

# Exploring the Volume and Type of Unhealthy Advertising in Close Proximity to Schools: An Audit of Bus Shelter Advertising in One Mid-Sized Canadian City

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## Abstract

**Background:** Unhealthy advertising influences the attitudes and behaviour of children. Child exposure to products such as alcohol and fast food have been linked to adverse health problems, such as heavy drinking and obesity. Bus shelter advertisements are a potential exposure site for unhealthy advertising for children as they take municipal transit to and from school. This study explores the volume and type of unhealthy advertising at bus shelters within close proximity to schools in Halifax, Nova Scotia, Canada. **Methods:** In Halifax, Nova Scotia, 55 bus shelters with advertising were within a 500-metre distance of an elementary, junior, or high school. Three audits occurred in October 2020 (Fall), January 2021 (Winter), and April 2021 (Spring). Advertisements were coded as unhealthy if containing alcohol or gambling promotions. Food promotions were classified as maximum (healthy), moderate, or minimum (unhealthy) nutrition. **Results:** In total, 319 bus shelter advertisements were collected across three audits. Of these, 14.4% of advertisements were unhealthy (n = 46), and less than 1% (n = 3) were classified as healthy. For the unhealthy advertising, 37.0% (n = 17) of advertisements promoted gambling, 32.6% (n = 15) advertised food, 21.7% (n = 10) advertised non-alcohol beverages, and 8.7% (n = 4) advertised alcohol. The majority of advertisements (n = 270; 84.6%) were classified as other. **Implications:** Children are potentially exposed to unhealthy advertising as they travel to and from school in Halifax, Nova Scotia. Further research is needed to understand how and when children are exposed to these types of advertising. Municipalities can consider implementing further bylaws and administrative orders that create supportive environments for children and youth.

**Keywords:** Commercial determinants of health; Bus shelter advertising; Gambling advertising; Alcohol advertising; Obesity; Child health; Nova Scotia

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The WHO-UNICEF-Lancet Commission of 2020 recommends that exposure to harmful commercial practices be more strongly regulated to build sustainable environments where children can develop and flourish (Clark et al., 2020). Childhood provides an opportune time to shape and mould health behaviours (Patton et al., 2016); however, commercial industries specifically target children—those under 18 years of age—to advertise unhealthy products (United Nations Convention on the Rights of the Child, 1989; World Health Organization [WHO], 2021). In Canada, advertising is defined by the *Food and Drugs Act* (1985) as “any representation by any means whatever for the purpose of promoting directly or indirectly the sale or disposal of any food, drug, cosmetic or device.” This study captures unhealthy advertising (e.g., alcohol, unhealthy foods, and gambling products) at bus shelters in close proximity to schools to assess the volume and type of unhealthy advertising in this environment.

Unhealthy advertising is linked to various negative health outcomes in children (Lapierre et al., 2017). Multiple systematic reviews demonstrate associations between advertising and increased consumption of fast food, contributing to high rates of childhood obesity (Boyland et al., 2016; Coleman et al., 2022; Smith et al., 2019) that is linked to illnesses such as Type 2 diabetes, hypertension, and heart disease (Park et al., 2012). Similarly, exposure to alcohol advertising has been linked directly to alcohol consumption (Jernigan et al., 2017; Martino et al., 2018; Naimi et al., 2016). Sargent and Babor (2020) found a causal relationship between exposure to alcohol advertising and the onset of drinking, as well as contributing to binge drinking in adolescence. Those who consume alcohol at a younger age are more likely to develop an alcohol use disorder later in life (Salmanzadeh et al., 2020). According to WHO, restricting alcohol advertising is one of the top five most cost-effective interventions to reduce alcohol-related harm (WHO, 2019). Additionally, gambling advertisements lead to increased gambling intentions among children who are exposed to

sports gambling sponsorship (Hing et al., 2013; Pitt et al., 2017). Gambling is associated with various harms, such as financial loss, social and emotional distress, and negative impacts on education and work (Abbott, 2017).

