International Journal of Drug Policy 63 (2019) 39–46

Contents lists available at ScienceDirect

International Journal of Drug Policy

journal homepage: www.elsevier.com/locate/drugpo

Research Paper

Off the rails—Evaluating the nightlife impact of Melbourne, Australia's 24-h public transport trial

Ashlee Curtis*, Nicolas Droste, Kerri Coomber, Belinda Guadagno, Richelle Mayshak, Shannon Hyder, Alexa Hayley, Peter Miller

School of Psychology, Faculty of Health, Deakin University Geelong, Waterfront Campus, Locked Bag 20001, Geelong, VIC, 3220, Australia

ARTICLE INFO

Keywords:
Alcohol
Illicit drugs
Face-to-face interviews
Night-time entertainment precincts
Public transport

ABSTRACT

Background: This paper evaluates the impact of the AU$83 million introduction of 24-h public transport (PT) in Melbourne, Australia on Friday and Saturday nights on a sample of nightlife venues and venue patrons. This sample was selected because a primary reason for the introduction of 24 h PT was to provide a safe means of travel home for nightlife attendees.

Methods: Covert venue observations (pre-post) and a convenience sample of nightlife patron interviews (post-only) were conducted to measure the impact of 24-h PT on venues and venue patrons. Specifically, the impact of 24-h PT on the proportion of people observed within venues (as rated on a 0–100% scale of venue capacity), patrons in venues showing any sign of intoxication, those who were observed to be too intoxicated to remain in the venue, patron drinking or drug taking behavior, train use, and the time and money spent in the night time economy were assessed.

Results: After 24-h PT was introduced there were no significant differences overall in the proportion of people observed within venues, or significant associations with the proportion of patrons showing any sign of intoxication or proportions who were observed to be too intoxicated to remain in the venue. However, when accounting for seasonality (matching-months), observed patron intoxication increased significantly after the introduction of 24-h PT. The majority of nightlife patrons did not report a change in their pre-drinking or drug taking behavior after 24-public transport, but 44% indicated spending more time in the night time economy, 27% reported spending more money, and 56% reported increasing their train use.

Conclusion: Patron reports suggest that 24-h public transport has increased the amount of time people spend in nightlife settings without obviously impacting on drinking behavior. However, supplying 24-h public transport has resulted in greater self-reported use of public transport.

Introduction

On January 1 2016 the State Government in Victoria, Australia, introduced "Homesafe", a trial of 24-h public transport (PT) in the state capital of Melbourne. Prior to Homesafe, trains and trams ran until approximately 1am on Friday and Saturday nights, and a night bus serviced the remainder of the night. The Homesafe trial involved an increase in PT availability on Friday and Saturday nights after 1am: trains running every hour from Flinders street station (the major metropolitan railway station in Melbourne), and selected trams running every 30 min for the entire night; a 2am regional bus service (previously 1am); and an expanded night bus service on 20 metropolitan routes. The trial was initially costed by the government at AU$50 million and was later revised to AU$83 million to cover the costs of additional protective service officers required to patrol the major transport hubs. In August 2016, the trial was extended to June 2017, at additional cost of AU$38.7 million, and in April 2017 the Victorian Government announced that 24-h PT in Melbourne would run for a further four years at an additional cost of AU$193 million.

As noted by Public Transport Victoria, running accessible PT to over 70% of Melbourne residents on weekends "provides late night public transport options for the thousands of people who go out at night on weekends, as well as shift workers who may currently have limited means of getting to and from work on public transport" (Public Transport Victoria, 2017). Benefits to nightlife patrons include cheap, accessible options for travelling home, and relatively frequent opportunities to leave the city. Further, licensed venues may benefit from increased business as patrons may opt to stay out for longer. Indeed,

* Corresponding author.
E-mail address: ashlee.curtis@deakin.edu.au (A. Curtis).

https://doi.org/10.1016/j.drugpo.2018.10.006

research has suggested that providing late night transport options for nightlife attendees would reduce harm in night time entertainment precincts (NEPs) through the efficient dispersal of patrons from NEPs, and reducing opportunities for assaults and injuries to occur (Graham & Homel, 2008; Graham, Bernards, Osgood, & Wells, 2006; Homel & Clark, 1994; Homel, Carvolth, Hauritz, Mcillwain, & Teague, 2004). However, providing patrons with the option to spend longer in the night time economy (NTE) may also increase rates of alcohol-related harm, given they may spend longer in licensed venues consuming more alcohol (or other drugs), which may in turn may increase their risk of intoxication-related harms, such as assault and injury. For example, Miller et al. (2014) found that risk of harm associated with alcohol use increases after 12am. Additionally, when trading hours are reduced for licensed venues, and people are forced to go home earlier, there is a reduction in alcohol-related harm (Chikritzhs & Stockwell, 2002; Wilkinson, Livingston, & Room, 2016). In addition to providing patrons with an opportunity to spend additional time in the NTE, there is also the risks associated with violence occurring on public transport, which may be increased if there are greater levels of intoxication (Hughes, Anderson, Morleo, & Bellis, 2008). As such, it is important to ensure that there is a balance between providing accessible and cheap PT and ensuring the safety of persons attending the NTE.

