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Drug and Alcohol intoxication and Subsequent Harm in night-time Entertainment Districts (DASHED) – Research Bulletin

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Background

The harm associated with the consumption of alcohol, particularly amongst young people, is of growing concern within the Australian community. It presents a major challenge to all levels of government. In 2004–05, alcohol use in Australia was estimated to cost the community approximately $15.3 billion in crime, violence, and healthcare costs (Collins & Lapsley 2008), increasing to an estimate of $36 billion by 2010 (Laslett et al. 2010).

The evidence relating to the range of individual and social harms associated with alcohol misuse is strong. In the 2013 National Drug Strategy Household Survey, 22 percent of adult Australians reported being a victim of alcohol-related verbal abuse, 13 percent reported having been put in fear, and 8.7 percent of Australians aged 14 years or older had been physically abused by someone under the influence of alcohol over the preceding year (AIHW 2014). The rates of physical and verbal abuse by a person affected by alcohol are more than twice the rate for other drug types (Nicholas 2006).

Australian policy directed towards reducing incidents of alcohol-related victimisation has been primarily concerned with regulatory responses that target licensed premises and liquor outlets, with a current focus on the restriction of closing times (Kypri, Jones, McElduff & Barker 2011; Miller et al. 2014; Miller et al. 2012). Licensed premises are a high-risk setting for alcohol-related violence, with a large proportion of assaults occurring in or within very close proximity to hotels and nightclubs (Fitzgerald, Mason & Borzycki 2010).

However, the relationship between alcohol and violence, like many other complex social phenomena, is not straightforward. Research suggests that the association between alcohol and aggression is the result of a complex interaction of a number of variables, including the pharmacological effects of alcohol; the characteristics of the drinking environment (eg crowding, premises management and staff behaviour); individual characteristics including age and predisposition to aggression; and societal attitudes and values (Graham, Bernards, Osgood & Wells 2006; Graham et al. 1998).

Understanding alcohol-related problems in and around entertainment precincts requires insights into the licensed premises that are established in these areas, the characteristics of the clientele, and the culture and community within which the intervention is delivered (Graham & Homel 2008). The current study, *Drug and Alcohol intoxication and Subsequent Harm in night-time Entertainment Districts (DASHED*), was designed to address these questions in relation to alcohol consumption in two Australian capital cities, Canberra and Hobart. The study was made up of three elements: short patron interviews with people entering or leaving licensed venues; sessions of structured observation within licensed venues; and the use of administrative data (police, ambulance, emergency department, and licensing compliance data). The sites were chosen to form a comprehensive national picture of Australia when this study is combined and contrasted with two past studies, *Dealing with alcohol-related harm and the night-time economy* or DANTE (Miller et al. 2012) and *Patron Offending and Intoxication in Night-Time Entertainment Districts* or POINTED (Miller et al. 2014).

The specific aims of this study were to:

1. Determine the prevalence of alcohol and substance-related harms in Canberra and Hobart entertainment precincts and major trends over time;
2. Identify the main characteristics of alcohol and substance-related harms in Canberra and Hobart entertainment precincts and how these compare with other entertainment precincts elsewhere in Australia;
3. Examine the nature of the relationship between patron alcohol consumption, intoxication, substance use and associated harms in Canberra and Hobart entertainment precincts;
4. Determine the main drivers of alcohol and substance-related harm in Canberra and Hobart entertainment precincts and identify opportunities to implement responses to reduce the level of harm associated with alcohol;
5. Estimate the costs associated with alcohol and substance-related harms in Canberra and Hobart entertainment precincts.
6. Provide a valuable evidence base to help select and adapt appropriate responses to alcohol-related problems in Canberra and Hobart as well as providing a baseline against which to measure the impact of future responses.

Method

Setting

This study involved evaluating the existing strategies to address alcohol-related harm in the entertainment precincts of two regional Australian cities: Canberra (Australian Capital Territory or ACT) and Hobart (Tasmania or Tas). Canberra and Hobart are two of the smallest capital cities in Australia, together contributing just 2.6 percent of the national population (ABS 2016). Both Canberra and Hobart have large, successful entertainment districts. Canberra City (or Civic) and Braddon are considered to be the ACT's primary entertainment precinct, with venues closing at 1, 3, and 5 am, meaning that there are high numbers of people moving through the area at all times of the night. Hobart has a concentration of licensed venues in the postcode areas of Hobart (suburb) and Battery Point, with venues generally closing at 1, 3, and 5 am. Between 2010 and 2015, there were 109 licensed venues in the Canberra entertainment precinct and 86 in the Hobart entertainment precinct.

Patron interviews

Patron interviews consisted of a systematic random sample (selecting every third person) of all people attending night-time entertainment districts in Canberra and Hobart. Interviews were conducted in busy thoroughfares in each city, as well as with individuals either queuing to enter venues or leaving venues. Researchers worked in groups of six or more in public thoroughfares. Patron interviews were not conducted inside licensed premises. All interviewers wore easily identifiable clothing from their relevant institution and obtained informed consent from patrons before beginning the interview.

Patron interviews were conducted by members of the research team on Friday and Saturday nights between 10 pm and 2 am with target patrons both arriving and leaving the entertainment precinct at these times. Interviews occurred between April and December 2015.

Interview data were entered into Tap Forms software stored on iPod Touch or iPhone devices. The interview consisted of four sections: demographics; current night out (including alcohol and other substance use); aggression/offending/alcohol-related consequences (including verbal aggression, physical aggression, unwanted sexual attention, and injuries); and intentions for the rest of the night.

Patrons were also asked to provide a blood alcohol concentration (BAC) measure using a breathalyser (Andatech Alcosense Prodigy® unit certified to Australian Standard AS3547). Details of the interview can be found in the full DASHED report.

A randomly selected sub-sample (about every fifth person) was asked if they were willing to undergo an oral fluid swab (Securetec DrugWipe®) for the presence of other drugs; specifically, amphetamines/methamphetamines, cocaine, cannabis and opiates.

Venue Observations

Observations within venues were conducted by members of the research team on a quarterly basis in two-week blocks on Friday and Saturday nights. Observers assessed adoption of alcohol-related harm reduction strategies within each of the venues at each site. They also described the prevalence of additional evidence-based practices that can contribute to reductions in intoxication and/or alcohol-related violence.

Detailed observation items are included within the full DASHED report. The information that was collected as part of the observations included:

- the number of patrons in the establishment and patron characteristics;
- patron movement (entering and exiting licensed premises);
- crowding around alcohol service areas and service times;
- patron interactions (with one another, establishment staff, and security personnel);
- patron level of intoxication and whether intoxicated patrons were still served;
- patron consumption of energy drinks (with or without alcohol);

- the use of promotions by establishments (eg $2 shots);
- the occurrence and nature of aggressive/violent incidents; and
- the presence of strategies designed to reduce alcohol-related offending (eg high-visibility policing, security managers at taxi ranks).

A range of venues in each city was selected for observation sessions, based on opening times and size. Three types of venues were selected: large mainstream pubs¬—closing time 1 to 3 am; bars—closing time 1 to 5 am; and nightclubs (DJ-focused)—closing time 3 am to 24-hour trading. Each observation period lasted between four and five hours, with start times varying from 8 to 10 pm and finishing between 2 am (in Hobart) and 3 am (in Canberra). Each team visited a variety of venues per night of observation, with teams moving from venue to venue). Observations were conducted hourly, with observers conducting data collection in pairs, entering data into structured fields in Tap Forms software stored on iPod Touch or iPhone devices. Observers were dressed in plain clothes and were encouraged to be as unobtrusive as possible to blend into the setting.

Administrative Data

The following types of unit record data have been included:

Ambulance attendances. Data from 1 January 2010 to 31 July 2015 were requested from ACT and Tasmania ambulance services for all alcohol and substance-related ambulance attendances in Canberra and Hobart (see the full DASHED report for the alcohol and substance-related codes used for extraction).

Emergency department presentations. Alcohol-related presentations in emergency departments and hospital admissions from both ACT Health and the Tasmanian Department of Health and Human Services were requested from 1 January 2010 to 31 December 2014 (see the full DASHED report for codes used for alcohol-related presentations).

Alcohol-related offending. Recorded alcohol-related offence data from ACT Policing and Tasmania Police including assaults, property damage, street offences drink driving, and place of last drink (for ACT only) were requested for Canberra from 1 January 2010 to 31 December 2014 and for Hobart from 1 January 2010 to 30 June 2015 for Hobart.

Licensing compliance. Compliance data relating to enforcement action targeting licensed premises were requested from the ACT Office of Regulatory Services (ORS) and Tasmania Liquor and Gaming for the period from December 2010 to July 2015.