Bus shelters are one aspect of the outdoor food environment that have been studied near schools; others include convenience store windows and billboards (Brien et al., 2023; Dia et al., 2021; Trapp et al., 2022). Studies have assessed the volume of bus shelter advertisements specific to foods high in calories and salt, sugar, and fat (Finlay et al., 2022; Huang et al., 2020; Kelly et al., 2008; Trapp et al., 2021; Velazquez et al., 2019). For example, Huang et al. assessed bus shelters within walking distance of schools (500 metres) and discovered 12.8% of advertisements promoted non-core food items (e.g., chocolate bars). Other studies found varying percentages of unhealthy food advertisements (ranging from 12.8% to 49.0%). While the focus has been on food and beverages, some studies explore various types of unhealthy advertising. For example, Parnell et al. (2019) measured the volume of bus shelter advertising promoting unhealthy products in Perth, Australia, and reported 31.4% of advertisements as unhealthy. These advertisements promoted alcohol (12.0%), non-alcoholic beverages (10.9%), gambling (20.7%), and fast food (56.5%). This suggests that there are other types of unhealthy advertising at bus shelters that warrant exploration.

Unlike electronic media advertisements (e.g., TV, radio), bus shelter advertisements are unique in being able to reach a large, unrestricted audience because they are highly visible and continuously available for viewing (Kelly et al., 2008). Additionally, travelling by transit is encouraged within cities. For example, Canadian cities such as Halifax, Nova Scotia, promote transit as a viable option for children and youth (Halifax Regional Municipality, n.d.). Schools in Halifax are located throughout the community, and students potentially travel between their home and school at least twice a day from Monday to Friday from September to the end of June. The bus rider’s age is not

collected; we don't know how many children use transit for travel. Therefore, many children are potentially exposed to bus shelter advertisements a minimum of twice a day (to and from school).

Further research to learn more about the volume of exposure to unhealthy advertisements around schools is needed to inform policies and interventions to support children's overall health (Trapp et al., 2021). This study aimed to assess the volume and type of unhealthy advertising at bus shelters near schools in Halifax, Nova Scotia, focusing on advertising of alcohol, food, and gambling.

## Methods

### Data Collection

This paper adapts the methodology of Parnell et al. (2019), a study exploring bus shelter advertising in Perth, Australia. Bus shelters within Halifax, Nova Scotia, were identified using the sole advertising agency's website (OUTFRONT Media) and pinned using the Google My Maps application. Next, we pinned elementary, junior, and high schools from both the public and private school systems into the Google My Maps application. We used the Google My Maps distance tool to measure distances between schools and bus shelters. Bus shelters were included in the audits if they were within 500 metres of a school. A distance of 500 metres is considered a five-minute walk from a school, and what a child would walk if taking transit to school. Other studies have used this distance to measure advertising and proximity (Kelly et al., 2008; Parnell et al., 2019). If the distance to a bus shelter was greater than 500 metres, it was excluded from the audit. The total number of schools within 500 metres of a bus shelter was 40.

During a one hour in-person meeting or video conference call, LK trained health promoters from Mental Health and Addictions at Nova Scotia Health on how to collect the photos and use the map application. Subsequently, the health promoters collected photos of the bus shelter advertisements. Two health promoters visited each bus shelter, and one person

collected a photo of the advertisements on a mobile device. Advertisements on both sides of the bus shelter were collected. Date and bus stop number were also collected. Three audits occurred, each over a five-day period to ensure photos were captured within the same season. Audit 1 occurred from October 8 to 12, 2020 (Fall). Audit 2 occurred from January 7 to 11, 2021 (Winter). Audit 3 occurred from April 8 to 12, 2021 (Spring). Children are not attending school in the summer (July/August).

All alcohol and gambling advertising was classified as unhealthy. Food advertising was classified as either maximum, moderate, or minimum nutrient content. This was based on the *Nova Scotia Food and Beverage Nutrient Criteria*, a resource supporting healthy eating policies and guidelines that classifies foods based on nutrient content as maximum, moderate, and minimum nutrition (Nova Scotia Government, 2016). All other advertisements were classified as other.

The data were organized in Excel and analyzed in RStudio software. The primary outcome was to quantify and describe unhealthy advertising at bus shelters near schools.

## Results

There were 55 bus shelters with advertising within 500 metres of a school. Each audit monitored 110 potential advertisements (one advertisement on each side of the bus shelter). Audits 1 and 3 had several shelters with no advertisements. Overall, 319 bus shelter advertisements were collected across the three audits (See Table 1). Of these, 14.4% of bus shelter advertisements were unhealthy ( $n = 46/319$ ) and less than 1% ( $n = 3/319$ ) were classified as healthy food product advertisements. The majority of advertisements ( $n = 270/319$ ; 84.6%) were classified as other. No advertisements were classified as moderately healthy.

