

# Developing a social practice-based typology of British drinking culture in 2009–2011: implications for alcohol policy analysis

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## ABSTRACT

**Background and aims** The concept of national drinking culture is well established in research and policy debate, but rarely features in contemporary alcohol policy analysis. We aim to demonstrate the value of the alternative concept of social practices for quantitatively operationalizing drinking culture. We discuss how a practice perspective addresses limitations in existing analytical approaches to health-related behaviour before demonstrating its empirical application by constructing a statistical typology of British drinking occasions. **Design** Cross-sectional latent class analysis of drinking occasions derived from retrospective 1-week drinking diaries obtained from quota samples of a market research panel. Occasions are periods of drinking with no more than 2 hours between drinks. **Setting** Great Britain, 2009–11. **Cases** A total of 187 878 occasions nested within 60 215 nationally representative adults (aged 18+ years). **Measurements** Beverage type and quantity per occasion; location, company and gender composition of company; motivation and reason for occasion; day, start-time and duration of occasion; and age, sex and social grade. **Findings** Eight occasion types are derived based primarily on parsimony considerations rather than model fit statistics. These are mixed location heavy drinking (10.4% of occasions), heavy drinking at home with a partner (9.4%), going out with friends (11.1%), get-together at someone's house (14.4%), going out for a meal (8.6%), drinking at home alone (13.6%), light drinking at home with family (12.8%) and light drinking at home with a partner (19.6%). **Conclusions** An empirical model of drinking culture, comprising a typology of drinking practices, reveals the dominance of moderate drinking practices in Great Britain. The model demonstrates the potential for a practice perspective to be used in evaluation of how and why drinking cultures change in response to public health interventions.

**Keywords** Drinking culture, drinking occasion, latent class analysis, practice, policy analysis, typology.

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## INTRODUCTION

The study of national drinking cultures has a long research tradition, with the dominant approach being to characterize cultures through their position on one or more dimensions (e.g. regularity of drinking or the use-values of drinking) [1,2]. Invoking national drinking cultures is also common in policy debate [3,4], with regulatory interventions often derided for failing to tackle the underlying culture [5]. Further, Room has described a recurrent 'impossible dream' of changing a nation's drinking culture which, in its most common form, manifests as advocates for change within northern European temperance cultures yearning for a Mediterranean drinking style, complete with

low levels of intoxication and more socialized drinking [6]. Despite being well established, the concept of national drinking culture is rarely operationalized in contemporary alcohol policy analysis and evaluation, which instead favours measures of alcohol-related harm and frequencies or quantities of drinking and heavy drinking [7]. Whereas policy actors apply cultural change as a motivating construct, alcohol policy researchers view it typically as a sociological issue to which they devote little attention.

We propose a new approach to studying drinking cultures, based around analysis of drinking occasions and informed by theories of practice [8–11]. In the context of alcohol, consumption practices are the recognizable types of occasions within which alcohol is consumed in a society

at a given time. The sociology of practice draws upon a broad range of cultural theorists, particularly Bourdieu [12,13], but shares similarities with the alcohol literature's concepts of social worlds and collectivity of drinking [4,14]. The nature of practices is debated, but an accessible and influential formulation of the theory argues that they result from interconnections between materials (e.g. alcoholic drinks, glassware, buildings), competencies (e.g. brand awareness, etiquette, alcohol tolerance) and meanings (e.g. sophistication, relaxation, transgression) [8,9]. Others have emphasized interconnections with time, and this appears relevant here (e.g. weekend versus weekday drinking) [11]. The importance of practices for public health lies primarily in their tendency to persist, with a typically gradual emergence, decay and evolution of practices over time. This bias toward stability constrains individual-level behaviour change through a reflexive relationship between forces at the micro-level (e.g. habit, identity construction and performance) and macro-level (e.g. commercial interest, public policy, built environments) [8,15,16]. Thus, adopting a practice perspective within alcohol research does not involve rejecting the importance of individual decision-making or broad social forces, but argues that particular attention should be paid to the ways of drinking and getting drunk which can be observed within a society at any given time and the processes which produce them. To paraphrase Room, if public health stakeholders do not discuss changing the social location and meanings of drinking embedded within these practices, they cannot realistically hope to change drinking culture ([6], p. 11).

The merits of discussing drinking practices rather than drinking cultures may not be immediately apparent, given their similarities. Drinking cultures are also viewed as typically stable and subject to only gradual change, while their components (e.g. drinking patterns, contemporary and historical attitudes, norms and policies) echo those of practices [1]. This overlap is unsurprising, as we posit that drinking practices in combination comprise a society's drinking culture or the multiple cultures that may exist within it. Therefore, the added empirical value of a practice perspective is not its distinction but its granularity which, when applied within empirical analyses, helps to resolve three key limitations of the drinking culture literature. First, the dimensional approach to characterizing drinking cultures [1,2] tends to assign each culture a single emblematic drinking practice derived from average scores on the selected dimensions. This directs focus away from within-culture heterogeneity in drinking practices and disregards consideration of drinking subcultures. It also risks overstating differences between countries; for example, recent evidence suggests that characterizations of European countries as wine- or beer-drinking were based largely on the male drinking behaviours which dominated consumption statistics, while commonalities in female drinking

practices were overlooked [17]. Secondly, focusing on emblematic drinking practices means cultures at the midpoint of dimensions lack definitional clarity. As globalization drives cultural convergence, fine-grained residual or emergent cultural variation, which has been regarded as important in the sociological literature, may be unobserved in alcohol research [18,19]. Finally, Room's discussion of the impossible dream notes that examples of wholesale cultural change are rare, but points to instances of lesser cultural shifts which were found to be unsatisfactory by advocates for change [6]. One source of dissatisfaction may be a scientific failure to characterize sufficiently the cultural change that had occurred in the absence of a granular empirical cultural model capable of evidencing small-scale policy effects.

To demonstrate the value of a practice perspective for alcohol policy analysis, this paper presents a prototype of a practice-orientated statistical model using Great Britain 2009–11 as a case study. The model is a typological latent class analysis of the drinking practices which occur in Britain and provides data on the prevalence, characteristics and social distribution of different practices. It follows a similar analytical approach to recent Finnish research [20] and, although lacking data in some areas, it represents the most detailed quantitative characterization to date of British drinking culture. The paper concludes by proposing a framework for operationalizing the model within policy analysis and discusses the value of doing so.

