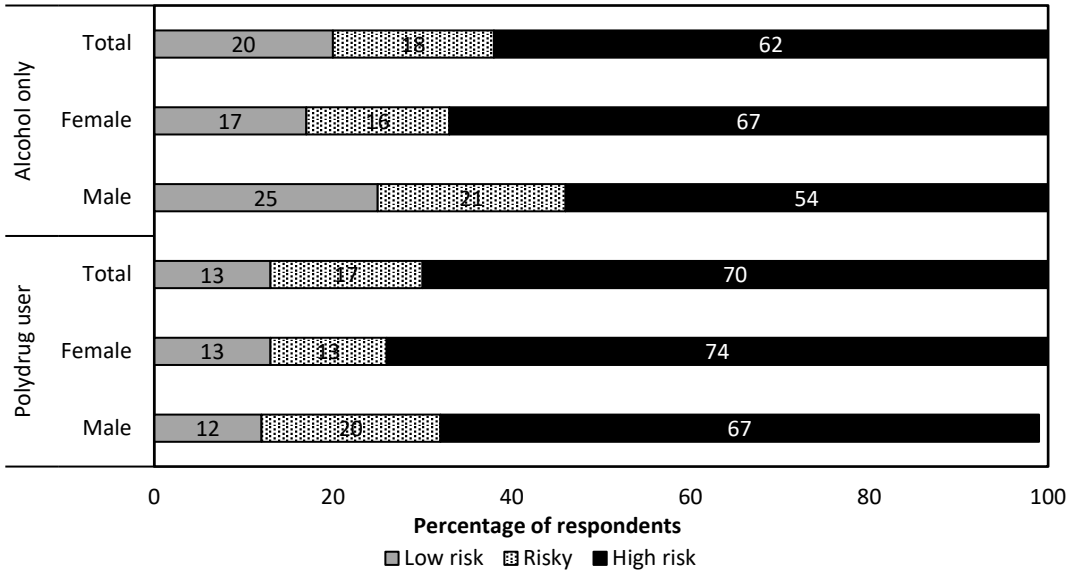
	Male	Female	Total	*p*
Used in association with the last festival (aged ≥16) (%)	*n*=254 90.2	*n*=183 85.8	*n*=437 88.3	0.161
Used in association with the last festival (aged ≥18) (%)	*n*=234 91.9	*n*=162 89.5	*n*=396 90.9	0.419
Used in association with the last festival (aged <18) (%)	*n*=20 70.0	*n*=21 57.1	*n*=41 63.4	0.393
Daily use[a](%)	*n*=220 73.6	*n*=154 63.6	*n*=374 69.5	0.039*
Types used- over whole festival (%)	*n*=218	*n*=155	*n*=373	
Beer	77.1	38.1	60.9	<0.001***
Spirits/post-mix	54.6	63.9	58.4	0.073
Pre-mix	36.7	35.5	36.2	0.810
Cider	31.9	41.3	35.7	0.055
Wine	12.8	32.9	21.2	<0.001***
Median standard drinks consumed (IQR)				
Day 1	*n*=152 10.0 (8-15)	*n*=104 8.0 (5-10)	*n*=256 10.0 (6-14)	<0.001***
Day 2	*n*=157 10.0 (8-15)	*n*=108 8.0 (5-10)	*n*=265 10.0 (6-15)	<0.001***
Day 3	*n*=125 10.0 (6-15)	*n*=89 7.0 (4-10)	*n*=214 9.0 (5-12)	<0.001***
Day 4	*n*=50 10.0 (5-15)	*n*=30 6.0 (4-10)	*n*=80 8.0 (5-12)	0.016*
Day 5	*n*=21 9.0 (5-10.5)	*n*=11 6.0 (3-10)	*n*=32 8.0 (4-10)	0.289
Day 6	*n*=8 9.5 (7.25-13.5)	*n*=9 6.0 (1.5-10)	*n*=17 8.0 (4-11)	#
Day 7	*n*=5 9.0 (8.5-13.5)	*n*=7 3.0 (2-5)	*n*=12 6.5 (3-11.25)	#

Note. Respondents who identified as transgender or non-binary were excluded from this table due to small sample size (*n*<10). [a]Of those who reported any alcohol use. [#]Sample sizes are too small for statistical analysis. *p<0.050; **p<0.010; ***p<0.001.

E.20 Alcohol use classified according to the 2001 NHMRC guidelines

The 2001 guidelines differ according to gender so respondents were categorised accordingly (females: low risk ≤ 4.99, risky=5-6.99, high risk ≥ 7.00; males: low risk ≤ 6.99, risky=7-10.99, high risk ≥ 11.00). As evident in Figure 5.1, 62% of alcohol only users and 70% of polydrug users were drinking at 'high risk' levels according to the guidelines. Additionally, while males drank a significantly greater median number of drinks compared to females, significantly more female alcohol users were classified as 'high risk' drinkers compared to males (67% vs. 54%), $X2$ (1, n=747)=5.305, p =.021.

Figure 5.1: Level of alcohol risk for alcohol users and polydrug users at one-day festivals (NHMRC 2001 guidelines)



E.21 Patterns of cannabis use (one-day festival)

Table 5.23: Patterns of cannabis use associated with last one-day festival (by gender)

	Male	Female	Total	*p*
Last festival use (%)	*n*=961 31.5	*n*=668 19.5	*n*=1359 25.6	<0.001***
Points used (%)	*n*=216	*n*=129	*n*=345	
Before	43.1	41.9	42.6	0.828
During	42.1	52.7	46.1	0.056
After	73.1	62.0	69.0	0.031*
Combinations of points used (%)	*n*=216	*n*=129	*n*=345	
After only	32.9	24.8	29.9	
During only	13.0	24.0	17.1	
Before and after only	15.3	14.0	14.8	
Before, during and after	13.9	14.0	13.9	0.217
During and after only	11.1	9.3	10.4	
Before only	9.7	8.5	9.3	
Before and during only	4.2	5.4	4.6	
ROAs (%)	*n*=209	*n*=129	*n*=338	
Smoke	98.6	97.7	98.2	0.547
Vaporise	3.3	3.1	3.3	0.900
Swallow	2.4	3.9	3.0	0.434
Total median quantities used (IQR)				
Cones	*n*=123 6.0 (3-12)	*n*=48 4.0 (2-9)	*n*=171 5.0 (3-11)	0.021*
Joints	*n*=130 2.0 (1-3)	*n*=92 2.0 (1-3)	*n*=222 2.0 (1-3)	0.045*
Brownies	*n*=4 1.0 (1-1.75)	*n*=6 1.5 (1-2.25)	*n*=10 1.0 (1-2)	#

Note. Respondents who identified as transgender or non-binary were excluded from this table due to small sample size (*n*<10). #Cell sizes were too small for statistical analysis. *p<0.050; **p<0.010; ***p<0.001.

E.22 Patterns of cannabis use (multi-day festival)

Table 5.24: Patterns of cannabis use associated with last multi-day festival (by gender)

	Male	Female	Total	*p*
Used in association with the last festival (%)	*n*=254 58.3	*n*=183 38.8	*n*=437 50.1	<0.001***
Used every day they attended (%)	*n*=145 71.0	*n*=71 52.1	*n*=216 64.8	0.006**
ROAs (%)[a]	*n*=146	*n*=71	*n*=217	
Smoke	98.6	98.6	98.6	[#]
Swallow	3.4	4.2	3.7	[#]
Vaporise	4.1	2.8	3.7	[#]
Total median amounts used (IQR)				
Cones	*n*=67 15 (6-60)	*n*=18 8 (4-52)	*n*=85 13 (5-58)	0.346
Joints	*n*=100 6 (3-12)	*n*=48 2 (1-5)	*n*=148 4 (2-10)	<0.001***
Brownies	*n*=12 2.5 (1-8)	*n*=2 7.5 (1.5-14)	*n*=16 3 (1-11)	0.521
Median cones consumed (IQR)				
Day 1	*n*=49 6.0 (3-20)	*n*=12 6.0 (2.25-18)	*n*=81 6.0 (3-20)	0.361
Day 2	*n*=43 10.0 (3-20)	*n*=11 4.0 (3-20)	*n*=56 6.5 (3-20)	0.150
Day 3	*n*=42 9.0 (3-20)	*n*=10 4.5 (1.75-22.5)	*n*=52 7.5 (3-20)	0.395
Day 4	*n*=23 10.0 (5-20)	*n*=5 16.0 (3-25)	*n*=28 12.5 (5-20)	[#]
Day 5	*n*=9 5.0 (2-12)	*n*=2 13.0 (9-[#])	*n*=11 6 (2-15)	[#]
Day 6	*n*=5 6.0 (6-15)	*n*=0 -	*n*=5 6 (6-15)	[#]
Day 7	*n*=3 5.0 (4-[a])	*n*=1	*n*=4 7.5 (4-[a])	[#]

	Male	Female	Total	*p*
Median joints consumed (IQR)				
Day 1	*n*=64	*n*=29	*n*=112	
	2.0 (1-5)	1.0 (1-2)	2.0 (1-4)	<0.001***
Day 2	*n*=75	*n*=35	*n*=111	
	3.0 (2-5)	1.0 (1-2)	2.0 (1-5)	<0.001***
Day 3	*n*=63	*n*=20	*n*=83	
	2.0 (2-5)	1.5 (1-2)	2.0 (1-4)	0.008**
Day 4	*n*=27	*n*=4	*n*=31	
	3.0 (2-10)	1.0 (1-1)	3.0 (1-10)	[#]
Day 5	*n*=9	*n*=4	*n*=13	
	3.0 (2-7.5)	1.0 (1-6.25)	2.0 (1-7)	[#]
Day 6	*n*=3	*n*=4	*n*=7	
	2.0 (2-[a])	1.0 (1-1)	1.0 (1-2)	[#]
Day 7	*n*=1	*n*=1	*n*=2	
	15.0	1.0[a]	8.0[a]	[#]
Median brownies/cookies consumed (IQR)	*n*=6	*n*=1	*n*=10	
Day 1	2.0 (1-8)	[#]	4.0 (1-8)	
	n=6	*n*=3	*n*=10	
Day 2	2.5 (1-4.75)	4.0	2.5 (1-4)	
	n=5	*n*=1	*n*=6	[#]
Day 3	2.0 (1.5-6.5)	4	2.5 (2-6)	
	n=5	*n*=1	*n*=6	
Day 4	3.0 (1.5-4)	[#]	3.0 (2-4)	
	n=1	*n*=2	*n*=3	
Day 5	[#]	2.5 (2-[#])	2.0[#]	

Note. Respondents who identified as non-binary were excluded from this table due to small sample size ($n<10$). [a]Multiple responses were allowed so totals may exceed 100%. [#]Cell sizes were too small for statistical analysis. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

E.23 Patterns of ecstasy use (one-day festival)

Table 5.25: Patterns of ecstasy use (any form) associated with last one-day festival (by gender)

	Male	Female	Total	*p*
Last festival use (%)	*n*=691 57.3	*n*=668 38.6	*n*=1359 48.1	<0.001***
Points used (%)	*n*=390	*n*=257	*n*=647	
Before	36.4	27.6	32.6	0.020*
During	97.7	97.3	97.5	0.739
After	20.8	14.0	18.1	0.029*
Combinations of points used (%)	*n*=390	*n*=257	*n*=647	
During only	53.3	64.2	57.7	
Before and during only	23.8	19.8	22.3	
During and after only	10.3	7.4	9.1	
Before, during and after	10.3	5.8	8.5	#
Before only	2.1	1.9	2.0	
After only	0.0	0.8	0.3	
Before and after only	0.6	0.4	0.2	
ROAs (%)	*n*=393	*n*=258	*n*=651	
Swallow	97.7	97.7	97.7	0.976
Snort	29.3	17.8	24.7	0.001*
Shelve	2.5	0.4	1.7	#
Smoke	0.8	0.0	0.5	#
Inject	0.3	0.0	0.2	#
Forms used	*n*=396	*n*=258	*n*=656	
Pills	75	76	76	0.924
Caps	46	32	41	<0.001***
Crystals	12	8	11	0.105
Powder	8	7	8	0.527
Total median number of pills used (pill only users) (IQR)	*n*=157 3.0 (2-5)	*n*=144 2.5 (2-4)	*n*=301 2.75 (2-4)	0.105
Total median number of capsules (capsule only users) (IQR)	*n*=62 2.0 (2-3)	*n*=43 2.0 (1-2.5)	*n*=105 2.0 (1-3)	0.023*
Total median number of pills/caps (pill and cap users) (IQR)	*n*=68 5.0 (4-7.75)	*n*=17 5 (3.5-7)	*n*=85 5.0 (4-7)	0.367
Total median grams of crystals (crystal only users) (IQR)	*n*=11 0.35 (0.25-1)	*n*=6 0.45 (0.15-1)	*n*=17 0.35 (0.2-1)	#
Median lines of crystals (crystal only users) (IQR)	*n*=3 4#	*n*=2 1.1#	*n*=5 3 (1.1-4)	#