For Audit 1 (Fall), 100 bus shelter advertisements were collected. Of these, 29.0% of advertisements ( $n = 29$ ) promoted unhealthy products including gambling (58.6% /  $n = 17$ ), non-alcoholic beverages (34.5% /  $n = 10$ ), and

**Table 1**

*Unhealthy, Moderately, and Healthy Advertisements on 55 Bus Shelters Near Schools in Halifax, Nova Scotia*

		<b>Audit 1 (Fall)</b>		<b>Audit 2 (Winter)</b>		<b>Audit 3 (Spring)</b>		<b>Total across all audits</b>	
		n	%	n	%	n	%	n	%
<b>Total advertisements</b>		100	31.3%	110	34.5%	109	34.2%	319	100%
<b>Unhealthy advertisements</b>		29	29.0%	7	6.5%	10	9.2%	46	14.4%
	<b>Gambling</b>	17	-	-	-	-	-	17	37.0%
	<b>Non-alcoholic beverages</b>	10	-	-	-	-	-	10	21.7%
	<b>Alcohol</b>	-	-	-	-	4	-	4	8.7%
	<b>Food</b>	2	-	7	-	6	-	15	32.6%
<b>Moderately healthy advertisements (food/non-alcoholic beverages)<sup>1</sup></b>		-	-	-	-	-	-	0	0
<b>Healthy advertisements (food/non-alcoholic beverages)<sup>1</sup></b>		-	-	-	-	3	2.7	3	0.9%
<b>Other advertisements</b>		71	71.0	103	93.6	96	88.1	270	84.6%

*Note.* <sup>1</sup> Moderately and healthy were defined using the Nova Scotia Food and Beverage Nutrient Criteria.

unhealthy food (6.9% / n = 2), while 71 advertisements were classified as other (71.0%).

For Audit 2 (Winter), 110 bus shelter advertisements were collected. Seven advertisements promoted unhealthy products, including unhealthy food (100% / n = 7), while 103 advertisements were classified as other (93.6%).

For Audit 3 (Spring), 109 bus shelter advertisements were collected, including 10 advertisements promoting unhealthy products in the form of unhealthy food (60% / n = 6) and alcohol (40% / n = 4). Three advertisements promoted healthy food products, and 96 advertisements were classified as other (88.1%).

In total, gambling advertisements

accounted for 37.0% of all unhealthy advertisements, followed by unhealthy food (32.6%), non-alcoholic beverages (21.7%), and alcohol (8.7%). Unhealthy food advertisements promoted soda energy drinks and fast-food sandwiches (e.g., cheeseburger, chickenburger). Gambling advertisements included a monopoly restaurant game and local radio game show. Audit 3 (Spring) was the only audit containing alcohol advertisements. These comprised promotions for beer products. See Table 2 for a description of unhealthy advertisements.

**Table 2**  
*Description of Unhealthy Advertising on 55 Bus Shelters Near Schools in Halifax, Nova Scotia*

<b>Audit 1 (Fall)</b>	<b>Advertisement</b>	<b>Frequency</b>
Food	Soda energy drink	10
Food	Fast food sandwich	2
Gambling	Monopoly restaurant game	7
Gambling	Radio game show	10
<b>Audit 2 (Winter)</b>		
Food	Fast food, chickenburger	4
Food	Fast food, cheeseburger	3
<b>Audit 3 (Spring)</b>		
Alcohol	Beer	3
Alcohol	Beer (low alcohol)	1
Food	Fast food, hamburger	6

**Discussion**

This study assessed the volume and type of unhealthy advertisements at bus shelters within close proximity to schools in Halifax,

Nova Scotia. Three audits, conducted in Fall, Winter, and Spring, found that 14.4% of advertisements were unhealthy. Of those unhealthy advertisements, 37.0% promoted gambling, 32.6% promoted unhealthy food, 21.7% promoted non-alcoholic beverages (e.g., soda energy drinks), and 8.7% promoted alcoholic beverages. The majority of advertising (84.6%) was classified as other.

