

International Journal of Alcohol and Drug Research

The Official Journal of the Kettil Bruun Society for Social and Epidemiological Research on Alcohol

Patron Offending and Intoxication in Night Time Entertainment Districts (POINTED): A Study Protocol

Peter Miller¹, Amy Pennay², Rebecca Jenkinson³, Nicolas Droste¹, Tanya Chikritzhs⁴, Stephen Tomsen⁵, Phillip Wadds⁵, Sandra C. Jones⁶, Darren Palmer¹, Lance Barrie⁶, and Dan I. Lubman²

Abstract

Risky alcohol consumption is the subject of considerable community concern in Australia and internationally, particularly the risky drinking practices of young people consuming alcohol in the nighttime economy. This protocol paper describes a study that will determine some of the factors and correlates associated with alcohol-related risk taking, offending and harm in and around licensed venues and nighttime entertainment precincts across five Australian cities (three metropolitan and two regional). The primary aim of the study is to measure levels of pre-drinking, drinking in venues, intoxication, illicit drug use and potentially harmful drinking practices (such as consuming shots or mixing alcohol with energy drinks) of patrons in entertainment areas, and to relate this activity to offending, risky behavior and harms experienced. The study will also investigate the effects of license type, trading hours, duration of drinking episodes and geographical location on intoxication, offending, risk taking and experience of harm. Data collection involves patron interviews (incorporating breathalysing and drug testing) with approximately 7,000 people attending licensed venues. Intensive venue observations (n = 112 individual sessions) will also be undertaken in a range of venues, including pubs, bars and nightclubs. The information gathered through this study will inform prevention and enforcement approaches of policy makers, police and venue staff.

Patterns and Correlates of Alcohol Consumption

Risky drinking is the subject of considerable community concern in Australia and internationally, particularly the risky drinking practices of young people consuming alcohol in the nighttime economy (Hughes, Anderson, Morleo, & Bellis, 2007; Measham & Brain, 2005; Pennay, Lubman, & MacLean, 2011). Overall alcohol consumption patterns in Australia and other Western countries have remained largely unchanged for the past 20 years; however, rates of "heavy episodic drinking" have increased (Chikritzhs & Pascal, 2004). The most recent World Health Organization report on alcohol showed that 11.5% of drinkers world-wide engage in heavy episodic drinking occasions on a weekly basis, with men outnumbering women by four to one (World Health Organization [WHO], 2011). In Australia, one in four young people reported consuming alcohol at levels associated with short-term harm on a weekly to monthly basis in the past year, and over 40% of young people reported having consumed more than 20 standard drinks on a single occasion (Chikritzhs & Pascal, 2004; Victorian Drug and Alcohol Prevention Council, 2010). This is concerning, given that estimates indicate that up to 47% of alcohol-related deaths can be attributed to single sessions of heavy episodic drinking (Stockwell, 1998).

The estimated cost of alcohol to the community, including costs associated with crime, violence, treatment, loss of productivity and premature death, is significant. In Australia, these costs have been estimated at AUD \$15 billion per annum (Collins & Lapsley, 2008). Alcohol consumption has been shown to increase the likelihood and extent of aggressive and violent behaviors and to reduce 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; Bond et al., 2006; National Health and Medical

¹School of Psychology, Deakin University, Geelong, Australia

² Turning Point Alcohol and Drug Centre, Fitzroy, Australia

³ Burnet Institute, Melbourne, Australia

⁴ National Drug Research Institute, Curtin University, Perth, Australia

⁵ School of Social Sciences, University of Western Sydney, Penrith, Australia

⁶Centre for Health Initiative, University of Wollongong, Wollongong, Australia

Research Council, 2009; Pennings, Leccese, & de Wolff, 2002). Furthermore, alcohol at or over .05 blood alcohol concentration (BAC) significantly increases the potential for fatal car accidents (Drummer et al., 2003). For these reasons, alcohol places a significant burden on emergency services personnel, including police, paramedics and hospital staff.

Research has consistently shown that violence and harm in late-night entertainment areas peaks between midnight and 3:00 a.m. and is most frequent on Friday, Saturday, and Sunday nights (Chikritzhs & Stockwell, 2002; Ireland & Thommeny, 1993). A number of issues have been identified that may exacerbate levels of short-term harm associated with risky drinking. These include: excessive consumption at licensed premises, consumption in public areas, and a lack of transport and security in entertainment precincts (Graham & Homel, 1997; Homel, Tomsen, & Thommeny, 1992). Factors which increase risky drinking and associated harms in licensed premises include: patron demographic and mix; levels of comfort, boredom, and intoxication; promotions encouraging rapid alcohol consumption; and the behavior of security staff. Violence has also been shown to be perpetuated by poor management and policy, lax police surveillance, lack of transport options for patrons, and inappropriate bureaucratic controls (Graham & Homel, 2008; Homel et al., 1992; Hughes et al., 2011).

