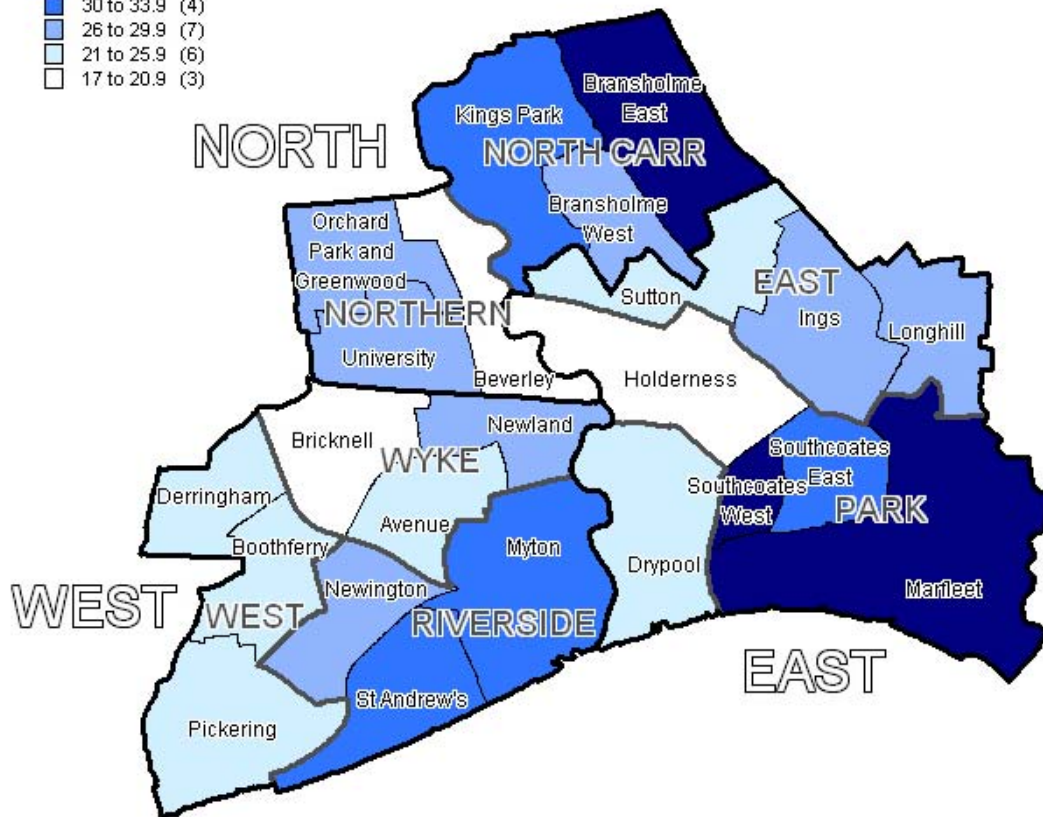


Hull's Health and Lifestyle Survey 2007

Alcohol Report

Percentage drinking alcohol excessively during week or binge drinking
Local Health and Lifestyle survey 2007

- 34 to 36.9 (3)
- 30 to 33.9 (4)
- 26 to 29.9 (7)
- 21 to 25.9 (6)
- 17 to 20.9 (3)



Mandy Porter, Robert Sheikh Iddenden, Tim Greene, Andrew Taylor.

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Abbreviations

BME	Black and Minority Ethnic group
dpm	days per month
dpw	days per week
GHS	General Household Survey
GP	General Practitioner
H&L	Health and Lifestyle (survey)
HSE	Health Survey for England
HUI	Health Utility Index
IMD	Index of Multiple Deprivation
LLSOA	Lower Layer Super Output Area (geographical area)
PCT	Primary Care Trust

Key Points / Headlines

- men aged 18-24 are the group with the highest levels of excessive (22%) and dangerous (a further 10%) drinking
- for women the highest levels of problem drinking are also in the youngest age group (18-24) with 12% drinking excessively and a further 2% dangerously
- levels of excessive or dangerous drinking reported in the Hull survey were slightly lower than the most recent England average figures
- most age groups had similar drinking levels to 2003 when an earlier Hull survey was conducted; the greatest increase was for young men (18-24) where excessive and dangerous consumption rose from 21% to 32% in 2007
- for men and women the highest proportion of non-drinkers were in the most deprived fifth of areas, after allowance had been made for differing age-structures; levels of problem drinking were similar across all 5 deprivation bands for men, but lowest in the most deprived areas for women
- when households were divided into three income groups a clear pattern emerged after allowing for age differences, with men and women in poorer households being more likely to never drink alcohol whereas better off households had the highest levels of excessive and binge drinking
- all three of Hull's localities had similar levels of alcohol consumption, with no significant differences once age differences had been allowed for

Hull's Health and Lifestyle Survey 2007: Alcohol Report

Summary

During 2007, 4,086 residents of Hull, who were broadly representative of Hull's overall population, participated in a Health and Lifestyle survey which collected information on a variety of topics including alcohol consumption.

Men drink alcohol more frequently than women, as do younger survey responders. Over 60% of men and 45% of women had drunk alcohol the previous week, as had 55% of those aged 18-64 years compared to 50% for those aged 65-74 years and 39% for those aged 75+ years. Residents living in the most deprived areas of Hull (defined by the local Index of Multiple Deprivation 2004 quintile) were more likely to never drink alcohol (28%) compared to those living in the least deprived quintile (17%). In the most deprived quintile, 45% had drunk alcohol in the previous week compared to 57% in the least deprived quintile.

The percentage of men who never drank alcohol increased with age (from 15% for men aged 18-24 years to 26% for men aged 75+ years), but for women the pattern was slightly different with 24% of those aged 18-24 years never drinking alcohol decreasing to 19% for those aged 45-64 years and then dramatically increasing to 33% for those aged 65-74 years and 49% for those aged 75+ years. The percentage drinking excessively (22-42 weekly units) was considerably higher for young men; 17% for those aged 18-44 years reducing to 3% for those aged 75+ years. A further 16% of men aged 18-24 years, 10% of men aged 25-44 years and 7% of men aged 45-64 years drank dangerously (43+ weekly units) compared to around 1% of men aged 65+ years. A similar pattern with age was observed for women with 12% of those aged 18-24 years, 8% of those aged 25-44 years and 6% of those aged 45-64 drinking excessively (15-28 weekly units) compared to around 2% of women aged 75+ years. A further 3% of women aged 18-24 years falling to 1.6% for women aged 45-64 years drank dangerously (29+ units last week) with none of the women aged 75+ years who were surveyed drinking dangerously. The percentage drinking excessively or dangerously was highest for people living in the second most deprived areas (20%), but similar across the other four deprivation quintiles (13% to 15%).

Half of male drinkers aged 18-24 years drink more than twice the recommended daily alcohol units on a single day (8+) at least once a week (the definition used in this report of "binge drinking") and this gradually fell with age to 42%, 33%, 20% and 6% for men aged 25-44, 45-64, 65-74 and 75+ years respectively. Approximately one-quarter of women drinkers aged 18-44 years drank twice the daily recommended limit (6+ units) at least weekly and this fell with age to 18%, 11% and 6% for women aged 45-64, 65-74 and 75+ years. Over a third of drinkers (35%) living in the most deprived and second most deprived quintile areas in Hull drank more than twice the recommended daily limits at least once a week and this fell to 29%, 27% and 22% in the least deprived quintiles with the lowest percentage in the least deprived quintile.

Half of men aged 18-24 years exceeded the weekly and/or twice the daily recommended alcohol units and this fell with age to 35% for men aged 45-64 years and to 7% for men aged 75+ years. For women, 22% of those aged 18-24 years exceeded the weekly and/or twice the daily recommended units with the percentage only slightly lower for those aged 25-44 years (20%) and 45-64 years (17%), but the percentage was only 8% and 3% of women aged 65-74 years and 75+ years respectively.

After adjusting for differences in the age distribution among groups, there were some statistically significant differences in the percentage of people who never drank alcohol. People living in the most deprived areas, on lower incomes, with lower qualifications, with poorer physical health, with poorer mental health and those who never exercised were all more likely to never drink.

However, very few statistically significant differences were found among the groups in terms of the age-adjusted prevalence of excessive drinking as defined by three overlapping groups: (i) more than the recommended weekly alcohol units; (ii) more than twice the recommended daily units at least once a week ("binge drinking"); and (iii) drinking excessively and/or binge drinking ("problem drinkers"). The exceptions were for smoking for both men and women and 5-A-DAY for men only. Current and former male smokers were more likely to drink excessively, binge drink and be problem drinkers compared to men who had never smoked, as were female current smokers relative to female never smokers. Female former smokers were more likely to drink excessively compared to women who had never smoked, but there was no difference for binge drinking or for problem drinking. The age-adjusted percentage of men drinking excessively, binge drinking and with problem drinking increased with the reduction in the daily portions of fruit and vegetables consumed.

Therefore, in terms of targeting people with regard to improving their alcohol behaviour, a broad approach should be used because no particular group has been highlighted with regard to their alcohol consumption, with the exception of young people, smokers and men who eat few portions of fruit and vegetables. It may be very difficult to send messages on the risk of alcohol consumption on health to men who consume few fruit and vegetables as it is difficult to see how the message could be targeted at these men specifically. It may be possible to target smokers more easily by combining messages about the dangers of smoking and alcohol together. The easiest group to target with health messages on alcohol would be young people aged under 45 years, and these messages should be targeted at both men and women, but with particular emphasis on the men. However, substantial numbers of older men and women drink too much alcohol, so the health messages should not be targeted to the younger age groups exclusively.

Hull's Health and Lifestyle Survey 2007: Alcohol Report

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Hull's Health and Lifestyle Survey 2007: Alcohol Report

Aims

To examine alcohol consumption among survey responders in Hull's 2007 Health and Lifestyle Survey, in more detail than the main summary report which is available on <http://www.hullpublichealth.org>

Methods

Survey methodology

During early 2007, an adult (18+ years) Health and Lifestyle survey was carried out in Hull by the Hull Teaching Primary Care Trust (PCT) with a target of 4,000 residents. The survey was funded by OneHull with the fieldwork and data entry being undertaken by SMSR¹. Individuals were approached through interviewers knocking on doors and inviting the household member to participate in the survey; an interview was completed or a questionnaire was left for self-completion and the interviewer collected the questionnaire at an agreed later date. Quota sampling was used based on gender, ten-year age group, nine geographical areas and employment status so that the resulting sample was broadly representative of Hull's overall population with regard to these characteristics. A total of 4,086 residents participated in the survey, with approximately one in three households approached having a household member agreeing to participate in the survey. Concurrently, a Black and Minority Ethnic group (BME) Health and Lifestyle survey was undertaken. However, due to the survey methodology the survey responders were not necessarily representative of Hull's BME population, so findings have not been included within this report. Additionally, a final question within the questionnaire asked if survey responders would like to become a Hull PCT panel member to help with further research. From individuals agreeing to become panel members, six 'reflector' groups were held involving 8-12 participants where more in-depth information was obtained on health and risk factors. It is not known how well these few participants represented views and opinions of Hull's residents within their individual groups. Further information on the BME survey results and the reflector group findings in relation to alcohol are given in reports on www.hullpublichealth.org

Comparisons over time

A local Health and Lifestyle survey conducted in Hull by the Public Health Development Team² during 2003 which included information on levels of alcohol consumption as well as other health and health-related lifestyle information. A random sample of people aged between 16 and 84 years who were registered with a General Practitioner (GP) within Hull were sent a self-completion questionnaire. The questionnaire was returned by 1,716 Eastern Hull PCT and 1,560 West Hull PCT residents (out of 6,500) giving an

¹ www.smsr.co.uk

² Working across four PCTs within Hull and East Riding of Yorkshire.

overall response rate of 50%, which compares favourably to other recent general population surveys, especially in urban areas.

Although the most recent survey conducted during 2007 used different survey methodology (quota sampling), both surveys are broadly representative of the population of Hull as a whole, and can be validly compared to give recent trends.

National comparisons

Local data on alcohol consumption can be compared to national surveys. Both the Health Survey for England (HSE) and General Household Survey (GHS) collect information on alcohol consumption. However, some of the questions differ slightly so it is not possible to examine all the local alcohol survey information in relation to a national comparison. Both the HSE and GHS defines adults as those aged 16+ whereas the local surveys only included those aged 18 years or over.

Survey questions

Men and women were asked how often they drank alcohol; the responses were: everyday; 4-6 days a week; 1-3 days a week; 1-3 days a month; less than once a month; and never.

Survey responses were also asked if they had drunk alcohol over the last seven days, and if so, were asked to specify the number of pints of ordinary and strong beer, lager or cider, number of glasses of wine (pub measures with “count large glass as 1½ pub measure glasses”), pub measure glasses of sherry, pub measures of spirits, bottles of alcopops, and pints of low alcohol beer or wine. They were then asked if this drinking was typical of their usual drinking (within the last three months), and given responses yes, no normally drink less or no normally drink more.

Men and women were asked to answer separate questions to assess the frequency of binge drinking (8 or more units for men or 6 or more units for women on a single day). They were asked how often they drank 8+ or 6+ units of alcohol on a single day with the additional information “where 8 units is 4 pints or 5 small glasses of wine (just under one bottle of wine) or 8 pub measures of whisky” for men and “where 6 units is 4 small glasses of wine (two-thirds of a bottle of wine) or 3 pints or 6 pub measures of vodka” for women. The responses were the same as for the frequency of drinking alcohol mentioned above.

The previous Health and Lifestyle survey conducted during 2003 did not include all the questions from the current survey. Survey responders were asked how frequently they drank alcohol, if they had drunk alcohol in the previous week, and if so, the number of pints or glasses for each type of drink. These questions were identical to those in the current survey except that alcopops was not included in the list of drinks, and survey responders were asked to specify the number of pub measure size glasses of wine (with no comment on large glasses of wine).

The HSE used a similar question regarding the frequency of drinking alcohol. Survey responders were asked if they drank in the previous seven days, and asked about the number of drinks (for each type) that they drank on the heaviest drinking day of the last week. Therefore, usual weekly units cannot be compared with the HSE, and whilst the frequency of drinking alcohol is included on the questionnaire it is generally not included in the reports.

The GHS included slightly different questions on alcohol consumption. People were asked if they drank alcohol or not, and if they did were asked to specify the quantity which ranged from “hardly drink at all” to “drink heavily”. Survey responders were then asked the types of alcoholic drinks they had consumed over the last 12 months, and asked to specify the number of pints/cans/bottles/glasses they had drunk on any one day during the last 12 months for each type of alcoholic drink. They were also asked if they had drunk over the previous seven days, and if so, on how many days they drank alcohol, and if more than one day, they were asked if the alcohol consumed was the same each day. They were asked to specify which day of the week they drank the most or had their last alcoholic drink, and were then asked what they drank on that day.

Calculating alcohol units

In the local survey, the number of alcohol units drunk the previous week were calculated. A pint of ordinary strength and a pint of strong beer, lager or cider were counted as two and three units respectively. Glasses of wine and bottles of alcopops were each counted as 1.5 units. Glasses of sherry, pub measures of spirits and pints of low alcohol beer or wine were counted as one unit. The sum over all the drinks was calculated for each individual to give the total number of weekly alcohol units consumed.

The GHS calculated alcohol units by using the number of units for each type of alcohol drunk on a typical day by the frequency of drinking alcohol³. In the most recent GHS survey, the number of alcohol units were adjusted as stronger drinks are more readily available and wine is generally served in larger glasses compared to a few years' ago. The HSE also applied similar changes in their alcohol unit calculations. Therefore, it is more difficult to compare trends over time for the national surveys. The local survey used similar calculations in its estimation of weekly alcohol units, so weekly units of alcohol consumption in Hull are comparable with the national data. However, the GHS adjusted their calculation of binge drinking to use more than eight units and more than six units rather than eight or more and six or more units for men and women respectively (i.e. local survey include exactly eight units and exactly six units). The GHS examined binge drinking on the heaviest drinking day of the *previous week*, whereas the local survey defined binge drinking based on a typical period. The reverse was true for weekly alcohol consumption with the local survey enquiring about last week and GHS asking about a typical period. Nevertheless, despite the differing definitions, broad comparisons can be made.

³ Multiplying by seven for alcohol consumption ‘almost every day’, by 5.5 for ‘5 or 6 days a week’, by 3.5 for ‘3 or 4 days a week’, by 1.5 for ‘once or twice a week’, by 0.375 (1.5/4) for ‘once or twice a month’, by 0.115 (6/52) for ‘once every couple of months’, and by 0.029 (1.5/52) for ‘once or twice a year’.

Alcohol as a risk factor for poor health and disease

In contrast to many other risk factors for poor health and disease, there is evidence that there are some health benefits for people drinking small amounts of alcohol regularly who have a lower risk of some diseases such as coronary heart disease compared to teetotallers. However, not all researchers agree with this, and some have suggested that the lowest risk for moderate drinkers could occur because people who are ill are more likely to not drink alcohol. Thus the moderate drinkers appear to have better health than those who never drink.

However, for many other diseases, there is an increased risk for people drinking alcohol compared to those who never drink particularly those who drink too much or binge drink or both. These include liver damage, osteoporosis, pancreatitis, obesity and high blood pressure which increase the risk of heart disease and stroke, as well as increased risks of some types of cancer (mouth, oesophagus, liver, stomach, colon, rectum and perhaps breast cancer in women).