Economic Assessment

This study attempted to provide an estimate of the costs associated with alcohol-related crime incidents in the Canberra entertainment precinct, using the same geographic boundaries as for other components of the research. Drawing on the secondary analyses of administrative data, the following cost items were included in the economic assessment:

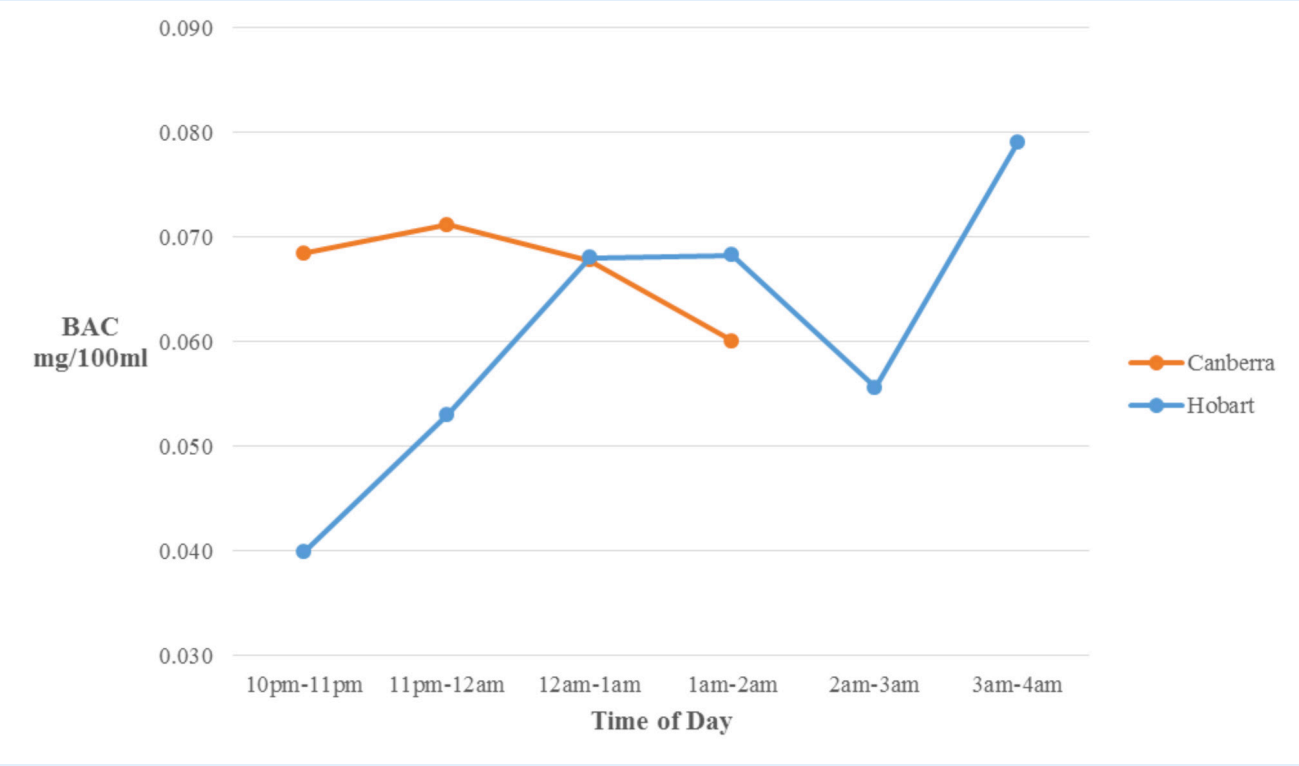
- the cost of police time responding to alcohol-related offences and other alcohol-related incidents;
- proactive and associated costs related to alcohol-related crime incurred by police responsible for policing the CBD;
- the healthcare costs of alcohol-related offences to victims, including hospitalisation, emergency department admissions, ambulance attendances and counselling;
- the cost of alcohol-related offences to victims and the broader community, including lost output, intangible costs and damage to property; and
- criminal justice system costs for alcohol-related assault offences, including court proceedings and imprisonment costs.

Results

Alcohol Consumption

Across both Canberra and Hobart, interviewees showed peak BAC readings at around 12 am, with subsequent declines in both sites (see Figure 1). The overall average BAC at time of interview was 0.048 g/100ml for Canberra and 0.062 g/100ml for Hobart.

Figure 1 Mean BAC level across the night



BAC level was categorised into four BAC groups: 0.000 (no alcohol detected), 0.001 to 0.050 (low BAC), 0.051 to 0.100 (moderate BAC) and more than 0.100 (high BAC). In Canberra, female participants were significantly more likely obtain a moderate BAC reading than male participants ($X^2 = 5.71$, $p = 0.017$), while male participants were significantly more likely to obtain a high BAC reading compared to female participants ($X^2 = 13.42$, $p < 0.001$) (see Table 1).

Table 1 BAC readings grouped by level and sex

	BAC groups			
Sex	0.000	0.001–0.050	0.051–0.100	0.100+
Canberra				
Male, n (%)	134 (24)	138 (25)	154 (28)	129 (23)
Female, n (%)	70 (22)	95 (30)	114 (36)	42 (13)
Total, n (%)	204 (23)	233 (27)	268 (31)	171 (20)
Hobart				
Male, n (%)	43 (11)	103 (26)	161 (40)	94 (23)
Female, n (%)	54 (17)	83 (26)	110 (35)	71 (22)
Total, n (%)	97 (13)	186 (26)	271 (38)	165 (23)

Note: BAC readings were missing for 39 cases in Canberra and 19 cases in Hobart.

Table 2 shows the trends over the night within each BAC group. In Canberra, the percentage of participants with high and moderate BAC readings increased steadily throughout the night, followed by a decrease between 2 and 3 am; however, this was based on a relatively small number of interviews completed after 2 am. The percentage of participants with no alcohol detected and a low BAC reading decreased throughout the night, with an increase later at night (after 2 am) for participants with no alcohol detected. In Hobart, the percentage of participants interviewed with a low BAC increased steadily over the night, while the percentage of participants interviewed with a high BAC reading and participants that had no alcohol detected declined throughout the night (with a slight increase between 1 and 2 am).

Table 2 Proportion of BAC readings by level and time of night

	BAC groups			
Time of interview	No alcohol detected 0.000	Low BAC reading (0.001-0.050)	Moderate BAC reading (0.051-0.100)	High BAC reading (>0.100)
Canberra				
10–11 pm	33%	36%	21%	10%
11 pm–12 am	28%	26%	28%	18%
12–1 am	15%	24%	37%	23%
1–2 am	15%	23%	36%	26%
2–3 am	33%	12%	30%	24%
3–4 am	25%	0%	50%	25%
Hobart				
10–11 pm	18%	25%	30%	26%
11 pm–12 am	14%	24%	32%	30%
12–1 am	9%	26%	47%	18%
1–2 am	12%	30%	42%	16%

In both Canberra and Hobart, self-rated intoxication was moderately correlated with BAC readings ($r = 0.51$, $p < 0.001$). There was a substantial difference between self-reported intoxication and tested BAC level, with people who rated their level of intoxication a three out of 10, on average, near to (in Canberra) or over (in Hobart) the legal BAC drink-driving limit (0.05 g/100mL). People who self-rated their intoxication as higher than five out of 10 ranged between 0.081 and 0.130 g/100mL. According to interviewer reports, just over half of interview participants in both sites showed one or more signs of intoxication with the most common being slurred speech or glassy/red eyes.

Confidence in driving ability was positively associated with BAC reading and self-reported standard drinks consumed on the night among Canberra patrons.

Pre-drinking behaviours

Pre-drinking behaviour was consistent across the cities of Canberra and Hobart, with over half (56%) of the interview sample in Canberra and over two-thirds (68%) of the sample in Hobart reporting that they had consumed alcohol before going out to licensed venues. The main motivator for pre-drinking in both sites was the cost of drinks in licensed venues: 48 percent of participants who reported pre-drinking in Canberra and 53 percent of those in Hobart stated price as a reason for pre-drinking.

Energy drink consumption

In both Canberra and Hobart, approximately one in five interview participants (Canberra = 20%; Hobart = 19%) said they had consumed energy drinks that night, with the percentage increasing from 5–12 percent between 10 and 11 pm to 37¬¬–36 percent between 2 and 3am. At both sites, almost all patrons (96–98%) who reported consuming energy drinks reported consuming alcohol that night as well.

Illicit drug consumption

In Canberra, 13 percent of interview participants reported using substances other than alcohol (excluding tobacco) during their current night out, compared to 11 percent in Hobart.

Table 3 lists the prevalence of positive drug test findings according to gender. In both Canberra and Hobart, the most prevalent positive drug swab was for amphetamines.