While previous research has explored the effects that factors such as transport, environment and security have on harms associated with heavy episodic drinking, little is known about how consumption practices affect harm. For example, we do not know what levels of BAC are associated with engagement in risky behavior and experience of harm, nor which drinking practices (for example, pre-loading and consuming shots, energy drinks or 'alco-pops') are associated with increased harm in the nighttime environment. Further, we do not know how duration of drinking episode, intoxication levels upon leaving and entering licensed venues, and venue characteristics (i.e., venue type, venue closing time, venue capacity, etc.) affect experiences of harm.

Patterns and Correlates of Other Drug Consumption

As with alcohol, reliable evidence on the prevalence of illicit drug use within the nighttime economy is lacking. Population survey and monitoring studies provide an indication of trends in the prevalence of illicit drug use in some populations, but there is limited research examining associations between illicit drug use and offending and harm in nighttime entertainment districts. A recent Australian study has identified that only a small proportion (around 7%) of patrons entering nightclubs in two regional cities reported any form of drug use (Miller, Miller et al., 2011). However, this data is limited by its geographically specific focus on regional cities, and the absence of objective data to validate the quality of self-report.

Psychostimulants (i.e., ecstasy, methamphetamine and cocaine) are the most widely used illicit drugs within licensed leisure spaces (Australian Institute of Health and Welfare, 2011; Sindich & Burns, 2010). The use of these drugs increased steadily throughout the mid to late nineties in Australia (and elsewhere), and has remained at relatively stable levels since 2001 (Australian Institute of Health and Welfare, 2011; Home Office, 2012). Epidemiological and social research has documented that most illicit drug users are polydrug users; however, drug research often focuses either on alcohol or illicit drugs, and only sometimes on the interaction between them. This is a potentially important area of study, given that concurrent use of alcohol and other drugs can exacerbate both the risks and harms associated with any of these drugs when used in isolation, and poses particular challenges for venue management, regulators and policy makers.

There is limited research regarding the potential harmfulness of the pharmacological and toxicological interactions between alcohol and psychostimulant drugs. However, a high percentage of both psychostimulant and alcohol-related deaths have been reported to be in the context of polydrug use (Allott & Redman, 2006). When used in combination, alcohol and psychostimulants have a greater-than-additive effect on heart rate and blood levels, and can put the combined user at clinical risk of cardiotoxicity (Kaye & Darke, 2004; Mokhlesi, Garimella, Joffe, & Velho, 2004; Pennings et al., 2002). As well as posing immediate physical threats, polydrug use has been found to increase the likelihood of risk-taking behavior, including unsafe sexual practices and drink/drug-driving (Baker & Lee, 2003; Kamieniecki, Vincent, Allsop, & Lintzeris, 1998; Minichiello, Marino, Khan, & Browne, 2003; Riley, James, Gregory, Dingle, & Cadger, 2001).

A recent event-based analysis in Melbourne showed that almost one in five young psychostimulant users (19%) reported engaging in an argument or fight during their most recent session of use (typically with a peer from their close social network), around one in six participants (16%) had had an accident of some sort (related to intoxication) or injured themselves, and almost one in three (29%) reported regretting decisions that they had made during the course of the session (Jenkinson, Dietze, & Jolley, 2009). As such, illicit drug use places significant demand on emergency services personnel, law enforcement and venue operators.

While we know psychostimulants are the most widely used illicit drugs in the nighttime economy, we know little about rates of illicit drug use and popular polydrug use combinations in the nighttime economy. Further, there is no information available about which substances (and polydrug combinations) are associated with engagement in risky behavior and experience of harm and what forms of harm are caused by drug use.

Patterns and Correlates of Combined Alcohol Consumption and Energy Drink Consumption

A recent and emerging consumption practice around the world is the combination of alcohol with caffeinated energy

drinks (ACED). The only prevalence data available internationally are an American study indicating that 25% of university students reported consuming ACEDs in the past month (O'Brien, McCoy, Rhodes, Wagoner, & Wolfson, 2008), and an Italian study which showed that 57% of university students reported previously consuming ACEDs, with 36% doing so more than three times in the past month (Oteri, Salvo, Caputi, & Calapai, 2007). The only prevalence data available in Australia shows that 69% of regular ecstasy users surveyed as part of the Ecstasy and Related Drugs Reporting System had previously consumed ACEDs. This sample reported consuming an average of three ACEDs in their last session of use, which exceeds the recommended intake of two energy drinks per day (Sindich & Burns, 2010); however, these findings are not representative, limited by the illicit-drug-using nature of the sample, and clearly an inadequate representation of the popularity of ACED use in Australia.