## METHODS

### Data

This research uses data from the Alcovision survey, a commercial product collected by the market research company, Kantar Worldpanel. Alcovision is a continuous monthly retrospective online diary survey with an annual representative sample of 30 000 individuals aged 18+ in Great Britain. Participants provide detailed data on their drinking occasions during the previous 7 days.

Quota samples based on age, sex, social class and geographic region are drawn from Kantar's managed access panel. Invitations to participate are sent out on set dates and timed such that completion of the survey occurs throughout each month, and each day of the year is included in fieldwork. Oversampling of 18–34-year-olds and Scotland residents permits robust analyses of these groups. Weights based on age–sex groups, social class and geographical region are constructed using UK census data to ensure representativeness of British adults. A data extract of selected variables for the total 2009–11 sample was purchased for the present analysis, and contained information on 187 878 drinking occasions nested within 60 215 respondents who reported any drinking in the survey week.

## Measures

The purchased data extract was not practice-orientated. Measures capturing materials, meanings and temporality of drinking are available, but competencies are poorly covered.

## Materials

Alcoholic drinks are the primary material, and the purchased data are categorized into 10 beverage types: on-trade and off-trade beer, cider, wine, spirits and Ready-to-Drinks (RTDs). Consumption quantities are recorded as serves and assumptions regarding standard serve size and alcoholic strength were made to estimate the number of units of alcohol per serve (1 unit = 10 ml/8 g of pure alcohol). Two consumption measures are used here: whether each of the 10 beverage types was consumed and the total quantity of alcohol consumed. Three quantity categories were created: low risk (< 6 units females/< 8 units males), increasing risk (6–12 units/8–16 units) and high risk (> 12 units/> 16 units). These categories align broadly with previous analyses of risky and highly risky single-occasion drinking [20–22]. Additional materials measures used are: location (16 categories; e.g. my own home), company (six categories; e.g. friends) and composition of company (nine categories; e.g. mixed-sex group).

## Meanings

Variables included are: reason for occasion (25 categories; e.g. catch-up, big night in) and motivation (11 categories; e.g. to have time for myself).

## Temporal

Measures included are day of the week (seven categories), occasion start time (seven categories) and duration of occasion (nine categories).

Partial and full response categories for all measures are shown in Tables 2 and 4, respectively. Starred measures in Table 2 permit multiple responses, as categories are not mutually exclusive or may change across the course of an occasion. For these measures, response categories are entered into the analysis as separate dichotomous variables.

Socio-demographic variables used are gender, age (two categories, < 35 versus 35+) and National Readership Survey (NRS) social grade (two categories, ABC versus DE). NRS social grade is an occupation-based measure of socio-economic status where ABC occupations are higher managerial through to skilled manual work and DE occupations are semi- or unskilled workers and the unemployed [23].

## Analysis

In line with the practice perspective, the drinking occasion rather than the individual is the unit of analysis and each occasion is considered the performance of a practice. Kantar Worldpanel define an occasion as a period of drinking in one or more locations in either the on-trade only or the off-trade only. The present analysis uses a different definition in order to allow occasions to encompass both on-trade and off-trade drinking. This alternative definition classes an occasion as a period of drinking with no 2-hour gap between consecutive drinks.

Latent class analysis (LCA) is used to segment occasions into types (i.e. practices) based on the measures above. Socio-demographic characteristics are not included in the LCA and are used only in secondary analyses described below. The LCA groups occasions probabilistically into mutually exclusive types, which are distinguished from other types by their propensity to share certain combinations of characteristics [24–26]. The key outputs of the LCA are the probability of any given occasion being of each type and the probability of an occasion having a particular characteristic conditional on it being of a particular type.

All analyses are performed using SAS version 9.3 with LCA models fitted using the PROC LCA procedure version 1.3.0, with sampling weights applied in the estimation procedure. To account for nesting of occasions within individuals, a clustered LCA model is fitted with respondents treated as clusters. The current version of PROC LCA does not support using parameter restrictions within clustered models, thus precluding pre-specification of model parameters based on external evidence. Within SAS version 9.3, the inclusion of clusters and weights in the estimation process also necessitates usage of pseudo, rather than true maximum likelihood. This affects the accuracy of estimated parameters and goodness-of-fit measures; however, given the sample size, no large deviance between the pseudo and true likelihood is expected and results will be largely unaffected. To avoid convergence to local minima or maxima and check results for robustness, 20 random data subsamples were used to fit each model, with the best fitting retained as the final model [27–29].

Analysts pre-specify the number of occasions to be fitted by the LCA and model selection is guided by the Akaike information criterion (AIC), Bayesian information criterion (BIC), 'consistent' AIC (CAIC) and adjusted (BIC) ABIC, with lower values indicating better model fits. Typically, analysts fit additional occasion types until the model fit statistics no longer improve significantly. However, parsimony, interpretability and meaningfulness are also valid considerations and where sample sizes are large, as in the present case, model fit may continue to improve beyond the point where the model is too complex to interpret.

LCA is a probabilistic approach and does not assign occasions deterministically to types. However, it is common practice to undertake such assignment, and we do so here to permit examination of average consumption levels and socio-demographic patterns by occasion type. Occasions are assigned to the types to which they have the highest probability of membership based on their characteristics [26,30]. Relationships between socio-demographics and occasion types are explored descriptively as opposed to using regression models, as we aim to assign relationships straightforwardly by age–sex–social grade subgroups rather than by each socio-demographic characteristic independently.

## RESULTS

### Descriptive analysis

Tables 1 and 2 summarize the sample characteristics and descriptive data on occasions, respectively. Individuals had an average of 3.2 occasions in the diary week, with an average of 2.1, 0.8 and 0.3 being low-risk, increasing risk and high-risk, respectively. Of 187 878 occasions, 67.0% were solely off-trade, 22.1% were solely on-trade and 10.9% involved both off- and on-trade drinking. Almost half (44.4%) of occasions involved drinking with a spouse or partner, while 16.6% involved drinking alone. Occasions occurred throughout the week, but 43.9% were on Friday or Saturday. Most started between 5 pm and 10 pm (73.6%) and common reasons for occasions were a quiet night in (18.0%), a sociable get-together (14.4%) and regular/everyday drinking (13.1%). Approximately two-thirds of occasions were low-risk (62.2%), while the remainder were increasing risk (24.6%) and high-risk (13.1%). High-risk occasions were particularly common when drinking with friends (24.3%) or colleagues (21.5%), when drinking switched between on- and

off-trade (36.3%), when drinking began between 2 pm and 5 pm (20.2%), in sociable get-togethers (23.3%) and where the motivation was to have a laugh (30.8%).