Table 3 Positive drug swabs by gender

	Total		Male		Female	
	Positive n (%)	Negative n (%)	Positive n (%)	Negative n (%)	Positive n (%)	Negative n (%)
Canberra						
Amphetamine*	11 (8)	119 (92)	10 (12)	71 (88)	1 (2)	48 (98)
Cocaine	5 (4)	125 (96)	5 (6)	76 (94)	0 (0)	49 (100)
Opiates	0 (0)	130 (100)	0 (0)	81 (100)	0 (0)	49 (100)
Cannabis	4 (3)	126 (97)	2 (2)	79 (98)	2 (4)	47 (96)
Any	19 (15)	111 (85)	16 (20)	65 (80)	3 (6)	46 (94)
Hobart						
Amphetamine*	17 (19)	74 (81)	10 (17)	50 (83)	7 (23)	24 (77)
Cocaine	2 (2)	89 (98)	2 (3)	58 (97)	0 (0)	31 (100)
Opiates	0 (0)	91 (100)	0 (0)	60 (100)	0 (0)	31 (100)
Cannabis	3 (3)	88 (97)	3 (5)	57 (95)	0 (0)	31 (100)
Any	20 (22)	71 (78)	11 (22)	49 (78)	7 (23)	24 (77)

Note: Mouth swabs do not identify MDMA as being distinct from other amphetamine-type substances without further testing

Data recorded from patron observations shows that there were 9.3 percent of observations in Canberra and 14.2 percent of observations in Hobart where observers suspected illicit substance use among patrons, based on visible signs of drug use or drug-affected patrons.

Aggressive incidents and safety

The weekly rate of injury presentations to the emergency department (ED) per 10,000 people from January 2010 to December 2014 for Canberra is shown in Figure 2. It reflects a steady increase in ED presentations from 2012 onwards. This trend was not reflected in Hobart, with the weekly rate of injury presentations to the ED per 10,000 people remaining relatively steady over the study period (see Figure 3). For both Canberra and Hobart, the majority of injury-related ED attendees were males aged 18–24 (17.4% in Canberra and 17.3% in Hobart).

Figure 2 Rate of injury-related ED presentations during high-alcohol hours from 2010–14, Canberra (ACT)

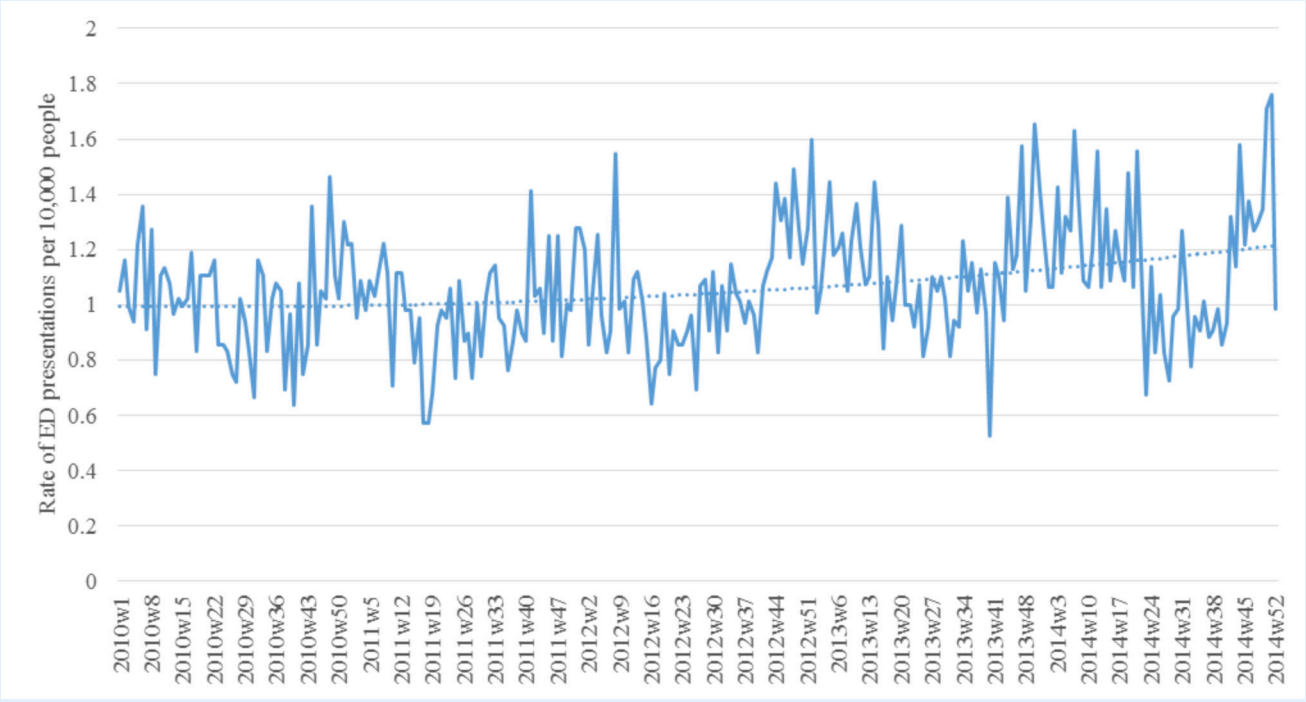
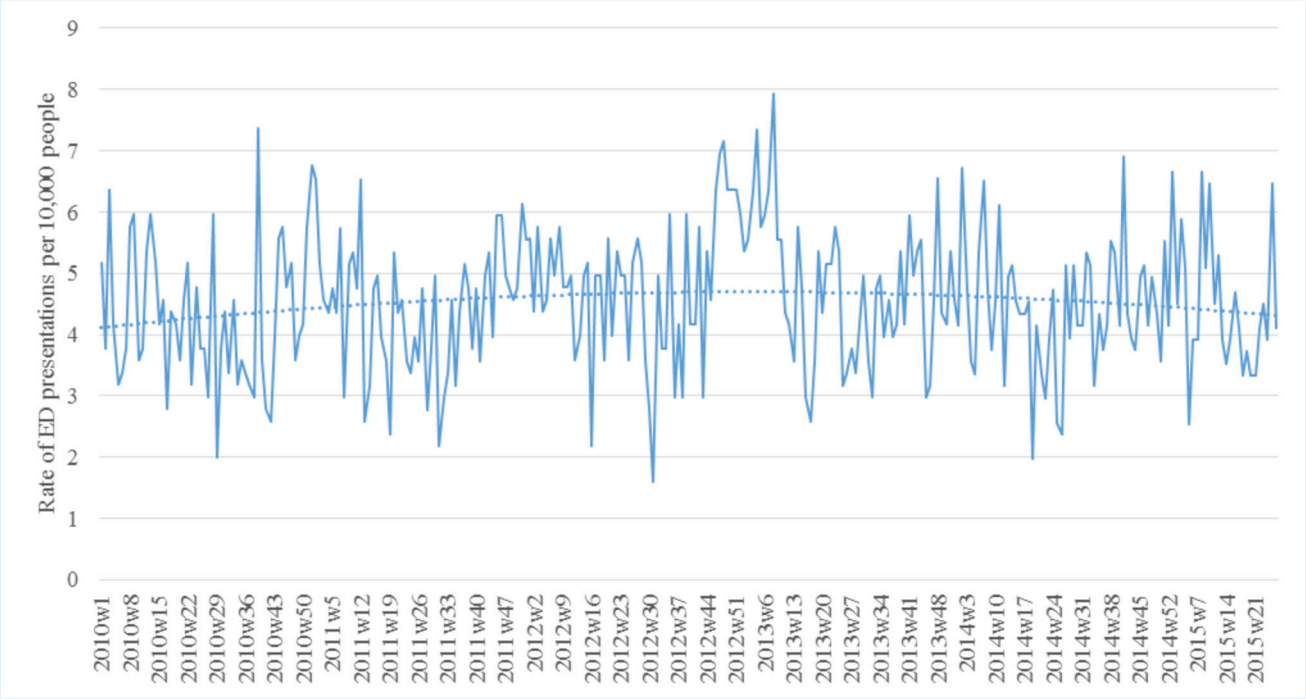


Figure 3 Rate of injury-related ED presentations during high-alcohol hours from 2010–15, Hobart (Tas)



The overall rate of police-recorded assaults during high-alcohol hours (HAH) was similar for Canberra (average of 1.57 per 10,000) and Hobart (average of 1.66 per 10,000).

In Canberra, 47 percent of interview participants reported being involved in some kind of aggression in or around licensed venues in the three months prior to interview, with the most common type being verbal aggression (30%), followed by unwanted sexual attention (28%) and physical aggression (17%), with a median of four incidents. Similar patterns were apparent in Hobart, where 49 percent of the sample reported that they had been involved in some form of aggression in or around licensed venues in the three months prior to interview, with the most common type being verbal aggression (33%), followed by unwanted sexual attention (26%) and physical aggression (16%), with a median of four incidents. The rates of involvement for both verbal and physical aggression were higher than those found in POINTED (Miller et al 2014—10% verbal and11% physical).

Archival data

Multivariate models of patron substance use and associated harms

A series of multivariate models were conducted using patron interview data to examine the key correlates of experience of physical aggression, verbal aggression, unwanted sexual attention, accidents, and injuries that had occurred in the last three months. Correlates entered into the models included BAC (grouped into 0; >0.0 to 0.05; 0.051 to 0.100; and 0.10+); pre-drinking; consumption of energy drinks; and self-reported illicit drug use.

No significant correlates were found when investigating factors associated with the experience of physical aggression in Canberra in the past three months. In Hobart, consumption of energy drinks (Odds Ratio (OR)=1.91, p=0.006) and illicit drugs (OR=2.75, p<0.001) were both significant correlates of physical aggression, suggesting that those who drank energy drinks or consumed illicit drugs on the night of the interview were more likely to report being involved in physical aggression in the past three months.