Note. Respondents who identified as transgender or non-binary were excluded from this table due to small sample size ($n<10$). #Sample size was too small for statistical analysis. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

E.24 Patterns of ecstasy use (multi-day festival)

Table 5.26: Patterns of ecstasy use (any form) associated with last multi-day festival (by gender)

	Male	Female	Total	*p*
Last festival use*	*n*=254 66.9	*n*=183 55.7	*n*=437 62.2	0.017*
Used every day they attended (%)	*n*=166 54.2	*n*=98 38.8	*n*=264 48.5	0.015*
ROAs (%)	*n*=167	*n*=98	*n*=265	
Swallow	98.2	98.9	98.1	0.888
Snort	43.1	36.7	40.8	0.308
Shelve	5.4	1.0	3.9	#
Smoke	0.6	0.4	0.4	#
Forms used	*n*=710	*n*=102	*n*=272	
Caps	58.2	61.8	50.6	0.566
Pills	63.5	52.0	59.2	0.060
Crystals	39.4	25.5	34.2	0.019*
Powder	21.8	21.6	21.7	0.970
Combinations of forms used	*n*=170	*n*=102	*n*=272	
Caps only	17.1	30.4	22.1	
Pills only	20.0	18.6	29.5	
Pills and caps	15.3	10.8	13.6	
All forms	11.8	5.9	9.6	
Crystals only	8.8	9.8	9.2	
Pills and crystals	6.5	2.0	4.8	
Crystals and caps	5.9	2.9	4.8	
Pills, crystals and caps	4.7	3.7	4.8	#
Pills and powder	2.9	4.9	4.4	
Pills, powder and caps	1.8	5.9	3.3	
Powder	2.4	2.9	2.6	
Powder and caps	1.2	1.0	1.1	
Powder, crystals and caps	0.6	0.8	0.7	
Powder and crystals	0.6	0.4	0.4	
Pills, powder and crystals	0.6	0.4	0.4	
Median number of pills used (pill only users) (IQR)	*n*=44 4.5 (2-9)	*n*=29 3.0 (2-4)	*n*=73 3.0 (2-6)	0.011*
Median number of capsules (capsule only users) (IQR)	*n*=32 3.0 (2-6.75)	*n*=27 3.0 (2-4)	*n*=59 3.0 (2-5)	0.488
Median number of pills/caps (pill and ca*p* users) (IQR)	*n*=25 8.0 (5-16)	*n*=9 4.0 (4-7.5)	*n*=34 7.0 (4-14)	#
Median grams of crystals (crystal only users) (IQR)	*n*=13 0.5 (0.2-1.6)	*n*=7 0.9 (0.25-1)	*n*=20 0.58 (0.2-1)	#

Note. Respondents who identified as non-binary were excluded from this table due to small sample size ($n<10$).
#Cell sizes were too small for statistical analysis. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

E.25 Risk practices reported by those who used illicit drugs in association with the last festival (by gender)

Table 5.27: Risk practices reported by those who used illicit drugs in association with the last festival (by gender)

	Male	Female	Total	*p*
Median number of risk behaviours – illicit drug users (IQR)	*n*=574 4.0 (3-6)	*n*=407 4.0 (2-6)	*n*=981 4.0 (3-6)	0.187
Risk behaviours- among those who used illicit drugs (%)	*n*=574	*n*=407	*n*=981	
Mixed alcohol and drugs	76.8	77.9	77.3	0.697
Used more than one illicit drug	60.3	52.3	57.0	0.013*
Danced for a prolonged period without taking a break	49.1	51.8	50.3	0.402
Didn't eat properly (e.g. no proper meal on the day/s)	33.1	48.4	39.4	<0.001***
Didn't drink enough water on the day/s	32.4	45.9	38.0	<0.001***
Stood in sun for a prolonged period without protection	22.8	26.8	24.5	0.155
Used drugs I had no user reviews on	23.5	21.4	22.6	0.429
Went out the night before the festival (moderate-big)	26.0	14.7	21.3	<0.001***
Used illicit drugs the preceding night (non-sleep)	25.1	15.2	21.0	<0.001***
Went 24 hours or longer without sleeping	20.0	14.0	17.5	0.014*
Drank ≥10 standard drinks of alcohol the night before	19.7	11.5	16.3	0.001**
Obtained drugs from an unknown or untrusted source	15.2	15.0	15.1	0.942
Drank/used drugs when I was in a bad mindset	7.5	10.1	8.6	0.154
Didn't drink any water or isotonic drinks	5.7	7.1	6.3	0.383
Drove under the influence of an illicit drug	5.2	3.9	4.7	0.344
Drove under the influence of alcohol	1.7	0.7	1.3	0.175
Other	1.2	0.0	0.7	#
No risk behaviours	4.5	3.4	4.1	0.395
Risk behaviours- ecstasy pill user specific response (%)	*n*=354	*n*=233	*n*=587	
Double dropped	55.9	36.9	48.4	<0.001***

Note. Respondents who identified as a non-binary gender were excluded from this analyses due to small sample size (*n*=5). #Cell sizes were too small for statistical analysis. *p<0.050; **p<0.010; ***p<0.001.

E.26 'Protective' practices reported by respondents who used illicit drugs in association with the last festival (by gender)

Table 5.28: 'Protective' practices reported by respondents who used illicit drugs in association with the last festival (by gender)

	Male	Female	Total	*p*
Median number of 'protective' behaviours (IQR)	*n*=583 6.0 (4-9)	*n*=424 6.0 (3-9)	*n*=1007 6.0 (3.25-9)	0.618
Protective practices- illicit drug user specific	*n*=583	*n*=424	*n*=1007	
Obtained drugs from known/trusted sources	72.4	72.6	72.5	0.928
Kept hydrated with water	66.4	59.0	63.3	0.016*
Obtained peer/user reviews	50.8	56.4	53.1	0.079
Rested the night before	48.2	59.7	53.0	<0.001***
Spaced my alcohol or drugs out	45.5	50.7	47.7	0.099
Made sure I had eaten adequately	50.9	41.7	47.1	0.004**
Took breaks from dancing	43.4	45.0	44.1	0.602
Set myself drug/alcohol use limits	29.8	34.9	32.0	0.089
Discussed emergency plan with friends	23.7	37.0	29.3	<0.001***
Started with a test dose	20.8	32.1	25.5	<0.001***
Avoided using when I was in a bad mindset	21.1	30.4	25.0	0.001**
Drank an isotonic drink	28.1	18.4	24.0	<0.001***
Researched/accessed drug information online	24.9	20.5	23.0	0.105
Took magnesium for muscle cramps	12.2	7.8	10.3	0.024*
Avoided mixing alcohol/drugs	9.3	10.4	9.7	0.556
Tested the drugs with a testing kit	11.1	4.2	8.2	<0.001***
Took 5-HTP	7.4	5.4	6.6	0.147
Took other vitamins/supplements	6.3	4.2	5.5	0.217
Obtained from a Darknet market[a]	3.8	1.7	2.9	0.047*
Other	1.5	0.7	1.2	0.227
No protective practices	4.6	2.8	3.9	0.144
Protective practices- ecstasy pill user specific	*n*=349	*n*=231	*n*=580	
Looked on the pill reports website	46.1	55.0	49.7	0.037*

Note. Respondents who identified as a non-binary gender were excluded from this analyses due to small sample size (*n*=5). [a]The full response option was 'Obtained drugs from a dark net website so I had more information about the content (eg. sites like Agora and Silk Road)'. [#]Cell sizes were too small for statistical analysis. *p<0.050; **p<0.010; ***p<0.001.

E.27 Correlates of double dropping (complete case analysis)

Table 5.29: Correlates of 'double dropping' among those who used ecstasy pills and/or capsules at the last festival (multivariable logistic regression – complete case analysis)

Variable	Level	Multivariable		
		AOR	95% CI	*P*-value
Age	16-17 years old	2.336	0.949-5.752	0.065
	18-19 years old	2.478	1.105-5.559	0.028
	20-21 years old	0.988	0.438-2.231	0.977
	22-25 years old	0.691	0.303-1.579	0.381
	26 years and over	1.000		
Gender	Male	2.272	1.487-3.471	<0.001***
	Female	1.000		
State	WA	#		
	VIC			
Ecstasy form	Pills and caps	2.714	1.540-4.782	0.001**
	Pills only	1.830	1.098-3.050	0.020*
	Caps only	1.000		
Frequency of general ecstasy use	1/week	7.057	3.072-16.211	<0.001***
	1/month	4.056	2.004-8.210	<0.001***
	Every few months	3.313	1.640-6.692	0.001**
	1-2/year	1.000		
Total recent festivals attended	1-2	0.973	0.577-1.641	0.919
	3-4	0.978	0.594-1.608	0.929
	5 or more	1.000		
Favourite festival genre was electronic dance music	No	0.703	0.438-1.129	0.145
	No favourite genre	1.044	0.586-1.862	0.883
	Yes	1.000		
Festival type	One day	0.618	0.382-0.997	0.049
	Inconsistent selection	0.638	0.247-1.636	0.636
	Multi-day	1.000		

Model χ^2 (16)=99.515, p<0.001. Adjusted R square=0.175 (Cox & Snell), 0.237 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.423, *n*=516. #Dropped from the multivariable model because *p*>0.25. **p*<0.050; ***p*<0.010; ****p*<0.001.

E.28 Correlates of using a test dose

Table 5.30: Correlates of illicit drug users self-reporting 'started with a smaller amount to see what it was like' in association with the last festival attended (multivariable logistic regression)

Variable	Level	*N*	Did a test dose	Did not use a test dose	Bivariable			Multivariable		
			25.5%	74.5%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	133	23.5	76.5	0.498	0.287-0.865	0.013*	0.492	0.276-0.878	0.016*
	18-19 years old	261	25.7	74.3	0.559	0.348-0.899	0.016*	0.581	0.354-0.955	0.032*
	20-21 years old	246	17.5	82.5	0.343	0.207-0.569	<0.001***	0.376	0.223-0.636	<0.001
	22-25 years old	250	28.8	71.2	0.655	0.408-1.050	0.079	0.707	0.433-1.153	0.164
	26 years and over	110	38.2	61.8	1.000			1.000		
Gender	Male	581	20.8	79.2	0.559	0.420-0.745	<0.001***	0.543	0.404-0.730	<0.001***
	Female	422	32.0	68.0	1.000			1.000		
Jurisdiction	WA	493	26.8	26.8	0.879	0.661-1.167	0.372	#		
	VIC	510	24.3	24.3	1.000					
Total recent festivals attended	1-2	375	27.5	72.5	1.312	0.907-1.900	0.150	1.314	0.891-1.939	0.168
	3-4	369	25.7	74.3	1.202	0.827-1.746	0.336	1.211	0.825-1.778	0.329
	5 or more	259	22.4	77.6	1.000			1.000		
Favourite genre to attend festivals for was an EDM genre	No	304	20.4	79.6	0.707	0.504-0.992	0.045*	0.640	0.451-0.910	0.013*
	No favourite genre	169	31.4	68.6	1.261	0.864-1.839	0.230	1.115	0.783-1.704	0.468
	Yes	530	26.6	73.4	1.000			1.000		
Festival type	One-day	653	23.3	76.7	0.727	0.531-0.996	0.047*	0.799	0.573-1.113	0.185
	Inconsistent selection	68	30.9	69.1	1.071	0.603-1.902	0.814	1.179	0.648-2.146	0.590
	Multi-day	282	29.4	70.6	1.000			1.000		

Model $\chi 2$ (11)=152.821, p <0.001. Adjusted R square=0.047 (Cox & Snell), 0.069 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.677, n=1003.
[#]Dropped from the multivariable model because p>.25. *p<0.050; **p<0.010; ***p<0.001.

