

Pub crawl: alcohol use among students attending organised drinking events

Zara Quigg, Karen Hughes and Mark A Bellis



Key findings and recommendations

- In total, 281 students attending commercial pub crawls were interviewed and breathalysed. Four pub crawls in three English cities were surveyed. The pub crawls differed widely in their size, nature and management, with location A (visited twice) involving around 1,000 students on each occasion, location B around 600 and location C around 150.
- At the point of interview, participants who had drunk alcohol reported having consumed a median of nine units (eight for women, 11 for men).
- Following the interview, participants expected to consume an additional six units (five for women, six for men). Thus, the total expected median alcohol consumption over the course of the pub crawl was 15 units (13 for women, 18 for men).
- The mean BAC score of drinkers at the point of interview was 0.10%BAC.
- By the end of the night out, modelled BAC data suggest that the majority of students would have had BAC levels well over the legal driving limit (0.08%BAC). High BAC levels have associations with health risks, injuries (e.g. falls, violence) and anti-social behaviour.
- In the follow-up survey (n=43), 14% of students reported that they had hurt themselves (e.g. fallen over), 9% vomited and 7% had been in an argument during the pub crawl. A smaller proportion (2%) reported perpetrating anti-social behaviour.
- The vast majority (87%) of participants had consumed alcohol before going out to join the pub crawl (pre-loading). Such alcohol use should not be considered separate from an organised event but rather a major aspect of students' pub crawl participation. Organisers should take measures to discourage pre-loading and spread the message that those who are already intoxicated will not be permitted on the event.
- In a follow-up survey, conducted the day after the pub crawl, a fifth of students reported having consumed alcohol in the street on the night of the event (despite each location having street drinking bans in place). Pub crawl organisers and local partners, such as the police, need to ensure students are aware that it is illegal to drink alcohol in streets where a street drinking ban is in place, with relevant measures put in place to prevent this occurring.
- Interventions that aim to tackle alcohol misuse and related harms on student pub crawls should not focus solely on participating licensed premises, but consider, for example, the impact of pre-loading and street drinking on areas visited by students on their way to, around and home from the pub crawl.
- In the follow-up survey, 14% of students reported being involved in sexual activity or having been groped during the pub crawl. In location A, pub crawl stewards were observed promoting sexualised behaviour. Sexual health messages should be promoted amongst staff and students, whilst stewards should be discouraged from encouraging risky behaviour amongst pub crawl participants.
- Many pub crawl participants will be entering licensed premises already drunk. Participating venues should be reminded that it is illegal to sell alcohol to drunk people. Pub crawl organisers should discourage participants from getting drunk, for example by promoting soft drinks. Only four individuals surveyed for this study reported having consumed a soft drink by the time of interview.
- Despite organisers implementing a range of measures to manage and supervise the pub crawls, in the larger events (here location A) the number of participants appeared to make such measures relatively ineffective. Establishing an upper limit on the size of pub crawls (which may vary depending on location) may be a useful mechanism for ensuring crawls are sufficiently supervised, reducing negative consequences and limiting their impact on public services.
- Local partners, universities and student unions should share knowledge and experiences of commercial pub crawls in their towns and cities, providing information of well and poorly managed events, and the factors that contribute to this.

1. Introduction

Student pub crawls are the subject of growing concerns among health organisations, criminal justice agencies, student representatives and other groups.¹⁻⁴ The organised movement of large numbers of students between pubs in town and city centres has attracted widespread media attention, typically highlighting intoxication and anti-social behaviour by student participants.¹⁻⁴ Such incidents have led to organisations, such as the National Union for Students, to call for a ban on organised pub crawls.⁴ Despite this, little is currently known about actual drinking behaviours by students participating in organised pub crawls.

Pub crawls are not a recent phenomenon; according to the Oxford Dictionary the term pub crawl, defined as “a tour taking in several pubs or drinking places, with one or more drinks at each”, has been used since the early 20th Century.⁵ However, whilst pub crawls have typically been organised by student bodies and societies (see Box 1), the mass commercial events that are the focus of current concerns are a relatively recent phenomenon. Across the UK, a number of commercial student event organisations have been set up, often managing numerous events across the country (Box 2).

Drinking alcohol often forms a major part of student social events. Universities themselves tend to have at least one student bar licensed to sell alcohol, often used as a place for meeting people, socialising and having fun. Drinking alcohol, particularly to excess, appears to be the norm amongst the student population. For instance, in a university study, first year students reported consuming an average of 18.9 units per week (males, 24.0 units; females 15.4 units).⁶ Whilst levels of drinking may decrease over the course of undergraduate studies (i.e. from year 1 to 3), particularly high levels of alcohol are consumed by a substantial number of students in all years, including those in their final year.⁶ Over half (56%) of students from

one university reported binge drinking¹ at least once in the previous seven days.⁷

Excessive alcohol consumption amongst university students is a concern. A review (2002) suggests that female and male binge drinking levels amongst students may exceed those of their peers in the general population.⁸ High levels of drinking have been found to have negative impacts on student’s studies, finances and physical and mental health.^{6,7} For example, in one UK study, 77% of students agreed that their alcohol consumption was having a negative effect on their finances, 48% on their physical health and 34% on their studies.⁶ Further, risky lifestyle factors amongst students, such as binge drinking, have been found to be accompanied by other unhealthy behaviours, such as a lack of exercise or a healthy diet.⁷

Alcohol misuse is associated with a wide range of health and social problems, including public disorder, violence, road traffic crashes, unintentional injuries and risky sexual behaviour.⁹⁻¹¹ The costs of alcohol misuse are

Box 1: Seven Legged student pub crawl, Nottingham

The Seven Legged student pub crawl is held annually in Nottingham. In 2009, the event, which is organised by the University of Nottingham’s fundraising and events team, attracted over 6,000 students. The event requires a team of seven. Six of the team members are tied together in a similar fashion to a three legged race at school. The seventh member acts as the 'runner' buying the team drinks at each of the pubs which they attend. All teams must have their own fancy dress code. At the end of the evening the teams end up in a final destination (e.g. nightclub). The event logo states: study by day: stagger by night. <http://www.7legged.moonfruit.com>

¹ Here defined as: females, 4+ alcoholic drinks; males, 5+ alcoholic drinks in one drinking session.

vast; in England and Wales alone alcohol misuse is estimated to cost around £20 billion per year^{2,12}. In addition to acute harms, alcohol misuse can contribute to long term health problems, such as alcoholic liver disease.¹³ Recent changes in nightlife environments and drinking patterns, including changes to opening hours and an increase in pre-loading (i.e. drinking at home or a friend's home before a night out), also have implications for levels of alcohol consumption and related issues. For example, one study shows that compared to those who do not pre-load, those that do are 2.5 times more likely to be involved in a fight whilst on a night out.⁹

However, little is known about actual levels of alcohol consumption on student pub crawls in the UK. This study will address this gap in

knowledge by measuring and monitoring alcohol consumption, blood alcohol levels and drunkenness amongst students on pub crawls across three English cities.

This study aims to:

- Understand alcohol consumption and drinking patterns among students on commercial pub crawls;
- Determine blood alcohol concentration levels among students on commercial pub crawls;
- Explore any negative outcomes associated with participation in commercial pub crawls; and,
- Make recommendations to reduce potential and actual health and social costs associated with pub crawls.