### Model fitting

As anticipated, model fit continued to improve significantly, with very large numbers of occasions specified (e.g. 20+). In line with the parsimony principle, models with six to nine occasion types were examined and a final model with eight types was selected on largely pragmatic grounds, as these types were identified clearly and interpretable, and requesting identification of additional occasion types produced only subcategories of the existing types. Supporting information, Table S1 shows model fit statistics for two to 10 class models and Supporting information, Fig. S1 shows that the percentage change in model fit statistics declines consistently as additional classes are added, except when an eighth class is added, suggesting that this delivered above anticipated levels of improvement in model fit. Focus group research with British drinkers, reported elsewhere [31], was used to validate the derived typology and supported this decision. Two sets of focus groups were conducted: the first asked participants to describe their occasions and highlight the most salient characteristics and the second used preliminary LCA results to construct stylized drinkers and their occasions which participants were asked to assess for face validity and similarity to their own occasions. In each case, focus group data supported our interpretation of the LCA results and identified no major omitted occasion types.

### Typology of occasions

Table 3 presents summaries of the eight types of drinking practice identified, with the full statistical results provided

**Table 1** Descriptive statistics by age, gender and social subgroup based on a diary data sample of 187 878 drinking occasions within 60 215 individuals between 2009 and 2011.

Sex–age–social grade group <sup>a</sup>	% of population (n = 60 215)	Units consumed in diary week		Number of occasions per week: mean (SD)			
		Mean	Median	Total	Low risk <sup>b</sup>	Increasing risk	High risk
Female < 35 DE	6.3	21.1	13.9	2.5 (2.0)	1.4 (1.6)	0.6 (0.9)	0.5 (0.8)
Female < 35 ABC	17.0	19.8	13.6	2.7 (1.8)	1.6 (1.5)	0.7 (0.9)	0.4 (0.8)
Female 35+ DE	6.1	16.0	9.1	2.7 (2.1)	1.8 (1.9)	0.6 (1.0)	0.3 (0.7)
Female 35+ ABC	17.9	16.6	11.3	3.1 (2.2)	2.2 (2.1)	0.7 (1.1)	0.2 (0.6)
Male < 35 DE	5.1	30.5	20.9	2.9 (2.1)	1.6 (1.8)	0.7 (1.0)	0.6 (0.9)
Male < 35 ABC	15.5	28.9	20.6	3.2 (2.2)	1.9 (1.8)	0.8 (1.0)	0.5 (0.8)
Male 35+ DE	9.0	28.5	18.3	3.5 (2.6)	2.2 (2.4)	0.9 (1.3)	0.4 (0.9)
Male 35+ ABC	23.1	26.6	18.5	3.7 (2.6)	2.6 (2.4)	0.9 (1.3)	0.3 (0.8)
Total	100.0	22.8	15.1	3.2 (2.3)	2.1 (2.1)	0.8 (1.2)	0.3 (0.8)

<sup>a</sup>Social grade definitions: ABC represents managerial, professional, clerical and skilled manual occupations. DE represents semi-skilled and unskilled manual occupations and the unemployed. <sup>b</sup>Low risk: <6/8 units for females/males, Increasing risk: 6–12/8–16 units, High risk >12/16 units, SD = standard deviation.

**Table 2** Descriptive statistics for occasion characteristics.<sup>a</sup>

	Occasions		Units consumed				
	%	n	Mean	Median	% Low risk	% Increasing risk	% High risk
Occasion location							
Off-trade only	67.0	125 802	6.6	4.5	68.9	21.8	9.3
On-trade only	22.1	41 546	8.0	5.7	60.2	26.6	13.1
Mixed location	10.9	20 530	14.2	11.3	25.2	38.5	36.3
Company <sup>c</sup>							
Family	23.1	43 354	7.5	4.5	61.4	24.1	14.6
Friends	32.7	61 523	10.5	7.9	43.9	31.8	24.3
Spouse/partner	44.4	83 448	6.7	4.5	63.4	24.8	11.8
Work colleagues	3.9	7 238	10.0	6.8	52.6	26.0	21.5
Alone	16.6	31 247	6.3	4.5	69.5	21.0	9.5
Gender composition of group <sup>c</sup>							
Male alone	9.1	17 160	7.1	4.6	68.1	22.0	9.9
Female alone	4.5	8 517	4.6	2.6	72.8	19.0	8.2
Mixed-sex pair	32.4	60 844	5.8	4.5	69.0	22.8	8.2
Male pair/group	13.3	24 914	9.7	7.1	52.4	29.5	18.1
Female pair/group	6.4	11 972	6.8	4.5	54.3	26.8	18.9
Mixed-sex group	40.1	75 429	9.1	6.6	51.2	28.5	20.3
Day							
Monday–Thursday	39.6	74 419	6.1	4.5	69.1	21.5	9.4
Friday–Saturday	43.9	82 466	8.1	5.3	55.5	27.7	16.8
Sunday	16.5	30 993	6.9	4.5	63.7	24.2	12.1
Duration							
Less than 1 hour	29.1	54 597	3.4	2.3	91.4	6.9	1.8
1–3 hours	50.8	95 405	7.7	5.7	58.0	29.1	12.9
4–6 hours	18.0	33 740	11.8	9.1	31.8	40.7	27.5
6+ hours	2.2	4 136	17.0	15.0	21.9	27.4	50.7
Start time							
Before 2 pm	9.9	18 632	6.8	4.3	68.5	18.1	13.4
2–5 pm	8.6	16 158	8.8	5.4	55.6	24.2	20.2
5–8 pm	41.6	78 126	7.4	4.6	57.6	27.8	14.6
8–10 pm	32.0	60 157	6.6	4.5	65.1	24.3	10.5
10 pm onwards	7.9	14 805	5.5	3.6	73.8	18.5	7.8
Reason for occasion <sup>b,c</sup>							
Quiet night in	18.0	33 834	6.4	4.5	67.2	23.5	9.3
Sociable get-together	14.4	26 978	10.0	7.5	43.8	33.0	23.3
Regular/everyday drink	13.1	24 604	6.6	4.5	63.9	24.8	11.4
Staying in as a couple	10.2	19 077	6.8	4.5	61.7	26.9	11.4
Rounding off the evening or	7.1	13 399	5.9	3.7	70.4	19.6	10.0
Motivation for occasion <sup>c</sup>							
To wind down or chill out	33.5	63 027	6.7	4.5	65.1	24.3	10.6
To have a laugh	14.2	26 764	12.2	9.1	35.7	33.5	30.8
To spend quality time with someone special	13.9	26 062	7.7	5.0	56.3	28.7	15.0
To recharge or invigorate	8.3	15 611	6.9	4.5	65.8	21.0	13.2
To bond with others	8.0	15 046	9.7	6.8	47.5	31.3	21.2
Total	100.0	187 878	7.06	4.50	62.2	24.6	13.1