Table 5.31: Correlates of ecstasy/MDMA users self-reporting 'started with a smaller amount to see what it was like' in association with the last festival attended (multivariable logistic regression)

Variable	Level	*N*	Did a test dose	Did not use a test dose	Bivariable			Multivariable		
			27.4%	72.6%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	69	23.2	78.6	0.459	0.213-0.990	0.047*	0.495	0.215-1.141	0.099
	18-19 years old	150	24.7	75.3	0.498	0.262-0.949	0.034*	0.545	0.270-1.100	0.090
	20-21 years old	137	20.4	79.6	0.391	0.200-0.764	0.006**	0.460	0.224-0.946	0.035*
	22-25 years old	142	33.1	66.9	0.753	0.400-1.416	0.378	0.856	0.435-1.682	0.651
	26 years and over	58	39.7	60.3	1.000			1.000		
Gender	Male	331	23.6	76.4	0.642	0.440-0.936	0.021*	0.607	0.408-0.904	0.014*
	Female	225	32.4	67.6	1.000			1.000		
Jurisdiction	WA	284	27.5	72.5	0.969	0.667-1.408	0.868	#		
	VIC	272	26.8	73.2	1.000					
Ecstasy form	Did not use a pill/tablet form	180	30.6	69.4	1.283	0.866-1.901	0.213	1.038	0.675-1.597	0.856
	Used pill/tablet form	376	25.5	74.5	1.000			1.000		
Frequency of general ecstasy use	1/week	78	24.4	75.6	0.566	0.289-1.107	0.096	0.569	0.276-1.175	0.128
	1/month	207	23.7	76.3	0.545	0.319-0.930	0.026*	0.527	0.295-0.940	0.030*
	Every few months	180	27.8	72.2	0.676	0.395-1.157	0.153	0.643	0.365-0.134	0.127
	1-2/year	91	36.3	63.7	1.000			1.000		
Total recent festivals attended	1-2	207	29.5	70.5	1.536	0.935-2.525	0.090	1.383	0.808-2.367	0.237
	3-4	204	28.9	71.1	1.486	0.908-2.468	0.114	1.486	0.885-2.496	0.134
	5 or more	145	21.4	78.6	1.000			1.000		

Variable	Level	*N*	Did a test dose	Did not use a test dose	Bivariable			Multivariable		
			27.4%	**72.6%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Favourite genre to attend festivals for was an EDM genre	No	153	22.9	77.1	0.787	0.502-1.232	0.295	0.656	0.406-1.061	0.086
	No favourite genre	78	34.6	65.4	1.404	0.829-2.376	0.207	1.245	0.718-2.161	0.435
	Yes	325	27.4	72.6	1.000			1.000		
Festival type	One-day	375	25.3	74.7	0.734	0.487-1.107	0.140	0.813	0.519-1.274	0.367
	Inconsistent selection	26	26.9	73.1	0.797	0.314-2.021	0.633	0.809	0.305-2.144	0.670
	Multi-day	155	31.6	68.4	1.000			1.000		

Model $\chi 2$ (15)=29.425, p =0.014. Adjusted R square=0.052 (Cox & Snell), 0.075 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.392, n=556.
[#]Dropped from the multivariable model because p>.25. *p<0.050; **p<0.010; ***p<0.001.

E.29 Correlates of awareness of the recommended water consumption (complete case analysis)

Table 5.32: Correlates of awareness of the recommended water consumption among those who had recently (past 12 months) used ecstasy (multivariable logistic regression- complete case analysis)

Variable	Level	*N*	Aware	Not aware	Bivariable			Multivariable		
			43.1%	56.9%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	85	51.8	48.2	0.843	0.458-1.553	0.584	0.813	1.440-1.503	0.510
	18-19 years old	189	39.7	60.3	1.375	0.812-2.329	0.236	1.340	1.786-2.285	0.282
	20-21 years old	174	38.5	61.5	1.445	0.847-2.466	0.177	1.409	1.819-2.425	0.215
	22-25 years old	182	45.1	54.9	1.103	0.651-1.869	0.715	1.070	1.628-1.825	0.803
	26 years and over	80	47.5	52.5	1.000			1.000		
Gender	Male	416	44.0	56.0	0.916	0.677-1.239	0.568	#		
	Female	294	41.8	58.2	1.000					
Jurisdiction	WA	351	44.7	55.3	1.141	0.847-1.535	0.386	#		
	VIC	359	41.5	58.5	1.000					
Frequency of general ecstasy use	1/week	93	46.2	53.8	0.792	0.471-1.332	0.380	#		
	1/month	233	43.3	56.7	0.890	0.589-1.347	0.583			
	Every few months	231	43.3	56.7	0.893	0.590-1.351	0.591			
	1-2/year	153	40.5	59.5	1.000					
Total recent festivals attended	1-2	260	43.5	56.5	0.735	0.497-1.087	0.123	0.775	0.521-1.153	0.208
	3-4	270	47.5	52.6	0.627	0.426-0.923	0.018*	0.629	0.426-0.928	0.019*
	5 or more	180	36.1	63.1	1.000			1.000		

Variable	Level	*N*	Aware	Not aware	Bivariable			Multivariable		
			43.1%	**56.9%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Favourite genre to attend festivals for was an EDM genre	No	212	44.3	55.7	0.922	0.658-1.292	0.637			
	No favourite genre	106	43.4	56.6	0.958	0.621-1.478	0.846	#		
	Yes	392	42.3	57.7	1.000					
Festival type	One-day	478	42.1	57.9	1.144	0.818-1.601	0.432			
	Inconsistent selection	38	44.7	55.3	1.026	0.510-2.063	0.944	#		
	Multi-day	194	45.4	54.6	1.000					

Note. This is a complete case analysis. There were 350 missing cases (33%). Multiple imputation was performed and compared.
Model $\chi 2$ (6)=959.228, p=0.075. Adjusted R square=0.016 (Cox & Snell), 0.022 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.592, n=710. #Dropped from the multivariable model because p>.25 *p<0.050; **p<0.010; ***p<0.001.

E.30 Obtaining illicit drugs (by gender)

Table 5.33: Obtaining illicit drugs in association with the last festival (by gender)

	Male	Female	Total	*p*
How illicit drugs used during the festival were obtained[a]	*n*=618	*n*=434	*n*=1052	
I organised and obtained drugs BEFORE entering the festival (AND carried them in MYSELF)	76.2	67.1	72.4	0.001**
I organised and obtained drugs INSIDE the festival	24.1	26.0	24.9	0.477
I organised drugs before entering, BUT obtained them inside the festival (someone else carried them in)	18.1	21.9	19.7	0.130
Other	2.3	2.3	2.3	0.967
How illicit drugs were carried into the festival grounds[a]	*n*=457	*n*=282	*n*=739	
On my person, in my underwear (e.g. bra, underwear)	38.7	49.3	42.8	0.005*
On my person, in my bag or wallet	23.9	28.4	25.6	0.171
On my person, in my clothing (e.g. shorts, jacket)	26.3	14.5	21.8	<0.001 ***
In the vehicle I/we entered the festival grounds in	17.1	10.6	14.7	0.024*
On my person, concealed internally in a body cavity	5.5	10.6	7.4	0.009*
I swallowed my drugs and then retrieved them inside	0.9	0.4	0.7	#
Other	5.5	3.2	4.6	0.151
Why obtained illicit drugs inside the festival grounds	*n*=229	*n*=183	*n*=412	
Because the opportunity presented itself	36.7	41.5	38.6	0.316
Because I/we wanted more drugs than I/we already had	34.5	25.7	30.6	0.054
Because I was concerned about being detected pre-entry	33.6	22.4	28.6	0.012*
Because my partner/friend carried my drugs in for me	29.7	28.6	23.5	0.037*
Because I knew it would be easy to obtain drugs inside	21.8	23.5	22.6	0.688
Because it was easier to meet my supplier inside	15.7	10.4	13.3	0.113
Because I/we wasn't able to obtain drugs before	12.2	13.7	12.9	.0666
Other	0.9	1.1	1.0	#
Among those who organised and obtained inside: were they known	*n*=147	*n*=113	*n*=260	
Known	44.2	49.6	46.5	
Both known and unknown	31.3	27.4	29.6	0.680
Unknown	24.5	23.0	23.8	

Note. Respondents who identified as a non-binary gender were excluded from this analyses due to small sample size (*n*=5). [a]Multiple responses were allowed so totals may exceed 100%. [b]All survey respondents were asked this question, regardless of whether or not they used illicit drugs at the last festival. *p<0.050; **p<0.010; ***p<0.001.

E.31 Supplying illicit drugs (by gender)

Table 5.34: Supplying illicit drugs in association with the last festival (by gender)

	Male	Female	Total	*p*
Supplied at the last festival	*n*=972	*n*=910	*n*=1882	
No, I did not supply drugs at all	74.7	86.9	80.6	<0.001***
Yes, I gave drugs away for free	8.2	4.1	6.2	<0.001***
Yes, I carried them in for a friend	7.4	4.8	6.2	0.020*
Yes, I carried them in for my partner	5.0	2.5	3.8	0.004*
Yes, I brokered drugs (i.e. no profit)	4.6	1.3	3.0	<0.001***
Yes, I exchanged drugs	3.1	2.1	2.6	0.174
Yes, I sold drugs (i.e. supplied for profit)	3.4	0.8	2.1	<0.001***
Don't want to answer	2.7	2.0	2.3	0.317
Supplied at the last festival[a]	*n*=946	*n*=892	*n*=1838	
No	76.7	88.7	82.5	<0.001***
Yes	23.3	11.3	17.5	
Reasons for supplying	*n*=217	*n*=99	*n*=316	
Help a friend looking/wanting	44.2	33.3	40.8	0.067
Friend without so offered	33.6	30.3	32.6	0.557
Help a friend worried about carrying	25.3	36.4	28.8	0.045*
I had an excess	18.4	14.1	17.1	0.347
Purchased for friend meeting inside	9.7	12.1	10.4	0.510
Make a profit	10.1	6.1	8.9	0.237
Knew there would be demand inside	5.1	4.0	4.7	0.690
Other	5.5	7.1	6.0	0.593
Persons supplied to	*n*=218	*n*=100	*n*=318	
Known	86.2	91.0	87.7	
Both known and unknown	9.6	6.0	8.5	0.497
Unknown	4.1	3.0	3.8	

	Male	Female	Total	*p*
Drugs supplied	*n*=214	*n*=98	*n*=312	
Ecstasy	76.6	78.6	77.2	0.670
Cannabis	25.7	25.5	25.6	0.986
Ketamine	9.8	4.1	8.0	0.203
Cocaine	9.3	5.1	8.0	0.085
LSD	8.4	3.1	6.7	0.081
Speed	6.1	5.1	5.8	0.738
Pharmaceutical stimulants	5.1	6.1	5.4	0.717
Nitrous oxide	3.3	5.1	3.8	#
Benzodiazepines	3.3	4.1	3.5	#
Crystal methamphetamine	2.3	3.1	2.6	#
GHB	1.4	3.1	1.9	#
Magic mushrooms	2.3	1.0	1.9	#
DMT	1.9	1.0	1.6	#
MDA	1.4	1.0	1.3	#
Alpha-PVP	0.5	1.0	0.6	#
Heroin	0.9	0.0	0.6	#
2C-x	0.9	0.0	0.6	#
Amyl nitrate	0.5	0.0	0.3	#
Other opiates/opioids	0.5	0.0	0.3	#
Steroids	0.5	0.0	0.3	#
Synthetic cannabis	0.5	0.0	0.3	#
NBOMe series	0.5	0.0	0.3	#
Other	0.5	1.0	0.6	#
Policing strategies which would influence supply[b]	*n*=20	*n*=6	*n*=26	
None, I would do it anyway	40.0	33.3	38.5	
Police with drug detection dogs	35.0	16.7	30.8	
Undercover police operations	20.0	16.7	19.2	
High visibility operations	10.0	16.7	11.5	#
Public order and riot squad police	10.0	0.0	7.7	
Community policing strategies	0.0	16.7	3.8	
Other	5.0	16.7	7.7	
Don't know	5.0	0	3.8	

Note. Respondents who identified as a non-binary gender were excluded due to small sample size (*n*=5).
[a]Dichotomised response options to yes and no and excluded those who did not answer.
[b]Among those who reported selling for financial profit. **p*<0.050; ***p*<0.010; ****p*<0.001.

