

The Relationship between License Type and Alcohol-Related Problems Attributed to Licensed Premises in Perth, Western Australia

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ABSTRACT. Drink-driving offenses, alcohol-related traffic accidents and number of assault charges were used as indicators of the degree of alcohol-related problems associated with individual licensed premises in the Perth Traffic Police region of Western Australia. These indicators were used to rank five main categories of licensed premises according to the levels of harm experienced by their customers while controlling for the amounts of alcohol sold in

each category. Nightclubs, taverns and hotels emerged as "high-risk" in comparison with clubs and restaurants. The role of such factors as different customer characteristics, opening hours, types of entertainment, restrictions on clientele and provision of meals are discussed as possible explanations underlying this finding. (*J. Stud. Alcohol* 53: 495-498, 1992)

IN RECENT YEARS there has been a growing interest in the opportunities that exist within the licensed drinking environment for reducing the amount of harm associated with the consumption of alcohol (Single, 1990). A number of prevention strategies have been proposed including the stricter enforcement of liquor licensing laws regarding the serving of alcohol to intoxicated patrons (Jeffs and Saunders, 1983), the training of barstaff to serve alcohol in a more responsible fashion (Russ and Geller, 1987) and the targeting of "high-risk" premises by random breath-testing patrols (Lang et al., 1989).

This focus on licensed drinking environments has been encouraged partly by the existence of laws that are intended to regulate the sale of alcohol for on-premise consumption, and also by the fact that drinking in such settings precedes the occurrence of a substantial proportion of acute alcohol-related harm. For example, in a review of research in the United States, O'Donnell (1985) concluded that approximately half of drivers convicted for drunk-driving had been drinking on licensed premises immediately prior to their arrest. Similar figures have been reported for Western Australia (Lang et al., 1989). Robb (1987) found that about half of all cases of assault in New South Wales had occurred on or adjacent to licensed premises.

Despite this growing interest in the prevention opportunities afforded by licensed drinking settings, there have been few studies that have attempted to identify the characteristics of premises whose customers are especially likely to experience some form of alcohol-related harm.

Most of these studies have concentrated on links between characteristics of the drinking environment, intoxication levels and violent or aggressive behavior. For example, Single (1987) cited observational studies where increased levels of observed intoxication were found to be associated with greater levels of aggressive behavior in bar room settings (Graham et al., 1980; Graves et al., 1981). A recent observational study of violent behavior in public drinking settings conducted by Tomsen et al. (1989) found that a combination of several factors often led to trouble, e.g., a "boring" atmosphere, lack of comfort, lack of food, aggressive bouncers and high levels of drunkenness.

The paucity of knowledge in this area has resulted in calls for more research into factors that facilitate problematic drinking behaviors in different types of settings (Snow and Landrum, 1986).

Preliminary research conducted in Perth, Western Australia, indicates that significant correlations exist between the amount of alcohol purchased by particular licensed premises and such alcohol-related problems as the number of assaults that occur on those premises, the number of alcohol-related traffic accidents and of drunk-driving charges involving clientele who last drank at those premises (Stockwell et al., 1991). Significant correlations between each of these indicators of harm for licensed premises were also found, i.e., establishments with a higher than average number of assaults on their premises also tended to be those whose customers were more likely to have an alcohol-related traffic accident and to have been convicted of a drunk-driving offense. When the number of alcohol-related offenses for each premises was standardized by the amount of alcohol purchased by those premises,

significant correlations were still found between these indicators of alcohol-related problems. In other words, it would appear that the volume of alcohol sold by a particular establishment (as indicated by purchases) is not the only "risk-factor" for alcohol-related harm, but that other characteristics of either the drinking settings and/or the types of drinkers who frequent them must also be important. Therefore, further research is required to identify these.

This study will explore the importance of type of liquor license as a predictor of which drinking settings are associated with alcohol-related problems. The majority of liquor licenses granted in Western Australia fall into five main categories: hotels, taverns, restaurants, clubs and nightclubs. Hotel and tavern licenses enable the licensee to both sell alcohol on the premises and also for consumption off the premises via a "bottle shop"—the only difference being that hotels must also supply accommodation. A restaurant license allows alcohol to be sold so long as it accompanies a meal. A club license requires that alcohol can only be sold to the members of sporting and social clubs and their guests. The holders of nightclub licenses are required to provide continuous entertainment and are permitted to remain open from 6 PM and 6 AM.