<sup>a</sup>Due to the volume of data, response categories for location, composition of group, day, start time and duration are collapsed and only the five most common responses for motivation and reason are shown. This is for presentational purposes; disaggregated data and all response categories were used in the latent class analysis as shown in Table 4. <sup>b</sup>Kantar Worldpanel refer to reason for occasion as type of occasion. We have renamed this variable to avoid confusion, as we refer to the outputs of the latent class analysis as occasion types. <sup>c</sup>Responses are not mutually exclusive, in part due to changes across the course of an occasion.

in Table 4. The most common practice is 'Light drinking at home with a partner', which accounts for 19.6% of occasions. Taken alongside 'Light drinking at home with family' and 'Drinking at home alone' this generally low-risk, brief,

regular, relaxing home drinking accounts for almost half (46.0%) of all occasions. However, home drinking is not always low risk. 'Heavy drinking at home with a partner' accounts for 9.4% of occasions. This practice always

**Table 3** Summary of the eight types of drinking occasion or practices identified by the latent class analysis of British drinking occasions 2009–11.<sup>a</sup>

<b>Mixed location heavy drinking</b> 10.4% of occasions. Mean units: 14.0 22.6% of the sample have this occasion 	<b>Heavy drinking at home with a partner</b> 9.4% of occasions. Mean units: 11.6 17.5% of the sample have this occasion 	<b>Going out with friends</b> 11.1% of occasions. Mean units: 9.3 25.2% of the sample had this occasion 	<b>Get together at someone's house</b> 14.4% of occasions. Mean units: 9.1 32.3% of the sample have this occasion 
These very diverse occasions involve often involve drinking at increasing ( $P=0.41$ ) <sup>b</sup> and high ( $P=0.34$ ) risk levels at a range of on-trade and off-trade locations including the home of the respondent ( $P=0.67$ ) or someone else ( $P=0.28$ ) and also village locals ( $P=0.23$ ), small town centres ( $P=0.24$ ) and city centres ( $P=0.17$ ). Different occasions or different phases of these occasions provide an opportunity for drinking with friends ( $P=0.64$ ), partners ( $P=0.46$ ) and family ( $P=0.28$ ) or for drinking alone ( $P=0.21$ ) and provide an opportunity to wind down or chill out ( $P=0.34$ ), have a laugh ( $P=0.20$ ) and spend quality time with people ( $P=0.20$ ). This might be part of a sociable get together ( $P=0.32$ ) or catch-up ( $P=0.15$ ), might a drink before going out ( $P=0.22$ ) or rounding off the evening ( $P=0.12$ ). These are often, but not exclusively Friday and Saturday occasions ( $P=0.53$ ) lasting 1–3 hours ( $P=0.89$ ) and starting in the afternoon ( $P=0.27$ ), early evening ( $P=0.52$ ) or mid-evening ( $P=0.19$ ). Any kind of drink may be consumed although beer is the most common in the on-trade ( $P=0.52$ ) followed by wine ( $P=0.19$ ).	Increasing ( $P=0.81$ ) or high ( $P=0.19$ ) risk drinking with a partner ( $P=0.84$ ) at home ( $P=0.97$ ). These occasions provide an opportunity to wind down or chill out ( $P=0.49$ ) for 1–3 hours ( $P=0.77$ ) on a quiet night in ( $P=0.31$ ) as a couple ( $P=0.32$ ), but may also be part of regular everyday drinking ( $P=0.21$ ). This usually happens on Friday and Saturday ( $P=0.45$ ) or Sunday ( $P=0.19$ ) and usually starts at dinner time, between 5pm and 8pm ( $P=0.55$ ) or mid-evening ( $P=0.33$ ). Wine is the predominant ( $P=0.70$ ) but not only drink.	Drinking at low ( $P=0.50$ ), increasing ( $P=0.34$ ) or high ( $P=0.16$ ) risk levels with friends ( $P=0.87$ ) in on-trade locations including small town centres ( $P=0.26$ ), village locals ( $P=0.22$ ) and city centres ( $P=0.20$ ). These occasions allow mixed sex ( $P=0.27$ ) or male ( $P=0.24$ ) groups to have a laugh ( $P=0.31$ ) and bond with others ( $P=0.17$ ) during sociable get togethers ( $P=0.39$ ). Friday and Saturday ( $P=0.49$ ) are the most common days for these occasions and, while most last 1–3 hours ( $P=0.70$ ), many last longer ( $P=0.23$ ). Drinking usually starts in early ( $P=0.33$ ) or mid ( $P=0.34$ ) evening but sometimes starts in the afternoon ( $P=0.24$ ) or after 10pm ( $P=0.09$ ). Beer is the predominant drink ( $P=0.63$ ) with spirits ( $P=0.21$ ), wine ( $P=0.19$ ), cider ( $P=0.11$ ) and RTDs ( $P=0.06$ ) also consumed.	These diverse occasions involve drinking at low ( $P=0.54$ ), increasing ( $P=0.28$ ) or high ( $P=0.17$ ) risk levels. A mixed sex group ( $P=0.78$ ) of friends ( $P=0.63$ ), family ( $P=0.41$ ) and partners ( $P=0.27$ ) meet up at the home of the respondent ( $P=0.34$ ) or someone else ( $P=0.34$ ) to have a laugh ( $P=0.26$ ) during a sociable get together ( $P=0.34$ ). This usually happens on weekends ( $P=0.70$ ) and, while some occasions last less than an hour ( $P=0.26$ ), others last more than four hours ( $P=0.16$ ). Most occasions start between 5pm and 10pm ( $P=0.69$ ) but may begin in the afternoon ( $P=0.20$ ). Any of wine ( $P=0.51$ ), beer ( $P=0.31$ ), spirits ( $P=0.21$ ), cider ( $P=0.10$ ) and RTDs ( $P=0.05$ ) may be consumed.
<b>Going out for a meal</b> 8.6% of occasions. Mean units: 5.2 20.6% of the sample have this occasion 	<b>Drinking at home alone</b> 13.6% of occasions. Mean units: 5.1 19.7% of the sample have this occasion 	<b>Light drinking at home with family</b> 12.8% of occasions. Mean units: 3.3 23.2% of the sample have this occasion 	<b>Light drinking at home with a partner</b> 19.6% of occasions. Mean units: 3.2 26.3% of the sample have this occasion 
These occasions generally involve low risk ( $P=0.81$ ) drinking with partners ( $P=0.45$ ) or family ( $P=0.26$ ) or drinking alone ( $P=0.19$ ) in on-trade locations including village locals ( $P=0.29$ ), small town centres ( $P=0.23$ ). They provide an opportunity to spend quality time with people ( $P=0.27$ ) and take a break ( $P=0.16$ ) while going out as a couple ( $P=0.23$ ), having a quiet drink ( $P=0.17$ ) or having a family occasion ( $P=0.10$ ). These occasions may happen on any day and often start at mealtimes (e.g. lunchtime ( $P=0.30$ ) or early evening dinnertime ( $P=0.35$ )). They are not long occasions and generally last less than three hours ( $P=0.96$ ) and sometimes less than an hour ( $P=0.26$ ). Beer ( $P=0.60$ ) and wine ( $P=0.27$ ) are the most common drinks	Generally, but not exclusively, low risk ( $P=0.80$ ) drinking alone ( $P=1.00$ ) at home ( $P=0.99$ ). These occasions provide an opportunity to wind down or chill out ( $P=0.45$ ) and have time for oneself ( $P=0.17$ ) on a quiet night in ( $P=0.35$ ) with a regular or everyday drink ( $P=0.25$ ) or to round off the evening ( $P=0.15$ ). They can happen on any day and usually start in the early ( $P=0.37$ ) or mid-evening ( $P=0.34$ ) but can start after 10pm occasionally ( $P=0.15$ ). These are usually short occasions lasting less than three hours ( $P=0.96$ ) and often less than one hour ( $P=0.50$ ). Any of wine ( $P=0.41$ ), beer ( $P=0.32$ ) and spirits ( $P=0.23$ ) may be drunk.	Low risk drinking ( $P=1.00$ ) at home ( $P=1.00$ ) with family ( $P=0.62$ ) or a partner ( $P=0.42$ ). These occasions provides an opportunity to wind down or chill out ( $P=0.41$ ) on a quiet night in ( $P=0.27$ ) or a regular everyday drink ( $P=0.19$ ). This might happen on weekdays ( $P=0.44$ ), Friday and Saturday ( $P=0.34$ ) or Sundays ( $P=0.22$ ) with drinking usually starting in early ( $P=0.44$ ) to mid-evening ( $P=0.35$ ) and is generally a short occasion lasting less than three hours ( $P=0.99$ ) and often less than an hour ( $P=0.55$ ). Wine ( $P=0.47$ ) and beer ( $P=0.31$ ) are the main drinks although spirits ( $P=0.18$ ) are also drunk in some cases.	Low risk ( $P=1.00$ ) drinking at home ( $P=0.97$ ) with a partner ( $P=1.00$ ) to wind down or chill out ( $P=0.44$ ) as part of a quiet night in ( $P=0.24$ ) spent as a couple ( $P=0.26$ ) or a regular everyday drink ( $P=0.23$ ). These occasions, which may occur on any day, last less than three hours ( $P=0.99$ ) and usually less than an hour ( $P=0.56$ ) starting from early ( $P=0.47$ ) or mid ( $P=0.36$ ) evening. Wine is the most common drink ( $P=0.53$ ) but beer ( $P=0.24$ ) and spirits ( $P=0.21$ ) are also common.