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E.32 Correlates of negative physical effects attributed to ecstasy use

Table 5.35: Correlates of a negative physical effect attributed to ecstasy use (multivariable logistic regression)

Variable	Level	N	Did not	Did	Bivariate			Multivariable		
			51.1%	48.9%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	104	53.8	46.2	2.567	1.395-4.724	0.002*	2.146	1.099-4.191	0.025*
	18-19 years old	208	52.9	47.1	2.469	1.431-4.261	0.001*	2.250	1.251-4.045	0.007*
	20-21 years old	200	52.5	47.5	2.432	1.405-4.207	0.001*	2.367	1.330-4.213	0.003*
	22-25 years old	215	46.0	54.0	1.878	1.090-3.233	0.023*	1.939	1.099-3.419	0.022*
	Over 25 years old	80	31.3	68.8	1.000			1.000		
Gender	Male	477	63.8	44.9	0.670	0.505-0.888	0.005*	0.663	0.485-0.908	0.010*
	Female	330	36.2	54.8	1.000			1.000		
Jurisdiction	WA	415	52.0	48.0	1.085	0.823-1.431	0.561	#		
	VIC	392	50.0	50.0	1.000					
Festival type	One-day	552	51.1	48.9	0.921	0.669-1.268	0.614	0.937	0.641-1.369	0.736
	Inconsistent selection	49	59.2	40.8	0.663	0.454-1.248	0.203	0.655	0.326-1.313	0.233
	Multi-day	206	49.0	51.0	1.000			1.000		
Type of form used	Used a pill/tablet form	569	48.7	51.3	1.382	1.019-1.874	0.038*	1.209	0.866-1.687	0.266
	Used non-pill forms only (crystals/powder)	238	56.7	43.3	1.000			1.000		
Number of illicit drugs used	1	272	54.8	45.2	0.760	0.541-1.067	0.112	0.810	0.542-1.211	0.305
	2	270	50.4	49.6	0.907	0.646-1.273	0.572	0.964	0.662-1.404	0.847
	3 or more	265	47.9	52.1	1.000			1.000		

Variable	Level	N	Did not	Did	Bivariate			Multivariable		
			51.1%	48.9%	OR	95% CI	*p*	AOR	95% CI	*p*
Other risk behaviours	Went out the night (moderate-big night)	164	56.1	43.9	0.775	0.549-1.095	0.148	0.668	0.457-0.976	0.037*
	Used illicit drugs night before (not for sleep)	165	49.1	50.9	1.104	0.748-1.554	0.572	#	#	#
	Drank >9 standard drinks the night before	135	54.8	45.2	0.834	0.576-1.209	0.338	#	#	#
	Obtained drugs from untrusted source	121	47.1	52.9	1.204	0.818-1.773	0.347	#	#	#
	Used drugs I had no user reviews on	192	46.4	53.6	1.280	0.925-1.771	0.136	1.050	0.738-1.496	0.785
	Didnt eat properly	331	44.1	55.9	1.605	1.210-2.129	0.001*	1.295	0.940-1.783	0.114
	Didnt drink ANY water (or isotonic drinks)	46	47.8	52.2	1.147	0.632-2.081	0.652	#	#	#
	Didnt drink ENOUGH water (< 9 glasses)	293	45.4	55.6	1.428	1.071-1.905	0.015	1.173	0.854-1.611	0.325
	Double dropped	342	45.9	54.1	1.431	1.081-1.894	0.012*	1.215	0.881-1.676	0.235
	Danced for a prolonged period without break	423	44.4	55.6	1.750	1.324-2.314	<0.001***	1.485	1.098-2.010	0.010*
	Stood in sun for a prolonged period	189	49.2	50.8	1.101	0.795-1.526	0.562	#	#	#
	Drank/used drugs in a bad mindset	61	44.3	55.7	1.343	0.794-2.271	0.271	#	#	#
	Went 24 hours or longer without sleeping	147	42.9	57.1	1.496	1.043-2.146	0.029*	1.299	0.866-1.948	0.206

Model $\chi 2$ (8)=33.717, p<0.001. Adjusted R square=0.039 (Cox & Snell), 0.051 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.928; n=807. #Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

E.33 Correlates of negative psychological effects attributed to ecstasy use

Table 5.36: Correlates of a negative psychological effect attributed to ecstasy use (multivariable logistic regression)

Variable	Level	N	Did experience	Did not	Bivariate			Multivariable		
			36.2%	63.8%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	101	45.5	54.5	2.071	1.092-3.929	0.026*	1.480	0.743-2.951	0.265
	18-19 years old	204	38.7	61.3	1.565	0.876-2.794	0.130	1.301	0.706-2.397	0.399
	20-21 years old	191	34.6	65.4	1.307	0.726-2.354	0.372	1.173	0.633-2.176	0.612
	22-25 years old	209	33.5	66.5	1.247	0.696-2.233	0.458	1.205	0.658-2.208	0.545
	Over 25 years old	73	28.8	71.2	1.000			1.000		
Gender	Male	461	34.3	65.7	0.812	0.603-1.092	0.168	0.914	0.664-1.258	0.581
	Female	317	39.1	60.9	1.000			1.000		
Jurisdiction	WA	405	40.7	59.3	0.665	0.495-0.893	0.007*	1.337	0.919-1.945	0.129
	VIC	373	31.4	68.6	1.000			1.000		
Festival type	One-day	534	38.0	62.0	1.335	0.943-1.891	0.103	1.040	0.663-1.632	0.863
	Inconsistent selection	47	36.2	63.8	1.234	0.6333-2.401	0.537	0.907	0.429-1.918	0.798
	Multi-day	197	31.5	68.5	1.000			1.000		
Type of form used	Used a pill/tablet form	548	39.2	60.8	1.571	1.127-2.190	0.008*	1.254	0.873-1.801	0.221
	Used non-pill forms only (crystals/powder)	230	29.1	70.9	1.000			1.000		
Number of illicit drugs used	1	261	39.8	60.2	1.265	0.884-1.808	0.198	1.162	0.767-1.760	0.479
	2	261	34.5	65.5	1.005	0.699-1.444	0.979	0.953	0.639-1.422	0.815
	3 or more	256	34.4	65.6	1.000			1.000		

Variable	Level	N	Did experience	Did not	Bivariate			Multivariable		
			36.2%	63.8%	OR	95% CI	*p*	AOR	95% CI	*p*
Other risk behaviours	Went out the night (moderate-big night)	159	34.6	65.4	0.913	0.634-1.316	0.626	#		
	Used illicit drugs night before (not for sleep)	155	36.1	63.9	0.994	0.689-1.433	0.973	#		
	Drank >9 standard drinks the night before	128	38.3	61.7	1.110	0.751-1.641	0.600	#		
	Obtained drugs from untrusted source	115	36.5	63.5	1.014	0.672-1.530	0.947	#		
	Used drugs I had no user reviews on	183	41.0	59.0	1.302	0.927-1.828	0.128	1.102	0.760-1.596	0.609
	Didnt eat properly	320	43.8	56.3	1.731	1.287-2.329	<0.001***	1.565	1.129-2.171	0.007*
	Didnt drink ANY water (or isotonic drinks)	44	40.9	59.1	1.233	0.663-2.290	0.508	#		
	Didnt drink ENOUGH water (< 9 glasses)	279	41.2	58.8	1.394	1.030-1.886	0.031*	1.068	0.768-1.486	0.696
	Double dropped	328	38.1	61.9	1.149	0.855-1.544	0.356	#		
	Danced for a prolonged period without break	413	38.0	62.0	1.177	0.878-1.579	0.275	#		
	Stood in sun for a prolonged period	173	39.9	60.1	1.221	0.863-1.728	0.259	#		
	Drank/used drugs in a bad mindset	56	55.4	44.6	2.327	1.344-4.028	0.003*	2.131	1.186-3.829	0.011*
	Went 24 hours or longer without sleeping	140	35.7	64.3	0.972	0.664-1.424	0.885	#		

Model $\chi 2$ (15)=35.243, p=0.002. Adjusted R square=0.044 (Cox & Snell), 0.061 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.474; n=778.
#Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

E.34 Correlates of negative social effects attributed to ecstasy use

Table 5.37: Correlates of a negative social effect attributed to ecstasy use (multivariable logistic regression)

Variable	Level	N	Did experience	Did not	Bivariate			Multivariable		
			29.2%	70.8%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	93	41.9	58.1	2.889	1.412-5.991	0.004*	2.149	0.995-4.645	0.052
	18-19 years old	200	29.5	70.5	1.674	0.865-3.232	0.126	1.403	0.702-2.804	0.338
	20-21 years old	192	29.7	70.3	1.689	0.871-3.276	0.121	1.520	0.762-3.035	0.235
	22-25 years old	201	25.9	74.1	1.396	0.718-2.715	0.326	1.251	0.627-2.497	0.525
	Over 25 years old	70	20.0	80.0	1.000			1.000		
Gender	Male	452	27.2	72.8	0.786	0.572-1.079	0.137	0.829	0.593-1.159	0.272
	Female	304	32.2	67.8	1.000			1.000		
Jurisdiction	WA	387	30.0	70.0	0.929	0.679-1.272	0.646	#		
	VIC	369	28.5	71.5	1.000					
Festival type	One-day	509	31.8	68.2	1.572	1.078-2.296	0.019*	1.602	1.062-2.418	0.025*
	Inconsistent selection	46	28.3	71.7	1.327	0.645-2.730	0.442	1.200	0.561-2.565	0.638
	Multi-day	201	22.9	77.1	1.000			1.000		
Type of form used	Used a pill/tablet form	532	29.3	70.7	1.015	0.720-1.431	0.933	#		
	Used non-pill forms only (crystals/powder)	224	29.0	71.0	1.000					
Number of illicit drugs used	1	246	29.7	70.3	1.121	0.761-1.652	0.563	#		
	2	254	30.7	69.3	1.178	0.803-1.727	0.403			
	3 or more	256	27.3	72.7	1.000					

Variable	Level	N	Did experience	Did not	Bivariate			Multivariable		
			29.2%	70.8%	OR	95% CI	*p*	AOR	95% CI	*p*
	Went out the night (moderate-big night)	150	26.7	73.3	0.854	0.571-1.276	0.441	#		
	Used illicit drugs night before (not for sleep)	153	28.1	71.9	0.933	0.630-1.383	0.731	#		
	Drank >9 standard drinks the night before	126	28.6	71.4	0.962	0.630-1.469	0.858	#		
	Obtained drugs from untrusted source	108	39.8	60.2	1.747	1.145-2.664	0.010*	1.270	0.784-2.058	0.331
	Used drugs I had no user reviews on	174	40.8	59.2	1.985	1.392-2.831	<0.001***	1.678	1.115-2.525	0.013*
	Didnt eat properly	309	35	65	1.588	1.157-2.179	0.004*	1.226	0.865-1.738	0.253
Other risk behaviours	Didnt drink ANY water (or isotonic drinks)	42	38.1	61.9	1.528	0.803-2.903	0.197	1.013	0.508-2.019	0.971
	Didnt drink ENOUGH water (< 9 glasses)	276	31.2	68.8	1.157	0.837-1.598	0.377	#		
	Double dropped	321	29.6	70.4	1.031	0.751-1.415	0.851	#		
	Danced for a prolonged period without break	402	33.3	66.7	1.534	1.116-2.110	0.008*	1.320	0.940-1.853	0.109
	Stood in sun for a prolonged period	174	33.9	66.1	1.33	0.926-1.911	0.123	1.052	0.712-1.554	0.799
	Drank/used drugs in a bad mindset	54	48.1	51.9	2.414	1.381-4.221	0.002*	1.914	1.041-3.518	0.037*
	Went 24 hours or longer without sleeping	140	30.7	69.3	1.091	0.732-1.626	0.669	#		

Model $\chi 2$ (14)=43.581, p<0.001. Adjusted R square=0.056 (Cox & Snell), 0.080 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.592; n=756.
[#]Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

E.35 Access and barriers to onsite first-aid (by gender)

Table 5.38: Access and barriers to onsite first-aid services for problems related to illicit drug use (by gender)