National recommended guidelines for alcohol

It is recommended that men and women drink no more than 21 and 14 units of alcohol per week respectively. However, there is also a recommendation against consuming too much alcohol in a single day. It is recommended that men and women do not exceed 4 and 3 units respectively on a single day.

Safe⁴ weekly alcohol consumption is defined as 1-21 and 1-14 units for men and women respectively, excessive weekly alcohol as 22-50 and 15-35 units respectively and dangerous weekly alcohol consumption as more than this. The definition of binge drinking used in this report is based on usual consumption of twice the recommended daily alcohol limits (6+ units for men and 8+ units for women). Men and women who reported this level of drinking on at least one day per week based on their usual drinking patterns were classified as binge drinkers. Drinking excessively and/or binge drinking is referred to as “problem drinking” within this report.

Statistical terms

The various statistical terms and statistical methods used in this report are explained in the **Appendix** on **page 54**.

Deprivation

The Index of Multiple Deprivation (IMD) 2004 score is a measure of deprivation derived for lower layer Super Output Area (LLSOA) across England. These geographical areas have a minimum population size of 1,000 and a mean population size of 1,500. Each individual participating in the survey was assigned a deprivation score based on the

⁴ The “none” category includes alcohol consumption which is less than one unit.

LLSOA in which they lived (from their postcode)⁵. Individual deprivation scores were then assigned to one of five different groups ranging from the 20% most deprived to the 20% least deprived areas in Hull (local quintiles).

Results

Frequency of alcohol consumption

Table 1 gives the frequency of drinking alcohol based on the number of days per week (dpw) or number of days per month (dpm) alcohol is usually consumed. Men drink alcohol more frequently than women, as do younger survey responders. Men and women were asked if they had drunk any alcohol in the previous week, and 60.8% of men and 45.5% of women had done so. This corresponds to information provided in **Table 1** with 52.8% of men and 32.7% of women drinking alcohol on a weekly basis and a further 16.7% of men and 20.4% of women drinking alcohol on between one and three days per month. For those aged 18-64 years, 55.1% had drunk alcohol in the previous week compared to 49.5% of those aged 65-74 years and 39.1% of those aged 75+ years.

Table 1: Frequency of alcohol consumption by age and gender

Gender	Age (yrs)	Number of responders	Frequency of alcohol consumption (%)					
			Daily	Very often (4-6 dpw)	Often (1-3 dpw)	Fairly often (1-3 dpm)	Rarely (<1 dpm)	Never
Men	18-24	293	7.2	16.4	36.2	17.4	8.2	14.7
	25-44	741	8.1	8.8	36.7	19.6	10.9	15.9
	45-64	531	10.4	11.3	31.6	16.4	13.9	16.4
	65-74	224	9.4	7.6	34.8	12.5	14.3	21.4
	75+	181	12.2	6.1	20.4	10.5	25.4	25.4
	All	1,983	9.1	10.2	33.5	16.7	13.1	17.4
Women	18-24	269	0.7	3.4	31.2	23.4	17.5	23.8
	25-44	752	1.7	3.9	27.4	24.1	21.9	21.0
	45-64	619	2.9	6.5	26.7	20.5	24.6	18.9
	65-74	248	2.4	4.8	22.2	12.9	25.0	32.7
	75+	185	3.8	4.3	13.5	10.8	18.4	49.2
	All	2,083	2.3	4.7	25.7	20.4	22.2	24.7

Table 2 gives the frequency of alcohol consumption by geographical area of residence. There are slight differences in the frequency of alcohol consumption, and some of these minor differences will be related to different areas having different age and gender population structures. Just under a half of people in North Carr (48.0%) and Park (49.7%) had drunk alcohol in the previous week. For other areas this was slightly higher than a half, with the highest percentages for Riverside East (55.0%), Wyke (56.9%) and

⁵ This gives an indication of deprivation as it would have been too time-consuming to collect information necessary to obtain social class of the survey responder. Some individuals will live in very deprived areas, but have a relatively high social class and/or income, and vice versa.

West (57.1%). Fifty-one percent of people in North and East Locality had drunk alcohol in the previous week compared to 56% of people in West Locality.

Table 2: Frequency of alcohol consumption by geographical area of residence

Area committee area / Locality	Number of responders	Frequency of alcohol consumption (%)					
		Every day	4-6 dpw	1-3 dpw	1-3 dpm	<1 dpm	Never
North Carr	277	4.7	4.7	30.7	21.7	20.6	17.7
Northern	541	5.7	6.3	31.1	13.9	20.5	22.6
North Locality	818	5.4	5.7	30.9	16.5	20.5	20.9
East	606	6.8	7.4	27.9	15.5	20.0	22.4
Park	740	5.7	7.4	29.3	18.4	15.9	23.2
Riverside (East)	222	6.3	7.7	33.8	17.6	9.5	25.2
East Locality	1,568	6.2	7.5	29.4	17.2	16.6	23.2
Riverside (West)	520	6.0	8.8	25.8	19.2	18.5	21.7
West	576	4.7	5.4	30.4	26.0	18.9	14.6
Wyke	584	4.8	10.1	30.5	17.3	15.2	22.1
West Locality	1,680	5.1	8.1	29.0	20.9	17.5	19.4

Table 3 gives the frequency of drinking alcohol among the local deprivation quintiles. People living in the least deprived areas of Hull drink alcohol more frequently than those in living in the most deprived areas. In the most deprived areas of Hull, 44.8% of people had drunk alcohol in the previous week and this percentage gradually increased to 57.3% in the least deprived quintile.

Table 3: Frequency of alcohol consumption by local deprivation quintile

IMD 2004 local deprivation quintile	Number of responders	Frequency of alcohol consumption (%)					
		Every day	4-6 dpw	1-3 dpw	1-3 dpm	<1 dpm	Never
Most deprived	667	5.1	6.4	25.8	15.1	19.8	27.7
2	527	6.1	6.6	27.5	19.0	18.6	22.2
3	763	5.5	6.0	28.8	17.0	18.3	24.2
4	1,045	5.4	8.2	31.5	19.1	17.1	18.7
Least deprived	885	6.1	8.4	30.4	20.9	17.5	16.7

Number of alcohol units consumed by drinkers

Table 4 gives the number of alcoholic units consumed by men and women for different ages for those who drank alcohol in the previous week. The number of male drinkers who had drunk 29 or more units of alcohol in the previous week varied dramatically with age from 41.0% for men aged 18-24 years to 3.3% for men aged 75+ years. Around 10% of women aged under 45 years had drunk 22 or more units of alcohol in the previous week and this percentage halved for women aged 45-64 years; only one women aged 65+ years had drunk more than 21 units of alcohol the previous week.

Table 4 also gives the median⁶ number of alcohol units consumed which is ‘middle’ number of units where half of the people in the group have drunk less than this number and half have drunk more than this number of units. For further information on the median see the **Appendix** on **page 54**.

Table 4: Number of alcohol units consumed last week for drinkers by age and gender

Gender	Age (yrs)	Number of responders	Alcohol units in last week (%)					Median units
			1-7	8-14	15-21	22-28	29+	
Men	18-24	183	13.7	19.1	16.4	9.8	41.0	22.0
	25-44	455	14.7	22.9	18.2	13.0	31.2	19.0
	45-64	328	22.3	27.4	17.1	12.5	20.7	15.0
	65-74	137	35.8	40.2	13.1	3.6	7.3	10.0
	75+	91	58.2	22.0	11.0	5.5	3.3	7.0
	All	1,194	22.4	25.5	16.5	10.7	25.0	16.0
Women	18-24	130	38.5	31.5	19.2	4.6	6.1	8.8
	25-44	340	48.8	28.5	12.1	5.0	5.6	7.5
	45-64	314	56.7	28.0	9.9	2.2	3.2	6.0
	65-74	96	76.0	18.8	5.2	0.0	0.0	4.5
	75+	51	76.5	15.7	5.9	2.0	0.0	4.0
	All	931	54.4	27.1	11.3	3.3	4.0	6.5

Twenty percent of men and 22% of women usually drank less, and 11% of men and 6% of women usually drank more compared to last week. However, whether last week represented typical drinking or not differed among age groups as illustrated in **Table 5**. We would expect this pattern with a slightly higher percentage of people drinking normally drinking less due to special events. Drinking patterns will be still representative.

Table 5: Whether last week represented typical drinking or not by age and gender

Age (years)	Number of responders	Last week represented typical drinking (%)		
		Yes	No, normally drink less	No, normally drink more
16-24	431	54.1	29.5	16.5
25-44	1,128	65.8	23.9	10.3
45-64	878	76.1	17.1	6.8
65-74	319	84.6	14.1	1.3
75+	209	84.7	14.8	0.5

Table 6 gives the number of alcohol units for the people who had drunk alcohol in the previous week by area of residence. Again, any differences found could reflect differences in the age-gender population structure within a particular geographical area.

⁶ The median is a preferred measure of the ‘typical’ value rather than the average in the case of alcohol units where there could be a very small number of people with a high number of units, which unduly increase the average. The median is not influenced by such extreme values.

Table 6: Number of alcohol units consumed last week for drinkers by geographical area of residence

Gender	Area committee area / locality	Number of responders	Total units in last 7 days (%)					Median units
			1-7	8-14	15-21	22-28	>28	
Men	North Carr	69	11.6	18.8	26.1	8.7	34.8	20.0
	Northern	177	19.2	28.2	17.5	15.3	19.8	16.0
	North Locality	246	17.1	25.6	19.9	13.4	24.0	17.0
	East	157	21.0	24.8	16.6	11.5	26.1	16.0
	Park	204	22.1	27.0	16.2	11.3	23.5	15.5
	Riverside (East)	63	27.0	34.9	11.1	4.8	22.2	12.0
	East Locality	424	22.4	27.4	15.6	10.4	24.3	14.8
	Riverside (West)	171	23.4	21.1	14.6	7.6	33.3	17.0
	West	181	26.5	28.2	17.1	8.8	19.3	12.0
	Wyke	178	24.2	21.3	15.7	12.4	26.4	16.0
	West Locality	530	24.7	23.6	15.8	9.6	26.2	15.0
Women	North Carr	63	57.1	22.2	17.5	3.2	0.0	6.0
	Northern	107	57.9	27.1	7.5	5.6	1.9	6.0
	North Locality	170	57.6	25.3	11.2	4.7	1.2	6.0
	East	151	54.3	26.5	12.6	1.3	5.3	6.5
	Park	161	51.6	34.2	8.1	3.1	3.1	7.0
	Riverside (East)	58	56.9	20.7	12.1	6.9	3.4	6.5
	East Locality	370	53.5	28.9	10.5	3.0	4.1	7.0
	Riverside (West)	97	57.7	19.6	9.3	5.2	8.2	6.0
	West	147	54.4	29.3	10.9	2.0	3.4	6.0
	Wyke	150	50.7	26.7	14.7	3.3	4.7	7.0
West Locality	394	53.8	25.9	11.9	3.3	5.1	6.3	

Table 7 gives number of alcohol units drunk in the last week by local deprivation quintile for people who had drunk some alcohol during the last week. Whilst a higher percentage of people who lived in the most deprived areas never drank alcohol (Table 3), the number of alcohol units consumed by those who had drunk alcohol in the last week who lived in the more deprived quintile was higher than those people who lived in the least deprived areas of Hull.

Table 7: Number of alcohol units consumed last week for drinkers by local deprivation quintile

Gender	IMD 2004 local quintile	Number of responders	Total units in last 7 days (%)					Median units
			1-7	8-14	15-21	22-28	>28	
Men	Most deprived	178	23.0	20.8	20.2	10.0	26.4	16.0
	2	166	16.9	19.3	15.7	10.8	37.4	20.0
	3	223	20.6	25.1	18.4	10.8	25.1	16.0
	4	294	24.8	28.6	15.0	12.6	19.0	14.0
	Least deprived	258	25.6	27.1	15.5	8.5	23.3	14.7

Gender	IMD 2004 local quintile	Number of responders	Total units in last 7 days (%)					Median units
			1-7	8-14	15-21	22-28	>28	
Women	Most deprived	118	50.0	30.5	8.5	4.2	6.8	7.5
	2	97	49.5	24.7	10.3	6.2	9.3	7.5
	3	159	52.8	26.4	13.2	3.1	4.4	7.0
	4	288	58.0	26.0	9.7	3.1	3.1	6.0
	Least deprived	245	55.9	26.1	13.9	2.4	1.6	6.0

Number of alcohol units consumed by all survey responders

Whilst it is useful to examine the total number of alcohol units consumed by those who had drunk alcohol during the previous week, it is also useful to assess the number of units in relation to the entire survey population and assess alcohol units in relation to the different national guideline limits for men and women. **Table 8** examines the total number of alcohol units for all survey responders including non-drinkers. Safe, excessive and dangerous drinking is defined in the section on **National recommended guidelines for alcohol on page 9**. Younger men are the most likely to drink excessively or dangerously with the highest percentage for those aged 18-24 years (32.1%), but closely followed by men aged 25-44 years (27.2%). One-fifth of men aged 45-64 years consume an excessive or dangerous number of weekly alcohol units, but for men aged 65-74 years (6.7%) or 75+ years (4.4%), this was more unlikely. Women are less likely to drink excessively with 12.4% doing so in the 18-24 year age group, 9.3% in the 25-44 year age group, 6.8% in the 45-64 year age group, and 2.1% for those aged 65+ years. Only 20 women out of 2,090 surveyed drank dangerously.

Table 8: Number of alcohol units consumed last week by age and gender

Gender	Age (yrs)	Number of responders	Alcohol units consumed in last week (%)			
			None	Safe	Excessive	Dangerous
Men	18-24	290	36.9	31.0	21.7	10.3
	25-44	740	38.5	34.3	19.2	8.0
	45-64	532	38.3	41.2	13.9	6.6
	65-74	224	38.8	54.5	5.8	0.9
	75+	180	49.4	46.1	3.9	0.6
	All	1,979	39.4	39.0	15.2	6.5
Women	18-24	267	51.3	34.1	12.4	2.2
	25-44	741	54.1	35.5	9.3	1.1
	45-64	618	49.2	43.0	6.8	1.0
	65-74	249	61.4	36.5	2.0	0.0
	75+	185	72.4	25.4	2.2	0.0
	All	2,070	54.9	36.7	7.4	1.0

Table 9 gives the number of alcohol units by geographical area of residence. There are relatively small differences among the Areas and Localities, with those in the West Locality having a slightly higher percentage who drink excessively. This will be associated with differences in the age distribution among the geographical areas.

Table 9: Number of alcohol units consumed last week by geographical area of residence

Area committee area / locality	Number of responders	Alcohol units consumed in last week (%)			
		None	Safe	Excessive	Dangerous
North Carr	277	52.3	32.1	10.8	4.7
Northern	540	47.4	38.1	11.1	3.3
North Locality	817	49.1	36.1	11.0	3.8
East	602	48.8	36.5	12.5	2.2
Park	738	50.5	36.7	9.3	3.4
Riverside (East)	221	45.2	41.2	10.4	3.2
East Locality	1,561	49.1	37.3	10.7	2.9
Riverside (West)	516	48.1	34.1	12.2	5.6
West	576	43.1	43.9	11.1	1.9
Wyke	579	43.4	38.9	12.3	5.5
West Locality	1,671	44.7	39.1	11.8	4.3

As mentioned earlier, people living in the most deprived quintile areas compared to those in the least deprived areas were more likely to never drink alcohol but those who did drink tended to drink more alcoholic units. However, as can be seen in **Table 10**, it appears that those living in the most deprived areas are slightly more likely to drink dangerously, but slightly less likely to drink excessively so the percentage drinking excessively or dangerously combined is the lowest. The second most deprived local quintile has the highest percentage drinking excessively or dangerously (20%).

Table 10: Number of alcohol units consumed last week by local deprivation quintile

IMD 2004 local deprivation quintile	Number of responders	Alcohol units consumed in last week (%)			
		None	Safe	Excessive	Dangerous
Most deprived	666	55.6	31.4	8.6	4.5
2	525	49.9	30.1	14.5	5.5
3	759	49.7	35.4	11.2	3.7
4	1,041	44.1	42.6	10.6	2.8
Least deprived	880	42.8	42.8	11.5	2.8

Binge drinking in drinkers

Men and women were asked how frequently (based on days per week or days per month) they usually consumed more than twice the maximum recommended daily alcohol units in a single day (8+ units for men and 6+ units for women). The percentage of survey responders who never consumed this quantity of alcohol on a single day varied dramatically with age, and differed among men and women (**Table 11**).

Table 11: Consumption of 8+ or 6+ daily units for men and women for drinkers by age and gender

Gender	Age (yrs)	Number of responders	Frequency of drinking 8+ (men) or 6+ (women) units of alcohol in a single day (%)					
			Daily	Very often (4-6 dpw)	Often (1-3 dpw)	Fairly often (1-3 dpm)	Rarely (<1 dpm)	Never
Men	18-24	246	3.7	6.1	39.8	30.9	11.8	7.7
	25-44	606	4.8	3.8	33.5	26.6	17.7	13.7
	45-64	432	5.1	3.5	24.5	16.2	24.1	26.6
	65-74	170	1.2	3.5	15.3	10.0	13.5	56.5
	75+	127	0.8	0.0	5.5	3.9	9.4	80.3
	All	1,560	4.0	3.8	27.8	20.7	17.4	26.3
Women	18-24	184	0.5	1.6	22.3	28.8	34.2	12.5
	25-44	498	0.2	2.2	21.3	19.5	32.5	24.3
	45-64	402	1.5	1.5	15.2	18.2	22.9	40.8
	65-74	127	0.0	0.8	10.2	7.1	12.6	69.3
	75+	70	0.0	1.4	4.3	2.9	14.3	77.1
	All	1,285	0.7	1.7	17.4	18.2	26.8	35.1

There are slight variations in the frequency of men drinking 8+ units per day and women drinking 6+ units per day across the different Areas and Localities, which will be influenced by the age and gender structures of the populations (**Table 12**).