There is a small but growing body of research demonstrating that the combination of alcohol and energy drinks is associated with a range of harms. Energy drinks enable wakefulness and alertness, which may mask the feelings of intoxication and lead to greater consumption of alcohol over a longer period of time. The potential consequences of this are alcohol poisoning, impaired judgment leading to accidents (e.g., stepping in front of traffic), poor decision making (e.g., driving while intoxicated), engaging in risky behavior (e.g., risky sexual behavior, violence), and experiencing more negative consequences (e.g., more severe hangover) (Brache & Stockwell, 2011; Ferreira, Tulio de Mello, Pompeia, & de Souza-Formigoni, 2006; Jones, Barrie, & Berry, 2012; Marczinski & Fillmore, 2006; Miller, Miller et al., 2011; O'Brien et al., 2008; Pennay, Lubman, & Miller, 2011; Thombs et al., 2010).

Clearly, gaps exist in the current evidence base regarding the popularity, functions, contexts, effects and correlates of harms (such as mixing with specific types of alcohol and other illicit drugs, quantities, serving practices, etc.) associated with ACED use, despite the widespread consumption of these beverages in the nighttime economy.

Jurisdictional, Geographic and Cultural **Differences**

A small amount of Australian research has shown that rates of alcohol-related harm are not uniformly spread among geographical regions, and appear to be higher in regional areas than metropolitan areas. For example, rural and regional areas have markedly higher levels of hospital admissions for alcohol-related assault than metropolitan areas (Briscoe, 2001; Chikritzhs et al., 1999). However, there is no Australian information on whether rates of drinking, patterns of consumption, harmful drinking practices, illicit drug use, and energy drink consumption differ across jurisdictions, and thus might explain these differences in harm.

The Current Study

This study aims to address the significant gaps in evidence which we have identified in the background section of this

paper. While we have information about the levels of risky drinking among young Australians at a population level, as well as national estimates of drug use, we know little about the drinking practices, drug use, and harms experienced by young people in and around licensed venues. We also know little about how behaviors and harms differ between locations and venue types. Without specific evidence of rates, patterns of consumption, behavior and harms, police and licensee efforts to address intoxication and offending in licensed venues will continue to be undermined by ineffective policy. This study attempts to address these important questions, utilising a research design which will enable us to capture data from consumers during an episode of alcohol and other drug use. This approach will limit the potential for recall bias, and allow us to observe first-hand the behavior that occurs in and around licensed venues.

Study Aims

The study seeks to investigate:

- the levels of intoxication of people in and around licensed venues,
- the types of substances being used by people before entering and while inside licensed venues,
- the relationship between time of evening, duration of drinking episode and level of intoxication and harmful or risky behavior.
- the relationship between licence type/operating hours and level of intoxication and harmful or risky
- the relationship between consumption of illicit drugs (or prescription drugs being used illegally), alcohol, and level of intoxication, and harmful or risky
- the relationship between consumption of energy drinks, alcohol, and level of intoxication, and harmful or risky behavior, and
- iurisdictional differences between alcohol consumption, substance use, energy drink use, levels of intoxication, and harmful or risky behavior.

The information gathered through this study will inform prevention and enforcement approaches of both police and venue staff.

Ethics

This study has been approved by the Human Research Ethics Committees of all participating universities.

METHOD

Study Design

This is a mixed methods cross-sectional study involving two data collection components that will enable us to capture data from consumers during an episode of alcohol and other drug use, thus limiting the potential for recall bias:

- 1) short patron interviews with people as they enter or leave licensed venues
- sessions of structured observation within licensed

Setting

This study will be undertaken in the nighttime entertainment districts of three metropolitan cities (Sydney, Melbourne, and Perth) and two regional cities (Wollongong and Geelong) in Australia. These sites have been chosen specifically to investigate jurisdictional differences in alcohol and other drug consumption patterns and intoxication, and related harms. Sydney, the capital of the state of New South Wales, and Melbourne, the capital of the state of Victoria, are the two largest cities in Australia, each with over four million residents. They are located on the east coast of Australia and both are known for their vibrant nighttime economies. Perth, the third metropolitan city in this study, is located on the opposite Australian coast. A beachside city with a population of around 1.6 million, Perth is a smaller metropolis and is not considered a busy international hub like Sydney and Melbourne. Nevertheless, Perth is the capital of Western Australia and has a thriving nightlife. Wollongong is a regional town in New South Wales (population around 300,000) and Geelong is a regional town in Victoria (around 160,000). These are two of the largest regional cities in Australia and have been chosen specifically to allow us to compare the differences between regional and metropolitan cities in the two largest states of Australia. Both cities have a small central business district with under 50 licensed venues. This is in contrast to the hundreds of venues in the central business districts of Sydney, Melbourne and Perth.