	Male	Female	Total	*p*
Ever accessed[a]	*n*=892 6.1	*n*=845 8.7	*n*=1212 7.2	0.084
If you haven't accessed onsite first-aid, have you ever considered or thought should have in hindsight?[a]	*n*=647 10.8	*n*=473 12.5	*n*=1120 11.5	0.392
What stopped you?	*n*=63	*n*=47	*n*=107	
Decided it wasn't serious enough	52.4	54.5	53.3	0.825
Fear of legal issues	31.7	27.3	29.9	0.619
Fear of negative treatment/judgment by staff	23.8	27.3	25.2	0.685
Fear of parents or family being contacted / notified	22.2	22.7	22.4	0.951
Couldn't be bothered	22.2	13.6	18.7	0.262
Didn't want to miss any of the festival	14.3	22.7	17.8	0.386
Embarrassment	14.3	20.5	16.8	0.564
Fear of other people seeing/social stigma/embarrassment	14.3	20.5	16.8	0.564
Didn't think they could help or thought could make it worse	4.8	13.6	8.4	#
Couldn't see/find the first aid tent	4.8	9.1	6.5	#
My friends encouraged me not to	3.2	9.1	5.6	#
I was attending underage	3.2	2.3	2.8	#
I jumped the fence	1.6	0.0	0.9	#
Bad experience previously	0.0	2.3	0.9	#
Don't know	11.1	13.6	12.1	#
Other	11.1	15.9	13.1	#
Hypothetically, if you felt unwell at the last festival you attended, would you have gone to first-aid?	*n*=614	*n*=438	*n*=1052	
Extremely comfortable	36.8	32.9	35.2	
Somewhat comfortable	28.2	25.6	27.1	
Neither comfortable nor uncomfortable	14.5	11.6	13.3	0.012*
Somewhat uncomfortable	14.8	20.8	17.3	
Extremely uncomfortable	5.7	9.1	7.1	
If did not select 'extremely comfortable', what are the reasons?	*n*=382	*n*=293	*n*=675	
Fear of legal issues	64.7	65.2	64.9	0.887
Fear of negative treatment/judgment by staff	39.0	54.9	45.9	<0.001***
Fear of parents/family being notified/called	37.4	41.6	39.3	0.268
Fear of others seeing/social stigma/embarrassment	29.6	33.1	31.1	0.327
I attended the festival underage	1.6	6.1	3.6	0.001**
Bad experience previously	1.6	3.1	2.2	0.295
I jumped the fence to get in	1.8	1.7	1.8	1.000
Don't know	5.2	6.1	5.6	0.612
Other	5.5	4.1	4.9	0.403

Note. Respondents who identified as a non-binary gender were excluded due to small sample size ($n<10$).
[a]Among respondents who had ever used an illicit drug associated with a festival. [#]Cell sizes were too small for statistical analysis. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

E.36 Correlates of feeling uncomfortable accessing onsite first-aid for a problem related to illicit drug use and barriers at the last festival attended

Table 5.39: Correlates of feeling uncomfortable accessing onsite first-aid for problem/s related to illicit drug use among illicit drugs users (multivariable logistic regression)

Variable	Level	*N*	Uncomfortable	Comfortable	Bivariable			Multivariable		
			28.2%	71.8%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	119	43.7	56.3	2.681	1.476-4.871	0.001**	2.118	1.140-3.936	0.018*
	18-19 years old	242	32.6	67.4	1.674	0.971-2.888	0.064	1.459	0.833-2.555	0.187
	20-21 years old	231	20.8	79.2	0.906	0.512-16.04	0.735	0.834	0.465-1.496	0.542
	22-25 years old	220	25.5	74.5	1.180	0.672-2.072	0.565	1.096	0.616-1.947	0.756
	26 years and over	98	22.4	77.6	1.000			1.000		
Gender	Male	524	24.0	76.0	0.616	0.461-0.824	0.001**	0.658	0.488-0.886	0.006**
	Female	386	33.9	66.1	1.000			1.000		
Jurisdiction	VIC	465	24.5	75.5	0.686	0.513-0.917	0.011*	0.943	0.673-1.323	0.735
	WA	445	32.1	67.9	1.000			1.000		
Festival type	One-day	588	31.6	68.4	1.833	1.295-2.596	0.001**	1.606	1.074-2.401	0.021*
	Unknown	59	30.5	69.5	1.740	0.926-3.269	0.085	1.361	0.698-2.655	0.366
	Multi-day	263	20.2	79.8	1.000			1.000		
Total recent festivals	1-2	338	25.4	74.6	0.821	0.566-1.192	0.299			
	3-4	337	30.3	69.7	1.044	0.725-1.503	0.816	#		
	5 or more	235	29.4	70.6	1.00					

Note. Response options were dichotomised (very comfortable and comfortable =0; very uncomfortable and uncomfortable=1; neither=excluded). Model $\chi 2$ (8)=39.95, p<0.001. Adjusted R square=0.043 (Cox & Snell), 0.062 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.338, n=910. #Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

Table 5.40: Correlates of fear of legal issues if accessed onsite first-aid for problem/s related to illicit drug use among illicit drugs users (multivariable logistic regression)

Variable	Level	*N*	Fear of legal issues	Did not select	Bivariable			Multivariable		
			65.1%	34.9%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	105	74.3	25.7	1.539	1.307-4.930	0.006**	2.440	1.247-4.773	0.009**
	18-19 years old	179	74.9	25.1	2.617	1.433-4.780	0.002**	2.547	1.390-4.669	0.002**
	20-21 years old	157	63.7	36.3	1.542	0.850-2.797	0.154	1.509	0.829-2.748	0.179
	22-25 years old	168	54.8	45.2	1.064	0.593-1.908	0.836	1.053	0.585-1.894	0.863
	26 years and over	62	53.2	46.8	1.000			1.000		
Gender	Male	380	65.0	35,0	0.987	0.717-1.360	0.937	#		
	Female	291	65.3	43.2	1.000					
Jurisdiction	VIC	315	63.2	36.8	0.851	0.619-1.169	0.318	#		
	WA	356	66.9	33.1	1.000					
Festival type	One-day	480	66.0	34.0	1.312	0.894-1.923	0.165	1.193	0.805-1.768	0.380
	Unknown	47	72.3	27.7	1.764	0.858-3.626	0.123	1.540	0.739-3.209	0.249
	Multi-day	144	59.7	40.3	1.000			1.000		
Total recent festivals	1-2	243	66.7	33.3	1.236	0.826-1.850	0.302	#		
	3-4	250	66.0	34.0	1.200	0.804-1.790	0.371			
	5 or more	178	61.8	38.2	1.000					

Model $\chi 2$ (6)=39.95, $p<0.001$. Adjusted R square=0.037 (Cox & Snell), 0.050 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, $p=0.928$, $n=671$. #Dropped from the model because $p>0.25$. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

Table 5.41: Correlates of fear of negative treatment if accessed onsite first-aid for problem/s related to illicit drug use among illicit drugs users (multivariable logistic regression)

Variable	Level	*N*	Fear of treatment	Did not select	Bivariable			Multivariable		
			46.1%	53.9%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	105	39.0	61.0	1.014	0.533-1.932	0.965	1.087	0.558-2.119	0.807
	18-19 years old	179	54.2	45.8	1.873	1.039-3.377	0.037*	2.043	1.114-3.747	0.021*
	20-21 years old	157	46.5	53.5	1.376	0.755-2.506	0.297	1.384	0.747-2.564	0.302
	22-25 years old	168	44.0	56.0	1.246	0.688-2.260	0.468	1.294	0.703-2.382	0.408
	26 years and over	62	38.7	61.3	1.000			1.000		
Gender	Male	380	38.9	61.1	0.515	0.378-0.702	<0.001***	0.492	0.359-0.676	<0.001***
	Female	291	55.3	44.7	1.000			1.000		
Jurisdiction	VIC	315	51.7	48.3	1.542	1.136-2.094	0.005*	1.607	1.130-2.285	0.008**
	WA	356	41.0	59.0	1.000			1.000		
Festival type	One-day	480	45.2	54.8	0.802	0.553-1.165	0.247	0.976	0.638-1.494	0.913
	Unknown	47	40.4	59.6	0.660	0.338-1.287	0.223	0.664	0.328-1.344	0.255
	Multi-day	144	50.7	49.3	1.000			1.000		
Total recent festivals	1-2	243	47.3	52.7	1.101	0.747-1.622	0.628			
	3-4	250	45.6	54.4	1.027	0.698-1.511	0.893	#		
	5 or more	178	44.9	55.1	1.000					

Model $\chi 2$ (8)=37.123, p<0.001. Adjusted R square=0.054 (Cox & Snell), 0.072 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.837, n=671. #Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

Table 5.42: Correlates of fear of family being notified if accessed onsite first-aid for problem/s related to illicit drug use among illicit drugs users (multivariable logistic regression)

Variable	Level	*N*	Fear of family being notified	Did not select	Bivariable			Multivariable		
			39.3%	60.7%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Age	16-17 years old	105	61.9	38.1	8.450	8.450-18.490	<0.001***	7.586	3.437-16.745	<0.001***
	18-19 years old	179	42.5	57.5	3.837	3.837-8.032	<0.001***	3.592	1.706-7.561	0.001**
	20-21 years old	157	35.7	64.3	2.883	2.883-6.112	0.006*	2.625	1.230-5.603	0.013*
	22-25 years old	168	33.9	66.1	2.670	2.670-5.644	0.010*	2.488	1.170-5.288	0.018*
	26 years and over	62	16.1	83.9	1.000			1.000		
Gender	Male	380	37.6	62.4	0.848	0.620-1.158	0.300	#		
	Female	291	41.6	58.4	1.000					
Jurisdiction	VIC	315	42.7	57.3	0.740	0.542-1.012	0.059	1.092	0.763-1.562	0.632
	WA	356	35.6	64.4	1.000			1.000		
Festival type	One-day	480	43.8	56.3	2.170	1.437-3.276	<0.001***	1.973	1.247-3.124	0.004**
	Unknown	47	34.0	66.0	1.440	0.709-2.923	0.313	1.266	0.605-2.650	0.532
	Multi-day	144	26.4	73.6	1.000			1.000		
Total recent festivals	1-2	243	41.6	58.4	1.237	0.831-1.840	0.295	#		
	3-4	250	39.2	60.8	1.121	0.754-1.667	0.537			
	5 or more	178	36.5	63.5	1.000					

Model $\chi 2$ (7)=51.45, p<0.001. Adjusted R square=0.074 (Cox & Snell), 0.100 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.626, n=671.
#Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001

E.37 Correlates of observing HR strategies (multivariable logistic regression)

Table 5.43: Correlates of observing a first-aid tent/service at the last festival

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			82.2%	**17.8%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Jurisdiction	VIC	837	79.9	20.1	0.733	0.571-0.941	0.015*	0.629	0.481-0.822	0.001***
	WA	862	84.5	15.5	1.000			1.000		
Festival type	One-day	1192	81.5	18.5	0.739	0.534-1.024	0.069	0.595	0.420-0.843	0.003**
	Unknown/inconsistent	139	79.9	20.1	0.667	0.402-1.107	0.177	0.559	0.333-0.938	0.028*
	Multi-day	368	85.6	14.4	1.000			1.000		

Model $\chi 2$ (3)=15.586, $p<0.001$. Adjusted R square=0.009 (Cox & Snell), 0.015 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, $p=0.001$, $n=1699$. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

Table 5.44: Correlates of observing cheap/well priced food stalls at the last festival

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			28.5%	**71.5%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Jurisdiction	VIC	837	35.8	64.2	2.059	1.659-2.554	<0.001***	1.468	1.157-1.862	0.002*
	WA	862	21.3	78.7	1.000			1.000		
Festival type	One-day	1192	22.7	77.3	0.307	0.240-0.393	<0.001***	0.367	0.281-0.479	<0.001***
	Unknown/inconsistent	139	23.7	76.3	0.325	0.209-0.505	<0.001***	0.375	0.239-0.588	<0.001***
	Multi-day	368	48.9	51.1	1.000			1.000		

Model $\chi 2$ (3)=99.93, $p<0.001$. Adjusted R square=0.057 (Cox & Snell), 0.082 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, $p=0.615$, $n=1699$. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

Table 5.45: Correlates of observing free water stations at the last festival

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			81.7%	**18.3%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Jurisdiction	VIC	837	80.5	19.5	0.857	0.670-1.096	0.220	0.832	0.638-1.086	0.176
	WA	862	82.8	17.2	1.000			1.000		
Festival type	One-day	1192	81.7	18.3	0.955	0.735-1.346	0.972	0.911	0.657-1.264	0.587
	Unknown/inconsistent	139	81.3	18.7	0.967	0.586-1.598	0.897	0.901	0.540-1.503	0.689
	Multi-day	368	81.8	18.2	1.000			1.000		

Model $\chi 2$ (3)=1.842, p <0.606. Adjusted R square=0.001 (Cox & Snell), 0.002 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.734, n=1699. *p<0.050; **p<0.010; ***p<0.001.