Table 12: Consumption of 8+ or 6+ daily units for men and women for drinkers by geographical area of residence

Area committee area / Locality	Number of responders	Frequency of drinking 8+ (men) or 6+ (women) units of alcohol in a single day (%)					
		Every day	4-6 dpw	1-3 dpw	1-3 dpm	<1 dpm	Never
North Carr	197	2.5	3.0	24.9	20.3	25.4	23.9
Northern	370	2.2	2.2	20.0	21.4	18.4	35.9
North Locality	567	2.3	2.5	21.7	21.0	20.8	31.7
East	415	1.4	2.9	25.5	15.4	23.4	31.3
Park	500	3.2	3.6	22.8	18.2	21.4	30.8
Riverside (East)	143	5.6	3.5	23.8	23.1	21.0	23.1
East Locality	1,058	2.8	3.3	24.0	17.8	22.1	30.0
Riverside (West)	377	3.7	2.7	29.7	17.0	21.0	26.0
West	451	1.6	2.0	17.7	21.7	23.7	33.3
Wyke	422	1.9	3.6	23.0	22.3	19.9	29.4
West Locality	1,250	2.3	2.7	23.1	20.5	21.6	29.8

Table 13 shows that men and women living in the more deprived areas drink 8+ or 6+ units per day respectively more frequently than those living in the least deprived areas of Hull.

Table 13: Consumption of 8+ or 6+ daily units for men and women for drinkers by local deprivation quintile

IMD 2004 local deprivation quintile	Number of responders	Frequency of drinking 8+ (men) or 6+ (women) units of alcohol in a single day (%)					
		Every day	4-6 dpw	1-3 dpw	1-3 dpm	<1 dpm	Never
Most deprived	420	3.6	3.6	27.9	18.3	20.2	26.4
2	368	3.8	3.3	28.0	21.7	20.1	23.1
3	534	2.1	3.2	23.8	20.6	21.7	28.7
4	755	2.3	2.5	22.0	19.6	22.3	31.4
Least deprived	663	1.5	2.3	18.6	17.0	23.1	37.6

Weekly units and binge drinking for all survey responders

Table 14 combines the frequency of drinking alcohol, number of alcohol units in the previous week and frequency of binge drinking for men and women for different ages, and examines alcohol consumption for all survey responders including those who never drink alcohol. **Table 15** combines the percentage who drink excessively and/or binge drink (“problem drinkers”). As expected there is a strong association with age for both men and women, with the percentage around twice as high in men compared to women.

Table 14: Frequency of weekly units of alcohol and binge drinking by age and gender

Gender	Age (yrs)	Number of responders	Alcohol (excessively: 21+/14+ units for men/women weekly and/or binge: 8+/6+ units for men/women > 1 per week), %				
			Never drinks	Acceptable weekly units, no binge	Problem drinkers		
					Acceptable weekly units, binge	Excessive weekly units, no binge	Excessive weekly units, binge
Men	18-24	287	15.0	34.8	18.1	7.7	24.4
	25-44	722	16.3	42.1	14.0	6.2	21.3
	45-64	518	16.8	48.3	14.3	7.3	13.3
	65-74	217	22.1	59.4	11.5	2.8	4.1
	75+	171	26.9	66.1	3.5	2.3	1.2
	All	1,928	17.9	46.7	13.4	6.0	15.9
Women	18-24	247	25.9	52.2	9.3	4.0	8.5
	25-44	652	24.2	55.8	9.5	2.0	8.4
	45-64	517	22.6	60.2	9.5	3.5	4.3
	65-74	207	39.1	53.1	5.8	1.4	0.5
	75+	161	56.5	40.4	2.5	0.6	0.0
	All	1,792	28.7	54.8	8.4	2.5	5.5

Table 15: Frequency of weekly units of alcohol and binge drinking by age and gender

Gender	Age (yrs)	Number of responders	Alcohol (excess: 21+/14+ units for men/women weekly and/or binge: 8+/6+ units for men/women>1dpw), %		
			Never drinks	Safe drinking	Excessive and/or binge (problem drinkers)
Men	18-24	287	15.0	34.8	50.2
	25-44	722	16.3	42.1	41.6
	45-64	518	16.8	48.3	34.9
	65-74	217	22.1	59.4	18.4
	75+	171	26.9	66.1	7.0
	All	1,928	17.9	46.7	35.4
Women	18-24	247	25.9	52.2	21.9
	25-44	652	24.2	55.8	19.9
	45-64	517	22.6	60.2	17.2
	65-74	207	39.1	53.1	7.7
	75+	161	56.5	40.4	3.1
	All	1,792	28.7	54.8	16.5

There are slight differences among the different Areas and Localities (**Table 16** and **Table 17**) at least partially due to differences in population structures.

Table 16: Frequency of weekly units of alcohol and binge drinking by geographical area of residence

Area committee area / Locality	Number of responders	Alcohol consumption (excessively: 21+ units for men or 14+ units for women weekly and/or binge: 8+ units for men or 6+ units for women more than once a week), %				
		Never drinks	Acceptable weekly units and no binge drinking	Problem drinkers		
				Acceptable weekly units but binge drinking	Excessive weekly units but no binge drinking	Excessive weekly units and binge drinking
North Carr	245	20.0	49.4	15.1	6.1	9.4
Northern	490	24.9	51.4	8.8	5.3	9.6
North Locality	735	23.3	50.7	10.9	5.6	9.5
East	550	24.7	48.2	12.2	4.7	10.2
Park	669	25.7	50.7	11.2	2.4	10.6
Riverside (East)	198	28.3	46.5	11.6	1.5	12.1
East Locality	1,417	25.7	48.8	11.6	3.2	10.7
Riverside (West)	486	23.3	45.9	12.6	3.1	15.2
West	534	15.7	60.7	10.3	5.6	7.7
Wyke	548	23.5	49.5	8.9	5.3	12.8
West Locality	1,568	20.8	52.3	10.5	4.7	11.8

Table 17: Frequency of weekly units of alcohol and binge drinking by geographical area of residence

Area committee area / Locality	Number of responders	Alcohol consumption (excessively: 21+ units for men or 14+ units for women weekly and/or binge: 8+ units for men or 6+ units for women >1 per week), %		
		Never drinks	Safe drinking	Excessive and/or binge (problem drinkers)
North Carr	245	20.0	49.4	30.6
Northern	490	24.9	51.4	23.7
North Locality	735	23.3	50.7	26.1
East	550	24.7	48.2	27.1
Park	669	25.7	50.7	24.2
Riverside (East)	198	28.3	46.5	25.3
East Locality	1,417	25.7	48.8	25.5
Riverside (West)	486	23.3	45.9	30.9
West	534	15.7	60.7	23.6
Wyke	548	23.5	49.5	27.0
West Locality	1,568	20.8	52.3	27.0

From **Table 18** and **Table 19**, it can be seen that people living in the more deprived areas of Hull are slightly more likely to be problem drinkers, but that the highest percentage of problem drinkers occurred in the second most deprived quintile.

Table 18: Frequency of weekly units of alcohol and binge drinking by local deprivation quintile

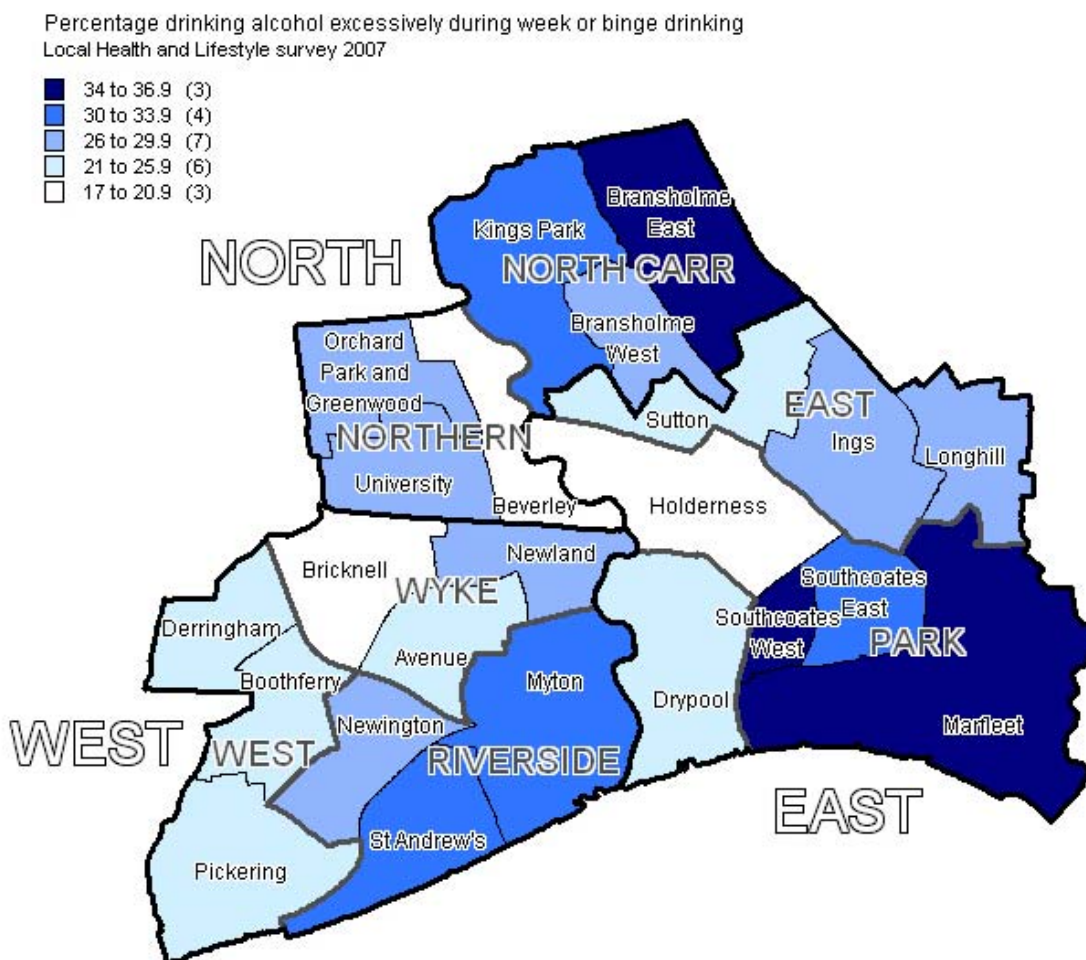
IMD 2004 local deprivation quintile	Number of responders	Alcohol consumption (excessively: 21+ units for men or 14+ units for women weekly and/or binge: 8+ units for men or 6+ units for women more than once a week), %				
		Never drinks	Acceptable weekly units and no binge drinking	Problem drinkers		
				Acceptable weekly units but binge drinking	Excessive weekly units but no binge drinking	Excessive weekly units and binge drinking
Most deprived	601	30.8	42.6	13.0	2.3	11.3
2	483	24.2	43.9	11.4	5.2	15.3
3	716	25.8	48.2	10.6	4.5	10.9
4	946	20.6	54.9	10.9	3.5	10.1
Least deprived	808	18.3	57.8	9.8	5.6	8.5

Table 19: Frequency of weekly units of alcohol and binge drinking by local deprivation quintile

IMD 2004 local deprivation quintile	Number of responders	Alcohol consumption (excessively: 21+ units for men or 14+ units for women weekly and/or binge: 8+ units for men or 6+ units for women more than once a week), %		
		Never drinks	Safe drinking	Excessive and/or binge (problem drinkers)
Most deprived	601	30.8	42.6	26.6
2	483	24.2	43.9	31.9
3	716	25.8	48.2	26.0
4	946	20.6	54.9	24.5
Least deprived	808	18.3	57.8	23.9

Figure 1 illustrates the percentage of problem drinkers (final column of Table 17 but at ward level).

Figure 1: Percentage of problem drinkers



Local trends over time

As mentioned in the section on **Survey questions** on **page 7**, there are slight differences in the survey methodology between the 2003 and 2007 local survey. Nevertheless, it is still possible to make broad local comparisons over time.

Figure 2 compares the frequency of drinking alcohol between the 2003 and 2007 local surveys for men of different ages. For men, there are relatively small differences in the frequency of alcohol consumption between 2003 and 2007. Slightly more younger men drink alcohol four or more times per week, but slightly more men across all age groups drink alcohol less than once a week with the biggest differences in the percentage of men aged 18-64 years who never drink alcohol which approximately doubled from around 7% in 2003 to around 15% in 2007.

Figure 2: Frequency of drinking alcohol for men by age, 2003 v 2007 local surveys

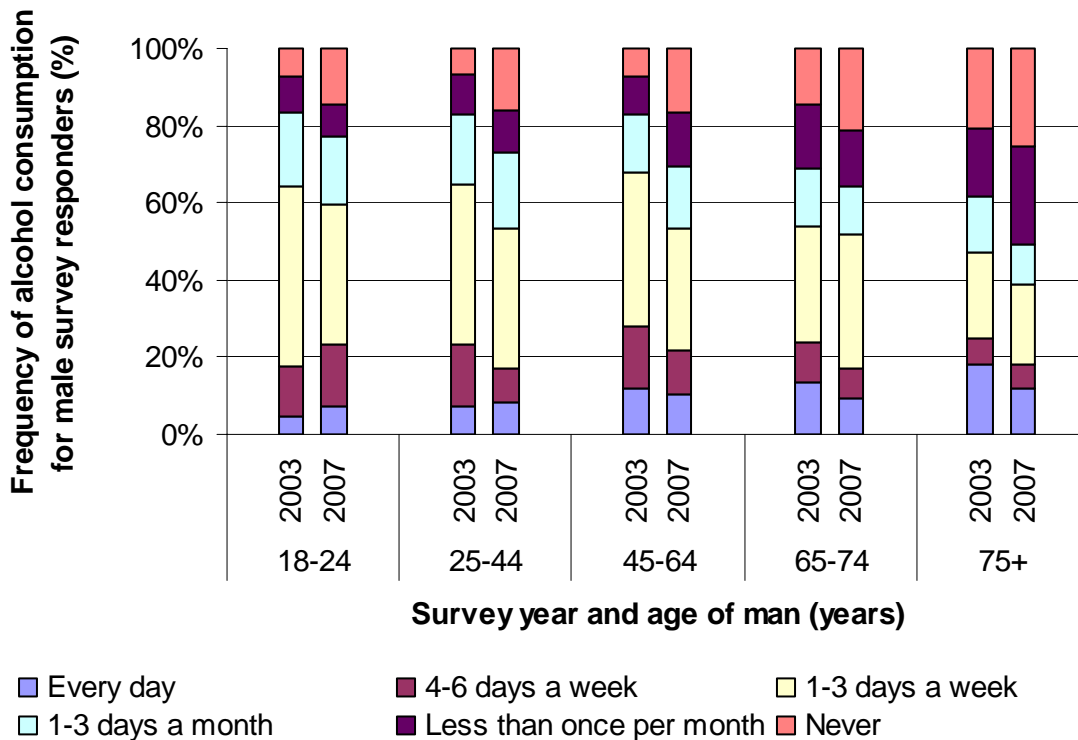


Figure 3 provides the equivalent comparison for women between 2003 and 2007. The differences between 2003 and 2007 are larger for women compared to men with the frequency of drinking alcohol tending to decrease, in particular for the younger age groups. The percentage of women aged 18-24 years never drinking alcohol increased from 5% to 24% between 2003 and 2007, and increased from 8% to 21% for women aged 25-44 years.