Box 2: Example of the set up and management of a commercial pub crawl

Advertising and promotion: these typically includes posters and flyers distributed amongst students (e.g. throughout halls of residence) and at locations often visited by students. Events may be promoted on social networking sites such as Facebook.

Registration: students can usually register their interest in the pub crawl or future pub crawls via dedicated websites or social networking sites.

Payment and receipt (t-shirt) collection: pub crawls tend to cost around £10 to join, with all participants receiving a pub crawl t-shirt as receipt of payment. Participants are usually only allowed on to the pub crawl, and into participating pubs, if they have the t-shirt with them. Payment and t-shirt collection is usually made in advance of the pub crawl, with t-shirts obtained directly from the event organiser or selected participating pub crawl venues.

Event schedule: these are usually provided to all pub crawl participants (often printed on the t-shirt). Typically, the pub crawl has a set time within each participating venue. For larger events, participants may be split into smaller groups, with groups visiting participating venues at separate times.

Stewards: stewards supervise the events and are often identified by high visibility jackets. Their role can include: chaperoning participants around the pub crawl venues; ensuring their safety at key points (e.g. road safety); and supervising their behaviour.

Medical services: for large events some commercial organisers provide onsite medical services.

Policing: discussions between pub crawl organisers and local partners, such as the police, are often held, informing partners on when and where events will take place and expected participation numbers. For large events, this may result in additional policing.

² Based on costs due to damage to health, crime and disorder, and the loss of work productivity.

2. Methods

The study targeted students who attended four commercial pub crawls in three locations in England. There were large differences in the nature and management of each event, and these are summarised in Box 3. All events took place between October 2010 and January 2011. On each evening, researchers worked in teams of two to recruit participants (supervised by a senior researcher) and implement a short survey and breath test. Surveys took place between the hours of 7.00pm and 2.10am; over a tenth (13.7%) before 9.00pm, 68.6% between 9.00pm and midnight, and 17.7% after midnight. Participants were recruited in streets surrounding the pub crawls. Individuals who appeared to be highly intoxicated were not approached to take part in the research due to ethical issues regarding their ability to

provide informed consent and possible risk for the researchers. Eligible individuals were approached and provided with an explanation of the research; only those who consented to participate were recruited.

Participant interview

A short questionnaire was conducted with participants covering: how much alcohol they had consumed up to the point of interview, when they started drinking and where; when they had eaten their last meal; their age; whether they were a student; whether they felt drunk; whether they had experienced any negative behaviours (e.g. vomited) up to the point of interview; how much more alcohol they expected to consume over the remainder of the night; and the time at which they expected to return home that night.

Box 3: Description of pub crawl locations (from researcher observations)

Location A (surveyed for two events): large city centre, around 1,000 participants per event. Participants appeared to join the pub crawl at no set time, roaming freely between pub crawl and non-pub crawl venues, with stewards managing safety at key points (e.g. road safety) (the size of the event appeared to prevent stricter control). Many participants were in the streets surrounding the pub crawl, often drinking alcohol in the street, with many appearing not to visit the bars but use the event as an opportunity to socialise and join in the atmosphere. Large queues to bars seemed to deter many people from entering. The pub crawl location/area appeared busier than a typical Saturday night. At the end of researcher data collection (past 2am) the streets surrounding the pub crawl remained crowded with pub crawl participants.

Location B: smaller city centre, around 600 participants at the event. The pub crawl appeared to have more formal control than location A, with participants clearly being chaperoned by stewards between bars (although participants appeared to join the pub crawl at no set time). Although there were queues to get in to bars, these were largely adhered to and disappeared quickly. Some participants were roaming freely between pub crawl venues. The pub crawl culminated in students entering a final destination nightclub around midnight, with the streets surrounding the pub crawl quite after 1am.

Location C: smaller city centre, around 150 participants at the event. The pub crawl was strictly managed, with participants split into two groups and chaperoned by stewards between bars. The majority of participants appeared to join the pub crawl at the advertised start time. Participants were kept together whilst walking in between bars; there was no apparent rowdiness or movement away from the pub crawl. The event was observed by local councillors. It is not known to what extent this affected the management strategy of the event. The pub crawl culminated in students entering a final destination nightclub around midnight, with the streets surrounding the pub crawl quite after this time.

Participants were also asked for their views on the pub crawl, how many bars they had visited and number of drinks consumed per bar. The questionnaire was completed by the researcher on behalf of the participant.

Breath alcohol concentration (BrAC) test

A BrAC test was conducted with all participants who had consumed alcohol. The Lion Alcometer® 500 Breath Alcohol Kit was used. The analytical response time of the test is normally within 30 seconds, but within five seconds at the 'zero' alcohol level. Each participant was provided with their own mouthpiece, which was discarded safely once used. Their breath test score was recorded on their completed questionnaire.

Internet-based follow-up survey

Participants in three of the four pub crawls (covering all locations) were asked to take part in an internet-based follow-up questionnaire the day after the pub crawl, which covered: their views and experiences of the pub crawl (including the morning after); when, how and who they went home with; and alcohol and food consumption during the pub crawl. Survey details were sent to participants via email (provided by them on the evening of interview).

Sample

Overall, 281 people took part in the study (location A visited twice, n=174; location B,

n=70; location C, n=37: 80% compliance rate). Forty three participants completed the follow-up survey.

Analyses

Data were entered and analysed in the statistical package SPSS version 17. Breath alcohol concentration (BrAC) scores were converted to blood alcohol concentration (BAC) for analyses. Analyses utilised descriptive statistics, and Chi-squared, Mann Whitney U and Kruskal Wallis tests. To calculate BAC at the end of individuals' time out drinking, a generalised linear model (GLM) was developed using information collected at the time of interview as training data (see Appendix 1). Appendix 2 provides details of the study's technical and statistical limitations.

Researcher observations

Pub crawls were observed by researchers from the beginning of the crawl up until participants started entering the final pub crawl location (i.e. nightclub). Researcher observations have been used to supplement findings throughout this report.

Research ethics

Ethical approval was sought and obtained from Liverpool John Moores University Research Ethics Committee. All research participants were informed of the purpose of the research and assured of confidentiality.

3. Findings

Sample characteristics

Just over half (51.6%) of those who took part in the study were male. Ages ranged from 17 to 38 years, with the majority (90.8%) being aged 18-21 years. A third (33.1%) stated that they were on a night out with 1 to 5 people, 44.4% with 6 to 10 people and 22.5% with more than ten people. At the time of interview, 57.1% had already started the pub crawl (i.e. been to at least one pub crawl bar); the remainder were on their way to it (most [90.0%] of whom had already started drinking). The majority (86.6%) of participants stated that they expected to go home later

than 2am; 43.9% expected to go home at 4am or later. Over six in ten (62.8%) had not eaten a meal for at least four hours prior to interview.

About the pub crawl

Participants were asked why they chose to attend the pub crawl. Responses were recorded in free text, and the main themes that emerged were because:

- It would be fun/good,
- Of peer pressure from friends; and,
- Of the reputation of the pub crawl they were attending.