Table 5.46: Correlates of observing dedicated chill out areas at the last festival

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			52.4%	**47.6%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Jurisdiction	VIC	837	50.1	49.9	0.832	0.688-1.007	0.059	0.718	0.582-0.885	0.002*
	WA	862	54.6	45.5	1.000			1.000		
Festival type	One-day	1192	51.3	48.7	0.748	0.591-0.948	0.016*	0.637	0.492-0.825	0.001*
	Unknown/inconsistent	139	46.0	54.0	0.607	0.410-0.899	0.013*	0.531	0.355-0.795	0.002*
	Multi-day	368	58.4	41.6	1.000			1.000		

Model $\chi 2$ (3)=17.98, p<0.001. Adjusted R square=0.011 (Cox & Snell), 0.012 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.909, n=1699. *p<0.050; **p<0.010; ***p<0.001.

Table 5.47: Correlates of observing signs for things like free water and first-aid at the last festival attended

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			77.2%	**22.8%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Jurisdiction	VIC	837	76.6	22.4	0.575	0.747-1.176	0.575	0.915	0.716-1.170	0.478
	WA	862	77.7	23.3	1.000			1.000		
Festival type	One-day	1192	77.2	22.8	0.970	0.733-1.284	0.830	0.929	0.686-1.259	0.636
	Unknown/inconsistent	139	75.5	24.5	0.885	0.560-1.400	0.603	0.855	0.535-1.365	0.512
	Multi-day	368	77.7	22.3	1.000			1.000		

Model $\chi 2$ (3)=0.771, p=0.856. Adjusted R square=0.000 (Cox & Snell), 0.001 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.355, n=1699. *p<0.050; **p<0.010; ***p<0.001.

Table 5.48: Correlates of observing shaded areas to sit at the last festival attended

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			64.9%	**35.1%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Jurisdiction	VIC	837	63.7	17.2	0.898	0.736-1.096	0.291	0.744	0.599-0.924	0.007**
	WA	862	66.1	17.9	1.000			1.000		
Festival type	One-day	1192	62.2	37.8	0.624	0.482-0.807	<0.001***	0.541	0.401-0.714	<0.001***
	Unknown/inconsistent	139	67.6	32.4	0.790	0.518-1.206	0.275	0.704	0.457-1.084	
	Multi-day	368	72.6	27.4	1.000					

Model $\chi 2$ (3)=0.771, p=0.856. Adjusted R square=0.000 (Cox & Snell), 0.001(Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.355, n=1699. *p<0.050; **p<0.010; ***p<0.001.

Table 5.49: Correlates of observing a walk through cooling tent at the last festival attended

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			10.2%	89.1%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Jurisdiction	VIC	837	10.9	89.1	1.145	0.836-1/567	0.398	0.893	0.628-1.271	0.531
	WA	862	9.6	90.4	1.000			1.000		
Festival type	One-day	1192	8.4	91.6	0.521	0.366-0.741	<0.001***	0.493	0.333-0.731	<0.001***
	Unknown/inconsistent	139	13.7	83.6	0.901	0.513-1.581	0.717	0.861	0.498-1.539	0.614
	Multi-day	368	14.9	85.1	1.000			1.000		

Model $\chi 2$ (3)=14.608, p=0.002. Adjusted R square=0.009 (Cox & Snell), 0.018 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.935, n=1699. *p<0.050; **p<0.010; ***p<0.001.

Table 5.50: Correlates of observing on-stage sprinklers at the last festival attended

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			15.7%	19.4%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Jurisdiction	VIC	837	19.4	80.6	1.730	1.325-2.259	<0.001***	1.097	0.810-1.489	0.551
	WA	862	12.2	87.8	1.000			1.000		
Festival type	One-day	1192	10.7	89.3	0.275	0.206-0.367	<0.001***	0.287	0.208-0.296	<0.001***
	Unknown/inconsistent	139	19.4	80.6	0.551	0.343-0.886	0.014*	0.571	0.350-0.932	0.025*
	Multi-day	368	30.4	69.6	1.000			1.000		

Model $\chi 2$ (3)=17.98, p<0.001. Adjusted R square=0.011 (Cox & Snell), 0.012 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.909, n=1699. *p<0.050; **p<0.010; ***p<0.001.

Table 5.51: Correlates of observing roaming support the last festival attended

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			45.8%	**54.2%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Jurisdiction	VIC	837	48.1	51.9	1.206	0.996-1.460	0.055	1.099	0.894-1.354	0.373
	WA	862	43.5	56.5	1.000			1.000		
Festival type	One-day	1192	44.2	55.8	0.719	0.568-0.908	0.006**	0.745	0.583-0.970	0.028*
	Unknown/inconsistent	139	41.7	58.3	0.649	0.438-0.963	0.032*	0.674	0.450-1.008	0.055
	Multi-day	368	52.5	47.6	1.000			1.000		

Model χ2 (3)=9.459, *p*=0.024. Adjusted R square=0.006 (Cox & Snell), 0.007 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, *p*=0.185, *n*=1699. **p*<0.050; ***p*<0.010; ****p*<0.001.

Table 5.52: Correlates of observing drug safety messages at the last festival attended

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			17.0%	**83.0%**	***OR***	**95% CI**	***p***	**A*OR***	**95% CI**	***p***
Jurisdiction	VIC	837	20.4	79.6	1.635	1.264-2.115	<0.001*****	1.216	0.913-1619	0.182
	WA	862	13.6	86.4	1.000			1.000		
Festival type	One-day	1192	13.2	86.8	0.390	0.294-0.518	<0.001*****	0.428	0.313-0.585	<0.001*****
	Unknown/inconsistent	139	20.1	79.9	0.649	0.404-1.041	0.073	0.700	0.431-1.137	0.150
	Multi-day	368	28.0	72.0	1.000			1.000		

Model χ2 (3)=43.372, *p* <0.001. Adjusted R square=0.025 (Cox & Snell), 0.042 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, *p*=0.716, *n*=1699. **p*<0.050; ***p*<0.010; ****p*<0.001.

Table 5.53: Correlates of observing information about legal rights at the last festival attended

Variable	Level	*N*	Observed	Did not observe	Bivariable			Multivariable		
			6.8%	93.2%	*OR*	95% CI	*p*	A*OR*	95% CI	*p*
Jurisdiction	VIC	837	9.4	90.6	2.324	1.554-3.476	<0.001*****	1.812	1.167-2.815	0.008**
	WA	862	4.3	95.7	1.000			1.000		
Festival type	One-day	1192	5.0	95.0	0.380	0.254-0.571	<0.001*****	0.495	0.318-0.771	0.002**
	Unknown/inconsistent	139	7.9	92.1	0.617	0.309-1.230	0.170	0.763	0.377-1.547	0.454
	Multi-day	368	12.2	87.8	1.000			1.000		

Model $\chi 2$ (3)=27.878, p <0.001. Adjusted R square=0.016 (Cox & Snell), 0.041 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.171, n=1699. *p<0.050; **p<0.010; ***p<0.001.

E.38 Responses to the expected presence of drug dogs at the last festival (by gender)

Table 5.54: Responses to the expected presence of drug detection dogs at the last festival (% of respondents)

	Male	Female	Total	p
Heard/suspected dogs would be present	*n*=848 67	*n*=826 66	*n*=1674 67	0.592
Responses among those who suspected dogs:				
I wasn't intending on taking drugs so didn't affect me	*n*=568 33.1	*n*=546 51.5	*n*=1114 42.1	<0.001***
Planned to conceal them well	32.4	22.7	27.6	<0.001***
Nothing, just hoped for the best[a]	24.1	16.5	20.4	0.002**
Decided to assess when arrived and avoid them	18.0	11.9	15.0	0.005**
Decided to send a spotter first to report back	13.2	9.9	11.6	0.084
Got someone else to carry my drugs in for me	9.2	8.1	8.6	0.515
Decided to time my arrival to avoid them	10.6	6.2	8.4	0.009**
Decided to try and buy drugs inside the festival	7.7	5.9	6.8	0.212
Decided to take drugs less easily detected by the dogs	7.4	3.5	5.5	0.004**
Decided to take drugs before the festival, not during	4.8	3.1	3.9	0.160
Decided to take a smaller quantity to the festival	5.3	2.4	3.9	0.012*
Decided not to take drugs at all that day	2.6	4.2	3.4	0.149
Other	1.9	2.2	2.1	0.759
Responses among those who were intending to take drugs:	*n*=380	*n*=265	*n*=645	
Planned to conceal them well	48.4	46.8	47.8	0.684
Nothing, just hoped for the best[a]	35.8	33.2	34.7	0.498
Decided to assess when arrived and avoid them	26.8	24.5	25.9	0.509
Decided to send a spotter first to report back	19.7	19.2	19.5	0.877
Got someone else to carry my drugs in for me	13.7	16.6	14.9	0.305
Decided to time my arrival to avoid them	15.5	12.5	14.3	0.272
Decided to try and buy drugs inside the festival	11.3	10.6	11.0	0.765
Decided to take drugs less easily detected by the dogs	11.1	7.2	9.5	0.097
Decided to take drugs before the festival, not during	7.1	6.4	6.8	0.732
Decided to take a smaller quantity to the festival	7.6	4.5	6.4	0.112
Decided not to take drugs at all that day	3.2	5.3	4.0	0.177
Other	2.9	4.2	3.4	0.387

Note. Respondents who identified as a non-binary gender were excluded due to small sample size ($n<10$). Multiple responses were allowed therefore the total may exceed 100%. [a]Only 11% ($n=74$) selected this response option exclusively. This indicates that while they hoped for the best, they also engaged in other precautions. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

E.39 Correlates of expecting drug detection dogs at the last festival attended

Table 5.55: Correlates of expecting drug detection dogs at the last festival attended (multivariable logistic regression)

Variable	Level	N	Expected	Did not	Bivariate			Multivariable		
			66.6%	33.4%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	309	71.20	28.80	2.234	1.501-3.324	<0.001***	1.871	1.240-2.821	0.003**
	18-19 years old	470	73.60	26.40	2.521	1.735-3.664	<0.001***	2.207	1.507-3.233	<0.001***
	20-21 years old	368	66.60	33.40	1.800	1.231-2.632	0.002**	1.621	1.101-2.386	0.014*
	22-25 years old	369	59.90	40.10	1.349	0.927-1.964	0.118	1.255	0.857-	0.244
	Over 25 years old	158	52.50	47.50	1.000			1.000		
Gender	Male	848	67.2	32.8	1.057	0.863-1.295	0.592	#		
	Female	826	66.0	34.0	1.000					
Jurisdiction	VIC	850	61.7	38.3	0.644	0.524-0.790	<0.001***	0.839	0.668-1.054	0.132
	WA	824	71.4	28.6	1.000			1.000		
Festival type	One-day	1176	71.00	29.0	2.154	1.690-2.745	<0.001***	1.799	1.375-2.354	<0.001***
	Inconsistent selection	139	64.00	36.0	1.566	1.046-2.344	0.030*	1.230	0.805-1.881	0.388
	Multi-day	359	53.20	46.8	1.000			1.000		
Total recent festivals	1-2	784	67.9	32.1	1.031	0.783-1.359	0.826	#		
	3-4	552	64.9	35.1	0.902	0.675-1.205	0.484			
	5 or more	326	67.2	19.3						

Model $\chi 2$ (7)=65.815, p<0.001. Adjusted R square=0.039 (Cox & Snell), 0.054 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.198; n=1674. #Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

E.40 Correlates of buying drugs inside in response to expecting drug dogs

Table 5.56: Correlates of buying drugs inside in response to expecting drug dogs among those who wanted to use (multivariable logistic regression)

Variable	Level	N	Decided to buy inside	Did not	Bivariate			Multivariable		
			10.9%	89.1%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	90	14.4	85.6	10.468	1.332-82.232	0.026*	19.450	2.386-158.582	0.006**
	18-19 years old	190	10.5	89.5	7.294	0.959-55.500	0.055	10.364	1.341-80.077	0.025*
	20-21 years old	151	13.9	86.1	10.015	1.317-76.164	0.026*	13.691	1.772-105.772	0.012*
	22-25 years old	148	10.1	89.9	6.992	0.903-54.130	0.063	8.531	1.090-66.736	0.041*
	Over 25 years old	63	1.6	98.4	1.000			1.000		
Gender	Male	379	11.3	88.7	1.119	0.672-1.861	0.666	#		
	Female	263	10.3	89.7	1.000					
Jurisdiction	VIC	303	14.2	85.8	1.911	1.149-3.178	0.013*	1.735	0.951-3.167	0.073
	WA	339	8.0	92.0	1.000			1.000		
Festival type	One-day	461	8.7	91.3	0.471	0.271-0.819	0.008**	0.464	0.244-0.884	0.020*
	Inconsistent selection	44	15.9	84.1	0.938	0.372-2.362	0.891	0.908	0.343-2.400	0.845
	Multi-day	137	16.8	83.2	1.000			1.000		
Total recent festivals	1-2	245	9.4	90.6	0.755	0.403-1.412	0.379	#		
	3-4	223	11.7	88.3	0.962	0.521-1.774	0.900			
	5 or more	174	12.1	87.9	1.000					