This mixed method paper evaluates the impact of the introduction of weekend 24-h PT in January 2016 in Melbourne, Victoria, upon a sample of nightlife venues and among venue patrons, with the aim of determining any changes to the number of people attending late-night NEPs, the proportion of people within licensed venues consuming alcohol or drugs, and changes in patron behavior as a result of 24-h PT availability. This is explored through the use of i) a program of covert venue observations, and ii) a convenience sample of nightlife patrons using brief field interviews.

Method

Ethics approval for the project was obtained from the Deakin University Human Research Ethics Committee to conduct the project. Two methods are utlised for this study; covert venue observations, and patron interviews.

Study 1 – covert venue observations

Setting

Observations were conducted monthly on Saturday evenings pre 24-h PT (October 2015-December 2015), and post 24-h PT (January 2016–November 2016) from 12am–4am. A total of 505 independent observation checklists were conducted by pairs of observers in four nightclubs in Melbourne. The venues were chosen because of their late-trading hours (all were open until at least 3am) that these were the types of venues that would be impacted by additional PT availability, and that all venues had close access to 24-h PT. All venues either had live DJs or recorded DJ entertainment throughout the night, did not serve food, had cover charges, and had indoor and outdoor areas. All venues had a dance-focus with clear dance floor areas. None of the venues appeared to change practices after the introduction of 24-h PT.

Procedure

All observations and patron interviews were recorded using iPhones and iPods with the app TapForms™. The methodology utilized in the current study has been successfully used elsewhere (Coomber et al., 2016; Droste, Miller, Pennay, Zinkiewicz, & Lubman, 2016; Miller, Pennay, Jenkinson et al., 2013). All observers and interviewers received training on how to conduct covert observations and patron interviews, including how to identify signs of intoxication, which were based on the criteria shown in Table 1 (Liquor & Gaming, 2015).

Observers and interviewers also received training on how to identify signs of drug use, including common physiological signs for each class of drug (e.g., stimulants, depressants), recognizing drug paraphernalia (e.g., pipes, baggies, needles), and drug taking behavior (e.g., smoking or ingestion of drugs) (Coomber et al., 2017; Miller, Pennay, Droste et al., 2013; Miller et al., 2012).

Each hour, observers were required to complete an observation form recorded electronically using the TapForms™ app. In the hour prior to the observations, observers were instructed to move throughout the venue ensuring they had observed all areas. Observers were then instructed to focus on different areas of the venue to that of their observation partner to ensure data were independent and to ensure an accurate representation of the entire venue, rather than any one specific area (Droste et al., 2016).

As per similar studies using this methodology, male/female pairs were utilized wherever possible to maximize safety of observers (Droste et al., 2016; Miller, Pennay, Jenkinson et al., 2013). To ensure observations remained covert, observers wore clothes consistent with those of usual patrons of the particular venue they were at, and were encouraged to behave as a normal customer of that venue would. At times, this may have involved interacting casually with other patrons, dancing, or purchasing a beverage.

Measures

Patron characteristics

Observers were required to estimate the maximum number of patrons in the venue at each hourly time point, and to estimate how full the venue was (proportion of total venue capacity, 0–100%). Further, observers estimated the proportion of patrons who were male, and of patrons who were below the age of 25 years.

Patron alcohol use

Observers reported whether they saw patrons stockpiling alcoholic drinks in the past hour, defined as having more than two unconsumed drinks. Observers also noted whether any one patron purchased more than four alcoholic drinks at one time, or more than one bottle of wine (regardless of who consumed these), in the past hour.

At each observation point, observers were required to estimate the proportion of all patrons who were showing any signs of intoxication in the past hour. They were also asked to note the proportion of patrons who seemed too intoxicated to be in the venue at the current observation point, based on the existence of three or more signs of intoxication (Table 1). In addition, observers reported whether they had seen an intoxicated person attempt to purchase an alcoholic drink, and noted the actions taken by staff in response.

Patron drug use

Observers recorded any sign of drug use witnessed in the venue in the past hour (e.g., explicit drug possession or use, possession of drug paraphernalia). They then recorded the proportion of patrons who were showing any signs of illicit drug use in the past hour, and whether staff took any action regarding the drug use.

Police activity

Prior to entering the venue and when leaving the venue, observers recorded whether they saw any police officers on the streets of the NTE area, the number of police seen, and whether police were conducting a routine patrol or responding to an incident. Observers also recorded whether any police entered the venue, and if so how many and what they were doing.

Table 1
Signs of intoxication used by observers.