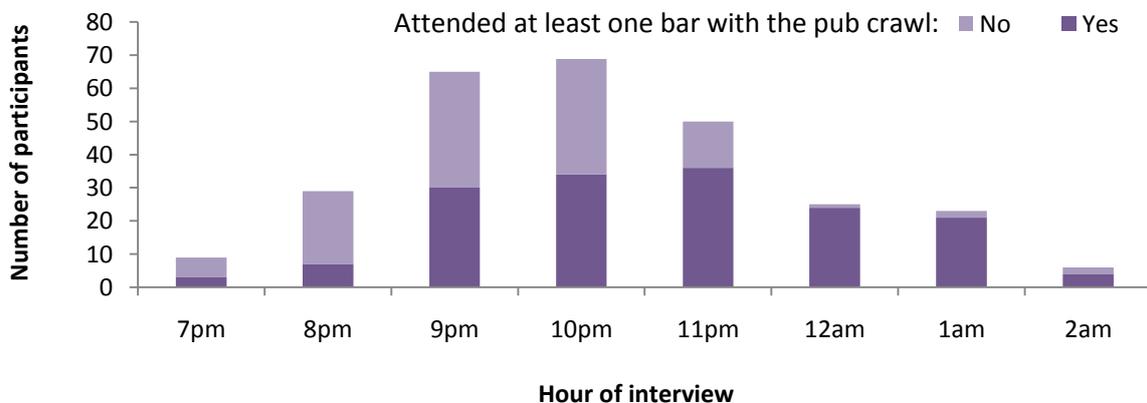
Pub crawls started in each location at 7pm. However, whilst all individuals interviewed were out as part of the pub crawl, some had not actually attended a bar that was part of the organised event at the time of interview. Of these, the majority were on their way to attending the pub crawl. There was a significant difference between locations in the proportion of interviews who had attended a bar as part of the pub crawl at the time of interview (location A, 39.9%; B, 88.6%; C, 78.4%: $\chi^2=56.09$, $p<0.001$). Particularly at location A, informal discussions between researchers and pub crawl participants suggests that some, despite paying to attend the pub crawl, had no intention of entering a pub crawl bar, but rather were there to enjoy the overall atmosphere. Queues to enter the bars and crowdedness inside them were often cited as reasons for not wishing to enter, with participants stating that other non-pub crawl bars were selling cheaper alcoholic drinks, and they were more likely to enter these venues. Figure 1 shows the number of participants interviewed during each hour of study by whether they had attended at least one bar on the pub crawl. Here, amongst those interviewed between 10pm and 10.59pm, 59.3% of interviewees had not visited a pub

crawl bar. In location A, only 8.3% of those interviewed during this time had been to a pub crawl bar, compared with all interviewees at location B and 86.7% at location C.

Of those who had already visited at least one pub crawl bar, the median number of bars visited at interview was three and the median number of alcoholic drinks consumed per bar was two. Only 3% (n=4) of participants reported having consumed non-alcoholic drinks in pub crawl bars. There was no significant difference in the median number of drinks per bar between age groups and genders. Those who were already on the pub crawl (had been to bars hosting the event) were asked what they thought of it (responses were recorded in free text). Half (51.7%) stated that the pub crawl was “good” and 34.5% that it was okay. Other responses included: “packed”, “not very good”, “cheap drinks” and “expensive”.

Reasons for attending the pub crawl included: it would be fun/good; due to peer pressure from friends; and, due to the reputation of the pub crawl they were attending.

Figure 1: Number of survey participants by whether they had attended at least one bar within the pub crawl at the time of interview



Drinking behaviours

The majority (95.0%) of participants had consumed alcohol at the time of interview. Fourteen participants stated that they had not been drinking, three of whom did not expect to drink alcohol all evening. At the time of interview, drinkers had been drinking for a median of 3.25 hours. Nearly a third (31.5%) had started drinking before 7pm, while only around one in ten started drinking later than 9pm. The majority (85.5%) of drinkers reported having consumed alcohol at home (including halls) or a friend's home before coming out that night (termed pre-loading). There were no significant differences in pre-loading between locations or genders. Several participants reported having consumed alcohol on the streets and, particularly in location A, researchers observed many students consuming off sales alcohol in the streets.

The majority (85.5%) of drinkers reported pre-loading.

Participants were asked to provide details of all drinks consumed up to the point of interview. The majority of drinkers reported having consumed shots (71.8%; i.e. spirits), 41.0% beer/lager/cider, 22.5% wine, 18.1% alcopops, 6.0% cocktails and 3.6% non-alcoholic drinks. Alcoholic drinks were converted to units to calculate total units consumed up to the point of interview³. Overall, drinking participants reported having consumed a median of nine units of alcohol that evening up until the time of interview (range, one to 40 units). There was a significant difference in reported alcohol consumption between genders (Tables 1 and 4) and between those who had pre-loaded and those who had not (pre-loaded, median = 10.0 units; not pre-loaded, 7.0: $z=-7.74$, $p<0.01$). There was no significant difference between age groups. Participants reported having consumed a median of 3.1 units of alcohol per hour of drinking up to the point of

³ Drink to unit conversion: standard glass of wine = 2.1 units; shot spirit = 1 unit; pint beer = 2.8 units; bottle beer = 1.7 units; pint cider = 2.6 units; alcopops = 1.1 units; cocktail = 2 units (www.drinkaware.co.uk).

interview. Males had drunk significantly more units per hour than females (3.6 compared with 2.7 units: $z=-3.32$, $p<0.01$). Further, participants aged 20 plus years and from location A drank significantly more units per hour than their counterparts respectively (Table 4). Figure 2 shows the number of units consumed by participants up until the point of interview, by survey hour. Amongst those interviewed before 10pm, 30.0% had consumed more than 10 units of alcohol compared with over half (50.6%) of those interviewed at 10pm or later.

Overall, participants reported having consumed a median of nine units of alcohol that evening up until the time of interview (range, one to 40.1 units).

Participants were asked how much more they thought that they would drink over the course of their night out. Overall, participants expected to drink a median of 6.0 additional units (range 0 to 30 units). There was a significant difference between genders, with males expecting to consume an additional median 6.0 units compared with 5.0 for females ($z=-3.93$, $p<0.05$) (Table 1).

Total median expected alcohol use over the night out, including that already consumed, was 15.4 units per drinker. Significant differences were observed between males and females (Table 1). In 9.6% of males and 0.9% of females, total expected alcohol consumption over the night out exceeded 40 units (Figure 3), over ten times the recommended daily units. Based on self-reported expected alcohol use, by the end of the night out over four in ten (40.9%) males and 42.6% of females would have drunk more than the recommended weekly limits in that one night out alone (Table 2).

By the end of the night out over four in ten (40.9%) males and 42.6% of females would have drunk more than the recommended weekly limits in that one night out alone.

Table 1: Alcohol consumption of drinkers over the course of the night out

	Gender			Age group (years)		
	Male	Female	p	Under 20	20 plus	p
% pre-loading	85.0	86.1	0.81	82.3	87.3	0.26
Median units consumed prior to interview (including pre-loading)	11.1	8.0	<0.01	9.0	10.0	0.51
Median expected units post interview	6.0	5.0	<0.05	5.0	8.0	<0.05
Total median units (including expected)	18.4	12.6	<0.001	14.6	18.7	0.05

* Significance (p) value obtained via Mann-Whitney U or Chi-squared Test.