Model $\chi 2$ (7)=26.825 p<0.001. Adjusted R square=0.041 (Cox & Snell), 0.082 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.534; n=642.
#Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

E.41 Correlates of deciding not to use illicit drugs at all in response to expecting drug dogs

Table 5.57: Correlates of deciding not to use illicit drugs in response to expecting drug dogs among those who wanted to use (multivariable logistic regression)

Variable	Level	N	Did not us	Did use	Bivariate			Multivariable		
			4.0%	96.0%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-21 years old	431	5.1	94.9	2.789	0.947-8.184	0.063	2.951	0.973-8.949	0.056
	Over 21 years old	211	1.9	98.1	1.000			1.000		
Gender	Male	379	3.2	96.8	0.582	0.265-1.278	0.177	0.620	0.275-1.399	0.250
	Female	263	5.3	94.7	1.000			1.000		
Jurisdiction	VIC	303	5.6	94.4	2.179	0.957-4.965	0.064	3.856	1.639-82.101	0.002**
	WA	339	2.7	97.3	1.000			1.000		
Festival type	One-day	461	4.6	95.4	6.491	0.865-48.700	0.069	10.573	1.362-82.101	0.024**
	Inconsistent selection	44	9.1	90.9	13.600	1.478-125.155	0.021*	24.344	2.501-236.928	0.006*
	Multi-day	137	0.7	99.3	1.000			1.000		
Total recent festivals	1-2	245	5.7	94.3	3.455	0.977-12.120	0.054	4.557	1.227-16.925	0.023*
	3-4	223	4.0	96.0	2.397	0.639-8.992	0.195	2.664	0.686-10.194	0.158
	5 or more	174	1.7	98.3	1.000			1.000		

Model $\chi 2$ (7)=28.709 p<0.001. Adjusted R square=0.044 (Cox & Snell), 0.152 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.804; n=642.
[#]Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

E.42 Responses to seeing drug detection dogs

Table 5.58: Response to seeing a drug detection dog at the last festival (by gender)

	Male	Female	Total	p
Saw drug dogs at the festival (%)	*n*=834 30.8	*n*=823 25.5	*n*=1666 28.2	0.026*
Had illicit drugs on them when saw dogs (%)	*n*=259 47.9	*n*=209 31.6	*n*=468 40.6	0.002**
Response to dogs when drugs were on their person[a] (%)	*n*=123	*n*=66	*n*=189	
Nothing, just hoped for the best[b]	65.9	60.6	64.0	0.474
Just avoided the police and drug dogs	43.9	53.0	47.1	0.231
Consumed some of the drugs I had	10.6	3.0	7.9	0.068
Consumed all of the drugs I had	1.6	0.0	1.6	0.553
Gave them to a friend to carry	1.1	1.5	1.1	1.000
Dropped them on the ground	0.5	0.0	0.5	1.000
Other	5.3	4.5	5.3	0.737

Note. Respondents who identified as a non-binary gender were excluded due to small sample size ($n<10$).
[a]Multiple responses were allowed so the total may exceed 100%.
[b]Only 44% ($n=84$) selected this response option exclusively. This indicates that while they hoped for the best, they also engaged in other behaviours to avoid detection.
*$p<0.050$; **$p<0.010$; ***$p<0.001$.

E.43 Correlates of seeing drug detection dogs at the last festival attended

Table 5.59: Correlates of seeing drug detection dogs at the last festival attended (multivariable logistic regression)

Variable	Level	N	Did see dogs	Did not	Bivariate			Multivariable		
			35.9%	64.1%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	227	61.7	38.3	1.608	0.998-2.593	0.051	1.191	0.721-1.968	0.494
	18-19 years old	370	55.7	44.3	2.061	1.319-3.218	0.001**	1.658	1.044-2.634	0.032
	20-21 years old	298	66.8	33.2	1.288	0.810-2.047	0.285	1.129	0.699-1.822	0.621
	22-25 years old	291	70.4	29.6	1.086	0.679-1.736	0.731	1.018	0.629-1.648	0.942
	Over 25 years old	122	72.1	27.9	1.000			1.000		
Gender	Male	678	61.7	38.3	1.244	0.992-1.561	0.059	1.314	1.037-1.663	0.024*
	Female	630	66.7	33.3	1.000			1.000		
Jurisdiction	VIC	652	25.6	74.4	0.399	0.316-0.504	<0.001***	0.450	0.347-0.584	<0.001***
	WA	656	46.3	53.7	1.000			1.000		
Festival type	One-day	919	38.6	61.4	1.932	1.435-2.601	<0.001***	1.218	0.870-1.706	0.250
	Inconsistent selection	96	44.8	55.2	2.490	1.538-4.034	<0.001***	1.633	0.970-2.748	0.065
	Multi-day	293	24.6	75.4	1.000			1.000		

Note. Those who were reported they were not sure/couldn't remember if they saw dogs or not were excluded from the analysis (n=360). Model $\chi 2$ (8)=81.207, p<0.001. Adjusted R square=0.060 (Cox & Snell), 0.083 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.451; n=1308. *p<0.050; **p<0.010; ***p<0.001.

E.44 Correlates of consuming drugs in response to a drug dog sighting at the last festival attended

Table 5.60: Correlates of consuming drugs in response to a drug dog sighting at the last festival attended (multivariable logistic regression)

Variable	Level	N	Consumed drugs	Did not consume drugs	Bivariate			Multivariable		
			9.5%	90.5%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-21 years old	129	8.5	91.5	0.706	0.259-1.922	0.495	0.891	0.321-2.542	0.829
	>21 years old	60	11.7	88.3	1.000			1.000		
Gender	Male	123	13.0	87.0	4.785	1.065-21.493	0.041*	4.711	1.030-21.546	0.046*
	Female	66	3.0	97.0	1.000			1.000		
Jurisdiction	VIC	126	7.9	92.1	1.687	0.631-4.511	0.297	#		
	WA	63	12.7	29.1	1.000					
Festival type	One-day	140	10.0	90.0	1.833	0.397-8.470	0.438	#		
	Inconsistent selection	14	14.3	85.7	2.750	0.348-21.757	0.338			
	Multi-day	35	5.7	94.3	1.000					
Total recent festivals	1-2	51	11.8	88.2	2.622	0.622-11.058	0.189	2.179	0.494-9.605	0.304
	3-4	76	11.8	88.2	2.642	0.683-10.218	0.159	2.698	0.684-10.646	0.156
	5 or more	62	4.8	95.2	1.000			1.000		

Note. Those who were reported they were not sure/couldn't remember if they saw dogs or not were excluded from the analysis (n=360). Model $\chi 2$ (4)=8.334, p=0.080. Adjusted R square=0.043 (Cox & Snell), 0.092 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.886; n=189. #Dropped from the model because p >0.25. *p<0.050; **p<0.010; ***p<0.001.

E.45 Identification by a drug detection dog

Table 5.61: Identification by a drug detection dog at the last festival (among those who saw drug dogs there) (by jurisdiction) (%)

Variable	WA	VIC	Total	p
Stopped by police due to an 'identification' by a drug dog	*n*=301 1.0	*n*=166 4.2	*n*=467 2.1 (*n*=10)	0.039*
Stopped by police due to an 'identification' by a drug dog (among those who had illicit drugs on their person at the time)	*n*=127 0.8	*n*=63 6.3	*n*=190 2.6 (*n*=5)	0.042*
Outcome of being stopped due to an 'identification'	*n*=3	*n*=7	*n*=10	
They DID NOT find drugs (because I had no drugs on me)	66.7	42.9	50.0	#
They DID NOT find drugs (even though I had drugs on me)	33.3	47.1	50.0	

#Cell sizes too small for statistical analysis. *p<0.050; **p<0.010; ***p<0.001.

Table 5.62: Identification by a drug detection dog at the last festival (among those who saw drug dogs there) (by gender) (%)

Variable	Male	Female	Total	p
Stopped by police due to an 'identification' by a drug dog	*n*=257 3.5	*n*=208 0.5	*n*=465 2.2	0.027*
Stopped by police due to an 'identification' by a drug dog (among those who had illicit drugs on their person at the time)	*n*=124 3.2	*n*=66 1.7	*n*=190 2.6	0.660
Outcome of being stopped due to an 'identification'	*n*=9	*n*=1	*n*=10	
They DID NOT find drugs (because I had no drugs on me)	55.6	0.0	50.0	#
They DID NOT find drugs (even though I had drugs on me)	44.4	100.0	50.0	

Note. Respondents who identified as a non-binary gender were excluded due to small sample size (*n*<10).
#Cell sizes too small for statistical analysis. *p<0.050; **p<0.010; ***p<0.001.

E.46 Concern and confidence about drug content

Table 5.63: Concern and confidence about drug content in association with the last festival (excluding solvents, pharmaceuticals and cannabis) (by gender) (%)

	Male	Female	Total	*p*
Concern re drug content	*n*=498	*n*=343	*n*=841	
Very concerned	5.4	3.2	4.5	
Somewhat concerned	21.5	31.8	25.7	
Not very concerned	41.2	39.7	40.5	0.005**
Not concerned at all	30.3	24.8	28.1	
Used multiple and had different concern for each	1.6	0.6	1.2	
Confidence re drug content	*n*=498	*n*=343	*n*=841	
Very confident	33.6	17.8	27.1	
Somewhat confident	51.4	53.1	52.1	
Not very confident	10.6	19.0	14.0	<0.001***
Not confident at all	2.8	8.7	5.2	
Used multiple and had different confidence for each	1.6	1.5	1.5	
Used drugs from that batch previously	*n*=495	*n*=341	*n*=836	
Yes	77.6	74.2	77.6	
No	13.9	18.2	15.7	0.140
Don't know	6.1	7.6	6.7	

Note. Respondents who identified as a non-binary gender were excluded due to small sample size ($n<10$).
*$p<0.050$; **$p<0.010$; ***$p<0.001$.

E.47 Correlates of confidence in and concern about ecstasy/MDMA content used in association with the last festival attended

Table 5.64: Correlates of concern about ecstasy/MDMA content used in association with the last festival attended (multivariable logistic regression – MI model)

Variable	Level	N	Was concerned	Not concerned	Bivariate			Multivariable		
			31.4%	68.6%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	90	34.4	65.6	0.957	0.508-1.804	0.892	#		
	18-19 years old	205	28.3	71.7	0.719	0.414-1.248	0.241			
	20-21 years old	192	31.8	68.2	0.848	0.488-1.473	0.559			
	22-25 years old	215	31.2	68.8	0.825	0.479-1.420	0.487			
	Over 25 years old	79	35.4	64.6	1.000					
Gender	Male	463	28.1	71.9	0.689	0.508-0.935	0.017*	0.720	0.526-0.985	0.040*
	Female	318	36.2	63.8	1.000			1.000		
Jurisdiction	VIC	390	31.5	68.5	1.008	0.745-1.364	0.958	#		
	WA	391	31.3	68.7	1.000					
Festival type	One-day	523	30.8	69.2	0.896	0.637-1.260	0.528	#		
	Inconsistent selection	47	29.8	70.2	0.855	0.430-1.700	0.654			
	Multi-day	211	33.2	66.8	1.000					
Past use of drugs from same 'batch'	Don't know	54	25.9	74.1	0.392	0.194-0.791	0.009**	0.390	0.191-0.798	0.010*
	Yes	602	28.6	71.4	0.447	0.302-0.663	<0.001***	0.491	0.328-0.734	0.001**
	No	125	472.	52.8	1.000			1.000		

Variable	Level	N	Was concerned	Not concerned	Bivariate			Multivariable		
			31.4%	68.6%	OR	95% CI	*p*	AOR	95% CI	*p*
Frequency of past year ecstasy use	Once a week or more	125	27.2	72.8	0.420	0.250-0.706	0.001**	0.462	0.272-0.784	0.004**
	About once a month	292	26.4	73.6	0.403	0.263-0.617	<0.001***	0.425	0.275-0.655	<0.001***
	Every few months	228	30.7	69.3	0.498	0.321-0.773	0.002**	0.546	0.349-0.854	0.008**
	Once or twice a year	136	47.1	52.9	1.000			1.000		

Note. Response options for concern/confidence about drug content were dichotomised (not very and not at all concerned/confident= 0; very and somewhat concerned/confident=1). When running a complete case analysis, 32% (n=253) of the cases were missing. Missing data for the variable 'frequency of general ecstasy use' were deemed MAR. MI was used to address missing data for this analysis. The MI function within SPSS was used to generate 32 imputed datasets. Model $\chi 2$ (6)=37.185, p<0.001. Adjusted R square=0.046 (Cox & Snell), 0.065 (Nagelkerke). Hosmer-Lemeshow goodness of fit test, p=0.638; n=781. #Dropped from the model because p>0.25. *p<0.050; **p<0.010; ***p<0.001.