Figure 3: Frequency of drinking alcohol for women by age, 2003 v 2007 local surveys

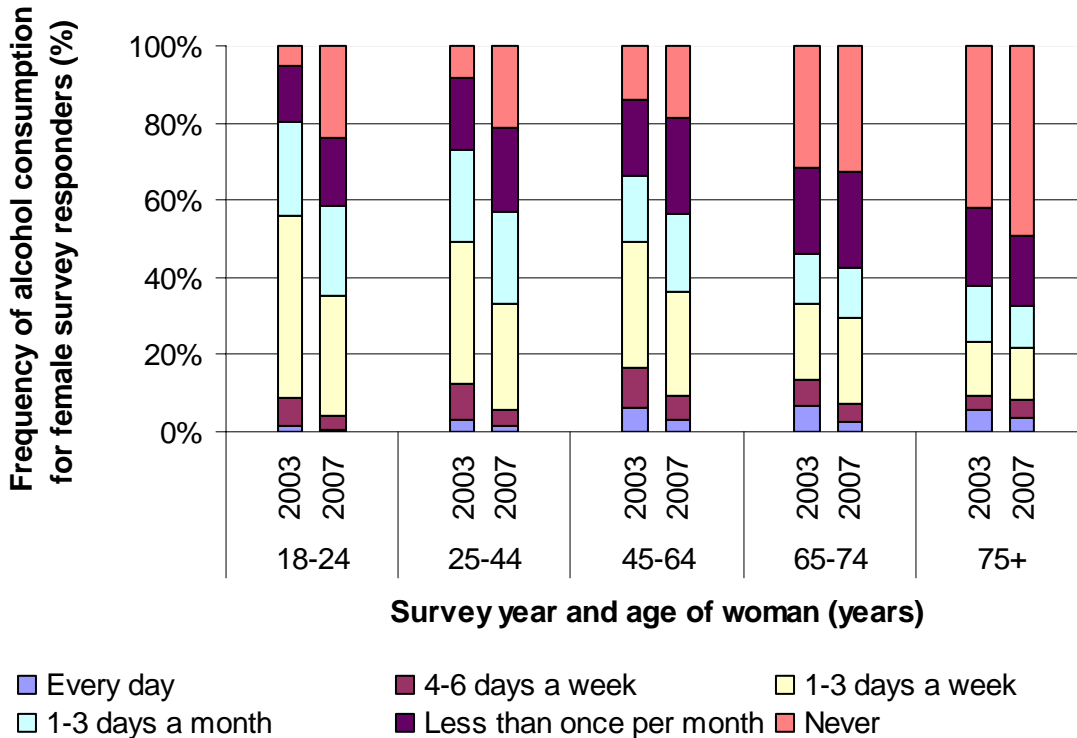


Figure 4 illustrates the changes between 2003 and 2007 in the number of alcohol units consumed in the previous week for men and women drinkers by age group (safe, excessive and dangerous drinking is defined in the section on **National recommended guidelines for alcohol** on **page 9**).

Figure 5 illustrates the equivalent information by local deprivation quintile instead of age. Men and women drinkers across most deprivation quintiles have a similar or higher percentage not drinking during the previous week for 2007 compared to 2003. However, in contrast, the percentage who drink excessively or dangerously has remained the same or increased between 2003 and 2007 for most of the local deprivation quintiles for men and women.

Figure 4: Alcohol consumption the previous week for men and women by age, 2003 v 2007 local surveys

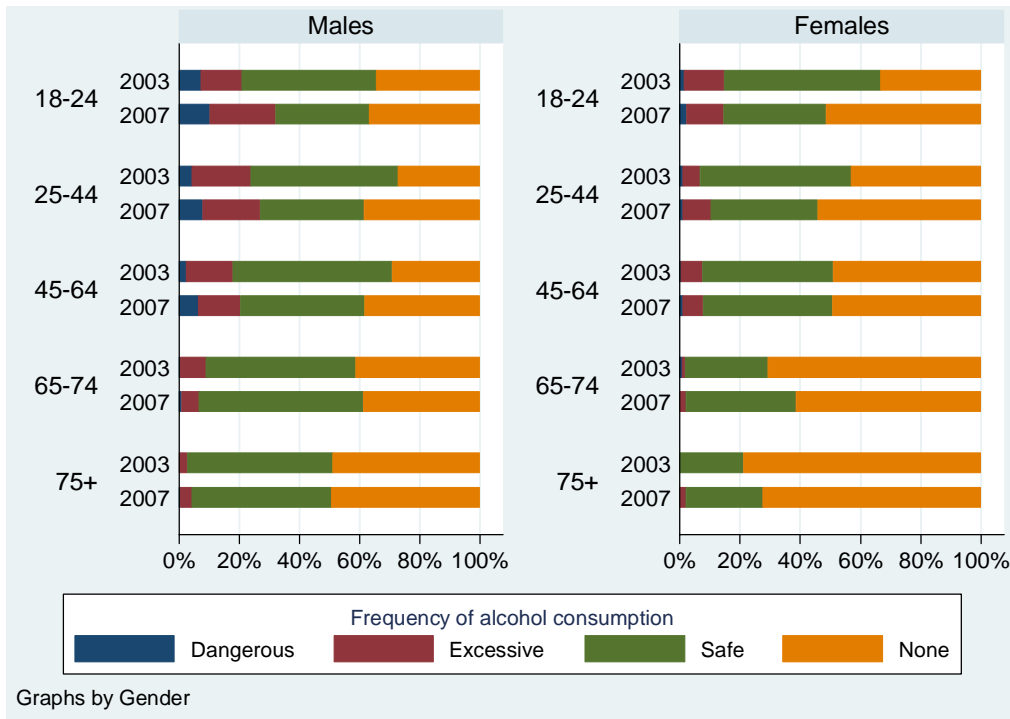
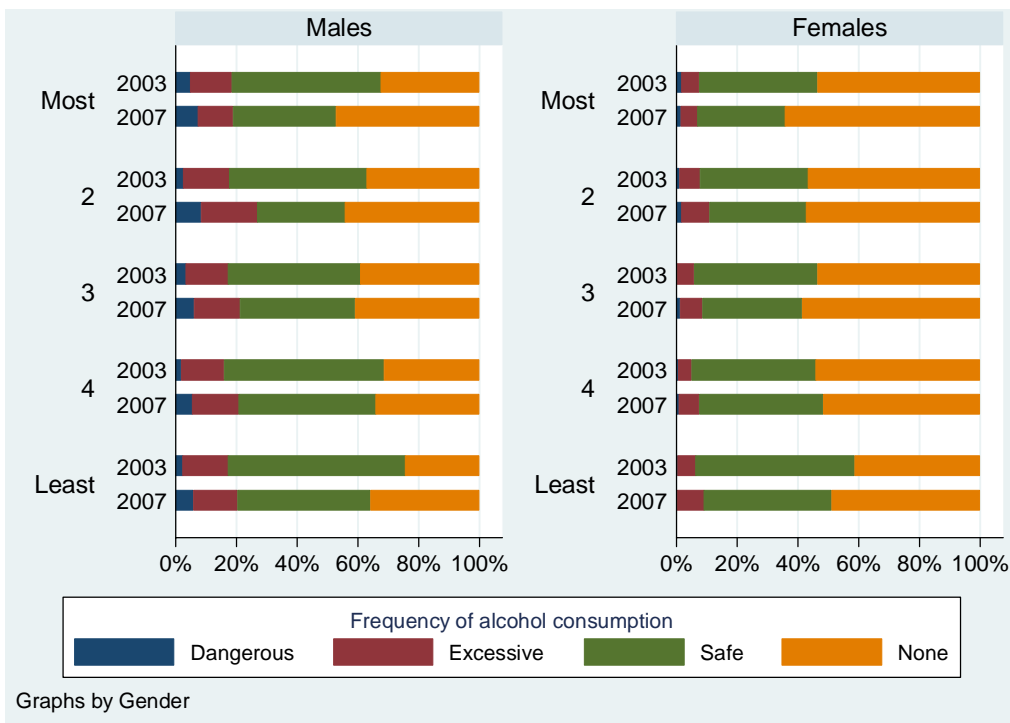


Figure 5: Alcohol consumption the previous week for men and women by local deprivation quintile, 2003 v 2007 local surveys



National comparisons

The most recent local survey (2007) can also be broadly compared with the GHS 2005. As with the local comparisons, differences in the survey methodology and questions occur (see section on **Survey questions** on **page 7**), but nevertheless broad comparison can still be made.

Table 20 gives the number of alcohol units consumed the previous week for the local surveys for those aged 18+ years compared to the GHS which measured typical drinking habits in those aged 16+ years.

Among men the percentage drinking dangerously (i.e. drinking more than 50 units per week) doubled in 2007, with a small increase in those drinking excessively (i.e. between 22 and 50 units per week). There was also an increase of those who did not drink in the preceding week (which was double the percentage reporting they were non-drinkers or drank less than one unit per week on average in the GHS). Hull males in 2007 equalled England males in the percentage deemed to be drinking dangerously.

Among women there was no change in dangerous drinking patterns (more than 35 units per week) remaining at 1%, half that reported for England. The number drinking excessively (15-35 units per week) increased from 6% to 7% in 2007, but was substantially lower than the percentage reported for England (11%). A majority of women in the Hull 2007 survey reported that they never drank alcohol (an increase on the 51% in 2003) which compares with one third of women in England reporting that they were non-drinkers or consume less than one unit per week on average.

Table 20: Local number of weekly alcohol units compared with number nationally

Gender	Survey	Alcohol consumption (%)			
		None	Safe	Excessive	Dangerous
Men	Hull 2003	33	50	14	3
	Hull 2007	39	39	15	6
	England 2005	19	57	18	6
Women	Hull 2003	51	42	6	1
	Hull 2007	55	37	7	1
	England 2005	35	51	11	2

Table 21 gives the percentage drinking excessively over the week in relation to binge drinking. Men in England had a slightly higher percentage who exceeded the weekly recommended units (29%) compared to men in Hull (26%), however, men in Hull were much more likely to drink more than twice the daily recommended limits (35%) compared to England (20%). A similar pattern occurred for women with 21% and 12% exceeding the weekly recommended number of alcoholic units in England and Hull respectively, but 12% and 20% undertaking binge drinking in England and Hull respectively.

Table 21: Weekly and daily alcohol in relation to national guidelines, Hull compared to England

Gender	Survey	Binge drinking and weekly guidelines (%)			
		Within weekly guidelines		Above weekly guidelines	
		Binge drinking		Binge drinking	
		Yes	No	Yes	No
Men	Hull 2007	16	57	19	7
	England 2005	7	63	13	16
Women	Hull 2007	12	77	8	4
	England 2005	5	75	7	14

Use of standardisation

It is important that alcohol consumption is examined in relation to the prevalence within different groups if the aim is to provide strategies and solutions to focus on that specific group. For instance, if levels of alcohol consumption or binge drinking are highest for people living in the most deprived areas in Hull, then there needs to be help provided for these people regardless of whether deprivation is the cause or other factors such as an older population. However, if you want to know if the prevalence is higher for those living in the most deprived areas, i.e. if deprivation is associated with the prevalence of alcohol consumption, it is necessary to take into account factors such as age and gender which are known to influence the prevalence and be associated with deprivation. If age and gender are not taken in to consideration, then if a difference in the prevalence of alcohol consumption is found, it will not be known whether deprivation is associated with the increased prevalence or whether the difference can be explained by other factors such as a difference in the age structure of the populations among the deprivation categories. See **Confounders** on **page 55** and **Standardisation** on **page 55** for more information.

In addition, it must be remembered that even if an association has been shown to exist between alcohol consumption and another factor, this does **not** prove that one causes the other. Furthermore, causation may run either way, or may be linked through another (confounding) variable.

The next section will examine the prevalence of alcohol consumption in relation to various measures of deprivation and health status without adjusting for age and gender, and the section following on from that will present the age-standardised prevalence.

Prevalence of alcohol consumption in relation to measures of deprivation

The prevalence of alcohol consumption in relation to local deprivation quintile is given in **Figure 6** for men and women separately.

Figure 6: Prevalence of alcohol consumption by deprivation (unadjusted for age and gender)

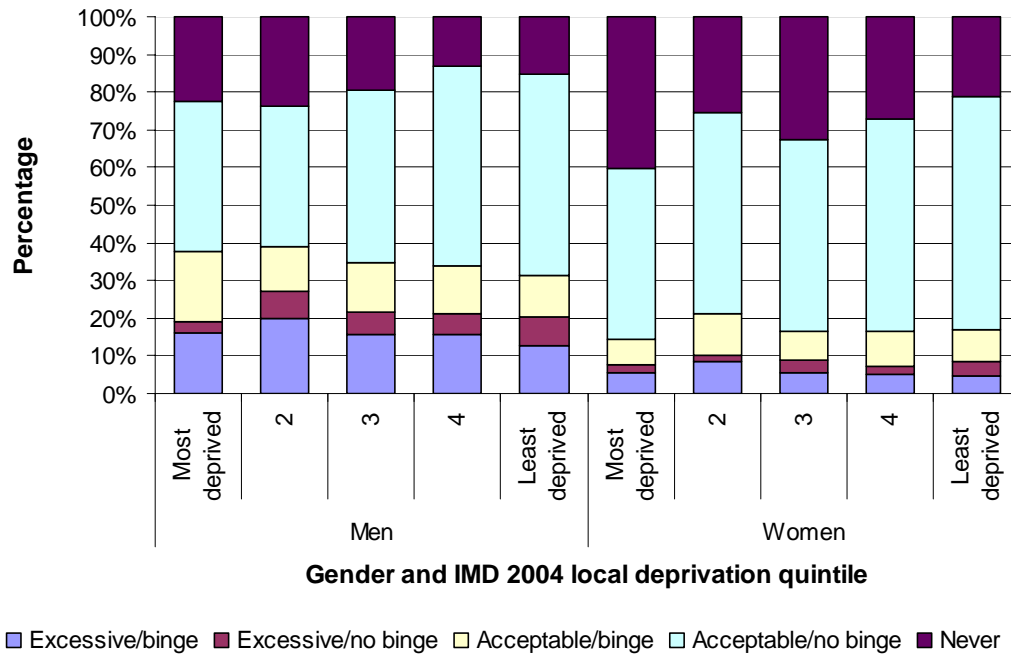
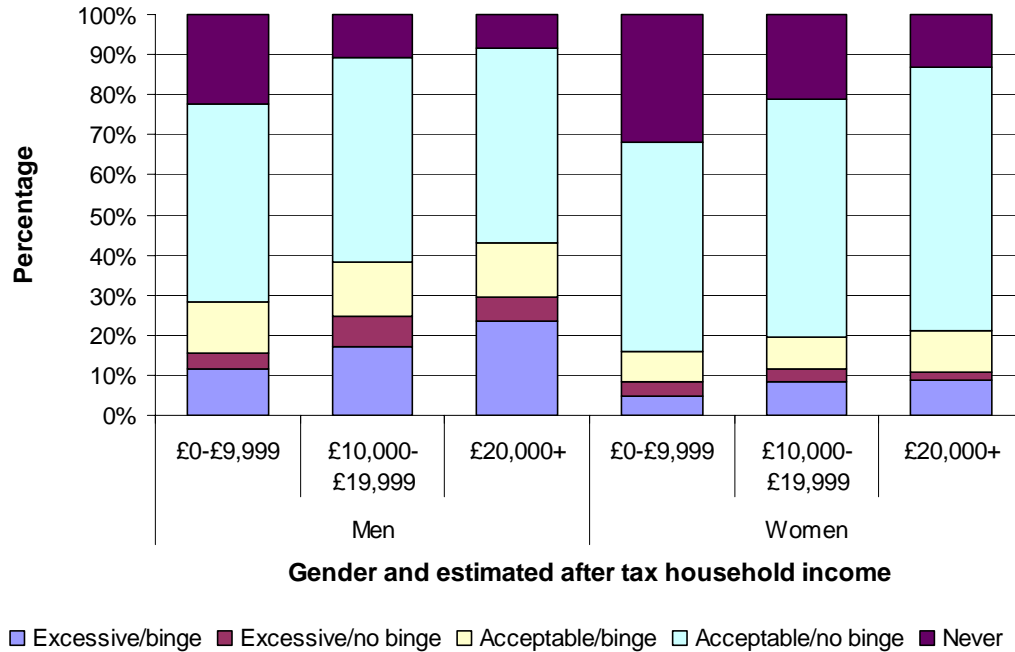


Figure 7 illustrates the prevalence of alcohol consumption in relation to estimated after tax household income⁷. It can be seen that women and in particular men in the higher income households are more likely to be problem drinkers compared to lower income households.

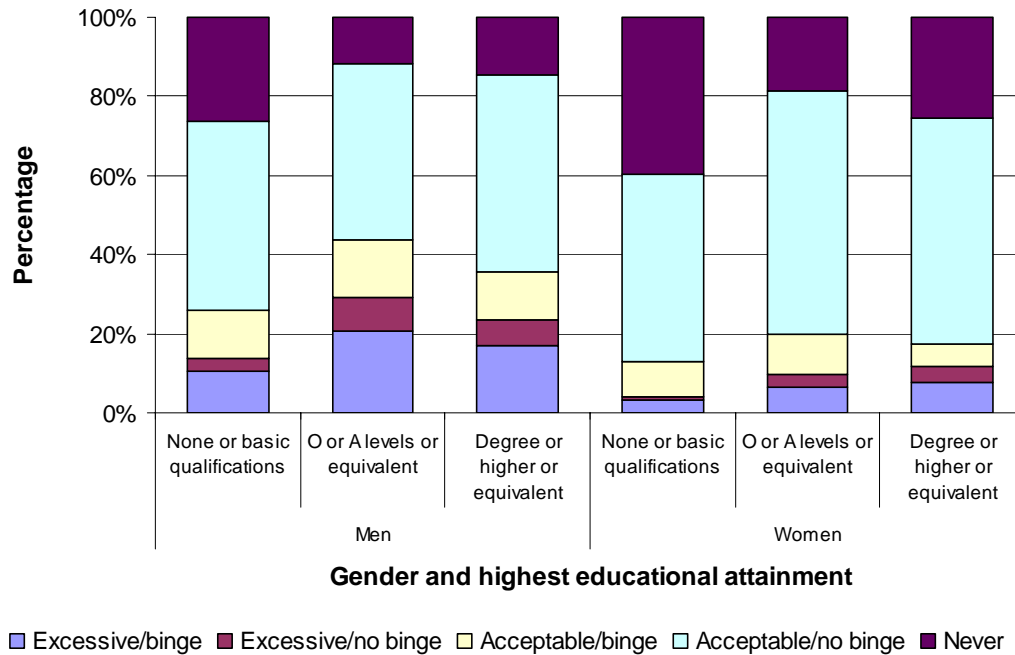
Figure 7: Prevalence of alcohol consumption by estimated after tax household income (unadjusted for age and gender)



⁷ Survey responders were asked to specify their household income category to nearest £5,000 or £10,000 depending on group and state whether this was before or after tax. An adjustment was made to estimate after tax household income category. Approximately 40% of survey responders did not complete the income questions, so it is possible that the information on income is biased (not representative of the household income of Hull's population).