Smith (1989) recently reported an analysis of the apparent effects of relative changes in both the number and type of licensed premises in Western Australia on indices of harm in comparison with Queensland. During the period 1974-82, there was a 16% relative increase in the number of hotel, tavern and liquor store licenses granted per head of population and a relative decrease of 17.4% in the rates of licenses granted for clubs, restaurants and all "other" categories. It was reported that, over the same period, there was a significant increase in rates of liver cirrhosis and a decrease in road traffic fatalities. Smith implies that this may have been due to there having been a shift in the relative proportions of different types of liquor licenses and also in the total number of these. Unfortunately, it was not possible to isolate the effects of changes in license type from changes in the overall rate of licensed premises per head of population—nor either of these effects from changes in per capita alcohol consumption over the same period. It is possible that the observed changes in levels of harm were related to relative changes in the number of outlets, though the direction of any causal relationship between this and the community's overall alcohol consumption is unclear.

In the present study, comparisons were made between the five major categories of establishments licensed to sell alcohol for consumption on the premises with regard to the extent to which their customers became involved in drunk-driving offenses, alcohol-related traffic accidents and assaults. These comparisons were made once adjustments for the extent of alcohol sales from individual premises have been made so as to avoid simply demonstrating that it is the busiest premises with the most customers that contribute most to incidents of alcohol-related harm.

Method

Study area and sample of licensed premises

The sample was comprised of 369 premises holding hotel, tavern, restaurant, club or nightclub licenses located in the inner Perth metropolitan area as determined by police operational subdivisions, and who were shown as having made purchases of alcohol on the Liquor Licensing Division's records during fiscal year 1989-90. Two hotels were excluded whose managers refused to supply an estimate of the ratio of bar to bottleshop sales. The population of the study area is very close to 400,000.

Indicators of harm following drinking on licensed premises

The indicators of alcohol-related problems used were as follows: (1) the number of traffic accidents known to have involved a driver who had subsequently failed a roadside breath-test after drinking on those premises during the first 6 months of 1989; (2) the number of drunk-driving offenders who had subsequently failed a roadside breath-test after drinking on those premises during the first 6 months of 1989; (3) the number of assaults recorded by the police as having occurred in or around particular licensed premises from July 1, 1988 to June 30, 1989; and (4) total purchases of alcohol made by each establishment in fiscal year 1988-89.

The Police Department of Western Australia provided data on all drivers in the study area who were given a confirmatory breath test at the Perth Traffic Police headquarters after failing a roadside test. The bulk of this group (approximately 80%) is comprised of individuals tested by routine traffic patrols, the remainder being individuals identified by random breath-test patrols (10%) and drivers involved in traffic accidents to which the police were called (10%). In the latter instance, it has been the policy of the W.A. Traffic Police that all such drivers be breath analyzed. Individuals tested were routinely asked to state the location they last consumed alcohol and also the name of the establishment if it was licensed; such information was provided by 93% of persons tested.

A search was performed on the Police Department of Western Australia database for assault offenses in which the details of the location of the offense specified a licensed premises by use of any of the following terms: "hotel," "tavern," "club," "nightclub" or "restaurant." Information on the name, type of license, location and total annual purchases of alcohol made by all licensed premises in the Perth metropolitan area for the period July 1, 1988 to June 30, 1989 were made available by the Liquor Licensing Division of the Office of Racing and Gaming. Descriptive statistics for each of the putative indices of alcohol-related harm for licensed premises are provided in Table 1.

TABLE 1. Descriptive statistics for alcohol-related problems by license type

License type	<i>n</i>	Annual purchases (\$10,000) Mean (\pm SD)	Traffic accidents Mean (\pm SD)	Drunk driving Mean (\pm SD)	Assaults Mean (\pm SD)
Hotel	79	32.3 \pm 27.2	0.22 \pm 0.52	3.63 \pm 5.03	0.89 \pm 1.48
Tavern	37	24.3 \pm 16.7	0.32 \pm 0.63	2.78 \pm 4.71	0.49 \pm 0.84
Nightclubs	23	17.2 \pm 14.5	0.30 \pm 0.63	5.87 \pm 8.00	1.87 \pm 3.63
Clubs	81	9.7 \pm 9.7	0.04 \pm 0.19	0.22 \pm 0.85	0.00 \pm 0.00
Restaurants	149	5.1 \pm 5.4	0.01 \pm 0.08	0.06 \pm 0.24	0.03 \pm 0.21
Total	369	14.6 \pm 18.7	0.11 \pm 0.38	1.50 \pm 3.88	0.37 \pm 1.27

There were 72 hotels and taverns out of a total of 116 that had a bottleshop on the establishment. This required that the total alcohol purchases for such premises were adjusted by the amount of alcohol sold for consumption off the premises. Since the Liquor Licensing Division's records did not distinguish between purchases of alcohol for on- and off-sales, all hotel and tavern managers were surveyed by telephone to determine their best estimates of the proportions of these two types of sales in their particular outlet.

Analysis

Because of the large number of premises that had neither traffic offenses nor assaults attributed to them, the frequency distribution for these indicators is very skewed. Consequently, nonparametric statistics were used to determine the relative effect each type of license had upon the number of alcohol-related offenses. A Kruskal-Wallis one-way analysis of variance was used to determine if there were any differences in the scores obtained on each of the indicators in relation to license type when the number of offenses were standardized by the annual purchases of alcohol made by each of the 369 premises in the study area.