When predicting incidents of verbal aggression within the past three months, there were no significant correlates found for Canberra patron interviews. In Hobart, pre-drinking (OR=1.49, p=0.028) and the use of illicit drugs on the night of the interview (OR=2.37, p=0.001) were both significant correlates, suggesting that those who consumed drinks before going out or consumed drugs on the night of interview were more likely to report verbal aggression in past three months.

In Canberra, experiencing unwanted sexual attention was found to be associated with BAC level on the night. Compared to 0.10+, those with >0.0 to 0.05 (OR=1.82, p=0.015) and those with 0.051 to 0.10 (OR=1.96, p=.004) were more likely to report unwanted attention in last three months. In Hobart, only the occurrence of pre-drinking on the night of the interview (OR=1.73, p=0.005) was a significant predictor, suggesting that those who reported pre-drinking were more likely to report unwanted sexual attention in past three months than those who did not report pre-drinking on the night.

When predicting the occurrence of accidents in the past three months, the only significant correlate among patrons in Canberra was use of illicit drugs (OR=2.12, p=0.013), showing that those who reported using illicit drugs on the night of the interview were more likely to report an alcohol-related accident. No significant correlates of accidents were found in Hobart.

When predicting the occurrence of alcohol-related injuries in the past three months, there were no significant correlates for patrons in Canberra. In Hobart, the occurrence of pre-drinking (OR=1.59, p=0.042), and the consumption of energy drinks (OR=1.69, p=0.021) significantly predicted the occurrence of injuries.

Overall, these findings demonstrate that a range of factors are associated with an increased likelihood of recent aggression. While some variables collected in this study suggest stronger associations, such as energy drink use or illicit drug use, these may be reflective of other patterns of behaviour. Ultimately, a range of factors may contribute to the experience of harm or engagement in risky behaviour. These continue to be complex phenomena which have multiple risk and protective factors.

Alcohol and substance-related harms in Canberra and Hobart

Across all measures of alcohol and substance-related harms in the Canberra and Hobart entertainment precincts, the rates per 10,000 people appear to have increased between 2010 and 2014. The only exceptions were drink-driving, police-recorded assaults, police-recorded property damage, and sexual assault in Canberra, and street offenses in Hobart—all of which show decreasing trends in the most recent year.

Figures 4 and 5 show the rate of ambulance attendances between 2010 and 2014 for HAH within suburbs containing night-time entertainment precincts (NEPs) in Canberra and Hobart. Rates of ambulance attendances in HAH in Canberra have remained relatively stable between 2012 and 2014, showing between 70 and 72 ambulance attendances per 10,000 people. Rates are considerably lower in Hobart, ranging from 17 ambulance attendances per 10,000 people in 2010 to 23 attendances in 2013. Across both Canberra and Hobart, persons aged 18 to 24 comprised the majority of ambulance attendances during HAH.

Figure 4 Rate per 10,000 people of ambulance attendances during high-alcohol hours (HAH) by year, Canberra

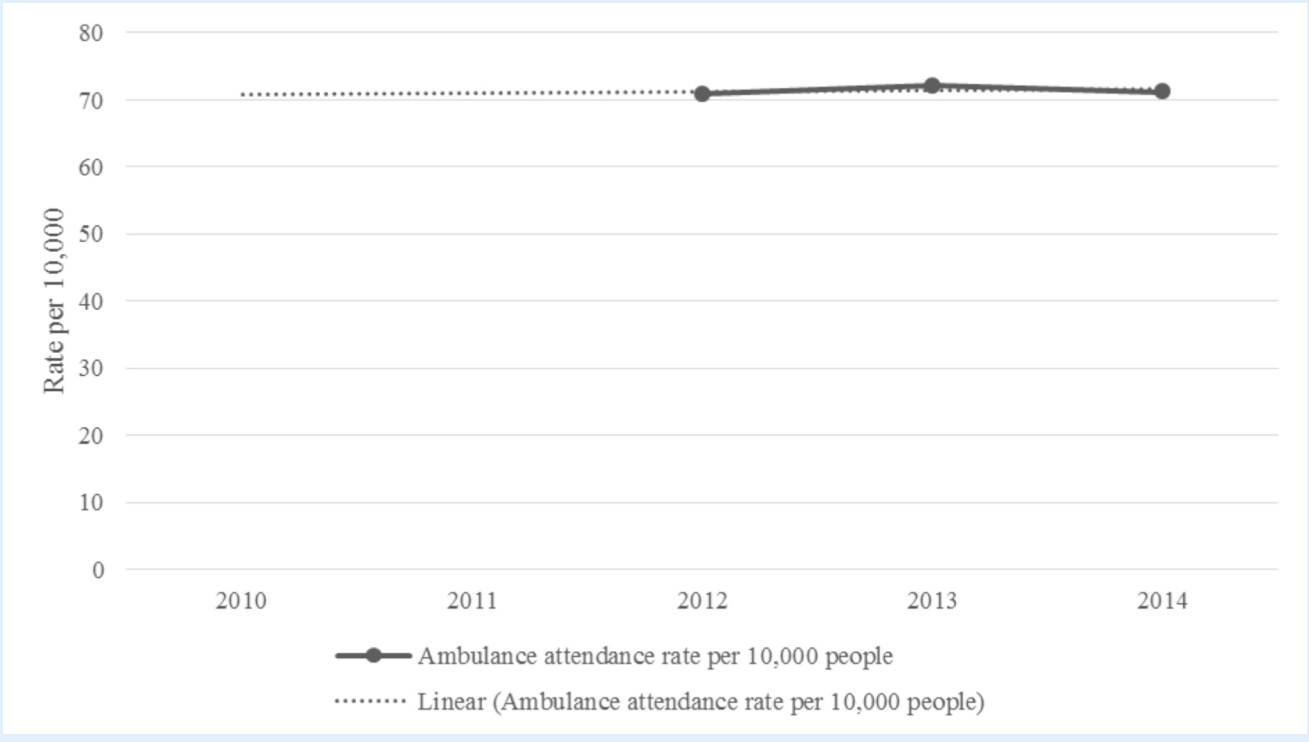


Figure 5 Rate per 10,000 people of ambulance attendances during high-alcohol hours (HAH) by year, Hobart

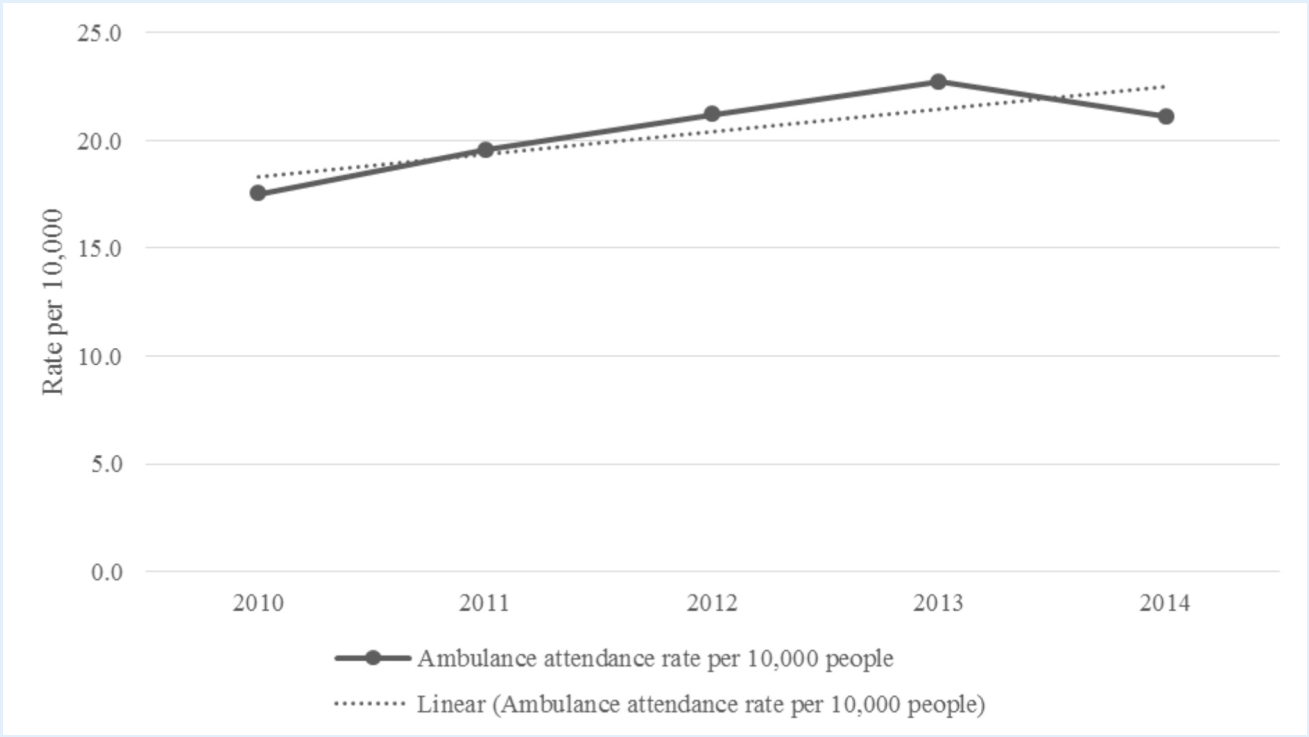


Figure 6 and Figure 7 show the rate of emergency department injury-related attendances between 2010 and 2014 for HAH. Emergency department attendance rates within HAH have increased slightly in both Canberra and Hobart, from 61.5 per 10,000 people (2010) to 70 (2014) in Canberra, and from 56.5 per 10,000 people (2010) to 58.2 (2014) in Hobart.