Speech	Balance	Coordination	Behavior
Slurring words	Unsteady on feet	Lack of coordination	Rude
Rambling or unintelligible conversation	Swaying uncontrollably	Spilling of drinks	Aggressive
Incoherent or muddled speech	Bumping into or knocking over furniture or people	Inability to find ones mouth with a glass	Belligerent
Loss of train of thought	Difficulty walking straight	Fumbling change	Argumentative
Not understanding normal conversation	Cannot stand or falling down	Difficulty counting money or paying	Offensive
Difficulty in paying attention	Stumbling	Difficulty opening or closing doors	Drowsiness or sleeping at a bar or table
	Staggering	Dropping drinks	Physically violent
			Loud/boisterous
			Disorderly
			Confused
			Exuberant
			Using offensive language
			Annoying/pestering others
			Overly friendly
			Loss of inhibition
			Inappropriate sexual advances
			Bad tempered
			Vomiting
			Drinking rapidly

Study 2 – patron interviews

Setting

Flinders Street Train Station was chosen as the site for nightlife patron interviews because it is the only station in the Melbourne central business district where 24-h PT was made available during the Homesafe trial.

Participant eligibility

Participants were interviewed if they were over the age of 18. However, the research is focused on understanding changes to participant behavior in the nightlife over the past year, therefore, participants who reported their age as 18 were excluded from analyses. This is because the legal age of licensed venue entry in Australia is 18, and as such, persons who were 18 at the time of the interview would have only been 17 years at the time of the introduction of 24 h PT.

Procedure

Interviews were conducted by two teams comprising between four and six members. Interview sessions occurred once per month on a Saturday night from August-November 2016, between the hours of 11 pm and 6am. Interviewers systematically approached every third person to ask if they would be interested in participating in the interview.

Measures

Demographics

Participants were asked their age and postcode. Date and time of interview were automatically entered by the TapForms™ app.

Current night out

Participants were asked how many standard drinks they had consumed before attending the city that evening (pre-drinking), and how many they had consumed prior to the interview (including pre-drinking). They were also asked whether they had consumed any illicit or pharmaceutical drugs not prescribed to them, and if so, the type of drug, during the night prior to the interview. Participants were asked whether they usually take the train home, and if yes, the time that they usually travel home.

Experience of aggression in past three months

Participants were asked how many times they had experienced (i.e. witnessed or were involved in) physical or verbal aggression, unwanted sexual attention, or alcohol-related injuries, in and around licensed venues in the past three months.

Behavioral changes

Participants were asked specific behavior change questions since the introduction of 24-h PT, for which they could respond 'more', 'less' or 'no change'. These included: hours spent consuming alcohol prior to going out (and if so, how many hours); drug use; use of PT; time in the NTE (if so, how many more/less hours); and money spent on a night out (if so, how much more/less money). They were also asked whether they use trains more regularly now that they are available over a 24-h period, whether they have experienced more aggressive incidents, unwanted sexual attention, or alcohol-related injury, in or around licensed venues since the introduction of 24 h PT.

Blood alcohol concentration (BAC)

All participants were asked to provide a breathalyzer sample to determine BAC at the end of their interview. BAC was recorded using a calibrated Andatech Alcosense Prodigy breathalyzer.

Analysis plan

All data were analyzed using SPSS v23 (IBM Corp, 2014).

Study 1 – covert venue observations

Pearson's chi square tests were utilized to determine whether there was an association between the introduction of 24-h PT (2015, pre 24-h PT and 2016, post 24-h PT) and the proportion of observations during which the observer had to wait in line, the proportion of patrons stockpiling drinks, buying more than four drinks at once, or showing signs of drug use, and the proportion of observations where police were observed. All proportions recorded from 0 to 100% by observers were coded categorically in intervals of 10.

A series of independent sample t-tests were conducted to determine average differences between observational variables before versus after the introduction of the 24-h PT. Comparisons pre/post 24-h PT included: the proportion of males; the proportion of persons estimated to be under 25 years of age; venue entry time; the proportion of observations reporting police activity inside and outside of venues; hourly

differences in the proportion of total capacity of the venue; proportion of intoxicated patrons; proportion of patrons who were too intoxicated; and proportion of patrons showing signs of drug use. All t-tests used a Bonferroni adjusted alpha level of 0.003 (i.e., $\alpha = 0.05/16$ analyses).

Study 2 – patron interviews

Given the type and nature of the data, medians, proportions, and mean changes are reported. Pearson's chi square tests were conducted to determine whether there were significant differences between proportions.

Findings

Study 1 – covert venue observations

Patrons

Independent sample t-tests showed there was no significant difference between the proportion of patrons observed as being male before or after 24-h PT (59% vs. 60%). Further, there was no significant difference between the proportion of patrons observed to be under 25 years of age before or after 24-h PT (80% vs. 79%).

Venue entry

Prior to 24-h PT, on 10% of observations, observers had to wait in line for entry, with an average wait time of 6.17 min ($SD = 4.73$). After 24-h PT, observers had to wait in line on 13% of observations, with an average wait time of 9.75 min ($SD = 7.99$). Independent t-tests indicated these differences were not statistically significant.