<sup>a</sup>Shading indicates off-trade only (blue) or occasions including on-trade (red). Bars show proportion of low-, increasing or high-risk occasions. <sup>b</sup>Probability of occasions having this characteristic, given it is of this type.

involves increasing or high-risk consumption levels and is characterized typically by chilling out with wine on weekend evenings. Similarly, ‘Get-together at someone’s house’ accounts for 14.4% of occasions, and although these typically lengthy weekend gatherings of friends and/or family are often diverse in character, 46.0% involved drinking at increasing or high-risk levels.

High-risk drinking was most likely to be found in a diverse practice described here as ‘Mixed location heavy drinking’. This practice was more difficult to characterize but tended towards heavier drinking split between on- and off-trade locations for a range of purposes, motivations and participants. It appears to incorporate nights out in urban centres with pre-loading, relaxing drinking throughout the day with changes in location and company and also having a night out followed by a nightcap at home. The familiar urban centre ‘big night out’ with associated binge drinking may be split between this occasion type and ‘Going out with friends’, which does not include any off-trade drinking (i.e. no pre-loading) and accounts for 11.1% of all occasions, although many were low risk (50.0%) and simply provided an opportunity for friends to get together at the local pub over a pint or two.

### Alternative latent class models

Although this paper focuses on the preferred eight-class model, examining results for models with fewer and greater numbers of latent classes can provide additional

insights into which types of drinking occasion share the same latent space and what additional information can be gained by adding latent classes. Thus, Supporting information, Tables S2–6 present models with six, seven, eight and nine latent classes. In broad terms, transitioning from six to seven classes distinguishes ‘Going out with friends’ from ‘Going out for a meal’; transitioning from seven to eight classes distinguishes ‘Light drinking at home with a partner’ from ‘Heavy drinking at home with a partner’; and transitioning from eight to nine classes allows identification of an additional male-dominated on-trade beer-drinking occasion type which includes going to the pub alone.

### Further analyses of practices

Individual occasions were assigned to practices for further analysis. A limitation of this approach is that many occasions may be assigned incorrectly if modal probabilities are low. In this case, more than 75% of occasions were assigned to practices based on probabilities above 0.95 and 90% of occasions were assigned to practices based on modal probabilities above 0.75.