Figure 6 Rate per 10,000 of emergency department attendances in high-alcohol hours (HAH) by year, Canberra

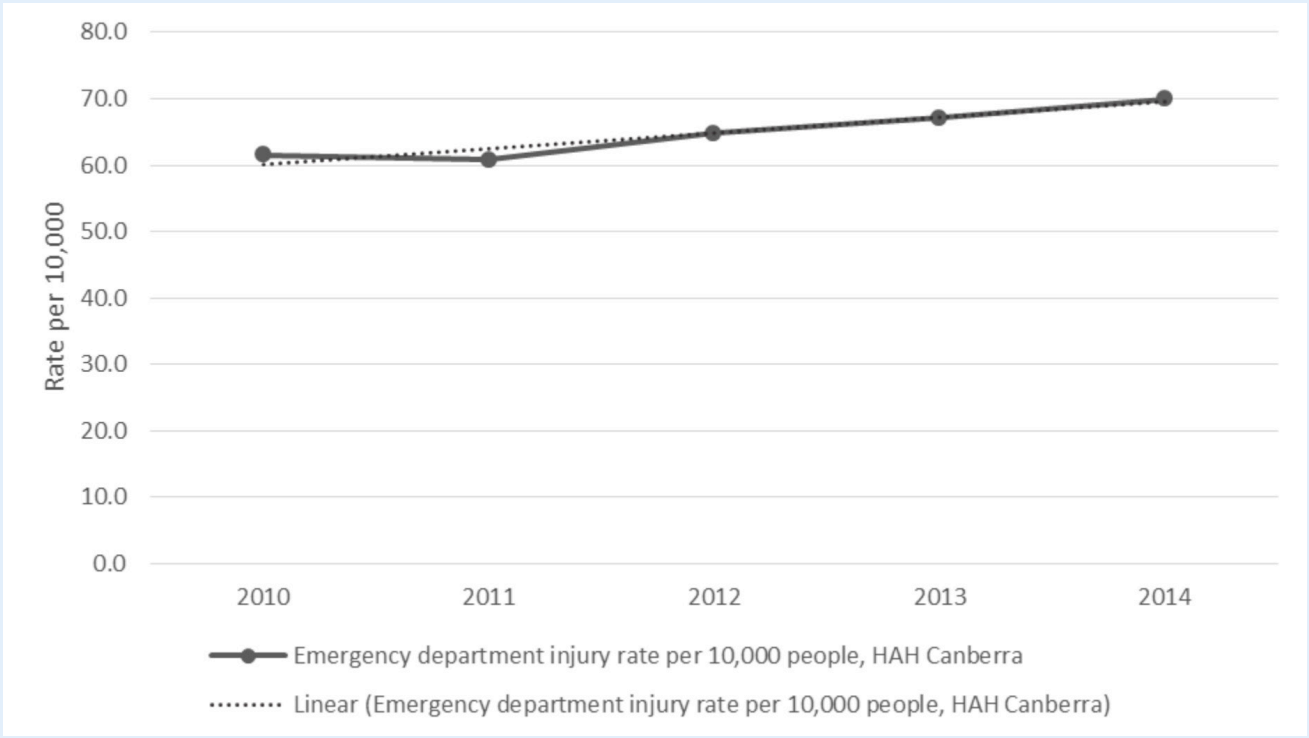


Figure 7 Rate per 10,000 of emergency department attendances in high-alcohol hours (HAH) by year, Hobart

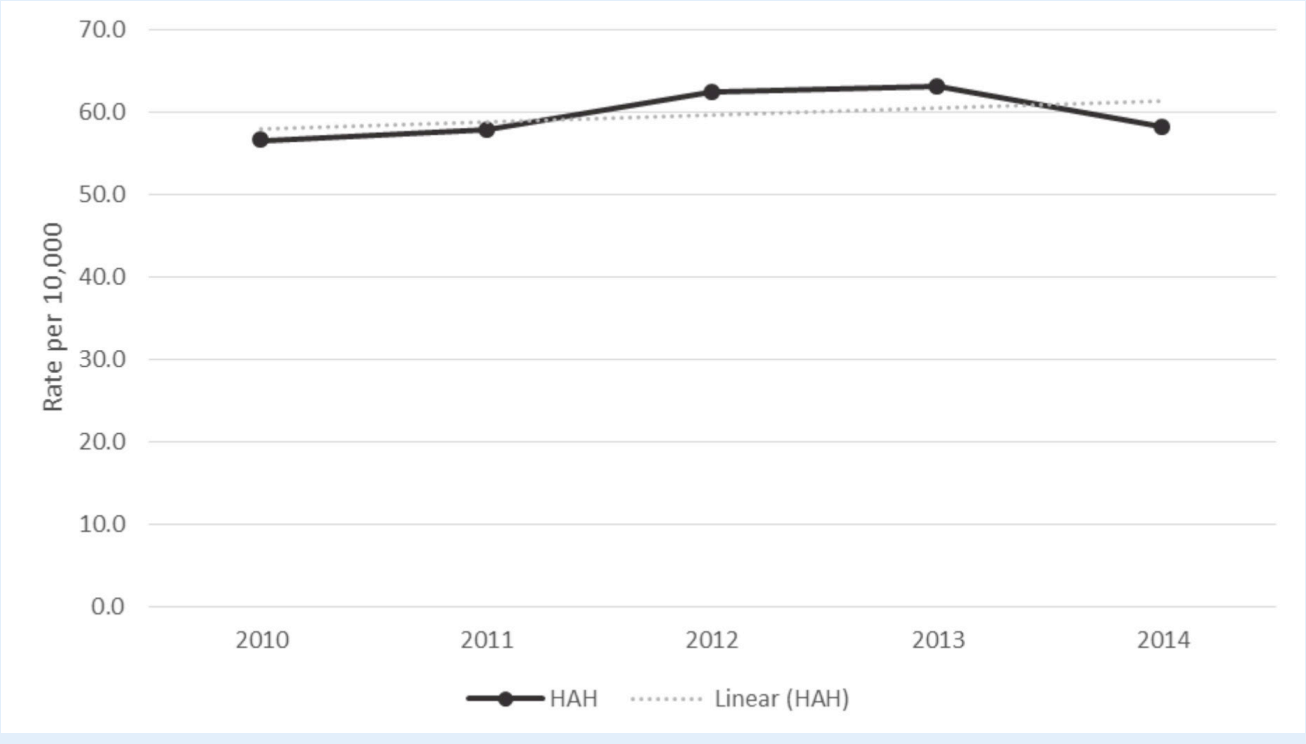


Figure 8 and Figure 9 show rates of assaults attended by police around NEPs in HAH between 2010 and 2014 in Canberra and Hobart. In Canberra, there was an upward trend in the rate of recorded assaults in 2013, from 5.4 to 6.6 per 10,000 people, before falling to 4.7 assaults per 10,000 in 2014. In Hobart, there was a slight upward trend between 2011 and 2013 ranging from 6.3 to 7.2 per 10,000 people, before rates reduced to 6.8 assaults per 10,000 in 2014.