People who have higher educational attainment are more likely to drink excessively, binge drink and be problem drinkers compared to those who have no qualifications or basic qualifications (**Figure 8**). However, this could be confounded by age, as the younger people in the survey were more likely to have qualifications and they were also more likely to drink exceed the recommended weekly units of alcohol and binge drink (see age-standardised percentages in section starting on **page 38**).

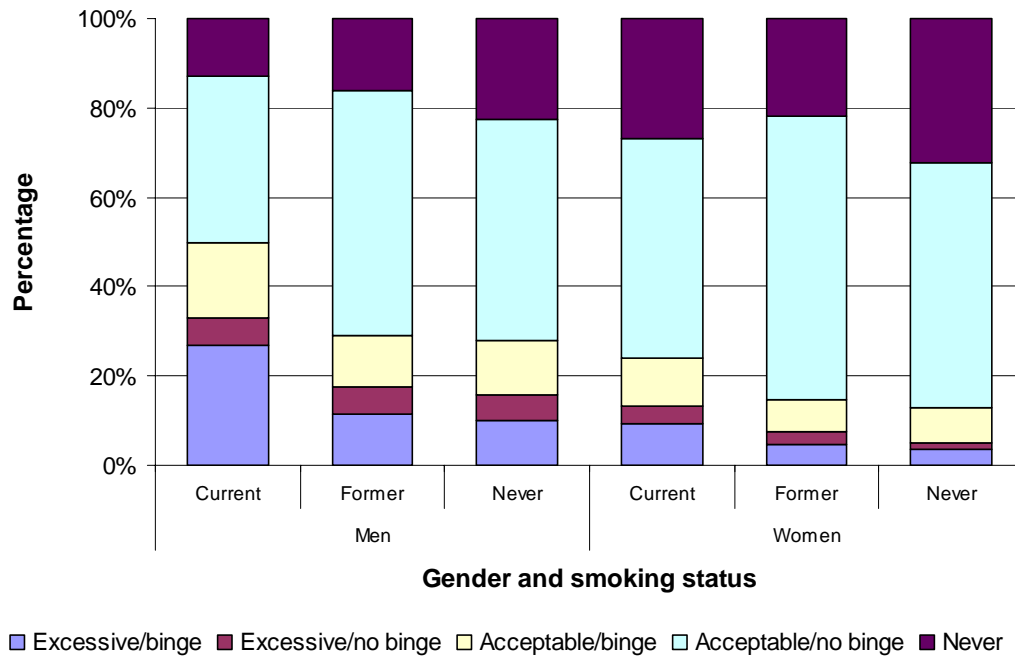
Figure 8: Prevalence of alcohol consumption by highest educational attainment (unadjusted for age and gender)



Prevalence of alcohol consumption in relation to smoking status

Current smokers are more likely to drink excessively, binge drink and be problem drinkers compared to those who never smoke, and this is particularly the case for men (**Figure 9**). Again, as young people have the highest prevalence of smoking this result could be confounded with age (see age-standardised percentages on **page 41**).

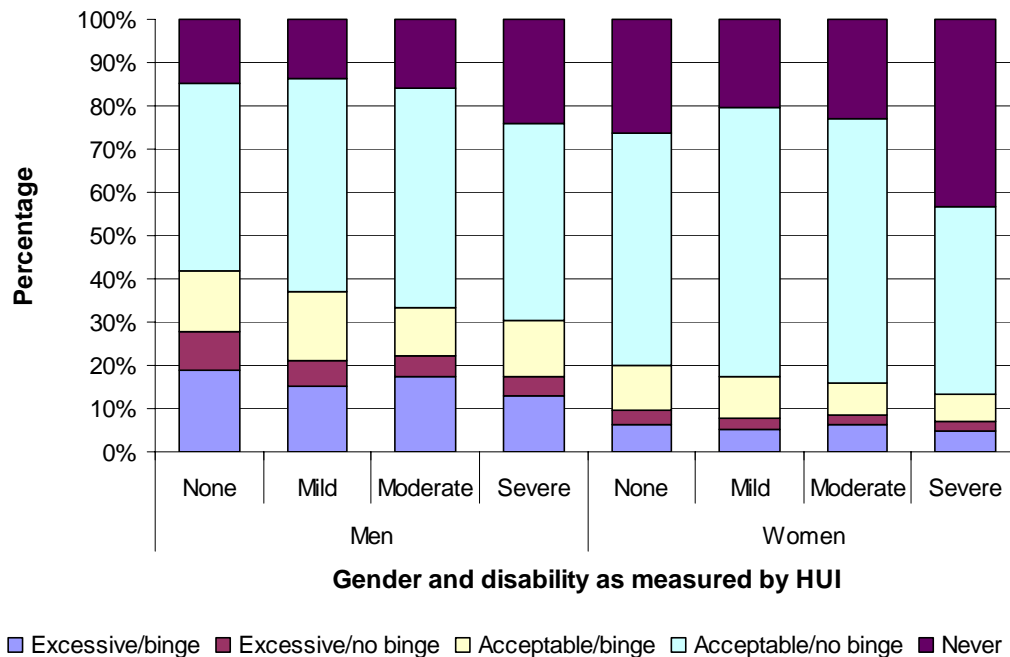
Figure 9: Prevalence of alcohol consumption by smoking status (unadjusted for age and gender)



Prevalence of alcohol consumption in relation to measures of physical and mental health

The Health Utility Index (HUI) is a scored health status measure reporting health-related quality of life on single attributes (vision, hearing, speech, ambulation/mobility, pain, dexterity, self-care, emotion and cognition) as well as having a single summary measure from the combination of these attributes⁸. The summary measure from -0.36 to 1 with 0 denoting death, 1 denoting the best health status and negative scores denoting very poor health scores. The HUI can be divided into four categories based on how much daily activities are affected by any disability: Not affected (score 1); mildly affected (score 0.89 to 0.99); moderately affected (score 0.70 to 0.88); and severely affected (score <0.70). People with the lowest levels of disability as defined by the Health Utility Index were more likely to be problem drinkers (**Figure 10**). However, age will be a confounder (see age-standardised percentages on **page 44**).

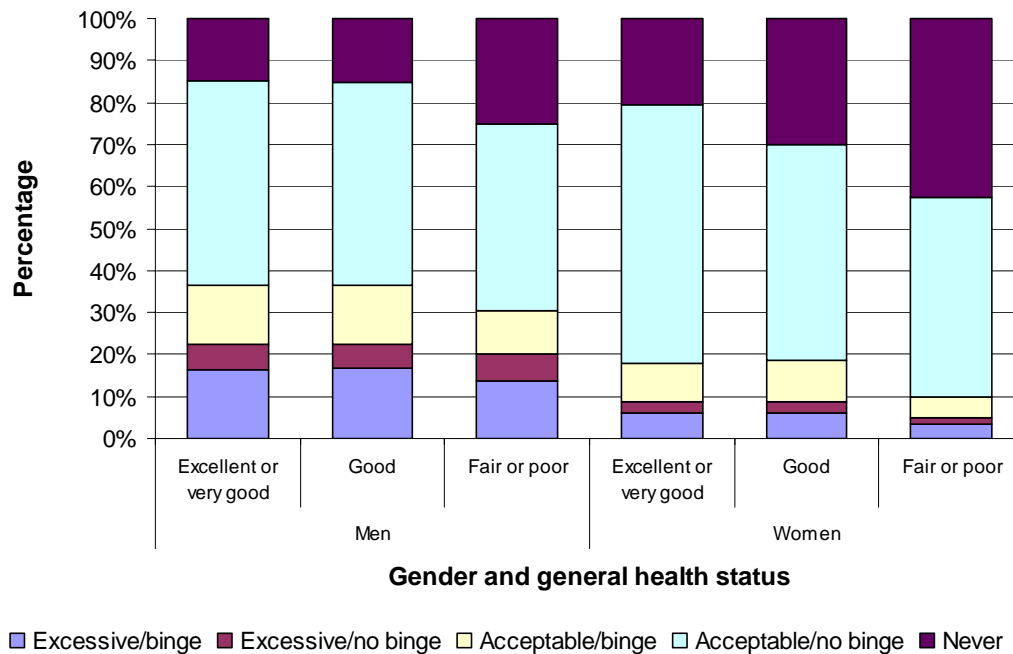
Figure 10: Prevalence of alcohol consumption by disability as measured by the Health Utility Index (unadjusted for age and gender)



⁸ It was not possible to calculate a summary score for all individuals unless a score was available for every attribute. For those who failed to answer all the questions and only had one or two of the attributes missing, the value of the attribute was imputed randomly from among the possible choices for the attribute for that particular person so that the summary score could be estimated (single attribute score remained missing). For example, if a person stated they could see well enough to read ordinary newsprint without glasses but it is not known whether they need glasses to see well enough to recognise a friend on the other side of the street, then the person would either be classified as scoring 3 (with glasses) or 1 (without glasses). If the person had only missed answering questions for two attributes at the most, then a value of 1 or 3 would be randomly imputed for 'modified vision score' so the summary score could be calculated.

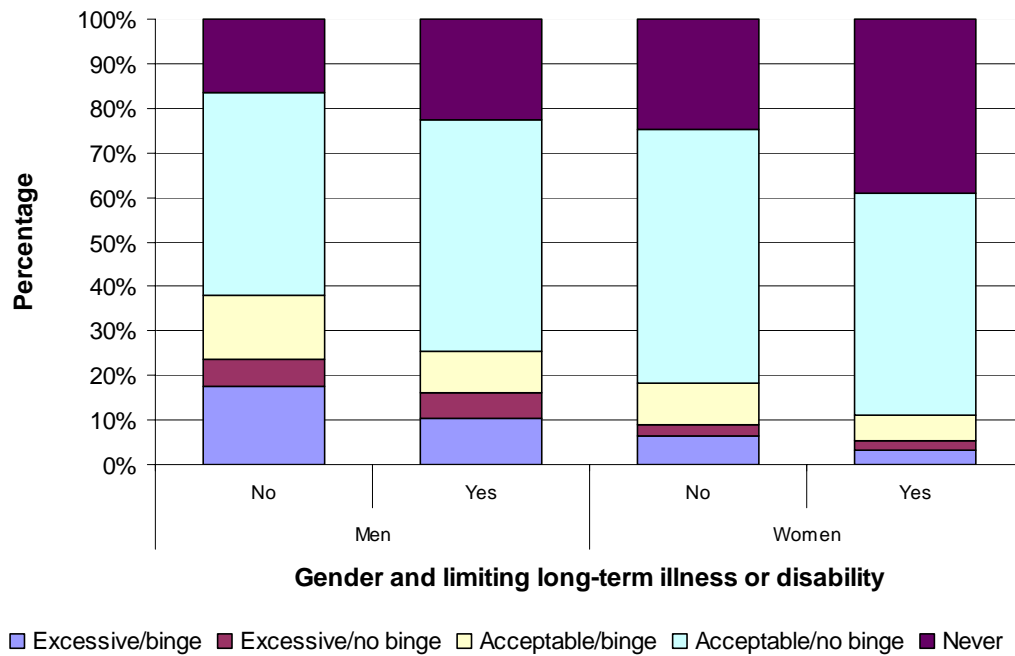
Figure 11 gives the prevalence of alcohol consumption for usual state of health. Those with better health are slightly more likely to be problem drinkers compared to those with fair or poor health, however, age will be a confounder (see age-standardised percentages in section starting on **page 44**).

Figure 11: Prevalence of alcohol consumption by general health (unadjusted for age and gender)



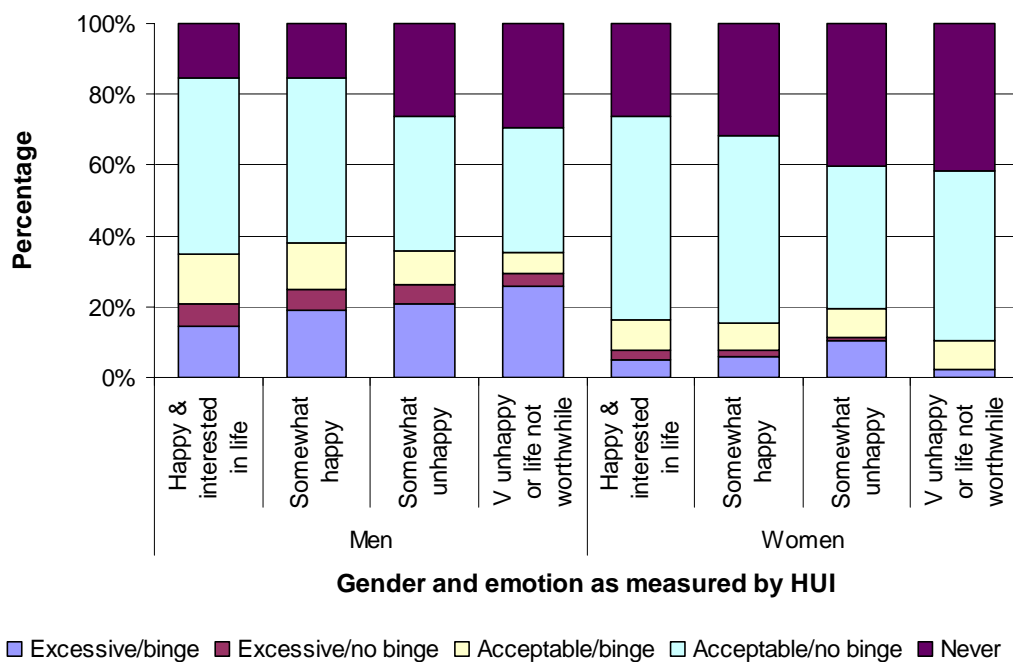
Survey responders were asked if they had any illness or disability which had lasted for longer than one month, and if so, whether this illness or disability limited their activities in any way. Survey responders were classified into two groups: (i) those did not have a long-term illness or disability or had one which did not affect their activities; and (ii) those who had a long-term illness or disability which also affected their activities. People with such illnesses and disabilities are more likely to be older so not unexpectedly, they are also less likely to drink excessive alcohol or binge drink (**Figure 12**).

Figure 12: Prevalence of alcohol consumption by limiting long-term illness or disability (unadjusted for age and gender)



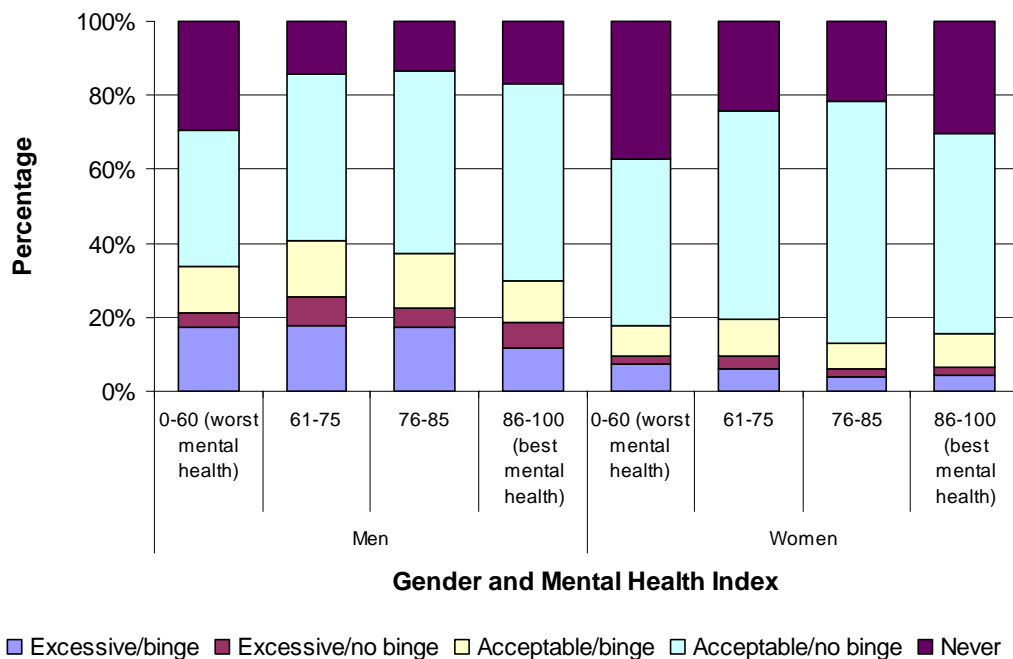
There is a trend in the prevalence of exceeding the weekly alcohol units combined with binge drinking in men, with men who are very unhappy or who are so unhappy that life is not worthwhile being more likely to drink excessively and binge drink compared to those who are very happy (**Figure 13**). There are relatively small differences in the percentage of problem drinkers (excessive weekly units and/or binge drinking). However, men who are most unhappy are also more likely to never drink alcohol. The numbers are relatively small for people who are in the unhappiest category, so undue weight should not be placed upon the results. The same pattern is not evident in women.