Sample, Procedures and Measures

Patron interviews. The population to be studied are people entering and leaving licensed venues in major entertainment strips. Given that this is the site of most focus for policing and alcohol-related problems, it is proposed that capturing people entering and leaving licensed venues will give us a representative view of the issues being faced in relation to nighttime entertainment areas. We anticipate that patrons will be over the age of 18 years, as this is the legal age for admission to licensed venues in Australia, and we will be asking people their year of birth (and, as per our ethics approvals, excluding participants who are under 18).

Data collection will occur fortnightly in each city on a Friday or Saturday night. Brief structured interviews and breathalyser tests will be undertaken with approximately 7,000 patrons of licensed venues across five cities over a period of six months (see also Clapp, Min, Shillington, Reed, & Croff, 2008; Thombs et al., 2010). In Geelong and Melbourne only, every fifth person will be asked to complete a drug swab test to detect the presence of illicit These tests are drug use (approximately 500 tests). designed to measure the validity of self-report.

Patron interviews will be conducted in vibrant and diverse entertainment districts in all five cities. The interviews will be conducted in busy thoroughfares, as well as with patrons queuing to enter venues and leaving venues (with consent from venue operators). Researchers will work in groups of six or more (Miller, Palmer et al., 2011) in these public thoroughfares and outside selected licensed venues (up to six venues each night). Each team will be allocated a team leader who will be responsible for liaising with the venue staff, carrying support equipment and overseeing team operations and safety. All interviewers will wear easily identifiable clothing from their relevant institution.

All staff are required to attend training in the use of equipment such as breathalysers and iPod Touch devices, which are used to record interview data and drug tests. Extensive safety training will be provided prior to commencement of data collection, which will include how to handle incidents of aggression, situations where participants are highly intoxicated, or situations where police or venue operators request the results of data or breathalyser or drug tests. Training will also provide information on basic research methods, sampling, how to build interviewer-interviewee rapport, how to conduct interviews and how to identify signs of alcohol and other drug intoxication. Data collection will occur during the warmer months in Australia (within the October to April period). Interviews will normally be conducted between the hours of 10:00 p.m. and 3:00 a.m., but will sometimes run as late as 5:00 a.m.

All potential participants will be approached, regardless of age, gender and nationality, and the study will be verbally explained. If a person is walking in a busy thoroughfare alone, one team member will approach them. Where people are walking in pairs or groups, two researchers will approach. When interviewing people in queues, if the queue is moving quickly, the team will start interviewing at the back of the line so as to finish the interview before the patron is granted entry, and then move to interview the next person that arrives. If the line is moving slowly, the team will start in the middle of the queue.

Interviewers will be trained in the identification of intoxicated persons and patron interviews will not be conducted with people who are heavily intoxicated. Where intoxication is not evident until the interview has begun, the interviewer will end the survey prematurely, thanking the participant for their time and informing them they have answered all the questions. The team leader will pay close attention to the safety of both interviewers and interviewees and, in situations where safety is threatened, will move the location of the team. All prematurely ended surveys will be recorded as such, and all refusals will be recorded, so that response rate is captured.

Once participants agree to be interviewed, they will be given a business card that will have a web address and contact details of the study investigators and ethics committee, which they may use if they wish to know more about the study or be informed of study findings. Verbal consent to participate will be sought. Participants will not need to tell us their names; the only demographic information gathered will include gender, year of birth, postcode and occupation. The interview questions will be stored on iPod Touch devices. Interviews will take approximately four minutes and data will be saved automatically, including results from accurate fuel-cell-type breathalysers and results for drug swab tests (at applicable

In Geelong and Melbourne only, a randomly selected subsample (i.e., every fifth person) will be asked if they are willing to undergo a swab for the presence of other drugs (all responses will be recorded to allow for the calculation of response rates). Results from the drug tests will be recorded in the interview file and used to understand the reliability of our self-reported data. Drug tests will not be able to provide a measure of impairment, as they only test for the presence or absence of a drug. Testing requires one non-invasive scrape of the tongue and results are generally identified within two minutes. Testing kits will be placed into a bag with other swabs immediately following the test so that they cannot be linked to an individual. Tests are not useful to police because the chain of evidence cannot be guaranteed by the officer and tests require strict protocol adherence to guarantee valid results, which police would not be able to ensure. Further, interviewers are instructed to shake any drug tests (thereby invalidating results) if the results are requested by anyone not part of the research team.