Figure 8 Rate per 10,000 of police-attended assaults in high-alcohol hours surrounding night-time entertainment precincts by year, Canberra

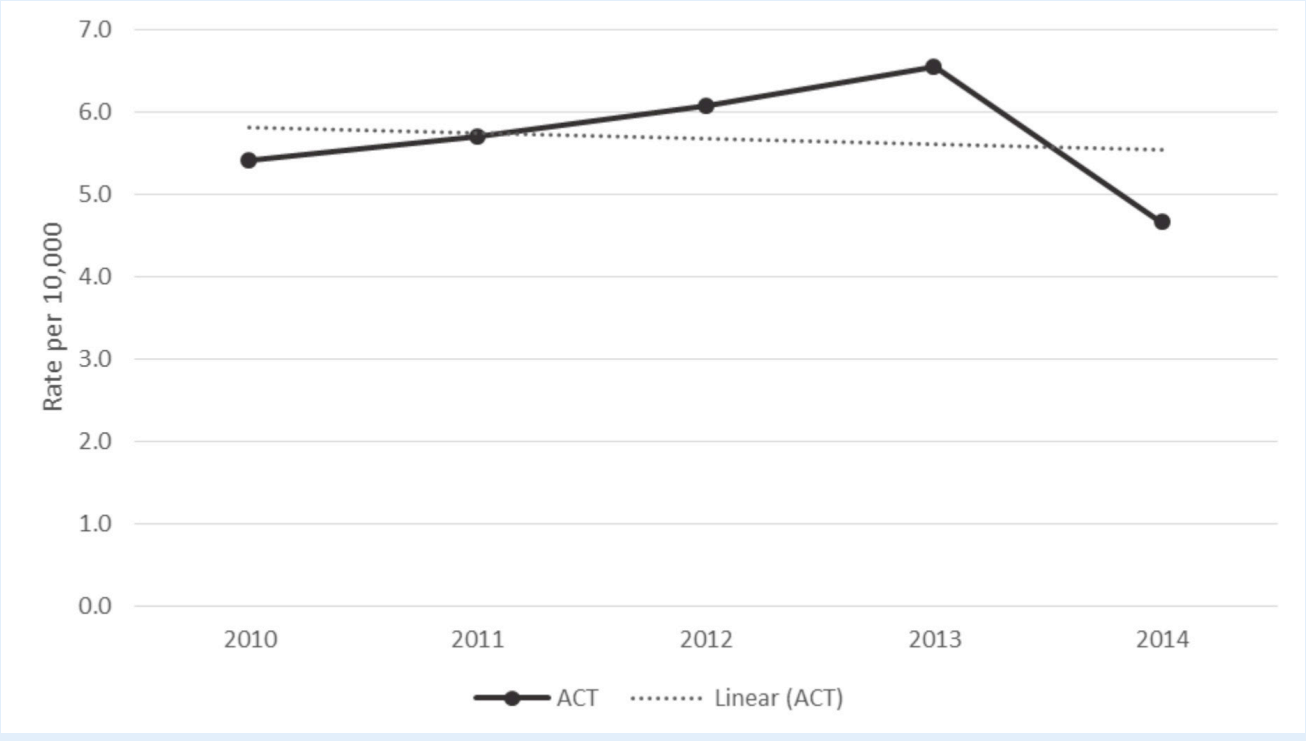
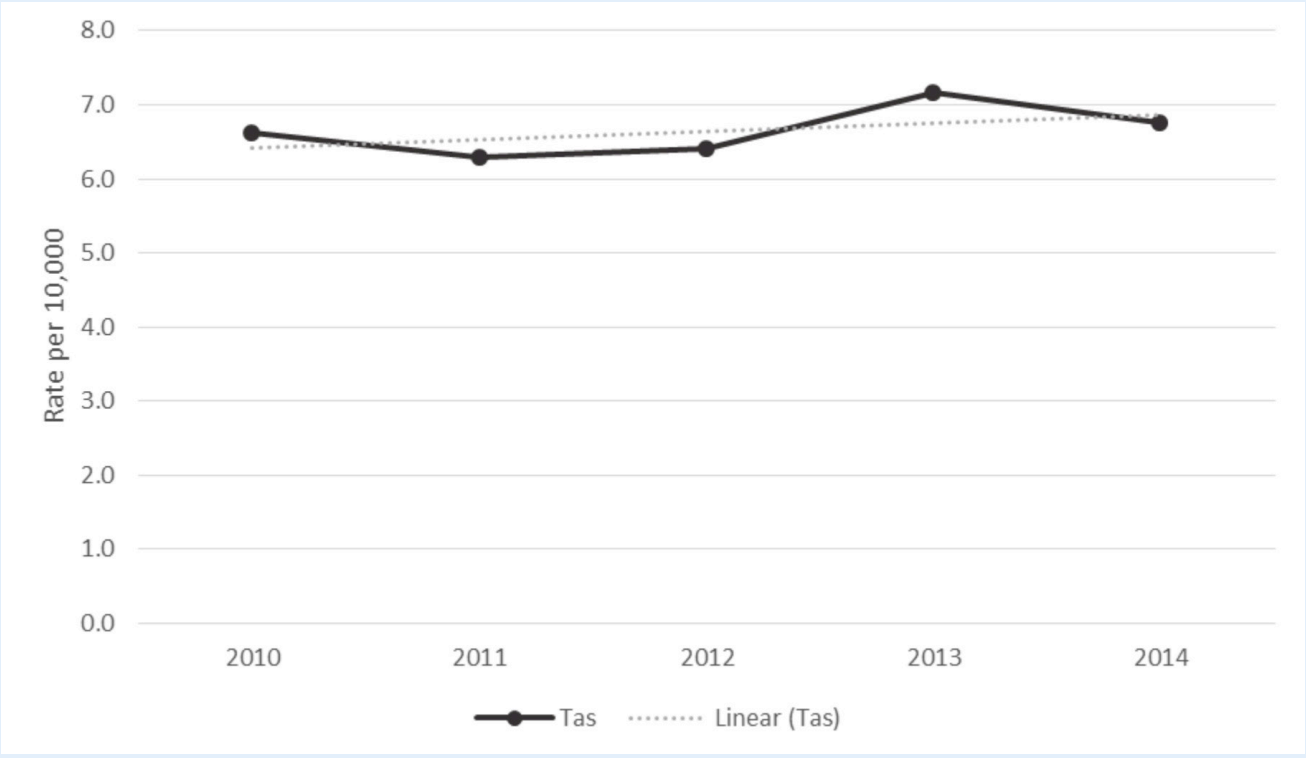


Figure 9 Rate per 10,000 of police attended assaults in high-alcohol hours surrounding night-time entertainment precincts by year, Hobart



Comparisons of alcohol and substance-related harms in Canberra and Hobart with other entertainment precincts

Experiences of alcohol- and drug-related harms and involvement in risky behaviours relating to intoxication in Canberra and Hobart were compared with other major metropolitan entertainment precincts, based on data from the POINTED study. Table 4 shows median BAC levels of patron interview participants for Canberra and Hobart between midnight and 2 am on Saturday nights, as well as for sites from POINTED (Geelong, Melbourne, Perth, Sydney and Wollongong).

There was a higher median BAC in Hobart than in Canberra. The BAC of patrons in both Canberra and Hobart fell between the lowest BAC (Sydney) and the highest BAC (Wollongong) in POINTED, with patrons in Hobart having a higher median BAC than all cities except Wollongong. Table 3 also shows different trends in different cities in terms of intoxication after midnight, with cities like Wollongong and Hobart—which have many venues shutting at 1 am—showing decreasing levels of intoxication, whereas cities like Canberra, Geelong and Perth—which have a higher proportion of much later-trading venues—showing increasing BAC levels to 2 am. While there are some important limitations on the ability to compare different cities, it is clear that patrons in the main entertainment precincts of both Canberra and Hobart have comparable levels of intoxication to those found in other Australian cities.

Table 4 BAC levels across Australian cities

	Median BAC 12–12.59 am Sunday	BAC Range	Median BAC 1–1.59 am Sunday	BAC Range
DASHED—Canberra	0.060	(0–0.218)	0.062	(0–.176)
DASHED—Hobart	0.071	(0–0.256)	0.067	(0–.151)
POINTED—Geelong	0.058	(0–0.220)	0.072	(0–.201)
POINTED—Melbourne	0.061	(0–0.328)	0.067	(0–.278)
POINTED—Perth	0.066	(0–0.236)	0.070	(0–.237)
POINTED—Sydney	0.043	(0–0.269)	0.051	(0–.350)
POINTED—Wollongong	0.089	(0–0.277)	0.060	(0–.183)

The proportion of patron interviewees in Canberra and Hobart who had experienced alcohol and other substance-related harms or been involved in risk behaviours relating to intoxication, compared with POINTED, is presented in Table 5.

Table 5 Proportion of interviewees who have experienced alcohol-related harms or been involved in risk behaviours in the past three months across sites

	DASHED Canberra %	DASHED Hobart %	DASHED Geelong %	DASHED Melbourne %	DASHED Perth %	DASHED Sydney %	DASHED Wollongong %
Driven under the influence of alcohol	17	15	18	16	13	11	15
Driven under the influence of drugs	9	5	-	-	-	-	-
Committed property damage while intoxicated	3	4	9	4	2	3	6
Been refused entry to a licensed venue	14	13	-	-	-	-	-
Been refused service in a licensed venue	6	6	-	-	-	-	-
Been kicked out of a licensed venue	9	8	-	-	-	-	-
Alcohol-related injury	13	18	17	12	14	13	16

Overall, the findings demonstrate that nightlife patrons in Canberra and Hobart experience high levels of alcohol-related harm and engage in comparable levels of anti-social or risky behaviour as those in other Australian cities. A high proportion of patrons reported having driven while under the influence of alcohol or drugs in the past three months. Conversely, only a small proportion reported having been refused service in a licensed venue, while substantially more reported having been refused entry, suggesting that, similar to the situation in other cities around Australia, pre-drinking plays a role in the problems faced by licensed venues in Hobart and Canberra.

Experiences of aggression

Experiences of verbal and physical aggression and unwanted sexual attention were measured across Canberra and Hobart. Table 6 shows the proportion of interviewees across DASHED, POINTED, and DANTE sites who had experienced aggression or unwanted sexual attention within the three months prior to the interviews in or around night time entertainment precincts.