As per the *Nova Scotia Food and Beverage Nutrient Criteria*, food products were classified as unhealthy, moderate, or healthy. Less than 1% of advertising promoted healthy food products. These advertisements were for a local gardening company and featured fruits and vegetables.

Overall, there was more gambling advertising in this study (37.0% of unhealthy advertising) than reported by Parnell et al. (2019; 20.7%), but less alcohol advertising (8.7%, compared with the 12.0% found by Parnell et al.). This study found 32.6% of unhealthy advertisements were for unhealthy food products, less than Parnell et al. (2019; 56.5%) and Finlay et al. (2022; 35.1%). The findings are similar to those of Kelly et al. (2008), in that the majority of food advertising promoted unhealthy products. For example, Kelly et al. (2008) reported that 25% of advertisements promoted food, and of those 80% promoted unhealthy products. In Halifax, this study also found fewer advertisements for healthy food: 1% compared to 8% (Trapp et al., 2021) and 7% (Dia et al., 2021). The authors noted that many of the gambling advertisements were associated with food companies (e.g., McDonald’s Monopoly game); thus, these advertisements promoted multiple unhealthy products and behaviours.

A global policy analysis found that from 2015 to 2017 policies related to alcohol advertising and physical activity decreased (Allen et al., 2020). To prevent this erosion of policy, municipal governments could strengthen bylaws and administrative orders to create more supportive environments for children. For example, local and state governments in Australia continue to adjust advertising policies to include transit (e.g., buses and bus shelters).

In 2018, the state of Victoria banned static (e.g., bus shelter) alcohol advertising within 150 m of schools and banned gambling advertising on transit, in response to concerns about children's exposure to betting (State Government of Victoria, 2017; Victorian Commission for Gambling and Liquor Regulation, 2018).

Our findings highlight various policy gaps in existing restrictions meant to protect children in Canada. For example, the Canadian Radio-television and Telecommunications Commission (CRTC) Code includes various clauses that restrict alcohol advertisements to children but also contains notable omissions. Paragraph (b) of the code excludes alcohol messages from children's toys, clothing, playground equipment, wading pools, or objects commonly used by children (e.g., sports equipment, coloured pencils). However, there are no specific guidelines about alcohol advertising at (or near) places where children congregate (CRTC, 1996). Including specific policy clauses for restricting unhealthy advertisements in areas where children congregate could further restrict industry influence over child marketing and thus support healthy environments.

Many jurisdictions mention advertising contracts with third-party contractors, suggesting that public health advocates must gain an understanding of how advertising contracts are structured within their jurisdictions. Advocates can look beyond traditional health stakeholders and build relationships encompassing other participants (e.g., transit) to explore potential policy opportunities. Researchers and public health advocates can continue to monitor these regions to determine the effects of these policy changes and their impact on health behaviours.

This study demonstrates the need for further research. Transit is increasingly being offered to children as a way to support active transportation and sustainable cities, which provides even more incentive for cities to consider advertising policies. Public health researchers could recommend that transit collect data on how many children use these services. Bus shelter advertisements are one

facet of the outdoor advertising environment. Other aspects include buses, billboards, ferries, terminals, and train stations. In addition, schools are only one setting where children congregate. Further research could examine outdoor advertising at parks, recreation centres and shops, and other places children gather (Egli et al., 2020).

### **Strengths/Limitations**

Advertisements were collected at 55 bus shelters three times over one year. Audits were evenly spaced to account for variations between seasons. Two staff/student members of Nova Scotia Health (health promoters) verified each photo. This study shines a light on the current landscape and the current policy gaps regarding outdoor advertising.

This research does not demonstrate causality between advertising and health behaviour. This audit did not account for advertising in other outdoor places where children congregate, such as sports fields or parks, or other outdoor advertising such as billboards. Additionally, it is unknown how many children use public transit to travel to school and how much of an impact outdoor advertising has on health behaviour.

### **Conclusion**

In an audit of bus shelter advertising, this study found that approximately 14% of advertising promoted unhealthy products, with unhealthy foods and gambling accounting for the most advertisements. Bus shelters are one medium of advertising that children are exposed to as they travel to and from school. Advertising of products such as unhealthy food, alcohol, and non-alcoholic beverages continues to be explored in the literature, showing serious health harms to children. Governments and municipalities can continue to invest in public policies restricting unhealthy commodity advertising in outdoor spaces near schools to build supportive environments where children live, learn, and play.

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