The practice with the highest mean consumption was ‘Mixed location heavy drinking’ (14.0 units) followed by ‘Heavy drinking at home with a partner’ (11.6 units) (Supporting information, Fig. S2). In contrast, the practices with lowest mean consumption were ‘Light drinking at home with a partner’ (3.2 units) and ‘Light drinking at

Table 4 Full latent class model results characterizing eight types of drinking occasion.

	Mixed location heavy drinking	Heavy drinking at home with a partner	Going out with friends	Get together at someone's house	Going out for a meal	Drinking at home alone	Light drinking at home with family	Light drinking at home with a partner
	10.4%	9.4%	11.1%	14.4%	8.6%	13.6%	12.8%	19.6%
<b>Consumption level</b>								
Low risk	0.25	0.00	0.50	0.54	0.81	0.80	1.00	1.00
Increasing risk	0.41	0.81	0.34	0.28	0.15	0.16	0.00	0.00
High risk	0.34	0.19	0.16	0.17	0.04	0.04	0.00	0.00
<b>Beverage</b>								
Off-Beer	0.44	0.23	0.00	0.34	0.00	0.32	0.31	0.24
Off-Cider	0.12	0.11	0.00	0.10	0.00	0.09	0.06	0.05
Off-Wine	0.34	0.70	0.00	0.51	0.00	0.41	0.47	0.53
Off-Spirits	0.21	0.16	0.00	0.21	0.00	0.23	0.18	0.21
Off-RTD	0.04	0.01	0.00	0.05	0.00	0.01	0.02	0.01
On-Beer	0.52	0.00	0.63	0.00	0.60	0.01	0.00	0.00
On-Cider	0.10	0.00	0.11	0.00	0.09	0.00	0.00	0.00
On-Wine	0.19	0.00	0.19	0.00	0.27	0.00	0.00	0.00
On-Spirits	0.17	0.00	0.21	0.00	0.09	0.00	0.00	0.00
On-RTD	0.05	0.00	0.06	0.00	0.03	0.00	0.00	0.00
<b>Location</b>								
Village or rural local	0.23	0.00	0.22	0.00	0.29	0.00	0.00	0.00
High street/centre small town	0.24	0.00	0.26	0.00	0.23	0.00	0.00	0.00
Residential area in a small town	0.12	0.00	0.14	0.00	0.12	0.00	0.00	0.00
Centre of large town or city	0.17	0.00	0.20	0.00	0.15	0.00	0.00	0.00
High street or centre of a suburb or large town or city	0.07	0.00	0.09	0.00	0.07	0.00	0.00	0.00
Residential area in a large town or city	0.08	0.00	0.11	0.00	0.09	0.00	0.00	0.00
Retail park or entertainment complex	0.02	0.00	0.02	0.00	0.04	0.00	0.00	0.00
University/college campus	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00
Holiday park, village or complex	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00
Form of transport (e.g. plane)	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00
Other	0.04	0.00	0.01	0.02	0.03	0.00	0.00	0.00
My own home	0.67	0.97	0.00	0.34	0.00	0.99	1.00	0.97
Someone else's home	0.28	0.02	0.00	0.59	0.00	0.00	0.00	0.02
Holiday home/cottage/	0.03	0.01	0.00	0.04	0.00	0.00	0.00	0.01
Outdoors (e.g. picnic)	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00
At an event/festival	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00
<b>Company</b>								
Family	0.28	0.20	0.12	0.41	0.26	0.00	0.62	0.01
Friends	0.64	0.03	0.87	0.63	0.11	0.00	0.08	0.00
Spouse or partner	0.46	0.84	0.16	0.27	0.45	0.00	0.42	1.00
Work colleagues	0.07	0.00	0.09	0.04	0.07	0.00	0.00	0.00
Other	0.02	0.00	0.02	0.02	0.02	0.00	0.01	0.00
Alone	0.21	0.01	0.00	0.00	0.19	1.00	0.01	0.00
<b>Gender composition of company</b>								
Male alone	0.13	0.01	0.01	0.00	0.14	0.46	0.02	0.00
Female alone	0.04	0.01	0.00	0.00	0.02	0.35	0.02	0.00
Male pair	0.12	0.03	0.06	0.03	0.08	0.13	0.06	0.00
Female pair	0.05	0.02	0.04	0.05	0.03	0.05	0.06	0.00
Mixed sex pair	0.30	0.71	0.02	0.04	0.35	0.01	0.24	1.00
Male group	0.16	0.01	0.24	0.07	0.04	0.00	0.02	0.00
Female group	0.05	0.00	0.07	0.06	0.01	0.00	0.02	0.00
Mixed sex group	0.62	0.24	0.57	0.78	0.24	0.00	0.57	0.00
Children present	0.07	0.00	0.05	0.00	0.13	0.00	0.00	0.00
<b>Day</b>								
Monday-Thursday	0.33	0.35	0.39	0.29	0.47	0.51	0.44	0.48
Friday-Saturday	0.53	0.45	0.49	0.49	0.37	0.34	0.34	0.34
Sunday	0.14	0.19	0.12	0.21	0.16	0.14	0.22	0.18
<b>Duration</b>								
Less than an hour	0.07	0.12	0.07	0.26	0.26	0.50	0.55	0.56
1-3 hours	0.89	0.77	0.70	0.58	0.70	0.46	0.45	0.42
4-6 hours	0.04	0.09	0.18	0.12	0.04	0.03	0.01	0.01
6+ hours	0.00	0.01	0.05	0.04	0.01	0.01	0.00	0.00

(Continues)

Table 4 (Continued)