Results

Validity of managers' sales estimates

To test the validity of the managers' sales estimates, correlations between each indicator and the proportion of purchases attributed by them to on-premises sales were compared to correlations between each indicator and the managers' modal estimate of this proportion—this was 40% on-sales and 60% off-sales. Table 2 shows that the estimates given by each manager produced higher correlations than those derived from the modal proportion for

TABLE 2. The Kendall tau correlations between each indicator and the on-premises sales for hotel and taverns as estimated by the managers of each premises (*N* = 116)

Method	Traffic accidents	Drunk driving	Assaults
Managers' estimates	0.27	0.40	0.35
Mode of estimates	0.20	0.43	0.25

two out of the three indicators of alcohol-related harm (traffic accidents and assaults) and little difference to the third (drunk-driving). It was decided, therefore, to adjust the data on annual purchases in accordance with the managers' estimates for the foregoing analyses.

The Kruskal-Wallis one-way analysis of variance produced highly significant rankings of the five major license types in terms of their "scores" on each indicator of alcohol-related harm ($p < .0001$ each case). The rankings show consistency across the three indicators with nightclubs, hotels and taverns always ranked in the first three; restaurants and clubs in the two lowest. Table 3 ranks the different license types according to the number of incidents of harm per \$1 million of alcohol purchases in order to illustrate these differences most clearly. Mann-Whitney U-Tests were also performed to test whether the mean ranks obtained by each license type on the Kruskal-Wallis ANOVA were significantly different from the mean rank of the other four license types combined. This resulted in there being 15 tests, since they were repeated for each indicator, only one of which failed to reach the $p < .05$ significance level.

Discussion

The principal finding of this study was that per dollar of alcohol sold there is a higher probability that customers of nightclubs, hotels and taverns will be involved in incidents of alcohol-related harm than will the customers of clubs and restaurants. There was a highly consistent and significant ranking of these different license types across these three indicators of harm used.

These findings suggest that license type may be an important risk factor for drinking settings. Whether this is

TABLE 3. Number of incidents of harm per \$1 million of alcohol purchases for each license type and each harm indicator

License type	Traffic accidents ^a	DDOs	Assaults
Nightclub	1.77	34.09	10.86
Tavern	1.33	11.44	2.74
Hotel	0.66	11.23	2.00
Club	0.38	2.80	0.66
Restaurant	0.13	1.19	0.00
Total	0.74	10.23	2.52

^aThese will be underestimates of the actual totals since they are only those where the police were called to the accident, a driver failed a roadside breath-test and did not require hospital treatment.

mainly due to environmental factors, policy of the licensed premises or characteristics of the clientele remains to be investigated. However, a number of possible factors suggest themselves.

The provision of continuous entertainment by nightclubs and their consistently "high-risk" status fits Graham's (1985) finding that aggressive behavior is related to dancing, bands, loud music and little provision of food. It is also likely that many customers move on to nightclubs after drinking at other locations earlier in the evening to take advantage of the later business hours.

The requirements of hotel and tavern licenses are similar and therefore it is not surprising that these license types have a similar incidence of alcohol-related offenses. The influences of entertainment and recreational activities, overcrowding and the lack of requirement to provide meals may all operate within these types of establishment to increase the likelihood of alcohol-related offenses.

It is possible that the type of clientele attracted to "high-risk" establishments may also influence the increase in alcohol-related offenses associated with such premises. Lang et al. (1989) found that drivers who were breath analyzed after drinking at "high-risk" premises were predominantly male and under the age of 25 years. Therefore a greater proportion of the clientele of hotels and taverns may be of this age, leading to an increase in alcohol-related offenses on such premises. Further research is being conducted to test this hypothesis.

The requirements for club and restaurant licenses may explain why these were classified as "low-risk" in this study. First, clubs are supposedly restricted to members and guests of members only, therefore reducing the likelihood of overcrowding. Second, restaurants have a primary requirement to provide a meal with less emphasis being placed on alcoholic drinks than other types of licensed premises.

Further research is being conducted in Perth to confirm or disconfirm the various possible explanations for these observed differences in degree of "risk" between different license categories. In the meantime it is still possible to make recommendations for the prevention of alcohol-related harm on the basis of these findings. One possibility would be to increase the number of "low-risk" license types (restaurants and clubs) and simultaneously reduce the number of premises that fall into the "high-risk" license types (nightclubs, hotels and taverns).

The "high-risk" license types could also be made priorities for the introduction of responsible server training, community policing and stricter enforcement of liquor licensing legislation—especially in relation to serving intoxicated persons (Jeffs and Saunders, 1983).

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