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Research paper

# Observable characteristics associated with alcohol intoxication within licensed entertainment venues in Australia

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ABSTRACT

*Background:* The aim of the current study was to assess correlates of intoxication in licensed venues in Australia.
*Methods:* Covert observations of licensed venues and venue patron in night-time entertainment districts of five Australian cities were conducted. In total, 828 unique cross-sectional observations were completed across 62 bars, nightclubs, and large mainstream pubs. Venues were selected from the main entertainment district of smaller cities and the busiest entertainment districts of larger cities. Outcomes were the estimated percentage of patrons showing any signs of alcohol intoxication and the overall level of intoxication ('high' versus 'none to medium'). Seven predictors of patron intoxication were examined: hour of observation; estimated percentage of male patrons; estimated percentage of patrons <25 years old; venue crowding; presence of observable alcohol promotions; type of alcoholic beverage consumed by the majority of patrons; and, venue type.
*Results:* Time of night (coefficient = 11.71, $p < .001$; OR = 9.61, $p < .001$), percentage of patrons aged <25 (coefficient = 0.14, $p < .001$; OR = 1.01, $p = .031$), and venue crowding (coefficient = 4.40, $p < .001$; OR = 1.39, $p = .009$) had significant positive associations with both signs of intoxication and high levels of intoxication. Nightclubs had a lower percentage of signs of intoxication compared to pubs (coefficient = −10.73, $p = .021$). Increased percentage of male patrons was associated with increased odds of high-level intoxication (OR = 1.05, $p = .020$).
*Conclusion:* Time of night and proportion of younger patrons had a strong association with patron intoxication adding further support for the strong body of evidence that ceasing service of alcohol earlier in the evening will reduce intoxication levels.



## Introduction

Approximately 2.5 million deaths (4% of all deaths) each year globally are due to alcohol (World Health Organization, 2011). Drinking in Australia causes 15 deaths and 430 hospitalisations each day (Gao, Ogeil, & Lloyd, 2014), and the social costs of alcohol have been estimated between AUD15.3 billion (Collins & Lapsley, 2008) and AUD36 billion annually (Laslett et al., 2010). Alcohol consumption increases the likelihood and extent of aggressive and violent behaviours and reduces an individual's cognitive and verbal capacity to resolve conflict, thereby increasing the likelihood of involvement in arguments or fights (Australian Bureau of Statistics, 2007; Wells et al., 2014). It is, therefore, not surprising that alcohol-related violence and associated injuries are especially prevalent in spaces with a high density of intoxicated people, such as licensed venues (Miller, Droste, Baker, & Gervis, 2015) and areas with a high alcohol outlet density (Livingston, Chikritzhs, & Room, 2007).

Alcohol-related violence and harm often occurs within late-night entertainment areas on Friday and Saturday nights, between 12 am and 3 am (Chikritzhs & Stockwell, 2002), placing significant burden on emergency services personnel, including police, paramedics and hospital staff (Macdonald et al., 2006). Past research has found that, for Friday and Saturday nights, the rate of assaults peak at 12 am (Miller et al., 2012b), the rate of alcohol-related injuries are consistently high from 12 am to 3 am (Miller et al., 2012b), and emergency department presentations peak

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between 12 am and 1 am (Miller, Coomber, Sonderlund, & McKenzie, 2012a). Most violent incidents are concentrated in and around specific venues (Briscoe & Donnelly, 2003), therefore risk factors for alcohol intoxication associated with such venues should be examined so preventative measures can be put in place (Graham & Homel, 2008). The physical and social environment of venues has been shown to contribute to harms, even when controlling for characteristics of the drinker (Graham, Bernards, Osgood, & Wells, 2006). Therefore, controlling the venue environment can play a key role in reducing alcohol intoxication, and subsequent alcohol-related harms.

Police and liquor licensing authorities often audit venues to assess compliance and monitor the responsible serving of alcohol (Wilkinson, 2013) in an attempt to reduce levels of intoxication and harm. However, audits are often inadequate because they are primarily concerned with legislative requirements rather than evidence-based environmental harm (Daly, Campbell, Wiggers, & Considine, 2002); they rely on self-reporting; are often completed during non-peak times (Briscoe & Donnely, 2001); and are frequently dependent on resources. Thorough observations at peak times are required to adequately assess potential harms within drinking environments. Using an observations approach limits the potential for recall bias, and allows first-hand observations of behaviour that occurs in and around licensed venues.