Table 6 Proportion of interviewees who have been involved in aggression in and surrounding night-time entertainment precincts in the past three months across sites

	DASHED Canberra %	DASHED Hobart %	POINTED Geelong %	POINTED Melbourne %	POINTED Perth %	POINTED Sydney %	POINTED Wollongong %	DANTE Geelong %	DANTE Newcastle %
Verbal aggression	30	33	14	8	5	11	8	–	–
Physical aggression	17	16	16	8	9	13	7	15	15
Unwanted sexual attention	28	26	–	–	–	–	–	–	–
Sexual aggression	–	–	3	1	1	2	1	–	–

Much higher proportions of interviewees in Canberra and Hobart were involved in verbal aggression than at any of the POINTED sites, while the proportions of physical aggression were similar in Canberra and Hobart to POINTED and DASHED findings. The decision to change the wording around sexual aggression experienced by patrons demonstrates that a very substantial proportion of people experience unwanted sexual attention in nightlife areas, signalling an issue which deserves substantial intervention in and around licensed venues across Australia. Overall, the findings demonstrate the continuing high levels of aggression experienced by people attending nightlife areas in Australia and indicates the need for evidence-based responses.

Costs associated with alcohol- and substance-related harms in Canberra

The final objective of the study was to estimate the financial costs associated with alcohol-related crime incidents within the Canberra entertainment precincts. Drawing on the administrative data analysed as part of the current research, together with the results from previously published studies, it was possible to estimate the short-term costs of alcohol to policing (both reactive and proactive); the costs of crime including medical costs (hospitalisation, emergency department presentations and ambulance attendances), lost output, intangible costs and property loss and damage; and the criminal justice system costs associated with alcohol-related assault.

This assessment only reports on the costs of alcohol-related crime within the limited geographical area of the nightlife district. It should be considered a bottom-line cost, and is therefore a substantial underestimate of the full costs of the entertainment precinct to the ACT government and community. Given the limitations of the available data, the results from this economic assessment underestimate the total cost to police and the criminal justice system. It does not include costs incurred outside the suburbs of Canberra City and Braddon and therefore does not represent the total cost of the central business district (CBD) entertainment precinct to the ACT government or the wider community. Similarly, the 'bottom-up approach' always seems to underestimate the cost of police time. Further, there is a range of other harms associated with alcohol, including accidental injury and other health problems, which are not included in this estimate. Finally, having been developed specifically for the ACT, this estimate will not be applicable to other cities' entertainment precincts. The number of recorded assaults in other major city entertainment precincts (eg Sydney, Melbourne and Brisbane) is substantially larger, which means the cost to police and to the wider community will also be proportionally larger.

A summary of these costs is presented in Table 7. In 2014, the cost of alcohol-related offences committed within Canberra's main entertainment precinct (Canberra City and Braddon), including unrecorded offences, was estimated to be $5.9 million. Intangible costs accounted for the largest proportion of this cost (41%), followed by lost output (38%) and medical costs (17%). In addition, the immediate and short-term cost to police of responding to alcohol-related offences and incidents in the Canberra CBD, based solely on the salaries of officers attending incidents, was estimated to be $199,851, and the total short-term cost to police of dealing with alcohol-related issues—primarily by the Regional Targeting Team—was estimated to be more than $600,000. There was a further $5.2 million in criminal justice costs for alcohol-related assault, although this estimate was based on a number of assumptions and was limited to assault offences only.

While this research focused on HAH because of the concentration of alcohol-related offences on Friday and Saturday nights, the economic assessment revealed that the cost of alcohol-related crime is not evenly distributed over these hours. Both the cost of crime and the cost to police peaked after 2 am. Forty-six percent of the short-term reactive costs to police and 43 percent of the cost of alcohol-related offences committed in Canberra's main entertainment precinct resulted from incidents between the hours of 2 am and 6 am. The ability of evidence-based interventions to reduce the level of harm later in the evening therefore has the potential to deliver significant financial savings.

Table 7 Summary of estimated costs associated with alcohol-related crime in Canberra City and Braddon, 2014 ($)*	
Short-term policing costs	
Reactive policing activities	199,851
Proactive policing activities	121,679
Activity constants	283,919
Total	605,449
Cost of offences committed within the entertainment precinct	
Medical costs	980,369
Lost output	2,259,872
Intangible costs	2,412,389
Property loss and damage	250,009
Total	5,902,639
Criminal justice system costs (alcohol-related assault only)	
Court proceedings	156,214
Imprisonment	5,026,680
Total	5,182,894

*All costs are presented in 2014–15 Australian dollars

Limitations aside, this assessment shows the substantial avoidable costs from alcohol-related incidents in CBD entertainment precincts. These may be reduced through effective interventions. It also highlights the need for data to be able to better estimate both the prevalence of harm in specific areas and the economic cost of that harm to individuals, business, government and the wider community.

Discussion and Policy Implications

A key aim of this project was to determine the main drivers of alcohol- and substance-related harm in Canberra and Hobart entertainment precincts and to identify opportunities to implement responses to reduce the level of harm associated with alcohol.

The findings of this report demonstrate that key drivers of alcohol-related harm are consistent with those in other cities in Australia and internationally (Graham & Homel 2008). For the most part, these can be linked back to: high concentrations of venues within a given district; generally high alcohol consumption levels in the community; pre-drinking (normally related to the price discrepancy between on-licence and off-licence outlets); late trading hours; high levels of intoxication; and the failure of responsible service of alcohol legislation and training to ensure intoxicated patrons are not served more alcohol (see full DASHED report for observational findings supporting this statement). However, the findings also specifically point to energy drinks and illicit drugs as correlates of harm, and highlight again the high levels of drink- and drug-driving in this sub-population.

There are a number of opportunities to implement responses which will reduce the level of harm associated with alcohol. Using the findings relating to the first four objectives, the following section outlines key findings and proposed responses for implementation or piloting.

Intoxication levels throughout the night

This research shows that levels of intoxication increased throughout the night across both sites, resulting in a substantial proportion of the people in the NEP being heavily intoxicated. The findings are consistent with prior research (Miller et al. 2014a; Miller et al. 2014b; Miller et al. 2012), although the trends appear more moderate in terms of increase through the night. It may be that pre-drinking is playing a greater role, both in the intoxication levels of people when they arrive in the NEP and in their subsequent drinking behaviour. In other words, people may be arriving at venues having drunk more at home, and subsequently be drinking less in venues.

Current regulatory and enforcement frameworks require further refinement and investment. In particular, responsible service of alcohol (RSA) measures are evidently insufficient and require more stringent regulation and more comprehensive and systematic enforcement regimes. Possession of a licence to sell liquor means that licensees are compliant with all conditions and do so to make profit from the sale of alcohol. As with driving or other areas of licencing, repeated breaches should result in licences being revoked. Specific responses include:

- making publicly available data about specific venues that are failing to meet their licence conditions, such as the Violent Venues list released by NSW Bureau of Crime Statistics and Research on a quarterly basis, and the related 'declared premises' scheme which penalises poor performance; using data collected from emergency department statistics and ambulance services is also strongly indicated.
- increased penalties, such as trading hours restrictions or temporary closure, for venues which have consistently high numbers of assaults, injuries or licensing breaches.

These jurisdictions should consider imposing trading hour restrictions, applied consistently across regions to ensure businesses can compete on a level playing field. The evidence from this report shows substantial spikes in assaults and related costs between 2 and 3 am, strongly indicating 2 am last drinks as a default minimum, with the option for communities and/or police to appeal for earlier trading where indicated. Beyond the prevention of violence and injury, this measure would provide substantial savings in terms of the financial and resources drain on emergency services.

Pre-drinking behaviours

This research, as with previous studies, has identified pre-drinking as a predictor of intoxication and as a major impediment to the responsible service of alcohol. This behaviour requires serious, substantial, evidence-based interventions across a range of variables (eg price, availability and advertising). The following recommendations should be considered for future policy development.

States may trial introducing a minimum price per standard drink of alcohol. Evidence from British Columbia has shown a 10.4 percent reduction in violence associated with alcohol, while the price of most alcohol sold has remained unaffected. By targeting the very cheapest alcohol sold in the community, the measure affects problem drinkers and young drinkers; groups that are most likely to experience alcohol-related harm (Stockwell et al. 2015).

Regulatory measures should be implemented to reduce discount alcohol sales. In particular, policy responses such as bans on bulk-buys, two-for-one offers and other promotions based on price could reduce heavy episodic drinking. Further, some states have regulations relating to discounting which should be more strictly enforced, in both on-licence and off-licence venues.

Caps on outlet density and on the number of licensed venues in nightlife precincts should be considered to prevent any further increases in alcohol-related harm. There is a large and robust literature (Chikritzhs, Catalonao & Pascal 2008; Donnelly, Menéndez & Mahoney 2014; P Miller, Curtis, Chikritzhs & Toumbourou 2015) demonstrating the association between increased liquor outlet density and street and domestic violence, indicating the need for restrictions in this domain.