Figure 13: Prevalence of alcohol consumption by emotion as measured by the Health Utility Index (unadjusted for age and gender)



The Mental Health Index (part of the SF-36 health status score) gives a measure of mental health from combining five questions giving a score ranging from 0-100 with a lower score denoting the worst mental health. The categories below are arbitrarily defined. A similar pattern was observed for the emotion component of the Health Utility Index as men who had the lower mental health scores were more likely to drink excessively or binge drink compared to those with the best mental health (**Figure 14**). However for the Mental Health Index, there was also a less distinct but similar pattern for women. Men and women with the worst mental health were also more likely to never drink alcohol, but this could be confounded with age (see age-standardised percentages in section starting on **page 44**).

Figure 14: Prevalence of alcohol consumption by Mental Health Index (unadjusted for age and gender)



Prevalence of alcohol consumption in relation to exercise and 5-A-DAY

Figure 15 shows a relatively strong relationship between exercise levels (achieving the national guidelines of 30+ minutes or more of vigorous or moderate exercise five or more times per week) and alcohol consumption, but the relationship will be influenced strongly by age (see age-standardised percentages in section starting on **page 49**).

Figure 15: Prevalence of alcohol consumption by exercise (unadjusted for age and gender)

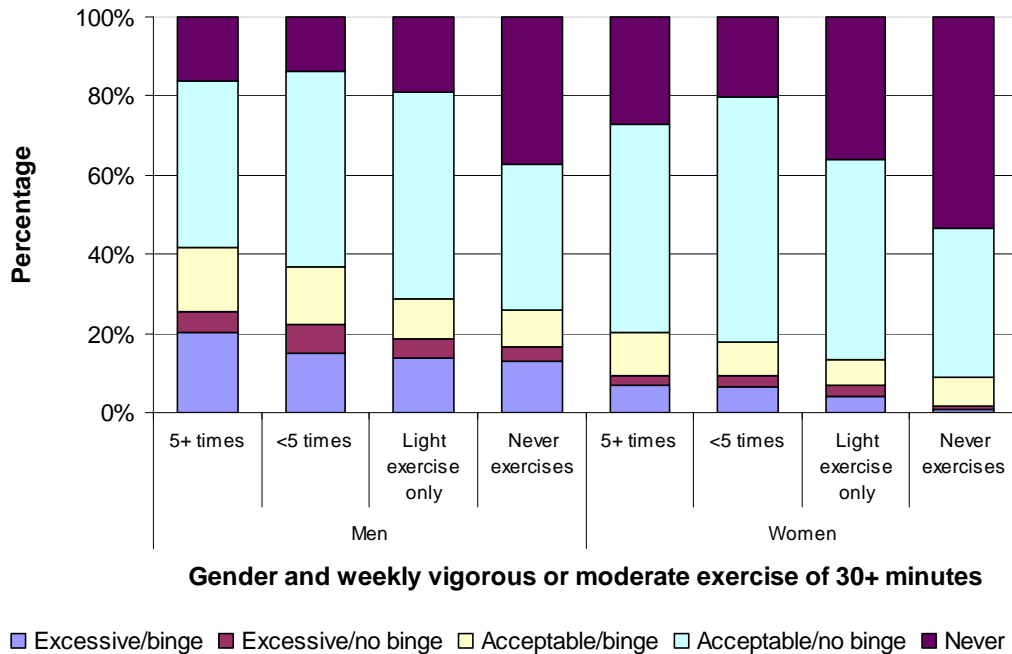
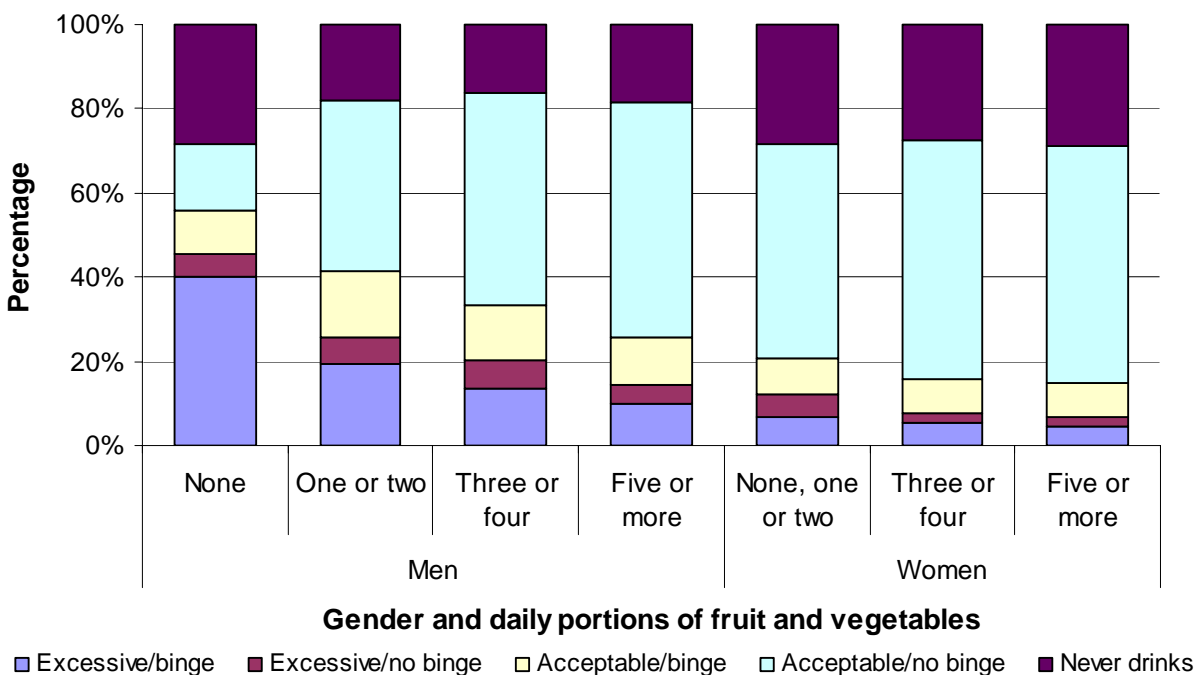


Figure 16 shows that there is a very strong association between drinking excessively, binge drinking and problem drinking with fruit and vegetables consumption for men. Forty percent of men who generally do not eat any portions of fruit and vegetables, drink excessively and binge drink (i.e. both excess drinking categories) compared to 10% of those men who eat five or more portions of fruit and vegetables daily. A further 16% for both of these categories either drink excessively or binge drink but not both, so 56% of men who do not eat fruit and vegetables are problem drinkers (drink excessively and/or binge drink) compared to 26% for those who achieve their 5-A-DAY. As with many other factors, age will be a confounder (see age-standardise percentages in section starting on **page 49**). There is a similar but weaker pattern for women, with 21% of women who eat none⁹, one or two portions of fruit and vegetables daily defined as problem drinkers compared to 15% for women who eat five or more portions of fruit and vegetables daily.

Figure 16: Prevalence of alcohol consumption by 5-A-DAY (unadjusted for age and gender)



⁹ Few women generally ate no portions of fruit and vegetables so this category was combined with one or two portions.

Age-standardised prevalence of alcohol categories

In order to examine whether deprivation, education, income, smoking status, physical health status, mental health status, fruit and vegetable consumption and exercise levels have an effect on the prevalence of alcohol consumption, it is necessary to take age into consideration (see **Confounders** on **page 55** and **Standardisation** on **page 55**). As the pattern of drinking alcohol differs among men and women, the prevalence has been presented separately for men and women.

Furthermore, it is possible to predict the percentage of people who consume too much alcohol on a weekly or daily basis for a particular group of individuals (e.g. different groups based on deprivation quintile) in a logistic regression model that adjusts for age group. The odds-ratio is the resulting statistic produced with a 95% confidence interval (see **Odds ratio** on **page 56** and **Confidence interval** on **page 57**). The values of the odds-ratios are given in the **Appendix** on **page 58**. A statistical test has been undertaken as part of the logistic regression model analysis, and it is possible from this test to state whether the age-adjusted prevalence of alcohol consumption is significantly different¹⁰ among different groups of people (see **Significance testing** on **page 54**).

As mentioned earlier, simply because there is a statistically significant difference in the prevalence of alcohol consumption between different groups of individuals (e.g. those with no disability compared to those with severe disability) does **not** imply that there is causality. Furthermore, even if there is causality, it can often run in either direction.

Additionally, even if a difference is found to be statistically significant among groups, it does not necessarily mean that the difference is clinically important or clinically significant. Relatively small differences can be statistically significant provided the numbers of observations are large. Furthermore, if there are only minor differences in the percentages, but prevalence is high for all groups, then it generally would be better to use a broad approach to reduce the levels rather than target specific groups where the prevalence is only marginally higher.

Four different age-standardised percentages have been calculated for overlapping groups:

- never drinks alcohol
- excessive weekly units (more than 21 units for men and more than 14 units for women last week)
- binge drinking (eight or more units for men and six or more units for women on a single day usually more frequently than once a week)
- problem drinkers (drinking to excess and/or binge drinking)

¹⁰ Even if there were no underlying differences in the overall population, one would expect slight variations in the prevalence among different groups of people in the sample of survey responders just through chance and random variation. Significance testing is a way to assess how likely the difference is due to chance and how likely the difference is due to some underlying difference.

Age-standardised prevalence of alcohol consumption in relation to measures of deprivation

There is a statistically significant difference in the percentage of people who never drink among the local deprivation quintiles for both men and women (**Figure 17; Table 22**). People living in the most deprived areas are more likely to never drink alcohol compared to those living in the least deprived areas. However, the age-standardised percentages of other alcohol consumption categories are not associated with deprivation for either men or women.

Figure 17: Age-standardised prevalence of alcohol consumption by deprivation

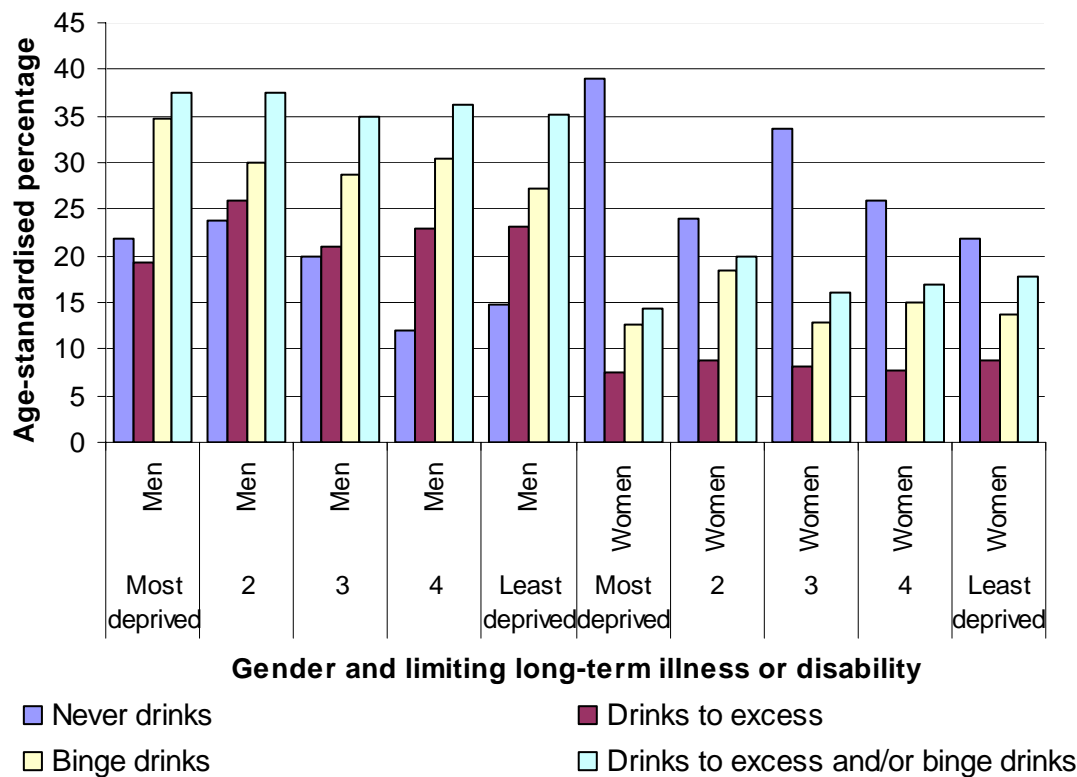


Table 22: Age-standardised prevalence of alcohol consumption in relation to deprivation

Gender	Index of Multiple Deprivation 2004 local quintile	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	Most deprived	21.8	19.2	34.8	37.5
	2	23.8	26.0	29.9	37.4
	3	19.9	21.1	28.8	35.0
	4	12.0	23.0	30.4	36.3
	Least deprived	14.7	23.1	27.2	35.1

Gender	Index of Multiple Deprivation 2004 local quintile	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Women	Most deprived	39.1	7.6	12.7	14.3
	2	24.0	8.8	18.5	20.0
	3	33.7	8.2	12.9	16.0
	4	25.9	7.8	15.1	17.0
	Least deprived	21.9	8.7	13.7	17.7

In a similar way as for deprivation, there is a statistically significant difference in the percentage who never drink alcohol after adjusting for age across the income categories with people with the lowest estimated after tax household annual incomes being more likely to never drink alcohol for both men and women than those with the highest incomes (**Figure 18; Table 23**). There is no difference in the percentage drinking excessively, binge drinking or with problem drinkers among the three income categories after adjusting for age.

Figure 18: Age-standardised prevalence of alcohol consumption by income

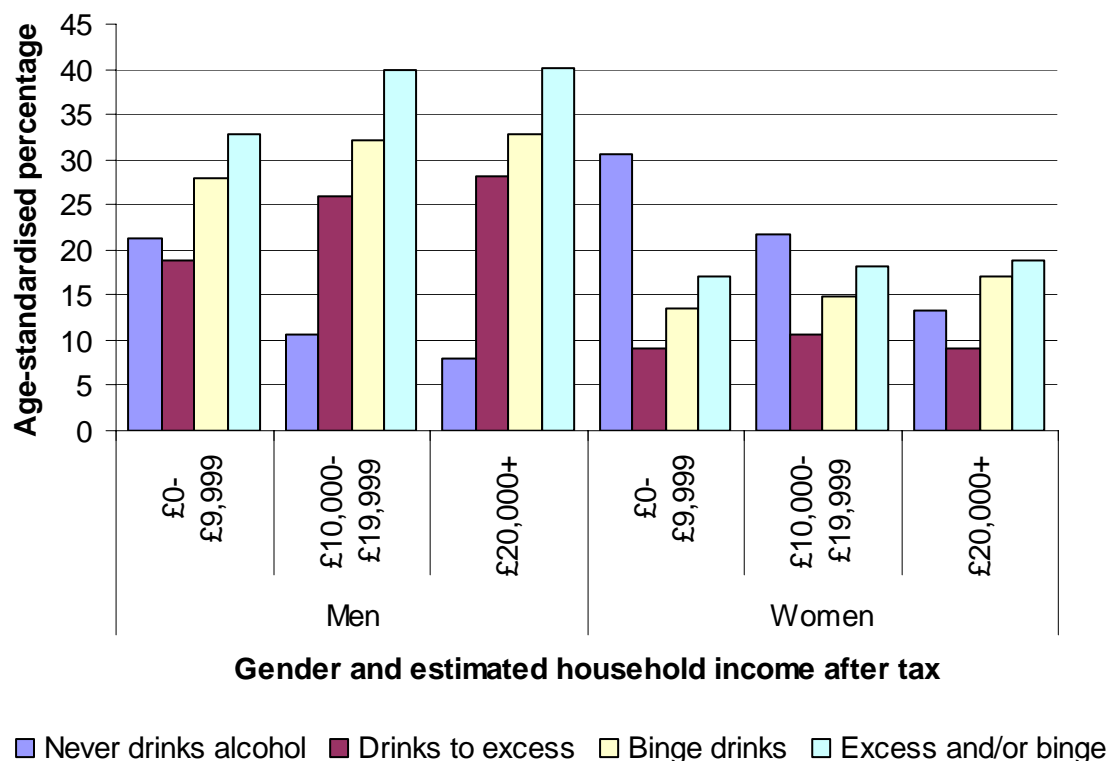


Table 23: Age-standardised prevalence of alcohol consumption in relation to income

Gender	Est household after tax annual income	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	£0-£9,999	21.2	18.8	28.0	32.7
	£10,000-£19,999	10.6	25.9	32.1	39.9
	£20,000+	7.9	28.1	32.8	40.2
Women	£0-£9,999	30.7	9.1	13.5	17.1
	£10,000-£19,999	21.7	10.7	14.9	18.1
	£20,000+	13.3	9.1	17.1	18.9

There is a statistically significant difference in the percentages never drinking alcohol among the three highest educational attainment categories, with those with none or basic qualifications being more likely to never drink alcohol compared to those with a degree or equivalent or higher qualifications (**Figure 19; Table 24**). There was no significant difference among the qualification groups for drinking excessively, binge drinking or problem drinking with the exception that men with O or A levels or equivalent were more likely to exceed the weekly recommended alcohol units compared to those with none or basic qualifications.