Table 2: Proportion of participants consuming within and above the recommended daily alcohol limits, and above the recommended weekly limits, on the night of survey, by gender and time of their night out

Alcohol consumption:	Male		Female	
	At interview	At expected home time*	At interview	At expected home time*
Within daily limits (%)	9.4	0.9	15.0	1.9
Over daily, but within weekly limits (%)	75.8	58.3	63.3	55.6
Over weekly limits (%)	14.8	40.9	21.7	42.6

*Percentages do not add up to one hundred due to rounding.

Figure 2: Number of units consumed by participants up to the point of interview, by hour of interview

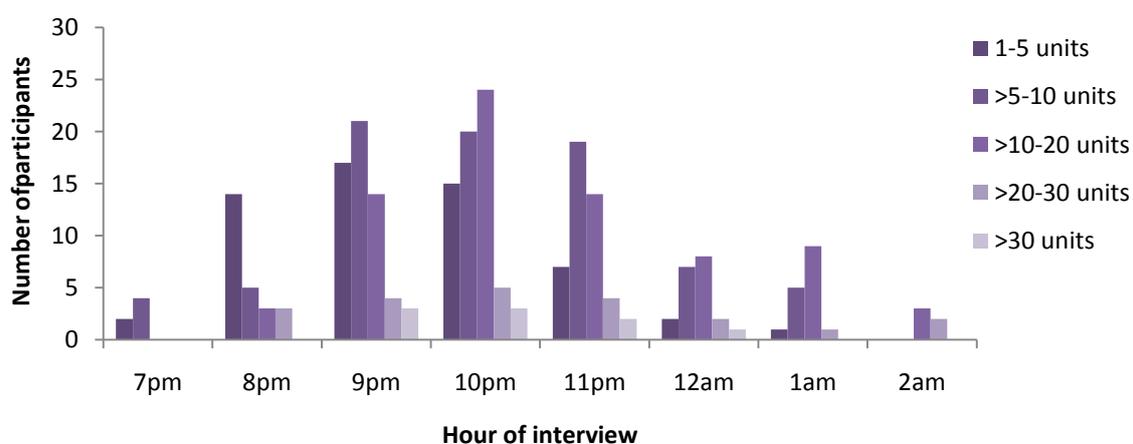
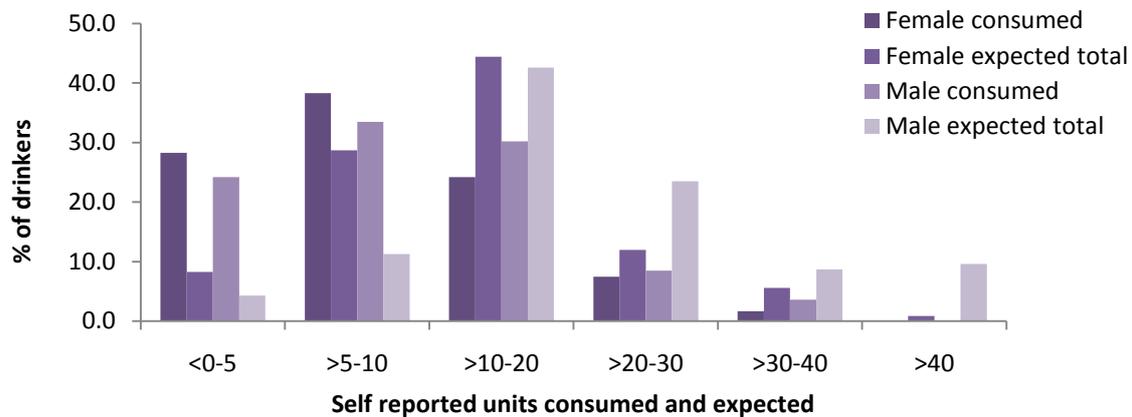


Figure 3: Number of units consumed at point of interview and individuals' estimates of expected total consumption by end of evening*



* Expected units are the sum of the units participants reported they had consumed at the point of interview and the units they expected to consume over the rest of their night out.

Blood alcohol concentration levels

The mean blood alcohol concentration (BAC) of participants (who had consumed alcohol) at the time of interview was 0.10%BAC (0.10 milligrams of alcohol per 100 millilitres of blood; range 0.0 to 0.27). There was no significant difference in BAC between genders or age groups. There was a significant difference in mean BAC between locations, with location A having the highest mean BAC (0.11%BAC; $p < 0.01$). Over half (52.1%) of participants were above the legal driving limit (0.08%BAC). The mean BAC for participants who had already reached binge drinking levels (using the definition of more than double the recommended limits) was 0.12%BAC for males and for females.

The mean BAC of participants (who had consumed alcohol) at the time of interview was 0.10%BAC.

Data were modelled to estimate the BAC of each participant by the time they said they expected to go home. The modelled data are based on an equation calculated from BAC measured at interview, number of hours drinking, total alcohol consumed at the point of interview and an interaction term (number of hours drinking multiplied by the total alcohol consumed at the point of interview). Modelled data were calculated at two time periods: the first time period was the point of

interview to test the model's goodness of fit⁴, and the second was the point at which people expected to go home. For the latter, expected additional units consumed were added to reported units already consumed. At the point at which participants expected to go home, an estimated 98.0% would have had a BAC of more than the legal driving limit (Figure 4). Nearly one in ten (9.3%) were over twice this value (0.16%BAC); expected effects to the individual here could include: reduced muscle co-ordination, double vision, sluggish reactions, nausea, depression and irritability (Table 3). Only 29 participants reported that they expected to go home before 2am. Figure 5 shows that predicted mean BAC at home time increased the later a participant expected to go home that evening, from 0.12%BAC among those who expected to go home before 2am to 0.15%BAC in those who expected to go home at 4am or later.

At the point at which participants indicated they would go home, an estimated 98.0% would have had a BAC of more than the legal driving limit (0.08%BAC).

⁴ The model explained approximately 28% of the variation.

Figure 4: Blood alcohol concentration measured at time of interview and modelled for expected home time for each individual (predicted)

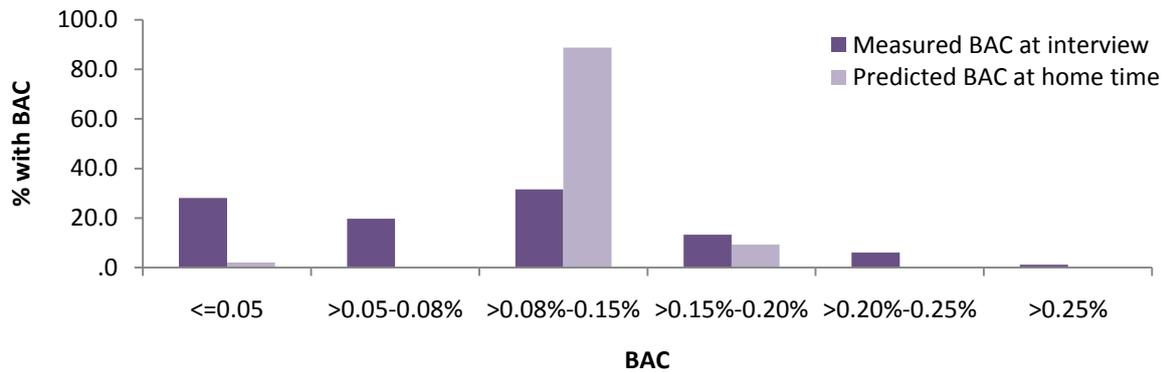
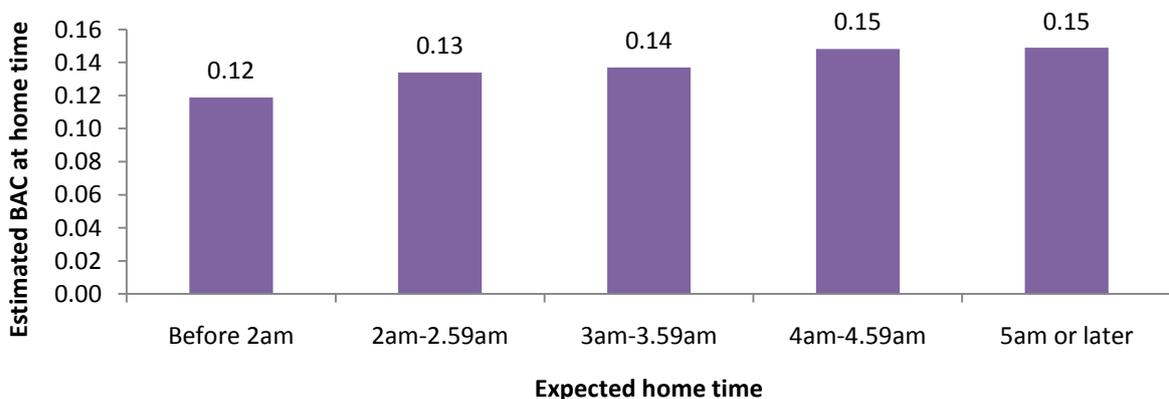