Alcohol and drug use

Independent t-tests also indicated there were no significant differences in the observed proportion of patrons stockpiling drinks (26% vs 27%), buying more than four drinks at one time (8% vs 8%), or showing signs of drug use (73% vs 81%) after the introduction of 24-h PT. Signs of drug use were observed during 390 (77%) observations. The most common of these included people appearing intoxicated, but obviously not from alcohol (n = 363), observers witnessing an exchange of money for small items (n = 79), observers witnessing drugs being ingested by patrons (n = 45), and observers seeing drug paraphernalia (n = 9).

Observation of police

Independent t-tests also showed there was no significant difference in the observation of police before or after the introduction of 24-h PT (13% of observations vs. 11% of observations, respectively).

Pre versus post introduction of 24-h public transport

To determine the impact that the introduction of 24-h PT had on a number of NTE indicators, four chi square tests of association were conducted to determine whether 24-h PT (before and after 24-h PT) was associated with the proportion of total capacity of the venue, the proportion of patrons showing any sign of intoxication, the proportion of patrons who were too intoxicated to remain in the venue, and the proportion of patrons showing any signs of drug use for each hour that observations were conducted.

There was no significant association between the introduction of 24-h PT and the observed proportion of patrons in venues (Fig. 1a), the observed proportion of patrons showing any signs of intoxication (Fig. 1b), or the proportion of patrons being observed as too intoxicated to be currently in the venue (Fig. 1c). As shown in Fig. 1d, there was also no significant association between the introduction of 24-h PT and the proportion of patrons showing any signs of drug use throughout the night. A Bonferroni correction ($\alpha = .003$) was applied to all analyses. All chi-squares were re-run to account for potential seasonality by matching months (i.e. October and November before and after 24 h PT); the percentage of those who were showing any sign of intoxication was significantly higher after the introduction of 24 h PT ($\chi^2 = 51.51$, $p < 0.001$). No other significant differences were observed.

Study 2 – patron interviews

A total of 432 persons were approached to participate, with an agreement rate of 60%. After participants with missing data on key variables, or who were 18 years of age were removed, the final sample comprised 207 participants (see Table 2 for sample characteristics). Males were significantly more likely to agree to participate than females (63% agreed vs. 47% agreed; $\chi^2 = 7.55$, $p < 0.01$).

Participants reported that they had consumed six drinks on average prior to the interview, and at the time of interview the average BAC reading was 0.041% (see Table 3), which is below the legal driving limit for fully licensed drivers in Australia.

Behavior change since 24-h public transport

On average, participants reported spending 3.27 ($SD = 1.89$) more hours drinking after the introduction of 24-h PT. One in 10 people (10%) reported that they pre-drink more now that 24-h PT is available; reporting an average increase of 3.32 more standard drinks ($SD = 2.61$). Less than 5% of participants reported that they pre-drink less ($M = 4.28$ fewer drinks, $SD = 2.98$), and the remainder (85%) said they had not changed their pre-drinking behavior. Fig. 3 shows the distribution of BAC, amount of money spent, number of drinks consumed, and time spent out after the introduction of 24 h PT.

Six people (5% of those who responded) reported that they take more drugs now that 24-h PT is available. Two participants (2%) reported taking less drugs, and an overwhelming majority of the sample (93%) reported that they have not changed their drug use.

Seven participants (3%) reported experiencing more aggressive, unwanted sexual attention, or alcohol-related injury incidents since the introduction of 24-h PT. Five of these incidents were physical, one was verbal, and one was unwanted sexual attention. There were no reports of additional alcohol-related injuries since the introduction of 24-h PT.

Public transport use

One hundred and twenty nine (62%) participants reported that they planned to take the train home on their current night out. As shown in Fig. 2, 73% of the 106 participants who responded to the question, reported usually getting the train home between 1am and 6am- the new 24-h PT time.

Ninety four participants (56%) said they use trains more regularly since the introduction of 24-h PT. Eight participants (5%) said they use trains less regularly, and 65 (39%) said they have not changed the regularity of train use, despite 22% reporting now using trains after 1am.

Time and money spent in night time economy

Eighty six participants (44%) said they stay out for longer since the availability of 24-h PT. On average, participants reported staying out 3.27 ($SD = 1.89$) more hours. Seven people (4%) said they spent less time out since the introduction of 24-h PT ($M = 2.66$, $SD = 1.21$), and 101 (52%) said they have not changed the amount of time they spend out in the NTE.

Over a quarter of the sample (27%) reported spending more money on a night out since the introduction of 24-h PT, an average of $60 ($SD = $71.50) more. Thirty participants (17%) reported spending less money ($M = $38.2, $SD = $25.94), and 97 (56%) said they spend the same amount of money as they did prior to 24-h PT.