The patron interview has five sections:

Interviewee demographics, including gender, year of birth, postcode and occupation.

Current night out, involving questions about the night so far, how many hours they have been "going" for, where they have been, their reason for going out, the alcohol types and quantity they have consumed (in standard drinks, which is 10 g of ethanol in Australia¹), their energy drink consumption (with and without alcohol), their engagement in pre-loading, their use of illicit drugs, and their BAC reading.

Aggression/offending/alcohol-related consequences, involving questions about their witness of, or involvement in, verbal, physical or sexual aggression over the past three months, the role that alcohol and other drug use have played in these incidents of aggression, personal injury or accidents as a consequence of alcohol or drug use over the past three months, and engagement in other offending over the past three months.

Intentions for the rest of the night, including how long they anticipate being out for, how many more drinks they intend to consume, how many energy drinks (with or without alcohol) they intend to consume, their intentions around drug use for the rest of the night, how they plan to get home, their self-rated ability to drive and their plans for the rest of the evening. Participants are also asked how typical this night was in their general routine.

In Melbourne and Geelong, every fifth participant will be asked to provide a drug swab to detect the presence of cannabis, amphetamine-type substances, cocaine, opioids, and benzodiazepines to validate self-report.

Structured observations. Sessions of observation will be undertaken in all cities fortnightly on a Friday or Saturday night (on the alternate weekend to interviews). In metropolitan cities, two teams of two observers will spend four to five hours within separate licensed venues; in regional cities, one team of two observers will spend four to five hours in one licensed venue. Venues will change from week to week. There will be 112 sessions of observation altogether.

A range of venues in each city will be selected for sessions of observation. Venues will be selected based on opening times and size. Three types of venues will be selected:

- bars and pubs serving until 2:00 a.m., also known as "feeder venues".
- mega-pubs or large commercial nightclubs with live music or DJs, open to approximately 5:00 a.m., and
- late-closing or 24-hour nightclubs that are DJ focussed.

Sessions of structured observations will be undertaken by researchers in pairs to ensure inter-rater reliability, and where possible, male-female pairs will be utilised. Researchers will pose as typical customers and wear clothing appropriate to the venue's image. Observation checklists will be completed by both researchers independently—without consulting with one another about what they are recording. Both sets of data will be treated as an independent session of observation for the purpose of

Each observation period will last four to five hours, with start times varying from 10:00 p.m. to 3:00 a.m. and finish times between 2:00 and 6:00 a.m. One venue will be visited by each team per night of observation (i.e., teams will not move from venue to venue). Each hour, observers will complete a number of observation checklists on their iPod Touch devices.

Observation will be as unobtrusive as possible, to maximize the naturalistic setting. Researchers will receive extensive safety training, as well as training on how to covertly complete the observation checklists. All data will be captured using an iPod Touch device, which looks identical to an iPhone; thus, when using the iPod Touch, researchers will appear to be using their mobile phones. Checklists will be completed over a period of 10 to 15 minutes, with the researchers putting the devices on the tables or in their bags every few minutes, to ensure they do not appear uncharacteristically focused on their phones for a long period of time. In the unlikely event that the researchers are approached with anger or suspicion by

¹During training interviewers will be provided with a standard drinks chart and informed how many standard drinks are in a low, mid- and full-strength beer, a small and tall glass of wine, a bottle of wine, a shot of spirits, a bottle of spirits and a bottle of "alcopop." Interviewers will prompt the participant for specifics so as to calculate how many standard drinks the participant has consumed.

patrons or staff, the researchers will produce an information card detailing the aims and scope of the research.

Each session of observation will involve completion of four separate forms:

Standard hourly form, involving questions about entry practices, patron characteristics, venue capacity and density, patron alcohol consumption patterns, alcohol promotions, observations of patron intoxication, signs of patron drug use, patterns of patron energy drink use (with and without alcohol), serving practices of staff, rating of staff friendliness and presence and activity of police inside and outside the venue.

Hourly drug use form, involving questions about particular groups of people who are exhibiting signs of drug use, such as how many people are in the group, their gender and age, what signs of drug use are noticed and what behaviors they are engaging in. This form is completed if there are new groups of drug users in the venue, and repeated hourly if there are existing groups who have continued their drug use in the venue.