A review of security training for the identification of intoxicated people is recommended. A potential amendment could be training in field sobriety testing, with the requirement for at least one staff member from each venue to have additional qualifications in this area. Different levels of complexity of the testing (from simple questioning of patrons through to horizontal gaze nystagmus testing) should be piloted to determine what is practical. Such an intervention should be scientifically evaluated before being implemented.

Further research and intervention trials should be undertaken to identify methods for reducing levels of pre-drinking in night-time entertainment districts. Examples include:

- Systematic trials could be conducted into the selective use of breathalysers by door staff in night-time entertainment districts to assess their utility and effectiveness.
- Heavier enforcement could be trialled, such as blitzes on pre-drinking and operations targeting queues at venues and working with security.
- Police and councils should trial interventions to address drinking in cars and taxis, even when stationary. Council by-laws or state and territory laws should be investigated.
- A potential alternative to further stretching police resources is to use specially hired and trained council officers to enforce such by-laws; these officers could also address the issue of open alcohol containers in many night-time entertainment districts.

Energy drink consumption

Energy drink use by nightlife patrons has been found to be associated with increased experience of harm and alcohol consumption in the NEP, both in this study and in many others (Arria et al. 2011; Droste, Miller, Pennay, Zinkiewicz & Lubman 2016; Marczinski & Fillmore 2006; Pennay et al. 2015). To address energy drink consumption, the following measures are recommended:

- policy trials restricting energy drink sales after 10 pm;
- policy trials restricting discounts and promotions on alcohol mixed with energy drinks after 10 pm;
- posters displaying information about the maximum number of energy drinks that should be consumed daily, along with the potential risks associated with combining alcohol and energy drinks, to be distributed to all venues for placement behind the bar and in the toilets;
- trials of public education campaigns about the potential dangers of mixing alcohol and energy drinks.

Illicit drug use

Illicit drug use was found at both sites, and drug use was associated with people experiencing greater violence and injury. A high proportion of interviewees reported illicit drug use and, despite the covert nature of illicit drug use, drug dealing was consistently observed by research teams.

To try and address drug dealing inside and around licensed venues, it is recommended to trial a policy of banning from nightlife areas those people caught committing drug-dealing or trafficking offences; this would extend patron-banning measures already in place in most states. Such a measure would also require the implementation of mandatory ID scanner technology and the real-time linking of police data to ID scanners.

Liquor licensing legislation in each state should be amended to consider illicit-drug-related offences within venues as amenity infringements associated with liquor licence breaches, along with other harms such as overdoses. The proposed amendment would allow for the endorsement of drug harm minimisation licence conditions and for disciplinary/amenity inquiries for drug-related reasons. It would also empower licensing agencies to invoke inquiry powers to address illicit-drug-related harm at licensed premises (eg grievous bodily harm, overdoses etc).

Implementing harm reduction measures such as posters in venues warning of the harms of combining alcohol and illicit drugs in night-time entertainment districts should be considered. Venues identified as having high levels of drug use could consider placing conditions on the environmental factors of the licensed venue which would limit the consumption of illicit drugs within the venue, such as removing flat surfaces in toilets and increased surveillance of bathroom areas by security.

Finally, well-constructed, funded trials of interventions such as the Clubs Against Drugs program (Abdon, Wallin & Andréasson 2011) are recommended.

Drink-driving and drug-driving

As reported within the full DASHED report, drink- and drug-driving were identified as major issues in terms of harm to the community. A large proportion of nightlife patrons reported driving under the influence of alcohol or drugs. It is recommended that targeted enforcement campaigns should be trialled, with associated awareness campaigns. Specific research should also be conducted into who is driving under the influence of drugs (including alcohol) and why, to inform subsequent responses.

Unwanted sexual attention

Unwanted sexual attention is a major harm experienced primarily by women in nightlife. It demands a rapid and serious response. To address this harm, pilot interventions should be implemented and evaluated which draw attention to respectful behaviour in nightlife settings. Further research into perpetrators of unwanted sexual behaviour and their criminogenic needs and offending pathways is also needed. Finally, specific banning provisions, linked to mandatory ID scanning in licensed venues, should be trialled and evaluated to target offenders. In order to address harms in the long term, these banning provisions should include a range of treatment options for offenders.

Conclusions

This study has demonstrated that alcohol-related harm is a major burden in Canberra and in Hobart, at similar or higher levels than in other cities around Australia. This harm comes at considerable cost to the community, not only in terms of the physical, psychological and emotional harms of violence and injury but also in terms of the substantial economic cost and burden on emergency services. Much of this cost is entirely preventable.

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References

All last references accessed November 2011.

Abdon JG, Wallin E & Andréasson S 2011. The 'Clubs against Drugs' program in Stockholm, Sweden: two cross-sectional surveys examining drug use among staff at licensed premises. *Substance abuse treatment, prevention, and policy*, 6(1), 1.

Australian Institute of Health and Welfare (AIHW) 2014. National drug strategy household survey detailed report: 2013. *Australian Institute of Health and Welfare*.

Arria AM, Caldeira KM, Kasperski SJ, Vincent KB, Griffiths RR & O'Grady KE 2011. Energy drink consumption and increased risk for alcohol dependence. *Alcoholism: Clinical and Experimental Research*, 35(2), 365–375.

Chikritzhs T, Catalonao P, & Pascal R 2008. *Predicting alcohol related harms from licensed outlet density: a feasibility study*. National Drug Law Enforcement Research Fund (NDLERF), Monograph no. 28. Canberra: NDLERF

Collins DJ, & Lapsley HM (2008). *The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004/05*. Canberra: Australian Government.

Donnelly N, Menéndez P, & Mahoney N 2014. The effect of liquor licence concentrations in local areas on rates of assault in New South Wales. *BOCSAR NSW Crime and Justice Bulletins*, 16.

Droste N, Miller P, Pennay A, Zinkiewicz L & Lubman DI 2016. Environmental contexts of combined alcohol and energy drink use: Associations with intoxication in licensed venues. *International Journal of Drug Policy*, 36, 58–66.

Fitzgerald J, Mason A, & Borzycki C 2010. The nature of assaults recorded on licensed premises. *Crime and Justice Statistics Bureau Brief*, (43).

Graham K, Bernards S, Osgood DW & Wells S 2006. Bad nights or bad bars? Multi level analysis of environmental predictors of aggression in late night large capacity bars and clubs. *Addiction, 101*(11): 1569–1580.

Graham K & Homel R 2008. Raising The Bar: Preventing violence in and around bars, pubs and clubs. *Devon: Willan*.

Graham K, Leonard KE, Room R, Wild TC, Pihl RO, Bois C & Single E 1998. Current directions in research on understanding and preventing intoxicated aggression. *Addiction, 93*(5): 659–676.

Kypri K, Jones C, McElduff P, & Barker D 2011. Effects of restricting pub closing times on night time assaults in an Australian city. *Addiction, 106*(2): 303–310.

Laslett, A.-M., Catalano, P., Chikritzhs, T., Dale, C., Doran, C., Ferris, J., . . . Mugavin, J. (2010). The *range and magnitude of alcohol's harm to others.* Fitzroy, Victoria: AER Centre for Alcohol Policy Research, Turning Point Alcohol and Drug Centre, Eastern Health, 29.

Marczinski CA & Fillmore MT 2006. Clubgoers and their trendy cocktails: implications of mixing caffeine into alcohol on information processing and subjective reports of intoxication. *Experimental and clinical psychopharmacology,* 14(4): 450.

Miller P, Curtis A, Chikritzhs T & Toumbourou J 2015). *Interventions for reducing alcohol supply, alcohol demand and alcohol-related harm: Final Report*. Canberra, Australia: NDLERF. Available at: http://www.ndlerf.gov.au/publications/monographs/monograph-57.

Miller, P., Pennay, A., Droste, N., Butler, E., Jenkinson, R., Hyder, S., . . . Lubman, D. I. (2014). A comparative study of blood alcohol concentrations in Australian night-time entertainment districts. *Drug And Alcohol Review*, 33(4), 338-345. doi: 10.1111/dar.12145

Miller, P., Pennay, A., Droste, N., Jenkinson, R., Quinn, B., Chikritzhs, T., . . . Palmer, D. (2014). Patron Offending and Intoxication in Night-Time Entertainment Districts (POINTED).

Miller, P., Tindall, J., Sonderlund, A., Groombridge, D., Lecathelinais, C., Gillham, K., . . . Sawyer, A. (2012). Dealing with alcohol-related harm and the night-time economy.

Nicholas R 2006. *Identifying and responding to problematic licensed premises: a guide for police.* Adelaide: Australasian Centre for Policing Research.

Pennay Aet al. 2015. 'Wide awake drunkenness'? Investigating the association between alcohol intoxication and stimulant use in the night time economy. *Addiction, 110*(2): 356–365.

Stockwell T et al. 2015. Relationships between minimum alcohol pricing and crime during the partial privatization of a Canadian government alcohol monopoly. *Journal of Studies on Alcohol and Drugs, 76*(4): 628-634.