Table 3: The expected effects of alcohol at different blood alcohol concentration levels¹⁴

	Effects	Units and blood alcohol concentration (BAC)
%BAC	0.02	Warmth and relaxation
	0.05	Less control over behaviour, lowered judgement
	0.08	Legal upper driving limit
	0.10	Unsteadiness, impaired speech and emotional judgement
	0.15	Reduced muscle co-ordination, double vision, sluggish reactions
	0.20	Nausea, depression, irritability
	0.30	Gross intoxication, loss of sight and/or hearing, confusion
	0.40	Progressive stupor, 'passing out'
	0.50	Coma, paralysis of respiratory centre, death
		<p>1 unit of alcohol = 8g of alcohol</p> <p>BAC following consumption of one unit of alcohol will vary depending on the drinker, including:</p> <ul style="list-style-type: none"> • Gender; • Size; and, • How much food has been eaten. <p>Approximately one unit of alcohol increases BAC by 15mg/100ml for men and 20mg/100ml for women.</p> <p>Alcohol content:</p> <ul style="list-style-type: none"> • Pint of lager = 2-3 units (depending on strength) • 175ml glass of wine = 2.1 units • 25ml shot of spirit = 1 unit <p>Individuals vary, but it takes approximately 1 hour for the body to break down 1 unit of alcohol.</p>

Figure 5: Estimated (modelled) blood alcohol concentration of individuals by expected home time



Perceptions of drunkenness

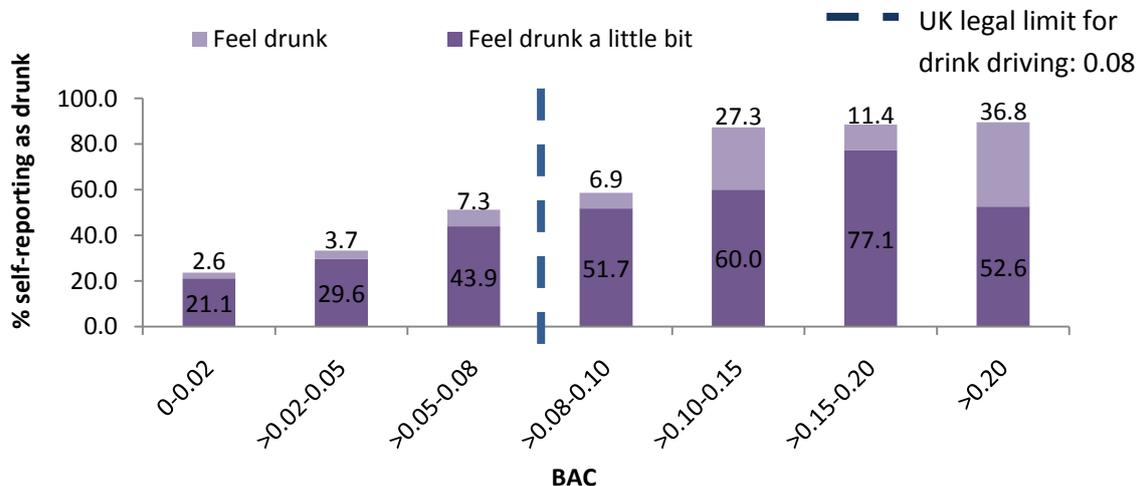
Of drinkers, 13.3% reported feeling drunk at the point of interview. A further 48.4% felt a little drunk (i.e. tipsy), but did not consider themselves to be fully drunk. There was no significant difference in proportions reporting feeling drunk between genders or age groups. Those who felt drunk had consumed significantly more alcohol than those who did not (felt drunk, median = 15.5 units; felt a little bit drunk, 10.4 units; did not feel drunk, 7.0 units: $X^2 = 30.90$, $p < 0.001$). Furthermore, they had significantly higher BAC scores (felt drunk, mean = 0.15%BAC; felt a little bit drunk, 0.12%BAC; did not feel drunk, 0.06%BAC: $f = 41.19$, $p < 0.001$) and had been drinking for a longer period at the point of interview (felt drunk, median = 4.6 hours; felt a little bit drunk, 3.5 hours; did not feel drunk, 2.2 hours: $X^2 = 47.94$, $p < 0.0001$). Before 11pm, less than 12% reported feeling drunk, whilst

after 11pm more than a fifth reported feeling drunk.

Figure 6 shows the relationship between BAC levels at the point of interview and participants' own assessment of their drunkenness. Over eight in ten (82.5%) of those with BAC scores over 0.08% considered themselves to be drunk (including drunk [19.7%] and a little bit drunk [62.8%]). By reported home time, 98.0% of drinkers are expected to have a BAC of over 0.08% and therefore the vast majority were likely to have been drunk. Similarly, 70.6% of those who had reached binge drinking levels at the point of survey stated that they felt drunk (drunk, 16.9%; a little bit drunk, 53.7%).

Of drinkers, 13.3% reported feeling drunk at the point of interview. A further 48.4% felt a little drunk (i.e. tipsy), but did not consider themselves to be fully drunk.

Figure 6: Relationship between blood alcohol concentration at interview and participants' self-reported drunkenness

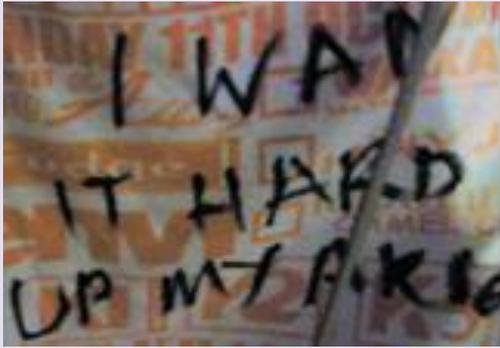


Negative experiences up to the point of interview

On the evening of the pub crawl, survey participants were asked if they had experienced a range of behaviours (from a pre-selected list) that evening up until the point of interview. A small proportion stated that they had fallen over (2.9%), been in an argument (2.5%) and vomited (1.1%).