Hourly energy drink form, involving questions about particular groups of people who are consuming energy drinks, such as how many people are in the group, their gender and age, what signs of energy drink use are noticed and what behaviors they are engaging in. This form is completed if there are new groups of energy drink users in the venue, and repeated hourly if there are existing groups who have continued their energy drink use in the venue.

Aggressive incident form, which involves questions about specific incidents of physical aggression, non-physical aggression such as arguments and sexually aggressive incidents, or unwanted sexual attention. This form is only completed if there are specific incidents of aggression in the past hour. Questions are asked about the nature of the incident, the number and characteristics of people involved. where in the venue it occurred, signs of alcohol and/or drug involvement in the incident and details of how the incident was resolved.

All forms have a number of fields where free text can be added. Researchers are encouraged to use these forms as much as possible to identify behaviors that might not be captured by the structured checklist-for example, particular problems with gaining entry, particular incidents of intoxication or other behavior, and security or staff practices.

Analysis

Data from the interviews and the observations will be analyzed separately (i.e., the data will not be linked for the purpose of analysis) but the separate analyses will be used to inform each other in the interpretation of the findings.

Patterns of alcohol and substance use will be drawn from self-report, breathalyser and drug tests, and observer-rated fields recorded in patron interviews and venue observations. These data will be reported as descriptive frequencies, means and percentages.

Data on patron experiences, attitudes and practices from the interview and observation data will be reported as descriptive frequencies, means and percentages.

Multivariate analysis including multiple regression and logistic regression will be used to identify significant predictors and covariates of harm and patron intoxication level or drug use. Harm will be operationalized based on a number of different indicators, such as involvement in or witnessing aggressive acts, injury to self or others as a result of intoxication, property damage and ejection or refusal of service from venues.

Predictors and covariates will be included in multivariate analyses that address specific research objectives. These include time of evening, duration of drinking episode, venue license type and opening hours, patron substance-use behavior (from both venue observation and patron interviews), consumption of energy drinks with alcohol, and the role of jurisdictional differences and of differences in cultural and regulatory environments among study sites.

Qualitative text-based notes recorded during venue observations will be stored and analysed using content analysis software NVivo.

All quantitative data collected via observation and patron interviews will be stored and analysed using Microsoft Excel, STATA 8 and SPSS (version 18).

Discussion

Patron Offending and Intoxication in Night Time Entertainment Districts (POINTED) is the first Australian study to investigate the role that alcohol and other substance use plays on intoxication, offending, risk and harm in the nighttime economy, using breathalysers and drug swabs. Further, it is the first study to investigate jurisdictional differences, and the effects of license type, on consumption patterns and harm.

Specifically, this study will address the gaps in the evidence, including what levels of BAC are associated with engagement in risky behavior and experience of harm; which drinking practices (for example, pre-loading and consuming shots or "alco-pops") are associated with increased harm in the nighttime environment; how duration of drinking episode, intoxication levels upon leaving and entering licensed venues and venue characteristics influence offending and harm; what types of illicit substances are being used in licensed venues, what polydrug combinations are popular, and how common illicit drug use is within licensed venues; which substances (and polydrug combinations) are associated with engagement in risky behavior and experience of harm and what forms of harm are caused by drug use; how commonly used energy drinks are, as well as their functions, contexts, effects and correlates of harms (such as

mixing with specific types of alcohol and other illicit drugs, quantities, serving practices, etc.); and whether rates of drinking, patterns of consumption, harmful drinking practices, illicit drug use and energy drink consumption differ across jurisdictions and between types of licensed venues.

This study utilises a research design that will enable us to capture data from consumers during episodes of alcohol and other drug use. This approach will limit the potential for recall bias, and allow us to observe first-hand the behavior that occurs in and around licensed venues.

Without specific evidence of rates and patterns of consumption, behavior and harms in the nighttime economy, police and licensee efforts to address intoxication and offending will continue to be undermined by This study has the potential to ineffective policy. substantially inform law enforcement, venue and policy responses to alcohol and other drugs in the nighttime economy. For example, data might be used to argue for opening-hour restrictions or other interventions which will reduce offending behavior and allow for the more effective deployment of police personnel. It may be, for example, that more resources should be deployed to regional entertainment districts, or should be used in certain hotspots of central business districts, or around venues with particular forms of entertainment, or areas with heavy outlet densities. It may similarly provide important data to encourage the development of appropriate codes of practice or regulatory frameworks for licensed venues.

Conclusions

This mixed-methods study is the first of its kind in Australia. Using unique data collection methodsincluding surveys with people during their sessions of alcohol and other drug use (incorporating breathalyser testing and drug swabs), as well as sessions of observation in licensed venues documenting consumption practices and behaviors—this study will inform potential responses to intoxication, harm and offending in the Australian nighttime economy. The evidence from this study will have the potential to be used by policy makers, police and local communities across Australia and internationally to reduce violence and harms around licensed venues, to assist police to deploy community resources more efficiently and to inform security and bar staff practices.