Discussion

The current study used a mixed-method approach to determine whether the introduction of 24-h public transport in Melbourne has impacted on nightlife venues and nightlife patron behaviors. Given the

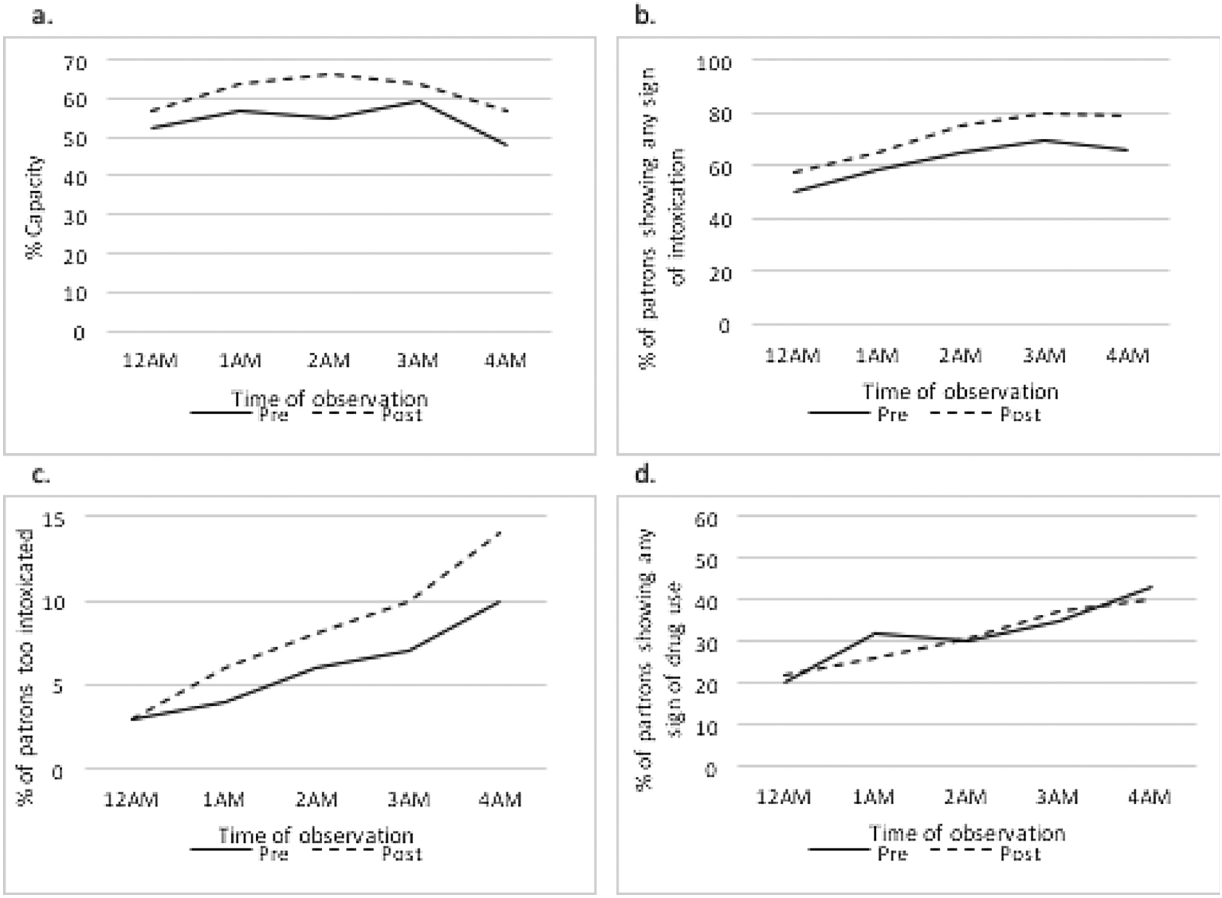

Fig. 1. Proportion of patrons (a), showing intoxication signs (b), too intoxicated (c), and signs of drug use (d) by time of observation.

Table 2
Sample Characteristics.

	N	%
Gender		
Male	120	62.2%
Female	73	37.8%
Age		
18-20	55	26.7%
21-25	92	44.7%
> 25	59	28.6%
Time Interviewed		
11pm-12am	26	12.6%
12am-1am	41	19.8%
1am-2am	51	24.6%
2am-3am	43	20.8%
3am-4am	14	6.8%
4am-5m	22	10.6%
5am-6am	10	4.8%
Drug use that evening prior to interview	25	12.1%
Type of drug used among those who had consumed drugs[a]		
Ecstasy	11	44.0%
Cannabis	7	28.0%
Cocaine	2	8.0%
Methamphetamine	1	4.0%
Prescription Drugs	2	8.0%
Ketamine	1	4.0%
Experienced physical aggression past 3 months	38	18.4%
Experienced verbal aggression past 3 months	54	26.1%
Experienced unwanted sexual attention past 3 months	38	18.4%
Experienced alcohol-related injuries past 3 months	25	12.1%

* Some variables do not sum to the total *N* due to missing data.