Researcher observations

At location B and C, stewards appeared to maintained professional boundaries from pub crawl participants. However, at location A they were observed promoting sexualised behaviour in students. Here, students were provided with marker pens to write messages on their t-shirts and body indicating if they were single and looking to have fun that



Photograph 1: Text written by a friend on a pub crawl participant's t-shirt. The text states "I want it hard up my arse".

evening or not. Many students had suggestive comments written (by themselves, friends or stewards) on their clothing and body such as: "I want sex tonight"; "I want it hard up my arse"; and, "I'm good in bed" (Photographs 1 and 2). Some female students were also observed with pictures of male genitalia drawn on them.

Follow-up survey

Forty three participants took part in the

Eighty percent (80.9%) agreed that they felt involved in the pub crawl and 92.8% that they had fun.

follow-up survey. Nearly half (48.8%) had attended a pub crawl in location B, 32.6% location C and 18.6% location A. Over six in ten (60.5%) were female.

Perceptions and experience of the pub crawl

Participants were asked on a scale of 1 to 5 (1=agree, 5=disagree) how much they agreed that they felt involved in the pub crawl and had fun. Eighty percent (80.9%) agreed (selecting numbers 1 and 2) that they felt involved in the pub crawl and 92.8% that they had fun.

The follow-up survey aimed to gain a better understanding of pub crawl participants' experiences of negative outcomes following the entire night out. A fifth (20.9%) of participants stated that during the pub crawl they had drunk alcohol in the street, 14.0%

were involved in some sort of sexual activity⁵ (although no participants reported having sexual intercourse), 14.0% had been groped, 13.9% had hurt themselves (e.g. by falling over), 9.3% had vomited and 7.0% had been in an argument. A small proportion (2.3% each) reported getting lost, being offered drugs, and committing anti-social behaviour / vandalism during the pub crawl.

A fifth (20.9%) of participants stated that during the pub crawl they had drunk alcohol in the street, 14.0% were involved in some sort of sexual activity, 14.0% had been groped, 13.9% had hurt themselves, 9.3% had vomited and 7% had been in an argument.

Over six in ten (62.8%) participants reported making friends on the pub crawl; with the majority (86.0%) stating that they would attend the pub crawl again.

Leaving the pub crawl

The majority (79.1%) of participants completing the follow-up survey stated that they had stayed until the end of the pub crawl. Reasons for leaving the pub crawl before the end included:

"Because my feet were sore and I was tired"

"Tired"

"Got tired and friend was going home"

"Felt tired and didn't want to drink anymore alcohol"

"Drink spiked"

"To get food [we always get hungry on a night out]"



Photograph 2: Text written by a friend on a pub crawl participant's arm. The text states "Can I lick your face" and "Barbie".

⁵ E.g. kissing a pub crawl member who was not a regular partner.

“Got bored and ran out of money and also a girl wanted me to go back to hers”

“Boredom”

“To go to a different bar”

Upon leaving the pub crawl, over half (53.5%) of follow-up participants reported going straight home, 39.5% to a restaurant or take away and 11.6% to another bar (that was not part of the pub crawl). Over two thirds (69.8%) reported getting a taxi home at the end of the night, whilst 23.3% walked. The majority (86.0%) stated that they went home with friends; however 9.3% reported going home alone.

Food and drink

Four in ten (45.2%) participants stated that they had drunk the same amount of alcohol during the pub crawl as they would expect to on a typical night out; 42.8% stated that they drank more than a typical night out and 11.9% less. The majority (80.9%) reported feeling drunk on the pub crawl. At the end of the night, 39.5% reported eating chips, 18.8% a pizza, 4.7% a kebab and 23.3% other food items.

On average, participants reported spending just under £26 on the pub crawl (excluding costs to attend the pub crawl, e.g. pub crawl t-shirt cost, usually £10). The majority of expenditure went on alcohol (77.0%), 14.8% on transport and 8.0% on food.

The morning after

Participants were provided with a list of activities and asked if they did them the morning following the pub crawl. Four in ten (43.9%) reported attending a lecture, 5.1% went to work, 5.1% drove a car and 5.3% rode a bicycle. Participants were asked on a scale of 1 to 5 (1=agree, 5=disagree) how much they agreed that the morning after the pub crawl they felt:

- hung-over;
- healthy; and,
- sober.

A small proportion (15.4%) agreed that they felt hung-over (selecting number 2 only), 33.3% healthy (selecting numbers 1 and 2) and 59.5% sober (selecting numbers 1 and 2).

Four in ten (45.2%) participants stated that they had drunk the same amount of alcohol during the pub crawl as they would expect to on a typical night out; 42.8% more than a typical night out and 11.9% less.

Table 4: Sample characteristics, patterns of consumption and blood alcohol concentration levels of drinkers only, at time of interview

		n	Hours drinking		Total units consumed		Units per hour		%BAC	
			Median	p	Median	p	Median	p	Mean	p
Age	Under 20	171	3.3	0.34	9.0	0.52	3.0	<0.05	0.10	0.6
	20 plus	96	3.0		10.0		3.6		0.11	
Sex	Female	124	3.1	0.16	8.0	<0.01	2.7	<0.01	0.10	0.2
	Male	143	3.5		11.1		3.6		0.11	
Pub crawl location	A	161	3.3	0.10	10.6	<0.01	3.5	<0.01	0.11	<0.01
	B	69	3.5		10.0		2.9		0.10	
	C	37	2.7		6.8		2.5		0.07	
Pre-loaded	No	34	2.3	<0.001	7.0	<0.01	3.3	0.32	0.07	<0.01
	Yes	228	3.6		10.0		3.1		0.11	
Feel drunk	No	95	2.2	<0.001	7.0	<0.001	3.4	0.45	0.06	<0.001
	A little bit	120	3.5		10.4		3.0		0.12	
	Yes	33	4.6		15.5		2.9		0.15	
Eaten in last 4 hours	No	153	3.8	<0.001	11.4	<0.001	3.0	0.36	0.12	<0.001
	Yes	82	2.0		6.8		3.6		0.06	

* Significance (p) value obtained via ANOVA, Mann-Whitney U or Kruskal Wallis test.

4. Discussion

Mass, commercially-organised student pub crawls have become a common yet controversial feature of university life. They can be valued by student participants and nightlife industries, yet have attracted widespread criticism in the media and among health and other bodies due to their association with drunkenness, anti-social behaviour and damage to health.¹⁻⁴ However, little research has examined actual drinking behaviours among student participants in commercial pub crawl events. The purpose of this study was to explore drinking levels and associated behaviours amongst students visiting commercial pub crawls across England.