	Mixed location heavy drinking	Heavy drinking at home with a partner	Going out with friends	Get together at someone's house	Going out for a meal	Drinking at home alone	Light drinking at home with family	Light drinking at home with a partner
	10.4%	9.4%	11.1%	14.4%	8.6%	13.6%	12.8%	19.6%
<b>Start time</b>								
Before 2pm	0.13	0.03	0.14	0.13	0.30	0.08	0.08	0.05
2pm - 5pm	0.14	0.05	0.10	0.13	0.15	0.06	0.05	0.04
5pm-8pm	0.52	0.55	0.33	0.41	0.35	0.37	0.44	0.47
8pm-10pm	0.19	0.33	0.34	0.28	0.16	0.34	0.35	0.36
10pm onwards	0.02	0.04	0.09	0.05	0.04	0.15	0.07	0.08
<b>Reason for occasion</b>								
Going clubbing	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00
Out on the pull/chatting up	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Big night out	0.04	0.00	0.05	0.00	0.00	0.00	0.00	0.00
Special celebration	0.10	0.02	0.08	0.11	0.05	0.00	0.02	0.01
Sociable get-together	0.32	0.01	0.39	0.34	0.05	0.00	0.05	0.00
Catch-up	0.15	0.01	0.10	0.15	0.03	0.00	0.02	0.00
Quiet drink	0.11	0.00	0.07	0.00	0.17	0.00	0.00	0.00
Drink after work	0.10	0.05	0.05	0.03	0.05	0.08	0.06	0.05
Regular/everyday drink	0.14	0.21	0.07	0.04	0.05	0.25	0.19	0.23
Going out as a couple	0.10	0.00	0.01	0.00	0.23	0.00	0.00	0.00
On a date	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Family occasion	0.04	0.00	0.01	0.00	0.10	0.00	0.00	0.00
Live event e.g. sport	0.04	0.00	0.06	0.00	0.03	0.00	0.00	0.00
Business drink/meal	0.01	0.00	0.01	0.00	0.02	0.00	0.00	0.00
Break from work	0.01	0.00	0.01	0.00	0.05	0.00	0.00	0.00
Part of another occasion	0.03	0.00	0.04	0.00	0.06	0.00	0.00	0.00
None of the above	0.12	0.06	0.04	0.06	0.12	0.17	0.14	0.10
Big night in	0.02	0.01	0.00	0.03	0.00	0.00	0.00	0.00
Friends or family came round	0.03	0.01	0.00	0.08	0.00	0.00	0.03	0.00
Staying in as a couple	0.07	0.32	0.00	0.02	0.00	0.00	0.14	0.26
Quiet night in	0.11	0.31	0.00	0.08	0.00	0.35	0.27	0.24
A drink before going out	0.22	0.00	0.00	0.03	0.00	0.01	0.01	0.01
Rounding off the evening	0.12	0.06	0.00	0.04	0.00	0.15	0.09	0.11
Barbeque/picnic	0.02	0.01	0.00	0.05	0.00	0.00	0.01	0.01
Outdoor event	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00
<b>Motivation for occasion</b>								
Wind down or chill out	0.34	0.49	0.13	0.16	0.15	0.45	0.41	0.44
Have time for myself	0.07	0.03	0.01	0.01	0.05	0.17	0.03	0.02
Treat or reward myself	0.10	0.07	0.03	0.03	0.07	0.10	0.09	0.08
Have a break	0.12	0.04	0.06	0.06	0.16	0.05	0.05	0.03
Recharge or invigorate	0.15	0.06	0.04	0.06	0.09	0.09	0.10	0.09
Spend quality time with someone spec	0.20	0.25	0.05	0.16	0.27	0.00	0.13	0.18
Bond with others	0.17	0.01	0.17	0.16	0.05	0.00	0.02	0.00
Feel part of a group	0.10	0.00	0.13	0.07	0.02	0.00	0.00	0.00
Have a laugh	0.30	0.02	0.31	0.26	0.03	0.00	0.02	0.00
Let go	0.08	0.03	0.03	0.03	0.01	0.04	0.03	0.02
None of the above	0.12	0.08	0.08	0.09	0.14	0.12	0.15	0.14

RTD = Ready-To-Drink.

home with family' (3.3 units). The distribution of consumption across beverages should be interpreted cautiously, as these represent averages across different occasions and individuals rather than consumption by a typical individual on a typical occasion. However, beer generally dominates on-trade drinking practices, perhaps reflecting or explaining this practice being performed disproportionately by males (see Supporting information, Fig. S3). To a lesser extent, wine dominates off-trade drinking practice, although beer, cider and spirits are still consumed commonly. There is little evidence that on-trade spirits play a substantial role in high-risk drinking practices on average, although examination of the distribution of on-

trade spirits consumed by occasion type (data not shown) suggests that a small number (< 10%) of primarily younger female drinkers consumed higher volumes of spirits within on-trade or mixed location practices.

Supporting information, Fig. S3 shows how the low-, increasing and high-risk occasions of each socio-demographic group are distributed across practices. The sociable, having a laugh-orientated practices involving on-trade drinking and drinking with friends account for greater proportions of male and younger drinkers' occasions compared to other groups, and these proportions increase as consumption levels rise. In contrast, the practices of both male and female older drinkers tend towards

relaxation and routinized drinking with a partner at home, irrespective of whether these are low-, increasing or high-risk occasions. There are also more fine-grained differences in practice, such as older males having proportionately fewer 'Get-together at someone's house' occasions, while 'Drinking at home alone' appears to be a disproportionately common high-risk occasion for older males of lower social grade.

Focusing on high-risk occasions, approximately 60% of older females' high risk occasions are centred on home drinking compared to approximately 45% among older males. This is due primarily to 'Heavy drinking at home with a partner' being a more dominant practice among older age groups. While young drinkers' pre-loading before big nights out has attracted substantial attention, high-risk drinking practices among older age groups also include substantial quantities of 'Mixed location heavy drinking'. Further, depending on gender and social grade, between 30 and 50% of younger drinkers' high risk occasions involve no on-trade drinking at all. This points towards considerable heterogeneity in high-risk drinking practices across age groups and, at this level of detail, little evidence that particular practices are confined to specific age groups.

Finally, breakdowns of mean beverage-specific consumption by practice and socio-demographic group are presented in Supporting information, Fig. S4. This shows that although drinkers of lower social grade have fewer occasions overall, their mean consumption is higher per occasion within almost all practices.

## DISCUSSION

The above results present a typology of British drinking practices based on detailed diary data. Three key points emerge: first, characterizations of the British drinking culture as one of excess (e.g. [32]) are simplistic. Although not a culture of exclusive moderation, practices akin to the socially integrated, frequent but moderate drinking associated traditionally with Mediterranean Europe are more common than is often acknowledged in policy debate. Secondly, increasing and high-risk drinking are found across society and are contained within diverse practices. They include youth big nights out in urban centres, relaxed and routinized home drinking among older couples, sociable domestic gatherings of family and friends and a range of occasions where the accumulation of drinks across on- and off-trade locations over long periods of time lead to high consumption levels. The latter two examples in particular have attracted little research or policy debate. Thirdly, drinkers of lower socio-economic status have fewer occasions but consume more per occasion, suggesting that greater alcohol-related mortality risk among lower socio-economic groups may,

in part, be explained by higher levels of intoxication per occasion [33–35].