[a] Drug use percentages refer to those who reported consuming illicit substances.

cumulative cost of implementing this 24-h PT trial is approaching AU $200 million, it is important to understand its impact on the nightlife community members and nightlife stakeholders it is targeting.

After the introduction of 24-h public transport there were no significant differences in venue characteristics such as the observed proportion of people within venues, or significant associations with the proportion of patrons showing any sign of intoxication or of being too intoxicated (i.e., showing more than three signs of intoxication). When the same months were compared before and after 24 h PT, however, there was a significant increase in the proportion of those who were observed to be showing any sign of intoxication in the venue. These observed higher levels of intoxication may be a result of some patrons feeling comfortable about consuming higher levels of alcohol given they do not need to stay below the Australian legal blood alcohol content limit to drive (0.05 g/100 mL). Alternately, they may have more money available due to a cost-effective means of travelling home, or the change may reflect longer periods of pre-drinking. The lack of overall change from before to after 24 h PT may indicate that there is not an increase in the number of people attending the nightlife, instead the nightlife patrons may have changed their mode of transportation from a taxi/Uber, for example, to a 24-h PT option, such as trains. This is particularly relevant for those who live some distance from the NEP for whom a taxi/Uber would have been expensive compared to the small cost of public transport (a metro train trip is approximately AUD $4.00). Most participants who were interviewed also reported that they had not changed their pre-drinking behavior or drug use after the introduction of 24-h PT. For those who did pre-drink, 24-h PT may provide a cost effective means of travel into the city later in the evening and allow patrons to pre-drink at home for an extended period of time, far beyond the last available evening train prior to 24 h PT (usually 11 pm-12am). Importantly, almost half the sample were spending more

Table 3
Alcohol Consumption behavior of patrons who were interviewed.

	M (SD)	Median
Number of standard drinks consumed that evening prior to interview	6.51 (5.79)	6.00
If standard drinks were consumed prior to attending city, how many were consumed (pre-drinking)	2.44 (4.18)	0.00
BAC at time of interview	0.041% (0.05)	0.028%

time in the NTE, and over a quarter reported spending more money, which is of great economic benefit to licensees. Further, a large majority of participants reported that they now usually take the train home between 1am and 6am- an option that was not available to them previously.

The average BAC of participants in study 2 was lower than other studies in which nightlife interviews have been conducted. For example, in the POINTED study, the average BAC of participants was 0.054% (Miller, Pennay, Jenkinson et al., 2013), indicating that the current sample may be different to other nightlife samples. This may be due to participants being interviewed when they are leaving the city, at which point their intoxication levels are likely to be decreasing, particularly if they have been waiting at the station for their hourly train prior to being interviewed. This is consistent with findings from Miller et al. (2014) who identified that the peak BAC in Melbourne was 2am, after which point BAC decreased. As such, it is likely these patrons were on the descending arm of the BAC curve, whereby fatigue sets in, prompting patrons to go home (Holdstock & Wit, 1998).

Only a very small proportion of participants reported experiencing more incidents of aggression, unwanted sexual attention, or alcohol-related injuries in and around licensed venues since the introduction of 24-h PT. The limited number of additional incidents may be associated with the increased number of protective service officers in and around train stations, potentially deterring anti-social behavior. Alternatively, the sample recruited for the current study may be biased toward under-reporting of negative incidents due to their personal belief that the 24-h PT system is useful. Further, self-report of aggressive incidents, unwanted sexual attention or alcohol-related injuries may be an under-representation of actual incidents as a result of recall bias (Hughes et al., 2008; Schnitzer et al., 2010), particularly as participants were asked to recall incidents that had occurred during the last 8–12 months. It would have been useful to also ask participants about whether they had experienced less incidents, to determine whether such a change was as small as those experiencing more incidents, and potentially a result of chance. As such, investigation of the number of people using 24-h PT and alcohol-related harms in the nightlife, including injuries and assaults, requires further investigation.

There were limitations to the current study that should be considered when interpreting the findings. In regard to Study 1, data were collected for the three Spring/Summer months leading in to the introduction of 24-h PT as this was when the trial was announced. The remainder of observations were conducted throughout the following year, including in Winter. This is likely to have reduced the possibility of finding significant results, given crowd numbers are likely to be smaller in the winter months. Ongoing monitoring of these trends will be important to enable exploration of seasonal effects, or long term impact on crowd numbers. In regard to Study 2, recruitment was targeted; patron interviews were conducted at a train station, where the sample would most likely be train users, enabling data to be collected around PT use at night. As such, participants are likely to have been positively biased toward using PT. Further investigation of 24-h PT should attempt to capture a broader sample of nightlife patrons from a variety of different areas, such as outside of licensed venues. Recruiting participants outside a train station also meant that participants may not have been able to complete the interview given they had a train to catch, potentially reflected in the participant agreement rate being lower than previous in-situ nightlife studies (e.g. Miller, Pennay, Droste et al., 2013). Third, we did not ask participants what their purpose for being in the city was, and as such we could not clearly distinguish between those who had been in the city on a night out, or who were travelling for work. Fourth, the interviews required participants to recall behaviors over the past year, which may have resulted in some recall bias. Finally, participants were not asked to distinguish between the cost of transport and the cost of their night out, therefore any changes in spending may be attributable to alcohol consumption, entertainment costs, or changes in travel practices.