Figure 19: Age-standardised prevalence of alcohol consumption by highest educational attainment

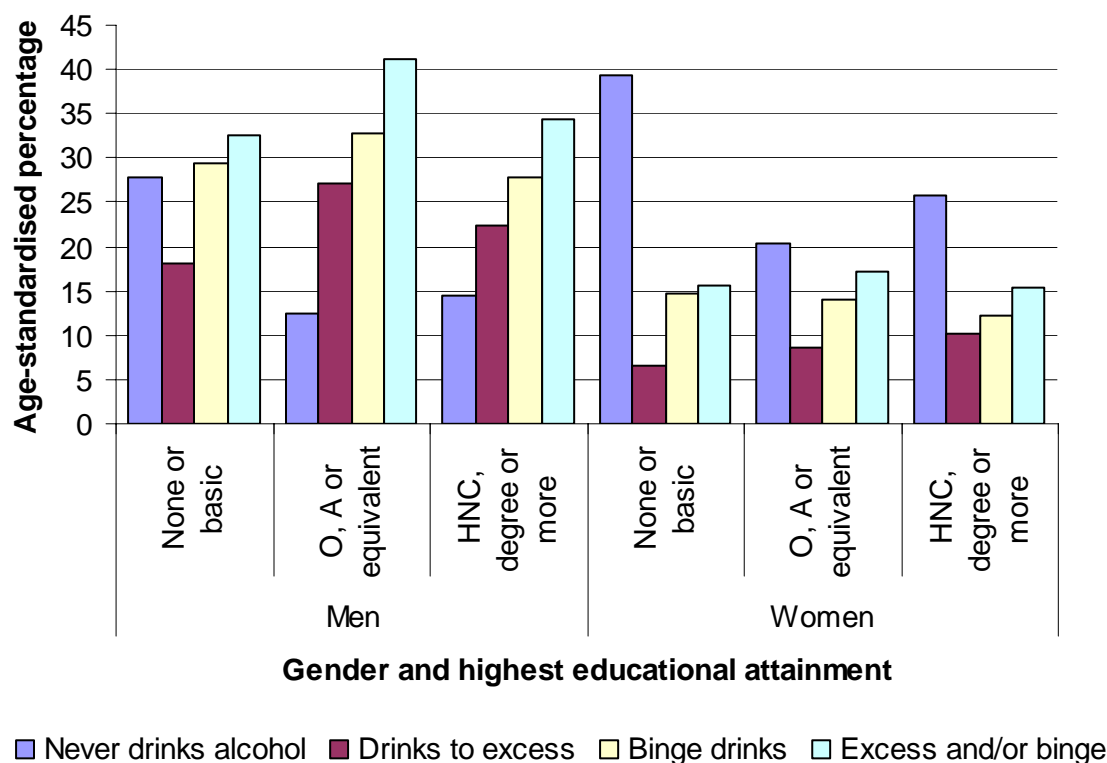


Table 24: Age-standardised prevalence of alcohol consumption in relation to highest educational attainment

Gender	Highest educational attainment	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	None or basic	27.8	18.0	29.4	32.5
	O, A or equivalent	12.4	27.2	32.8	41.1
	HNC, degree or more	14.4	22.5	27.8	34.3
Women	None or basic	39.4	6.5	14.7	15.5
	O, A or equivalent	20.3	8.5	14.1	17.2
	HNC, degree or more	25.7	10.2	12.1	15.4

Age-standardised prevalence of alcohol consumption in relation to smoking status

Men who have never smoked were more likely to never drink alcohol compared to those who were current smokers and there was no difference between former smokers and current smokers (**Figure 20; Table 25**). However, for women, current smokers were more likely to never drink alcohol compared to former smokers and there was no difference in the age-adjusted percentage never drinking alcohol between current smokers and those who had never smoked.

There was a statistically significant difference in the percentage of men and women who (i) exceeded the recommended weekly alcohol units; (ii) exceeded twice the recommended daily alcohol units; and (iii) were problem drinkers. Current smokers were more likely to exceed the alcohol recommended guidelines than those who never smoked for all three comparisons¹¹ for both men and women. For men, the former smokers were also more likely to exceed the recommended alcohol units for all three comparisons compared to those who had never smoked. However, for women, there was only a statistically significant difference between former smokers and those who had never smoked was for drinking excessively, i.e. there was no difference in the percentage of binge drinkers and there was no difference in the percentage of problem drinkers.

¹¹ Clearly the three comparisons will be linked. A relatively high percentage of those who exceed the weekly recommended alcohol units are also defined as binge drinkers (twice the daily recommended units).

Figure 20: Age-standardised prevalence of alcohol consumption by smoking status

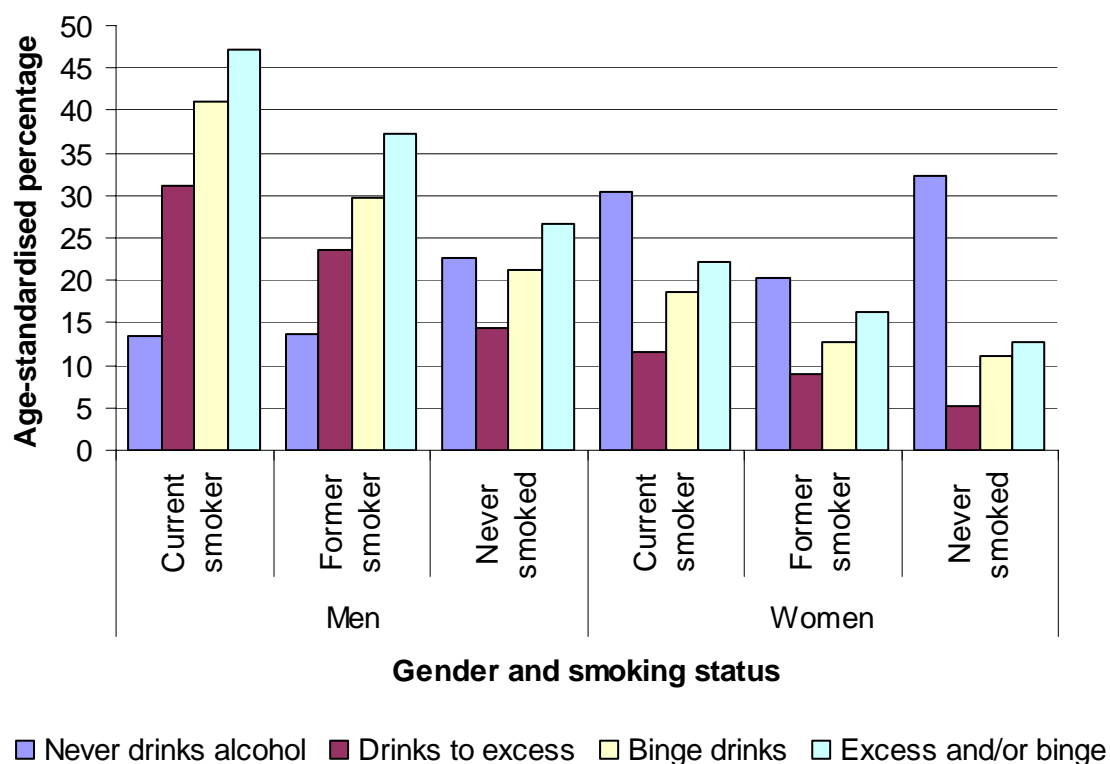


Table 25: Age-standardised prevalence of alcohol consumption in relation to smoking status

Gender	Smoking status	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	Current smoker	13.5	31.2	41.0	47.2
	Former smoker	13.7	23.7	29.8	37.2
	Never smoked	22.7	14.3	21.3	26.7
Women	Current smoker	30.5	11.6	18.7	22.1
	Former smoker	20.2	8.9	12.7	16.2
	Never smoked	32.3	5.1	11.0	12.7

Age-standardised prevalence of alcohol consumption in relation to Locality of residence

There were slight differences in drinking habits among the three Localities (**Figure 21**; **Table 26**). However, the differences were not statistically significant for any of the four percentages (never drinking; drinking excessively; binge drinking; and problem drinking).

Figure 21: Age-standardised prevalence of alcohol consumption by Locality of residence

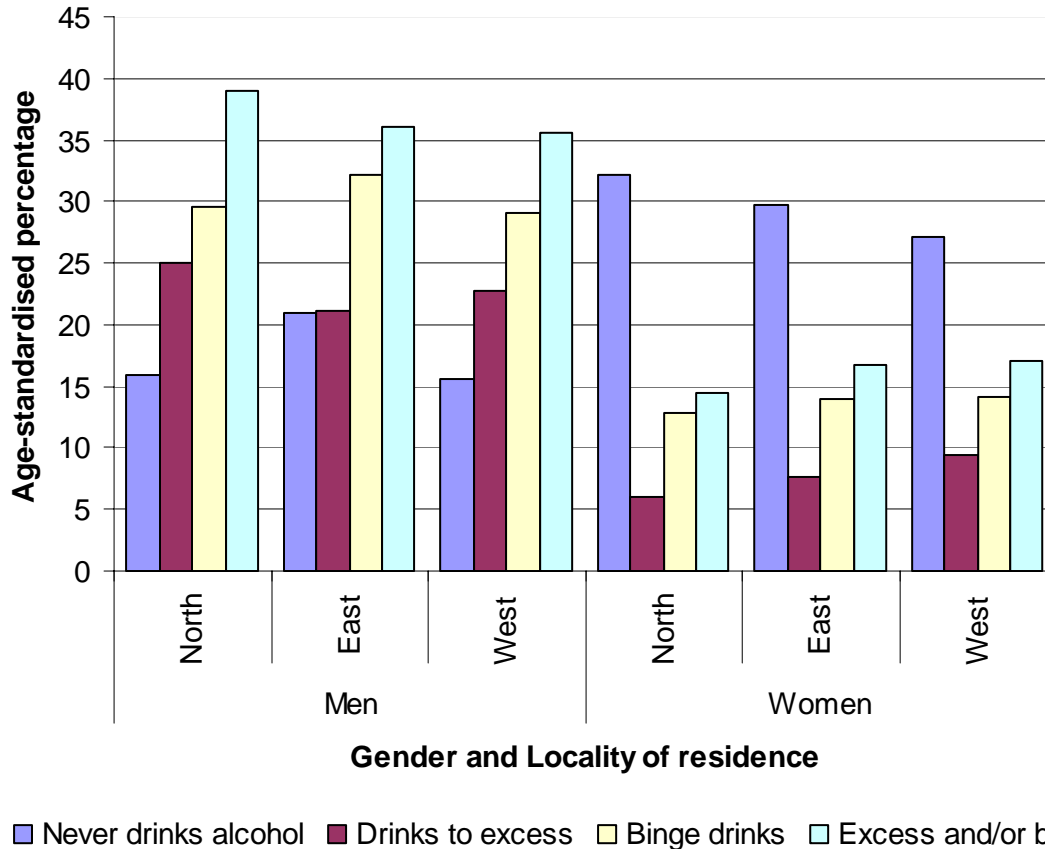


Table 26: Age-standardised prevalence of alcohol consumption in relation to Locality

Gender	Locality	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	North	15.9	25.0	29.6	39.0
	East	20.9	21.2	32.2	36.1
	West	15.6	22.8	29.0	35.6
Women	North	32.1	6.0	12.8	14.5
	East	29.7	7.6	14.0	16.7
	West	27.1	9.4	14.2	17.0

Age-standardised prevalence of alcohol consumption in relation to measures of physical and mental health

For men, there was no significant difference among the age adjusted percentage drinking never drinking, drinking excessively or binge drinking among the disability categories of the Health Utility Index. This was also the case for women with the exception of never drinking where there was a statistically significant difference between those with daily activities affected to a mild or lesser extent by any disabilities and those whose daily activities were affected moderately or severely (**Figure 22; Table 27**). It was necessary to combine some of the older age groups and examine two categories of the HUI summary measure rather than comparing all four categories as the numbers of observations were small for some of the categories.

Figure 22: Age-standardised prevalence of alcohol consumption by disability as classified from the Health Utility Index

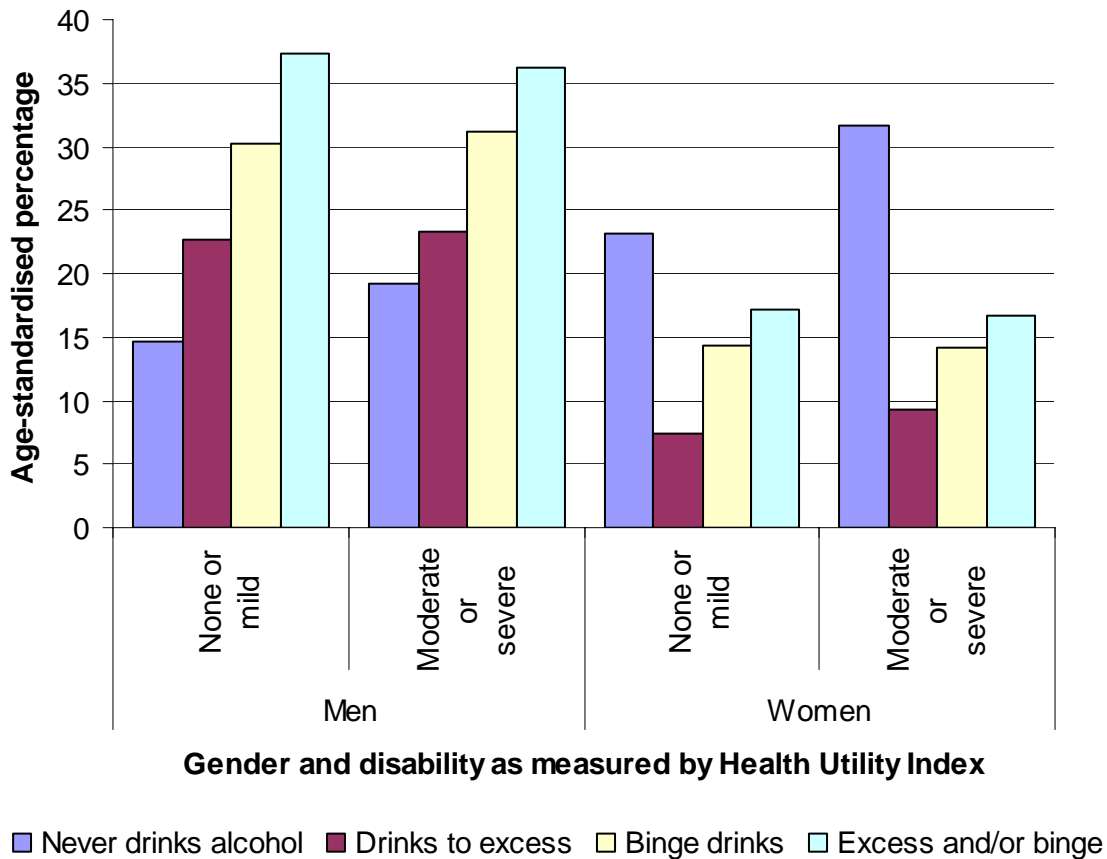


Table 27: Age-standardised prevalence of alcohol consumption in relation to disability as classified from the Health Utility Index

Gender	Disability based on Health Utility Index	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	None/mild	14.6	22.7	30.2	37.3
	Moderate/severe	19.3	23.4	31.2	36.1
Women	None/mild	23.2	7.5	14.4	17.1
	Moderate/severe	31.7	9.3	14.1	16.7

Both men and women with fair or poor health were more likely to never drink alcohol compared to those with excellent or very good health with the difference being statistically significant (**Figure 23; Table 28**). There were no significant differences in other three alcohol categories among the three different health categories.

Figure 23: Age-standardised prevalence of alcohol consumption by general health

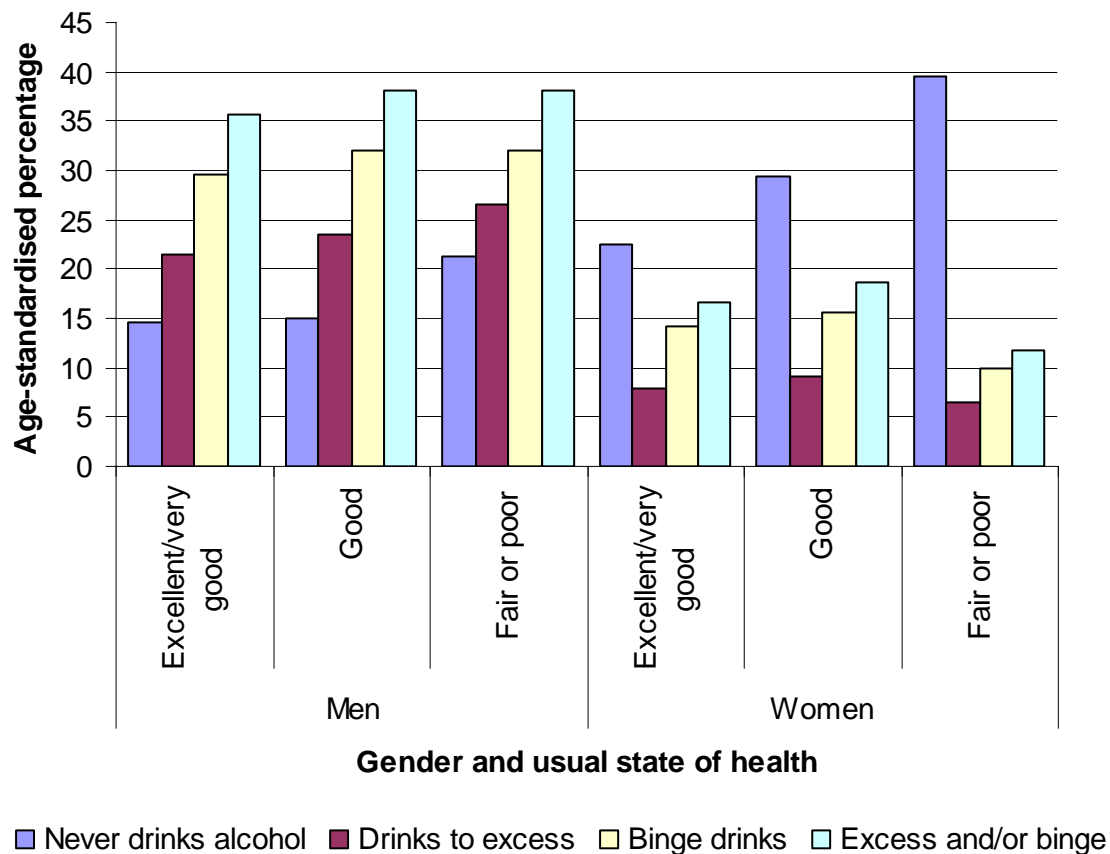


Table 28: Age-standardised prevalence of alcohol consumption in relation to general health

Gender	General health	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	Excellent/very good	14.5	21.5	29.6	35.7
	Good	14.9	23.6	32.0	38.1
	Fair or poor	21.3	26.5	32.1	38.1
Women	Excellent/very good	22.5	8.0	14.1	16.7
	Good	29.4	9.1	15.7	18.7
	Fair or poor	39.5	6.4	10.0	11.8

There were no differences in the percentages any of the four alcohol categories for men between those with and without long-term illnesses or disabilities which limits daily activities, but there was a statistically significant difference in the percentage never drinking alcohol for women between those with and without limiting long-term illnesses or disabilities (**Figure 24; Table 29**).