## Limitations

Although offering analytical possibilities unavailable within any publicly accessible UK data set, the Alcovision data set has important limitations beyond standard concerns regarding self-reported alcohol consumption data. The data set is collected for commercial market research rather than scientific study, and variables often align imperfectly with the drinking practice literature and have greater numbers of response options than is typical for scientific studies. The subset of data used for this analysis lacked a variable denoting food consumption, meaning a 'Drinking with a meal' occasion could not be identified with confidence, although the start time of occasions provided a useful proxy measure. Finally, applying multi-level modelling to nest occasions explicitly within individuals would have permitted clearer understanding of the links between practices and individual drinking patterns and presents an important direction for future research. For example, this may reveal the extent to which different types of heavy drinking occasions are nested within drinkers classed as moderate, hazardous or harmful based on their average weekly consumption.

## Implications for policy and research

The adoption of a practice perspective within alcohol policy analysis re-weights analytical focus away from individualized measures of frequency, quantity and pattern of alcohol consumption and towards understanding of how interventions affect whether, when, where, why and how people drink and get drunk. This recognizes that all drinking is not equal in epidemiological, policy or political terms even if the same amount of alcohol is consumed. For example, 'Mixed location heavy drinking', as a drinking practice, may be associated with more or less alcohol-related harm or less responsiveness to policy interventions and particular condemnation in public discourse when compared to 'Heavy drinking at home with a partner'. The analysis above provides researchers and policy stakeholders with an analytical framework grounded in social theory which can be used when exploring these distinctions in alcohol policy analysis and discourse.

A practice-perspective also affords greater understanding of the meso-level social phenomena which link micro-level behavioural decisions to macro-level structures such as commercial activity and social inequalities [8]. This can be seen in alcohol advertising research, which often posits a dose-response relationship whereby increased exposure to the advertising produced by multi-national corporations generates increased harmful behaviour by

directly influencing individual decision-making, particularly among vulnerable populations [36]. A practice perspective would argue instead that advertising situates products within practices and aims to develop, reinforce or evolve links between the materials, competences and meanings comprising those practices. As those elements of practice have differential availability and relevance to individuals across society, the resultant effects of advertising will not be well understood by models which do not account for the heterogeneity of drinking practices or the individuals who perform them. Such insights should motivate researchers to detect heterogeneous effects of advertising by designing more targeted analyses and may prompt reconsideration of recommended policy responses.

Benefits for evidence-based policy-making may also be realized through inviting policy actors to specify the drinking practices and components of practice (e.g. motivations, locations, consumption levels) which they aim to change when announcing new interventions. Crudely, this would involve stating the parameters of our typological model which are of particular concern and specifying what a more acceptable model would look like. By examining changes in the typological model in response to implemented policies, an evidence base can be developed describing the interaction between different policy options, drinking cultures and drinking practice. A challenging question which may emerge from this process is: can the parameters of an alternative model be specified which would represent a culture requiring no further intervention?

There are important barriers to integrating a practice perspective within current approaches to alcohol policy analysis. Crucially, the existing evidence base (both empirical literature and data sets) is not constructed for this purpose. For example, few epidemiological risk estimates are available pertaining to specific drinking practices and, beyond Finland [20], there appear to be no data sets available internationally which would allow for similar typologies to be created for cross-national comparison. Therefore, a key recommendation is to collect comparable international data sets which are purpose-designed for analysis of drinking practices and include robust contextual, epidemiological and psychological measures.

This process will take time, and the following are tractable shorter-term research goals. First, there is a need to apply trend analysis techniques to understand change in practices over time and map declining and emerging risk behaviours. This may be undertaken at the population level or as a study of changing subcultures which have been poorly mapped, and may potentially be located within particular socio-demographic groups [4]. Quantitative analysis of temporal change in practice has presented a major hurdle for sociologists, and alcohol researchers may contribute usefully to social theory in this area

[15,37]. Secondly, evaluation and natural experiment opportunities should be sought to evaluate how drinking practices respond to economic, social and policy changes. In Britain, recent opportunities include the ban on smoking in public places and sharp changes in the affordability and availability of alcohol [21,38]. Thirdly, understanding of how risk relates to different drinking practices is required. Where data linking drinking practices to health outcomes are unavailable, synthetic risk estimates may be created using techniques similar to those applied when generating highly localized synthetic estimates of alcohol-related harm in England [39]. Fourthly, improved analysis of whether globalization is leading to convergence in drinking culture and comparative studies between countries with available data will permit understanding of whether, as has been seen for other consumption behaviours, convergence is occurring alongside resilience and emergence of certain local practices [18,19,40]. Finally, findings generated from the above activities require synthesis to facilitate systematic consideration of evidence in policy decision-making. Adaptations of decision-models, such as the Sheffield Alcohol Policy Model [41–43], to meet this need may extend their utility to policy actors.

## CONCLUSIONS

Applying a practice perspective to British drinking culture reveals the dominance of moderate drinking practices, with high-risk drinking practices being less common and more diverse than it may appear from current popular and policy discourse. The practice perspective also offers the potential for a step-change in alcohol policy analysis by providing greatly enhanced insight into the characteristics of national drinking cultures and practices and how and why they change in response to public health interventions.

## Declaration of interests

None.

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### Supporting information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

**Table S1** Latent class model fit statistics.

**Table S2** Full results for a six latent class model of drinking occasions.

**Table S3** Full results for a seven latent class model of drinking occasions.

**Table S4** Full results for a seven latent class model of drinking occasions.

**Table S5** Full results for a nine latent class model of drinking occasions.

**Table S6** Full results for latent class models with 6,7,8 and 9 latent classes organised by drinking occasion type.

**Figure S1** Percentage change in model fit statistics as additional class is added.

**Figure S2** Mean units consumed by beverage type and occasion (values less than 0.5 not labelled).

**Figure S3** Composition of low (top), increasing and high (bottom) risk drinking occasions by sociodemographic group (percentages less than 5% not labelled).

**Figure S4** Mean beverage-specific consumption by occasion type and sociodemographic group (values less than 0.5 not labelled).