References

- Allott, K., & Redman, J. (2006). Patterns of use and harm reduction practices of ecstasy users in Australia. Drug and Alcohol Dependence, 82, 168–176.
- Australian Bureau of Statistics. (2007). Australian Social Trends, 2007: Interpersonal Violence. Canberra, Australia: Author
- Australian Institute of Health and Welfare. (2011). 2010 National Drug Strategy Household Survey Report (Drug Statistics Series No. 25. Cat. No. PHE 145). Canberra, Australia: Author.

- Baker, A., & Lee, N. (2003). A review of psychosocial interventions for amphetamine use. Drug and Alcohol Review, 22, 323-335.
- Bond, J., Borges, G., Cherpitel, C., Macdonald, S., Orozco, R., Poznyak, V., ... Ye, Y. (2006). Multicentre study of acute alcohol use and non-fatal injuries: Data from the World Health Organization collaborative study on alcohol and injuries. Bulletin of the World Health Organization, 84, 453-460.
- Brache, K., & Stockwell, T. (2011). Drinking patterns and risk behaviors associated with combined alcohol and energy drink consumption in college drinkers. Addictive Behaviors, 36, 1133-1140.
- Briscoe, S. D. (2001). Temporal and regional aspects of alcohol-related violence and disorder. Alcohol Studies Bulletin, 1.
- Chikritzhs, T., Jonas, H., Heale, P., Dietze, P., Hanlin, K., & Stockwell, T. (1999). Alcohol-caused deaths and hospitalisations in Australia, 1990-1997 (National Alcohol Indicators Technical Report No 1). Perth, Australia: National Drug Research Institute.
- Chikritzhs, T., & Pascal, R. (2004). Trends in youth alcohol consumption and related harms in Australian jurisdictions, 1990-2002 (National Alcohol Indicators Bulletin No. 6). Perth, Australia: National Drug Research Institute, Curtin University of Technology.
- Chikritzhs, T., & Stockwell, T. (2002). The impact of later trading hours for Australian public houses (hotels) on levels of violence. Journal of Studies on Alcohol, 63, 591-599.
- Clapp, J. D., Min, J. W., Shillington, A. M., Reed, M. B., & Croff, J. K. (2008). Person and environment predictors of blood alcohol concentrations: A multi-level study of college parties. Alcoholism: Clinical and Experimental Research, 32, 100-107.
- Collins, D. J., & Lapsley, H. M. (2008). The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004/05. Canberra, Australia: Australian Department of Health and Ageing.
- Drummer, O. H., Gerostamoulos, J., Batziris, H., Chu, M., Caplehorn, J. R., Robertson, M. D., & Swann, P. (2003). The incidence of drugs in drivers killed in Australian road traffic crashes. Forensic Science International, 134, 154-162.
- Ferreira, S. E., Tulio de Mello, M., Pompeia, S., & de Souza-Formigoni, M. L. (2006). Effects of energy drink ingestion on alcohol intoxication. Alcoholism: Clinical and Experimental Research, 30, 598-605.
- Graham, K., & Homel, R. (1997). Creating safer bars. In M. Plant, E. Single, & T. Stockwell (Eds.), Alcohol: Minimizing the harm (pp. 171-192). London, England: Free Association Press.
- Graham, K., & Homel, R. (2008). Raising the bar: Preventing aggression in and around bars, pubs and clubs. Oxford, UK: Routledge Publishing (Taylor & Francis Group) Crime Series.
- Home Office. (2012). Drug misuse declared: Findings from the 2010/11 British Crime Survey England and Wales. London, England: Home Office Statistics.
- Homel, R., Tomsen, S., & Thommeny, J. (1992). Public drinking and violence: Not just an alcohol problem. Journal of Drug Issues, 22, 679-697.