We studied 281 students attending four commercial pub crawls in three locations. The study was administered opportunistically in each location, with individuals who appeared highly intoxicated not being approached to participate. Consequently, the levels of drinking and drunkenness identified in this report are likely to be conservative estimates. Further, researchers relied on self-reported estimates of consumption for understanding quantities of alcohol consumed that night (surveys are known to underreport levels of alcohol consumption; Appendix 2).¹⁵⁻¹⁷ However, participants were only asked about consumption on the night of interview, therefore reducing opportunities for recall bias, and trained researchers encouraged participants to be open and honest about their consumption levels. Despite these limitations, this study provides a good insight to at least the minimum alcohol consumption levels amongst students on commercial pub crawls. Only forty three participants took part in the follow-up survey and the majority were from two of the three locations. It is not known to what extent this has skewed the results

Overall, drinkers reported having consumed a median of nine units that evening up until the

point of interview (eight for women, 11 for men). Surveys took place throughout the night and consequently participants would have been at different stages of their night out at the point of interview. However, by asking participants how much more alcohol they expected to consume before the end of the night we were able to calculate a total expected alcohol consumption of 15.4 units (12.6 for women and 18.4 for males) across the entire night out. By the end of the night, over four in ten male and female drinkers expected to consume more than the recommended weekly limits in that night alone. For female students, these levels of alcohol consumption are similar to those reported by regular female nightlife users in a study of drinking behaviours on a typical weekend night out in English city centres.¹⁸ For male students, they are slightly lower.

The mean BAC score of drinkers at the point of interview was 0.10%BAC. The mean BAC score for binge drinkers (using the definition of more than eight units for men and six for women at the point of interview) was 0.12%BAC for both males and females. By the end of the night out, modelled BAC data suggest that the majority of students would have had BAC levels well over the legal driving limit (0.08%BAC). Such levels have associations with irritability, confusion and other conditions linked to health risks, injuries (e.g. falls, violence) and anti-social behaviour.¹⁹⁻²¹ On the night of the survey, less than one in twenty students reported having experienced negative behaviours (e.g. been in an argument) up to the point of interview. In the follow-up survey (n=43), 14% of students reported being involved in sexual activity or having been groped during the pub crawl. Further, 13.9% reported that they had hurt themselves (e.g. fallen over), 9% vomited and 7% had been in an argument. A smaller proportion (2%) reported perpetrating anti-social behaviour.

Much work has been conducted to raise public awareness of alcohol units and recommended limits, and to advise them on how to prevent themselves becoming overly intoxicated and experiencing harm.²² Within universities and student unions in particular, initiatives can include policies on alcohol consumption, discouragement of drinking promotions, and advice and support.²³ Further, large commercial organisations who set up organised pub crawls for students provide sensible drinking advice (on their website) and encourage participating bars to provide free non-alcoholic drinks to participants (www.carnageuk.com). However, as this study shows, only four participants who had been to a pub crawl bar reported consuming a non-alcoholic drink, with the vast majority of participants likely to be drunk at the end of the night.

Understanding drinking patterns amongst students on pub crawls is critical to enabling the development and implementation of appropriate interventions to prevent harm. This study found that the majority (87%) of students had consumed alcohol at home or a friend's home (including student halls of residence) before going out to attend the pub crawl (known as pre-loading). This is a much higher level than observed in regular nightlife users.^{9,10} Pre-loading can be undertaken for a range of reasons, including to: avoid paying for high priced drinks in on-licensed premises; achieve drunkenness; enhance and extend the night out; socialise with friends; and reduce social anxiety.²⁴ Among students living on a low budget, cost can be a major factor and our follow-up study identified an average spend on the pub crawl of £36 per student (including joining costs). Further, a fifth reported having consumed alcohol in the street on the night of the event (despite each location having street drinking bans in place). This was an activity frequently observed by researchers during the course of the study, particularly in the largest events. In fact, prior to 11pm, at least half of all participants in the study had not yet been to a pub crawl bar despite the events starting at 7pm and this trend was particularly pronounced in the

largest events (location A). Here, several participants reported being deterred from entering pub crawl bars due to lengthy queues and crowding. Instead, they chose to remain in the streets and enjoy the general social atmosphere and use surrounding bars instead (some of which were offering cheap alcoholic drinks to students despite not being part of the official pub crawl trail).

The pub crawls studied differed widely in their size, nature and management. Location A, a large city centre, hosted the two biggest events, involving around 1,000 students on each occasion. Location B was a medium sized event (around 600 students) in a smaller city centre, whilst location C hosted the smallest event (around 150 students) again in a smaller city centre. Despite organisers implementing a range of measures to manage and supervise the pub crawl, such as stewards, in the larger events the number of participants made such measures seemingly ineffective. Location A had noticeably more stewards than the other two locations and the highest police presence, yet the high numbers of students meant that stewards appeared to have little control over participants, many of whom did not follow the pub crawl trail strictly and were able to move freely around bars and the surrounding nightlife area. Here, stewards appeared to be focused on maintaining student safety as they moved within the pub crawl area but were also observed promoting sexualised behaviour in students (e.g. writing suggestive comments on clothing such as "I want sex"). Conversely, location C appeared more tightly managed with participants strictly chaperoned between bars and strongly encouraged not to leave the pub crawl supervision. However, on the night of survey, this event was being observed by local counsellors, and it is not known to what extent this impacted on the running of the event. The event at location B appeared to be carefully managed with students also chaperoned between bars and stewards seemingly taking a more responsible approach to student safety and behaviour. The events at both location B and C culminated in students entering a final destination nightclub at around midnight. Although this was likely

the intention for the events in location A, the sheer size of the event meant that the streets remained very crowded with students when researchers ended their data collection past 2am.

The follow up study found that most participants enjoyed the pub crawl, felt a part of it, made new friends and would attend a pub crawl again. Organised events for students can bring valuable business into town and city centre night time economies during normally quiet periods. However, it is critical that they are organised in a way that does not promote excessive drinking or anti-social behaviour, or place a large burden on local services. The findings from this study suggest:

- The vast majority of pub crawl participants consume alcohol before going out to join a pub crawl. Organisers should take measures to discourage pre-loading and to spread a message that those who are already intoxicated will not be permitted on the event.
- Pre-loading and associated risks should not be considered separate from an organised event, but included in the behaviours that organisers need to manage as part of students' pub crawl experiences.
- Pub crawl organisers should work with universities, particularly student unions, to inform students of the risks associated with pre-loading and alcohol misuse prior to events taking place in the local area.
- Pub crawl organisers and local partners, such as the police, need to ensure students are aware that it is illegal to drink alcohol in streets

where a street drinking ban is in place, with relevant measures put in place to prevent this occurring.

- Interventions that aim to tackle alcohol misuse and related harms on student pub crawls should not focus solely on participating licensed premises, but consider, for example, the impact of pre-loading and street drinking on areas visited by students on their way to, between and home from the pub crawl.
- Establishing an upper limit on the size of pub crawls (which may vary depending on location) may be a useful mechanism for ensuring crawls are sufficiently supervised, reducing negative consequences and limiting their impact on public services.
- Sexual health messages should be promoted amongst staff and students, whilst stewards should be discouraged from promoting risky behaviour amongst pub crawl participants.
- Many pub crawl participants will be entering licensed premises already drunk. Participating venues should be reminded that it is illegal to sell alcohol to drunk people. Pub crawl organisers should discourage participants from getting drunk, for example by promoting soft drinks.
- Local partners, universities and student unions should share knowledge and experiences of commercial pub crawls in their towns and cities, providing information of well and poorly managed events, and the factors that contribute to this.

5. Appendices

Appendix 1: Predicting BAC at the end of the night

To calculate BAC at the end of individuals' time out drinking, a general linear model (GLM) was developed. All factors (see Table 4) were tested in a predictive model in order to establish variables significantly relating to measured BAC. The model that explained most variance (28%) in the data included the following components: number of hours drinking and alcohol consumed at time of interview. For each individual, hours drinking

and total expected alcohol consumption (over the whole intended drinking session) were based on answers to questions about what time they planned to go home and how much more alcohol they intended to consume. New *end of evening* values for each variable were then entered into the predictive BAC model and estimates were calculated for BAC at their indicated time for end of drinking session.