Factors associated with alcohol and alcohol-related harm in licensed venues include a permissive environment, cheap alcohol availability, poor cleanliness, crowding, loud music, a focus on dancing, and poor staff practice (Hughes et al., 2011b). However, most past studies relied on gathering information from drinkers, rather than directly observing these factors. Observational research has been successfully used to investigate correlates of aggression in licensed venues (e.g., Graham et al., 2006). Early Australian observational research demonstrated that intoxication, staff intervention with intoxicated patrons, a permissive environment, physical comfort of the venue, and availability of public transport are related to aggression (e.g., Homel, Carvolth, Hauritz, McIlwain, & Teague, 2004). However, these studies did not examine patron demographic mix or the correlates of intoxication. More recently, observational data in Melbourne found that the riskiest venues for aggressive incidents were those who prominently promoted alcohol products and specials (McFadden, Young, & Markham, 2015). However, this study is limited by the small number of observations that occurred over a 25 min time period in each venue, and the use of only one observer. A recent European observational study found that factors associated with increased intoxication within licensed venues included use of plastic drinking vessels, promotion of non-alcohol drinks (particularly energy drinks), a permissive environment, poor washroom facilities, presence of a dance floor, presence of sexual activity, and later time of observation (Hughes et al., 2012).

To our knowledge, no Australian research has been undertaken assessing correlates of intoxication in licensed venues using observational data. The current study addressed this gap by undertaking an observational study of risk factors for alcohol intoxication in the main late-night entertainment districts of five Australian cities. Observational studies are useful for expanding knowledge of consumption behaviours, and are free from the artificial constraints of experimental research and the potential for social desirability bias, inaccurate self-reporting, or other response biases inherent in survey research (Graham, West, & Wells, 2000; Pennay & Lubman, 2012). In-situ venue observations have also been used successfully as a field-study methodology in several Australian nightlife studies (Homel et al., 2004; Miller et al., 2012b). Such methods provide unobtrusive access to nightlife patron behaviour, and have effectively demonstrated variability in patron behaviour and substance use across nightlife venues (Graham et al., 2000; Homel et al., 2004; Hughes et al., 2012; Quigg et al., 2014). Based on established observational methods and items, our aim was to assess whether demographic and environmental factors were associated with alcohol intoxication in licensed venues in Australia. This observational study formed part of a larger investigation of night-time entertainment districts: the Patron Offending and Intoxication in Night Time Entertainment Districts (POINTED) study (Miller et al., 2013). This study is the largest and most rigorous *in situ* observational study of late-night entertainment areas conducted to date.

## Method

### *Setting*

Data were collected in licensed venues in five Australian cities, with locations selected to enable a comparison between large metropolitan cities (Sydney and Melbourne, each with more than four million residents) and smaller regional cities in the same states (Wollongong with 290,000 residents and Geelong with 175,000 residents) on the eastern coast of Australia. A fifth city, Perth, was selected as it represents a unique smaller metropolitan city (1.7 million residents) on the opposite coast of Australia. All five cities have busy entertainment districts with late trading venues (i.e., venues open until 3 am, and in some cases as late as 7 am).

A range of venues in each city was selected for observation. Based on trading hours, size and the provision of music/entertainment, the following categories were developed to classify the venues: large mainstream pubs (vary in size but the primary focus is not on live music or a DJ, food may be served, may have electronic gaming machines or televisions; closing time 1 am–3 am); bars (smaller capacity or boutique style venues, may serve food; closing time 1 am–5 am); and, nightclubs (DJ-focused with large capacity dance floor areas, no food service; closing time 3 am to 24 h trading). For the smaller cities (Wollongong and Geelong) all venues within the central business district were observed. In Perth, observations were concentrated in the main entertainment precinct area of Northbridge where the majority of venues are located. In Melbourne and Sydney, venues were selected within the busiest nightlife entertainment districts of each city (four districts in Melbourne, and three in Sydney) to ensure a cross-section of demographics and venue types.

### *Procedure*

Ethics approval was obtained from all participating institutions ($n = 6$) prior to undertaking observations. Our first nightlife observations study required that we obtain venue permission to conduct observations (Miller et al., 2012b), however venues that declined to be observed or for which there was no response were the venues that had worse patron behaviours and level of harms. Therefore, use of covert observations was used for the current study with full ethics approval. The use of covert observations does not increase any risks to patrons or staff and ensures that patrons or venue staff do not change their behaviour or protocols, thus resulting in unrepresentative data.

Full details of the POINTED methodology can be found in a published study protocol (Miller et al., 2013). Most observation sessions were undertaken in all cities fortnightly on Friday or Saturday nights, and on a smaller number of occasions on Wednesday or Thursday nights (student nights), between December 2011 and July 2012. In each city, 6–12 observers were recruited and received extensive training on observational methods. Each week, a team of observers were allocated to a venue and the time period of their observation was informed by that venue's trading hours to ensure the busiest time was observed. Teams consisted of