Table 5.65: Correlates of confidence about ecstasy/MDMA content used in association with the last festival attended (multivariable logistic regression – MI model)

Variable	Level	N	Confident	Not confident	Bivariate			Multivariable		
			80.0%	20.0%	OR	95% CI	*p*	AOR	95% CI	*p*
Age	16-17 years old	91	72.5	27.5	0.895	0.451-1.775	0.751	1.253	0.593-2.648	0.555
	18-19 years old	203	81.3	18.7	1.472	0.794-2.730	0.220	1.698	0.873-3.302	0.119
	20-21 years old	195	80.5	19.5	1.401	0.754-2.600	0.286	1.312	0.676-2.544	0.423
	22-25 years old	211	83.4	16.6	1.705	0.914-3.180	0.094	1.566	0.807-3.043	0.185
	Over 25 years old	79	74.7	25.3	1.000			1.000		
Gender	Male	465	85.8	14.2	2.412	1.688-3.448	<0.001***	2.295	1.574-3.346	<0.001***
	Female	315	71.4	57.7	1.000			1.000		
Jurisdiction	VIC	392	83.2	23.2	1.498	1.050-2.136	0.026*	1.726	1.161-2.567	0.007**
	WA	387	76.8	16.8	1.000			1.000		
Festival type	One-day	522	78.9	21.1	0.806	0.533-1.217	0.305	#		
	Inconsistent selection	48	81.3	18.8	0.932	0.416-2.089	0.865			

Variable	Level	N	Confident	Not confident	Bivariate			Multivariable		
			80.0%	20.0%	OR	95% CI	*p*	AOR	95% CI	*p*
	Multi-day	209	82.3	17.7	1.000					
Used drugs from that 'batch' previously	Don't know	54	68.5	31.5	1.393	0.706-2.747	0.339	1.409	0.691-2.874	0.346
	Yes	602	84.9	15.1	3.594	2.349-5.499	<0.001***	3.504	2.225-5.520	<0.001***
	No	123	61.0	39.0	1.000			1.000		
Frequency of past year ecstasy use	Once a week or more	122	88.5	11.5	3.943	2.037-7.632	<0.001***	3.004	1.503-6.002	0.002**
	About once a month	292	79.8	20.2	2.018	1.280-3.184	0.003*	1.695	1.046-2.747	0.032*
	Every few months	229	83.8	16.2	2.652	1.609-4.373	<0.001***	2.139	1.263-3.624	0.005**
	Once or twice a year	136	66.2	33.8	1.000			1.000		

Note. Response options for concern/confidence about drug content were dichotomised (not very and not at all concerned/confident= 0; very and somewhat concerned/confident=1). When running a complete case analysis, 32% (n=253) of the cases were missing. Missing data for the variable 'frequency of general ecstasy use' were deemed MAR. MI was used to address missing data for this analysis. The MI function within SPSS was used to generate 32 imputed datasets. [#]Dropped from the model because p>0.25. *p<0.050; **p<0.010; ***p<0.001.

E.48 Likelihood to access a drug-checking service

Table 5.66: Likelihood to access a drug-checking service for the last festival (excluding solvents, pharmaceuticals and cannabis) (by gender; %)

	Male	Female	Total	p
Would you have accessed a service?	*n*=494	*n*=343	*n*=837	
Definitely	61.5	60.6	61.2	
Probably	22.9	17.5	20.7	
Maybe	9.1	12.5	10.5	#
Probably not	5.3	7.3	6.1	
Definitely not	0.8	1.5	1.1	
Don't know	0.4	1.6	0.5	
Barriers among those who did not select 'definitely':	*n*=187	*n*=135	*n*=322	
Fear of police watching/stopping/pursuing me after	47.1	58.5	51.9	0.042*
I trust my source so not necessary	39.6	28.9	35.1	0.047*
Because I'd already used drugs from that batch	28.9	26.7	28.0	0.663
Because someone had already used that batch	26.2	27.4	26.7	0.810
Fear of negative treatment/judgment by staff	18.2	28.9	22.7	0.024*
Social stigma/embarrassment	16.0	19.3	17.4	0.452
Don't care that much about the drug content	13.9	15.6	14.6	0.679
I wouldn't want to miss any of the festival	15.0	11.9	13.7	0.421
Other	5.3	2.2	4.0	0.263

Note. Respondents who identified as a non-binary gender were excluded due to small sample size ($n<10$).
[#]Cell sizes too small for statistical analysis. *$p<0.050$; **$p<0.010$; ***$p<0.001$.

E.49 Preferred locations for accessing drug-checking

Table 5.67: Preferred locations for accessing a drug-checking service for the last festival (by jurisdiction; %)

	WA	VIC	Total	*p*
Locations would access a service	*n*=459	*n*=481	*n*=940	
I would consider both onsite and offsite options	61.0	59.9	60.4	
Onsite (at music festivals)	13.9	26.6	20.4	<0.001***
Offsite (before the festival or in the lead up to it)	19.2	9.1	14.0	
I would not consider using the service at all	5.9	4.4	5.1	
Preferred location	*n*=429	*n*=458	*n*=887	
Onsite (at music festivals)	36.6	59.4	48.4	
Offsite (before the festival or in the lead up to it)	44.1	23.8	33.6	<0.001***
No preference	14.9	12.4	13.6	
Don't know	4.4	4.4	4.4	

Note. Among everyone who reported using an illicit drug associated with the last festival attended. *p<0.050; **p<0.010; ***p<0.001.

Table 5.68: Preferred locations for accessing a drug-checking service for the last festival (by gender; %)

	Male	Female	Total	p
Locations would access a service	*n*=543	*n*=393	*n*=936	
I would consider both onsite and offsite options	59.3	61.8	60.4	
Onsite (at music festivals)	23.9	15.8	20.5	0.003**
Offsite (before the festival or in the lead up to it)	13.1	15.3	14.0	
I would not consider using the service at all	3.7	7.1	5.1	
Preferred location	*n*=521	*n*=362	*n*=883	
Onsite (at music festivals)	51.1	44.8	48.5	
Offsite (before the festival or in the lead up to it)	31.5	36.5	33.5	0.231
No preference	13.6	13.5	13.6	
Don't know	3.8	5.2	4.4	

Note. Among everyone who reported using an illicit drug associated with the last festival attended. Respondents who identified as a non-binary gender were excluded due to small sample size (*n*<10). **p*<0.050; ***p*<0.010; ****p*<0.001.

E.50 Responses to hypothetical drug-checking result

Table 5.69: Responses to a drug-checking test result indicating the drugs did not contain what they thought (by jurisdiction; %)

	WA *n*=459	VIC *n*=479	Total *n*=938	*p*
I would not have consumed it under any circumstances	17.9	20.5	19.2	0.313
I would not have if contained something very dangerous	59.3	62.2	60.8	0.354
I would not have if they contained something unknown	29.2	32.8	31.0	0.236
I would have if contained another known recreational drug	35.3	34.9	35.1	0.890
I would have researched and considered still using it	39.7	40.5	40.1	0.791
I would have warned my friends	58.0	61.2	59.6	0.316
I would have informed the supplier	33.6	41.1	37.4	0.017*
I would have consumed less	11.3	9.2	10.2	0.279
I would have been more cautious	39.0	40.1	39.6	0.734
Don't know	6.5	3.3	4.9	0.023*
Other	1.3	1.7	1.5	0.646

Note. Among everyone who reported using an illicit drug associated with the last festival attended. *p<0.050; **p<0.010; ***p<0.001.

Table 5.70: Responses to a drug-checking test result indicating the drugs did not contain what they thought (by gender; %)

	Male *n*=541	Female *n*=393	Total *n*=934	p
I would not have consumed it under any circumstances	20.7	17.0	19.2	0.161
I would not have if contained something very dangerous	60.1	62.1	60.9	0.534
I would not have if they contained something unknown	30.5	32.1	31.2	0.611
I would have if contained another known recreational drug	36.0	33.8	35.1	0.486
I would have researched and considered still using it	39.6	40.7	40.0	0.722
I would have warned my friends	61.2	57.5	59.6	0.258
I would have informed the supplier	39.4	34.9	37.5	0.160
I would have consumed less	8.3	13.0	10.3	0.021*
I would have been more cautious	37.9	42.2	39.7	0.180
Don't know	3.9	6.4	4.9	0.084
Other	2.2	0.5	1.5	0.034*

Note. Among everyone who reported using an illicit drug associated with the last festival attended. Respondents who identified as a non-binary gender were excluded due to small sample size (n<10). *p<0.050; **p<0.010; ***p<0.001.

E.51 Likelihood to utilise drug amnesty bins

Table 5.71: Likelihood to have disposed of illicit drugs into a drug amnesty bin if concerned about detection (by jurisdiction; %)

	WA	VIC	Total	*p*
Would you have thrown your drugs into the bin?	*n*=457	*n*=479	*n*=936	
Definitely	9.6	9.2	9.4	
Probably	12.5	15.9	14.2	
Maybe	21.9	26.7	26.7	0.123
Probably not	37.4	29.4	33.3	
Definitely not	16.2	16.3	16.2	
Don't know	2.4	1.3	2.5	
Why not definitely?	*n*=413	*n*=433	*n*=846	
Don't want to waste the money spent on the drugs	80.9	78.8	79.8	0.433
Wouldn't do it unless I was extremely concerned	56.4	64.0	60.3	0.025*
Would make the festival less enjoyable	39.2	39.7	39.5	0.882
Too much effort getting the drugs	30.5	31.6	31.1	0.722
Concerned about police watching/stopping/pursuing me	30.5	27.3	28.8	0.296
Depends which drugs I had on me	19.4	23.6	21.5	0.139
Embarrassment, judgment or stigma of others seeing me	18.2	13.4	15.7	0.057
Don't know	1.7	2.1	1.9	0.682
Other	1.7	1.4	1.5	0.715

Note. Among everyone who reported using an illicit drug associated with the last festival attended. *p<0.050; **p<0.010; ***p<0.001.

Table 5.72: Likelihood to have disposed of illicit drugs into a drug amnesty bin if concerned about detection (by gender; %)

	Male	Female	Total	*p*
Would you have thrown your drugs into the bin?	*n*=541	*n*=391	*n*=932	
Definitely	8.5	10.7	9.4	
Probably	14.0	14.6	14.3	
Maybe	23.3	25.6	24.2	0.493
Probably not	33.5	33.0	33.3	
Definitely not	18.1	13.8	16.3	
Don't know	2.6	2.3	2.5	
Why not definitely?	*n*=494	*n*=348	*n*=842	
Don't want to waste the money spent on the drugs	78.7	81.6	79.9	0.307
Wouldn't do it unless I was extremely concerned	56.7	65.5	60.3	0.010*
Would make the festival less enjoyable	42.1	35.9	39.5	0.071
Too much effort getting the drugs	32.6	29.0	31.1	0.271
Concerned about police watching/stopping/pursuing me	25.3	33.9	28.9	0.007*
Depends which drugs I had on me	21.3	21.8	21.5	0.839
Embarrassment, judgment or stigma of others seeing me	13.2	19.5	15.8	0.012*
Don't know	2.0	1.4	1.8	0.526
Other	1.8	1.1	1.5	0.436

Note. Among everyone who reported using an illicit drug associated with the last festival attended. Respondents who identified as a non-binary gender were excluded due to small sample size (n<10). *p<0.050; **p<0.010; ***p<0.001.