Appendix 2: Limitations of the study

There are a number of limitations to this study which may have impacted on the results discussed. Overall, 20.0% of individuals approached for inclusion in this study refused to participate and it is not known whether or to what extent this has skewed the results. Nevertheless, other nightlife studies have similar refusal rates.⁹ Researchers relied on self-reported estimates of consumption for understanding the quantities of alcohol consumed that evening. However, survey participants are known to provide underestimates when reporting quantities of alcohol consumed²⁵ and may be influenced by factors such as interview characteristics, social desirability, environmental factors and selective recall.^{15,16,25} Nevertheless, participants were only asked about consumption on the night of the interview (therefore, reducing the opportunities for lost recall) and trained researchers were used who encouraged participants to be honest and comprehensive in their responses. In addition to being asked about consumption up to the point of interview, participants were asked to estimate how much alcohol they would drink in the duration of the evening. It is not possible to gauge the reliability of these estimates; however, participants were recruited from across the night (from 7pm to 2.10am).

Alcohol consumption was also recorded through the use of breathalysers, which could be used to validate any erroneous consumption estimates. The guidelines supplied with the Lion Alcometer® 500 Breath Alcohol Kit state that twenty minutes should elapse in between the participants' last drink and the test taking place. This is because residual alcohol in the mouth may lead to a higher reading than is actually the case. In order to combat this, researchers did not recruit participants who were drinking and the test did not occur until the end of the interview, so delaying the amount of time between possible consumption and testing. Nevertheless, it is not known as to what extent the time limit was followed in practice. In addition, vomit or regurgitation can have the same effect as recent drinking on the reading. Whilst researchers did not approach potential participants who were obviously highly intoxicated, 1.1% did however report having vomited at some point prior to the interview. Because those who scored highly on ratings of drunkenness were not approached and not included in the study, average consumption figures and assessments of the prevalence of drunkenness provided in this report are likely to be under-estimates.

6. Acknowledgements

The study was funded by Drinkaware. We would like to thank Avis Johns, Kate Owen, Siobhan McCann, Adam Caris, Sara Wood, Michela Morleo, Donna Halliday, Jane Stuart, Emma Pemberton, Danielle Kelly and Katy Dale for their assistance in implementing the study, and all individuals who volunteered to participate.

7. References

1. Hill A. Student pub crawls face ban amid backlash over drunken disorder. The Observer online, 2009. www.guardian.co.uk/education/2009/nov/08/philip-laing-carnage-binge-drinking
2. Carter H. Carnage student pub crawl organiser spared jail after punching 61-year-old unconscious. The Guardian online, 2010. www.guardian.co.uk/uk/2010/apr/29/carnage-pub-crawl-ryan-hilton-escapes-jail
3. Dwan J. Five arrested during student pub crawl. Essex County Standard, 2011. http://www.essexcountystandard.co.uk/news/8910452.Five_arrested_during_student_pub_crawl/
4. Braidwood J. Student group wants ban on mass pub crawl. Sky news online, 2009. <http://news.sky.com/skynews/Home/UK-News/Carnage-UK-National-Union-Of-Students-Calls-For-Ban-On-Organised-Student-Pub-Crawl/Article/200911215447117>
5. Dalzell T, Victor T. The concise new partridge dictionary of slang and unconventional English. Routledge, London, 2007.
6. Bewick M et al. Changes in undergraduate student alcohol consumption as they progress through university. BMC Public Health 2008, 8:163.
7. Dodd LJ et al. Life risk factors of students: a cluster analytical approach. Preventive Medicine 2010, 51:73.
8. Gill J. Reported levels of alcohol consumption and binge drinking within the UK undergraduate population over the last 25 years. Alcohol and Alcoholism 2002, 37.
9. Hughes K et al. Alcohol, nightlife and violence: the relative contributions of drinking before and during nights out to negative health and criminal justice outcomes. Addiction 2008, 103: 60-65.
10. Stuart J, Anderson Z, Hughes K. Exploration of nightlife and associated problems in Prescott, Knowsley. Liverpool, Centre for Public Health, Liverpool John Moores University, 2009.
11. Bellis MA et al. Teenage drinking, alcohol availability and pricing: a cross-sectional study of risk and protective factors for alcohol-related harms in school children. BMC Public Health 2009, 9:380doi:10.1186/1471-2458-9-380.
12. Department of Health et al. Safe, Sensible, Social. The next steps in the National Alcohol Strategy. Department of Health, London, 2007.
13. Rehm J et al. In Ezzati M et al. Global and regional burden of diseases attributable to selected major risk factors. Geneva, World Health Organization, 2004.
14. Bellis MA et al. Effects of nightlife activity on health. Nursing Standard 2005, 19: 63-71.
15. Clapp JD et al. Environmental and individual predictors of error in field estimates of blood alcohol concentration: a multilevel analysis. Journal of Studies on Alcohol 2006, 67: 620-627.
16. Gruenewald PJ, Johnson FW. The stability and reliability of self-reported drinking measures. Journal of Studies on Alcohol 2006, 67: 738-745.

17. Heeb J, Gmel G. Interviewers' and respondents' effects on self-reported alcohol consumption in a Swiss health survey. *Journal of Studies on Alcohol* 2001, 63: 434-442.
18. Bellis et al. Cross-sectional measures and modelled estimates of blood alcohol levels in UK nightlife and their relationships with drinking behaviours and observed signs of inebriation *Substance Abuse Treatment, Prevention, and Policy* 2010, 5:5 doi:10.1186/1747-597X-5-5.
19. Johnston JJE, McGovern SJ. Alcohol related falls: an interesting pattern of injuries. *Emergency Medicine Journal* 2004, 21: 185-188.
20. MacDonald S et al. The criteria for causation of alcohol in violent injuries based on emergency room data from six countries. *Addictive Behaviors* 2005, 30: 103-113.
21. Naranjo CA, Bremner KE. Behavioural correlates of alcohol intoxication. *Addiction* 1993, 88: 31-41.
22. NHS Choices. Alcohol: know your limits. <http://units.nhs.uk/havingadrink.html>.
23. Coghill N, Orme J, Swindells M. Sensible drinking amongst students in Higher Education Institutions in the South West Region. A snap-shot of current practice. University of the West of England, Bristol, 2009.
24. Wells S, Graham K, Purcell J. Policy implications of the widespread practice of 'pre-drinking' or 'pre-gaming' before going to public drinking establishments: are current prevention strategies backfiring? *Addiction* 2009, 104: 4-9.
25. Catto S. How much are people in Scotland really drinking? Edinburgh, NHS Health Scotland, 2008.



Centre for Public Health
Research Directorate
Faculty of Health and Applied Social Sciences
Liverpool John Moores University
2nd Floor, Henry Cotton Campus
15-21 Webster Street
Liverpool L3 2ET
Tel: 0151 231 4535
Email: z.a.quigg@ljmu.ac.uk
www.cph.org.uk

Published: April 2011

ISBN: 978-1-908029-64-5 (pdf version)

for the facts
drinkaware.co.uk