Conclusions

The implementation and ongoing availability of 24-h PT has come at a substantial economic cost to Victorians. However, it appears that a substantial proportion of nightlife patrons are staying out longer, and are spending more money in the night time economy since it became available. Given the small sample size and targeted recruitment method for interviewing participants, it is important to explore further whether 24-h PT has impacted on wider trends of alcohol-related harms, such as

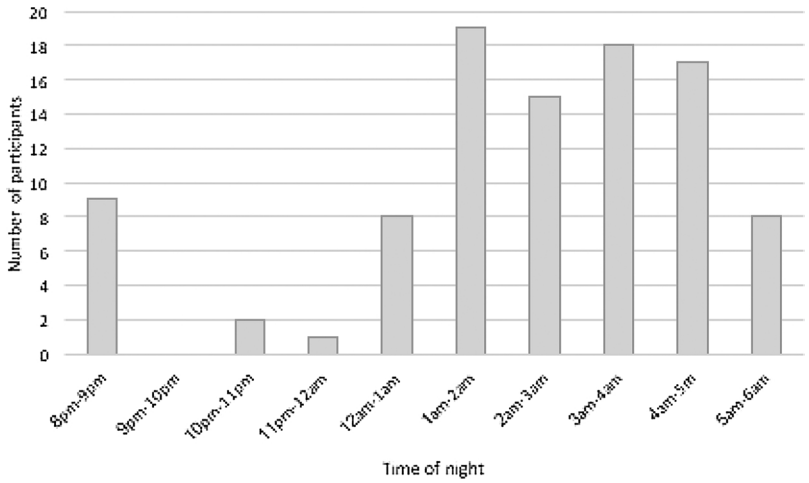

Fig. 2. Time participants reported they usually get the train home.