- Hughes, K., Anderson, Z., Morleo, M., & Bellis, M. A. (2007). Alcohol, nightlife and violence: The relative contributions of drinking before and during nights out to negative health and criminal justice outcomes. Addiction, 103, 60-65.
- Hughes, K., Quigg, Z., Eckley, L., Bellis, M. A., Jones, L., Calafat, A., . . . van Hasselt, N. (2011). Environmental factors in drinking venues and alcohol-related harm: The evidence base for European intervention. Addiction, 106, 37-46.
- Ireland, C. S., & Thommeny, J. L. (1993). The crime cocktail: Licensed premises, alcohol and street offences. Drug and Alcohol Review, 12, 143-150.
- Jenkinson, R., Dietze, P., & Jolley, D. (2009). 'Weekend on the town': Examining a session of psychostimulant use among a sample of young socialites. Drug and Alcohol Review, 28, 32-50.
- Jones, S., Barrie, L., & Berry, N. (2012). Why (not) alcohol energy drinks? A qualitative study with Australian university students. Drug and Alcohol Review, 31, 281-287.
- Kamieniecki, G., Vincent, N., Allsop, S., & Lintzeris, N. (1998). Models of intervention and care for psychostimulant users. Canberra, Australia: Looking Glass Press.
- Kaye, S., & Darke, S. (2004). Non-fatal cocaine overdose among injecting and non-injecting cocaine users in Sydney, Australia. Addiction, 99, 1315-1322.
- Marczinski, C. A., & Fillmore, M. T. (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, 450-458.
- Measham, F., & Brain, K. (2005). 'Binge' drinking, British alcohol policy and the new culture of intoxication. Crime, Media, Culture: An International Journal, 1, 262-283.
- Miller, P., Palmer, D., Droste, N., Tindall, J., Gillham, K., Sonderlund, A., ... Wiggers, J. (2011). Dealing with alcohol-related problems in the nighttime economy: A study protocol for mapping trends in harm and stakeholder views surrounding local community level interventions. BMC Research Notes, 4, 204.
- Miller, P., Tindall, J., Sonderlund, A., Groombridge, D., Lecathelinais, C., ... Wiggers, J. (2011). Dealing with alcohol and the nighttime economy (DANTE): Final report (pp. 278). Geelong, Australia: Deakin University and Hunter New England Population Health for the National Drug Law Enforcement Research Fund.
- Minichiello, V., Marino, R., Khan, M., & Browne, J. (2003). Alcohol and drug use in Australian male sex workers: Its relationship to the safety outcome of the sex encounter. Aids Care, 15, 549-561.
- Mokhlesi, B., Garimella, P., Joffe, A., & Velho, V. (2004). Street drug abuse leading to critical illness. Intensive Care Medicine, 30, 1526-1536.
- National Health and Medical Research Council (2009). Australian guidelines to reduce health risks from drinking alcohol. Canberra, Australia: Author.
- O'Brien, M. C., McCoy, T. P., Rhodes, S. D., Wagoner, A., & Wolfson, M. (2008). Caffeinated cocktails: Energy

- drink consumption, high-risk drinking, and alcoholrelated consequences among college students. Academic Emergency Medicine, 15, 453-460.
- Oteri, A., Salvo, F., Caputi, A. P., & Calapai, G. (2007). Intake of energy drinks in association with alcohol beverages in a cohort of students of the School of Medicine of the University of Messina. Alcoholism: Clinical and Experimental Research, 31, 1677–1680.
- Pennay, A., Lubman, D., & MacLean, S. (2011). Risky drinking among young Australians: Causes, effects and implications for GPs. Australian Family Physician, 40, 584-588.
- Pennay, A., Lubman, D. I., & Miller, P. (2011). Combining energy drinks and alcohol: A recipe for trouble? Australian Family Physician, 40, 104–107.
- Pennings, J., Leccese, A., & de Wolff, F. (2002). Effects of concurrent use of alcohol and cocaine. Addiction, 97, 773-783.
- Riley, S., James, C., Gregory, D., Dingle, H., & Cadger, M. (2001). Patterns of recreational drug use at dance events in Edinburgh, Scotland. Addiction, 96, 1035-1047.
- Sindich, N., & Burns, L. (2010). Australian trends in ecstasy and related drug markets 2009: Findings from the Ecstasy and Related Drugs Reporting System (EDRS) (Australian Drug Trends Series No. 46). Sydney, Australia: National Drug and Alcohol Research Centre, University of New South Wales.
- Stockwell, T. (1998). Alcohol-related harm in Australia: Current issues and future prospects. Alcoholism: Clinical and Experimental Research, 22, 173-176.
- Thombs, D. L., O'Mara, R. J., Tsukamoto, M., Rossheim, M. E., Weiler, R. M., Merves, M. L., & Goldberger, B. A. (2010). Event-level analyses of energy drink consumption and alcohol intoxication in bar patrons. Addictive Behaviors, 35, 325-330.
- Victorian Drug and Alcohol Prevention Council. (2010). 2009 Victorian Youth Alcohol and Drug Survey. Final Report. Melbourne, Australia: Author.
- World Health Organization (WHO). (2011). Global status report on alcohol and health. Geneva, Switzerland: Author