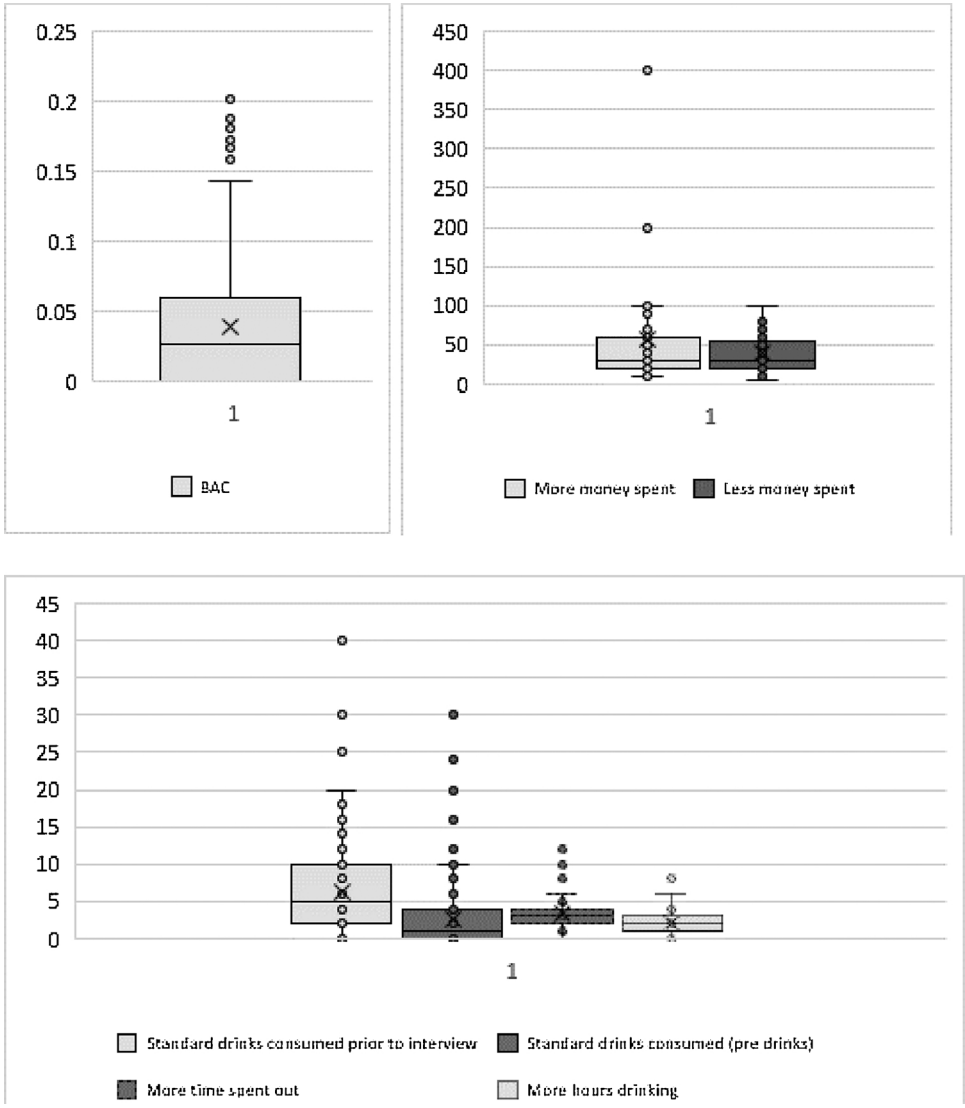

Fig. 3. Box and Whisker Plots highlighting changes in BAC, money spent, drinks consumed, and time spent out after 24 h PT.

alcohol-related ambulance attendances and assaults.

Declarations of competing interest

Peter Miller receives funding from Australian Research Council and Australian National Health and Medical Research Council, grants from NSW Government, National Drug Law Enforcement Research Fund, Foundation for Alcohol Research and Education, Cancer Council Victoria, Queensland government and Australian Drug Foundation, travel and related costs from Australasian Drug Strategy Conference. He has acted as a paid expert witness on behalf of a licensed venue and a security firm.

References

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,* (September), 591–599.

Coomber, K., Droste, N., Pennay, A., Mayshak, R., Martino, F., & Miller, P. G. (2017). Trends across the night in patronage, intoxication, and licensed venue characteristics in five australian cities. *Substance Use & Misuse, 52*(9), 1185–1195. https://doi.org/10.1080/10826084.2017.1302955.

Coomber, K., Pennay, A., Droste, N., Mayshak, R., Martino, F., Bowe, S. J., ... Miller, P. G. (2016). Observable characteristics associated with alcohol intoxication within licensed entertainment venues in Australia. *The International Journal on Drug Policy, 36*, 8–14.

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

Graham, K., Bernards, S., Osgood, D. W., & 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*, 1569–1580.

Graham, K., & Homel, R. (2008). *Raising the bar: Preventing aggression in and around bars, pubs and clubs.* Portland: Willan Publishiing.

Holdstock, L., & Wit, H. (1998). Individual differences in the biphasic effects of ethanol. *Alcoholism, Clinical and Experimental Research, 22*(9), 1903–1911. https://doi.org/10.1111/j.1530-0277.1998.tb05897.x.

Homel, R., Carvolth, R., Hauritz, M., Mcillwain, G., & Teague, R. (2004). Making licensed venues safer for patrons: what environmental factors should be the focus of interventions? *Drug and Alcohol Review, 23*, 19–29.

Homel, R., & Clark, J. (1994). The prediction and prevention of violence in pubs and clubs. *Crime Prevention Studies, 3*, 1–46.

Hughes, K., Anderson, Z., Morleo, M., & Bellis, M. A. (2008). 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.

IBM Corp (2014). *IBM SPSS statistics, version 23.* Armonk, NY: IBM Corp.

Liquor and Gaming (2015). *Intoxication guidelines.* fromhttp://www.liquorandgaming.nsw.gov.au/Documents/liquor/serving-alcohol-responsibly/gl4003-intoxication-guidelines.pdf.

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.

Miller, P., Pennay, A., Jenkinson, R., Droste, N., Chikritzhs, T., Tomsen, S., & Lubman, D. I. (2013). Patron offending and intoxication in night-time entertainment districts (POINTED): A study protocol. *The International Journal of Alcohol and Drug Research, 2*(1), 69–76.

Miller, P. G., Pennay, A., Droste, N., Jenkinson, R., Chikritzhs, T., Tomsen, S., ... Lubman, D. I. (2013). *Patron offending and intoxication in night time entertainment districts (POINTED): Final report*Available at:. Geelong, Australia: NDLERF. http://www.ndlerf.gov.au/pub/Monograph_46.pdf.

Miller, P. G., Tindall, J., Sonderlund, A., Groombridge, D., Lecathelinais, C., Gillham, K., ... Wiggers, J. (2012). *Dealing with alcohol and the night-time economy (DANTE): Final report*Geelong, Victoria: National Drug Law Enforcement Research Fund.

Public Transport Victoria (2017). *Night Network- all night public transport on weekends.* fromhttps://getinvolved.ptv.vic.gov.au/night-network-all-night-public-transport-on-weekends.

Schnitzer, S., Bellis, M. A., Anderson, Z., Hughes, K., Calafat, A., Juan, M., ... Kokkevi, A. (2010). Nightlife violence: A gender-specific view on risk factprs for violence in nightlife settings: A cross-sectional study in nine European countries. *Journal of Interpersonal Violence, 25*(6), 1094–1112.

Wilkinson, C., Livingston, M., & Room, R. (2016). Impacts of changes to trading hours of liquor licenses on alcohol-related harm: A systematic review 2005–2015. *Public Health Research & Practice, 24*(4).