Figure 24: Age-standardised prevalence of alcohol consumption by limiting long-term illness or disability

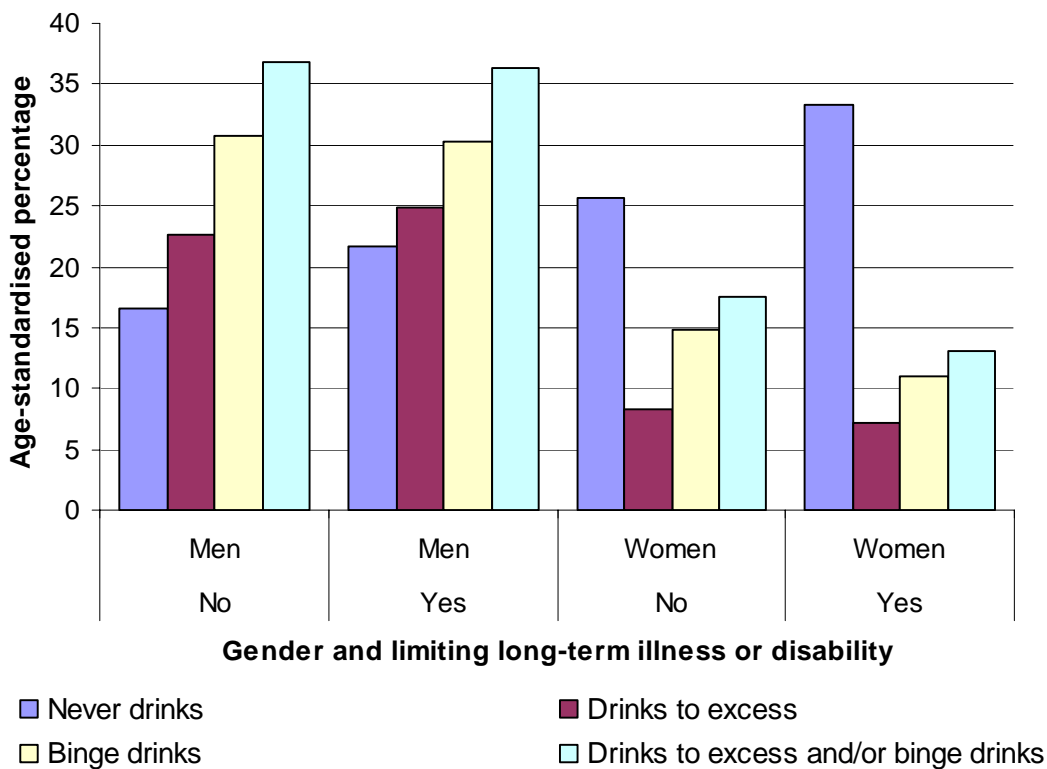


Table 29: Age-standardised prevalence of alcohol consumption in relation to limiting long-term illness or disability

Gender	Long-term illness or disability that limits daily activities	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	No	16.5	22.6	30.8	36.8
	Yes	21.7	24.8	30.3	36.3
Women	No	25.6	8.3	14.9	17.5
	Yes	33.3	7.2	11.0	13.1

Men and women who were somewhat unhappy or very unhappy were more likely to never drink alcohol compared to those who were happy and interested in life (**Figure 25; Table 30**). There was no statistically significant difference in the percentages for the other three alcohol categories among the four emotion components of the Health Utility Index.

Figure 25: Age-standardised prevalence of alcohol consumption by emotion component of Health Utility Index

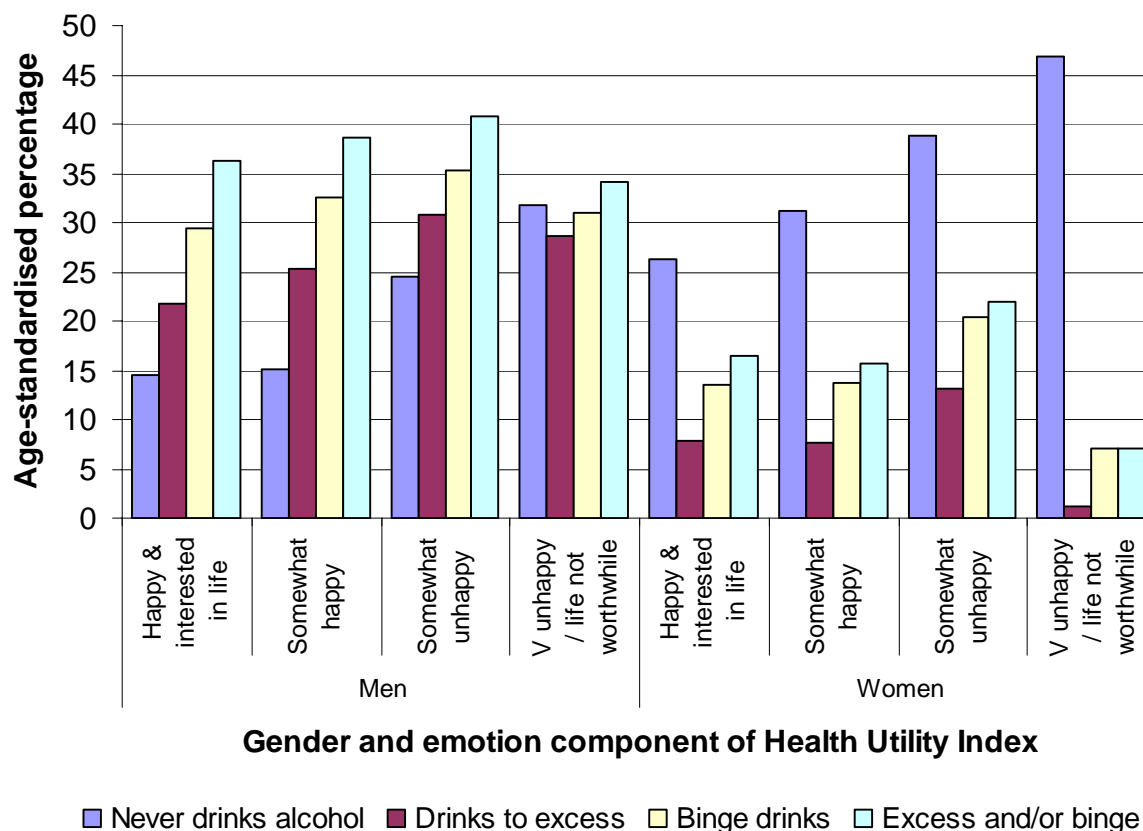


Table 30: Age-standardised prevalence of alcohol consumption in relation to emotion component of Health Utility Index

Gender	Emotion component of Health Utility Index	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	Happy & interested in life	14.6	21.8	29.5	36.3
	Somewhat happy	15.1	25.3	32.5	38.6
	Somewhat unhappy	24.5	30.8	35.3	40.7
	V unhappy/life not worthwhile	31.7	28.6	31.0	34.2
Women	Happy & interested in life	26.2	7.9	13.6	16.5
	Somewhat happy	31.2	7.7	13.8	15.6
	Somewhat unhappy	38.8	13.2	20.3	21.9
	V unhappy/life not worthwhile	46.8	1.1	7.1	7.1

Men with the worst Mental Health Index scores (0-60) are significantly more likely to never drink alcohol compared to men with the best scores (86-100), but there is less of a difference among the women, and no differences in the age-adjusted percentages for the other three alcohol categories (**Figure 26; Table 31**).

Figure 26: Age-standardised prevalence of alcohol consumption by Mental Health Index

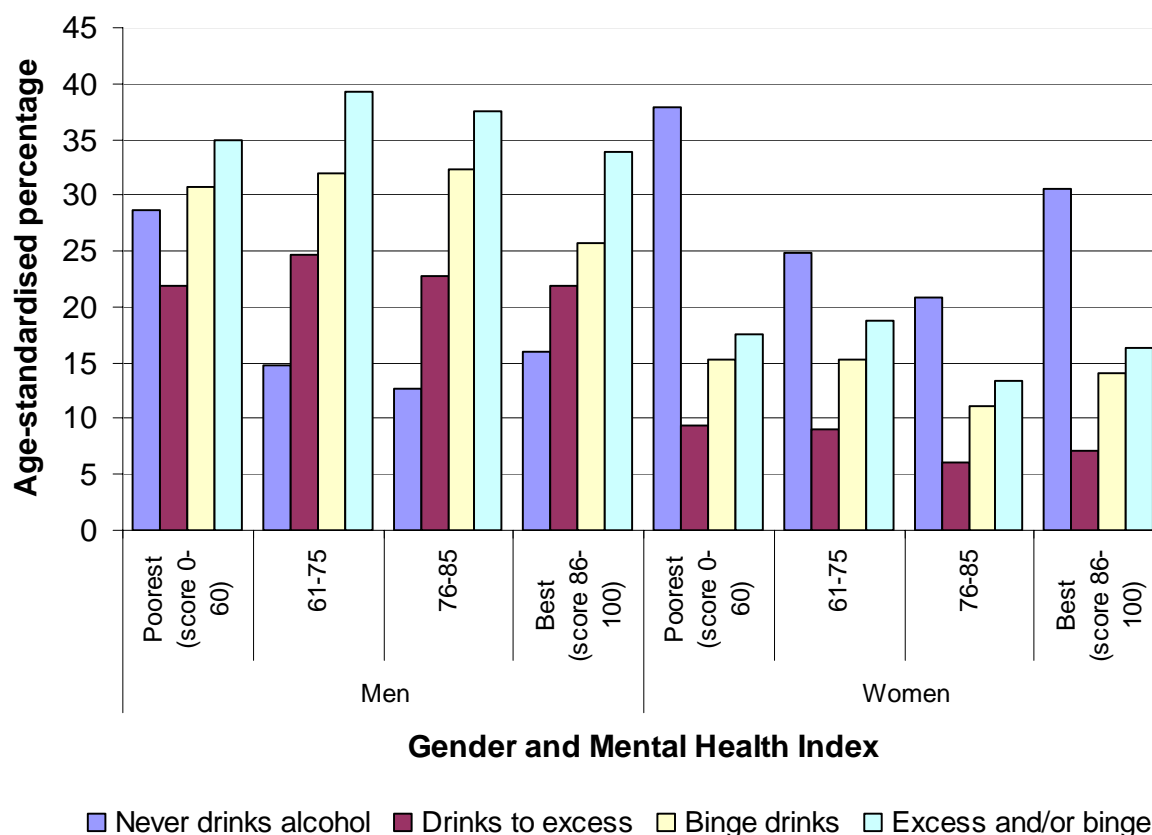


Table 31: Age-standardised prevalence of alcohol consumption in relation to Mental Health Index

Gender	Mental Health Index	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	Poorest (score 0-60)	28.7	21.9	30.8	34.9
	61-75	14.8	24.7	32.0	39.3
	76-85	12.7	22.7	32.3	37.6
	Best (score 86-100)	15.9	21.9	25.8	33.8
Women	Poorest (score 0-60)	37.9	9.3	15.3	17.5
	61-75	24.9	9.1	15.3	18.7
	76-85	20.8	6.1	11.2	13.4
	Best (score 86-100)	30.6	7.2	14.0	16.3

Age-standardised prevalence of alcohol consumption in relation to exercise and 5-A-DAY

There is a statistically significant difference in the percentage of men and women who never drink alcohol between those who never exercise and those who achieve the national recommended guidelines for exercise with those who never exercise being more likely to never drink alcohol (**Figure 27; Table 32**). There is no significant difference among the groups undertaking different levels of exercise for the percentages of men and women who exceed the weekly or daily (or either of these) recommended alcohol units.

Figure 27: Age-standardised prevalence of alcohol consumption by exercise levels

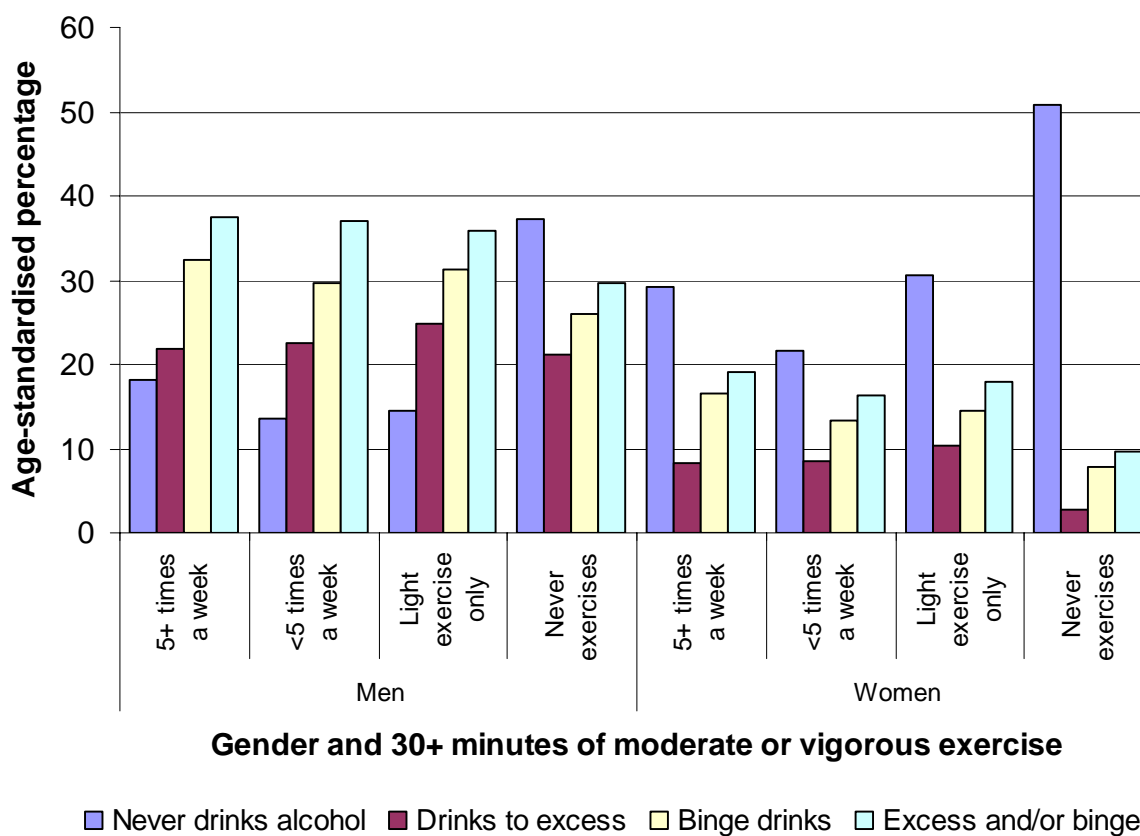


Table 32: Age-standardised prevalence of alcohol consumption in relation to exercise levels

Gender	Moderate or vigorous exercise of 30+ minutes	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	5+ times a week	18.2	21.9	32.4	37.5
	<5 times a week	13.6	22.5	29.6	37.0
	Light exercise only	14.5	24.8	31.2	35.9
	Never exercises	37.3	21.1	26.0	29.7
Women	5+ times a week	29.3	8.3	16.6	19.0
	<5 times a week	21.7	8.6	13.3	16.3
	Light exercise only	30.5	10.3	14.4	18.0
	Never exercises	50.8	2.8	7.9	9.6

For men, there is no statistically significant difference among the four categories in relation to 5-A-DAY consumption for the percentage who never drink alcohol, but there is an association for exceeding the weekly alcohol recommended limits, binge drinking and problem drinkers (**Figure 28; Table 33**). Men who eat five portions of fruit and vegetables daily are less likely to drinking too much and the age-adjusted percentages of problem drinkers increases steadily with fewer portions of 5-A-DAY. However, there is no such relationship among the women.

Figure 28: Age-standardised prevalence of alcohol consumption by 5-A-DAY

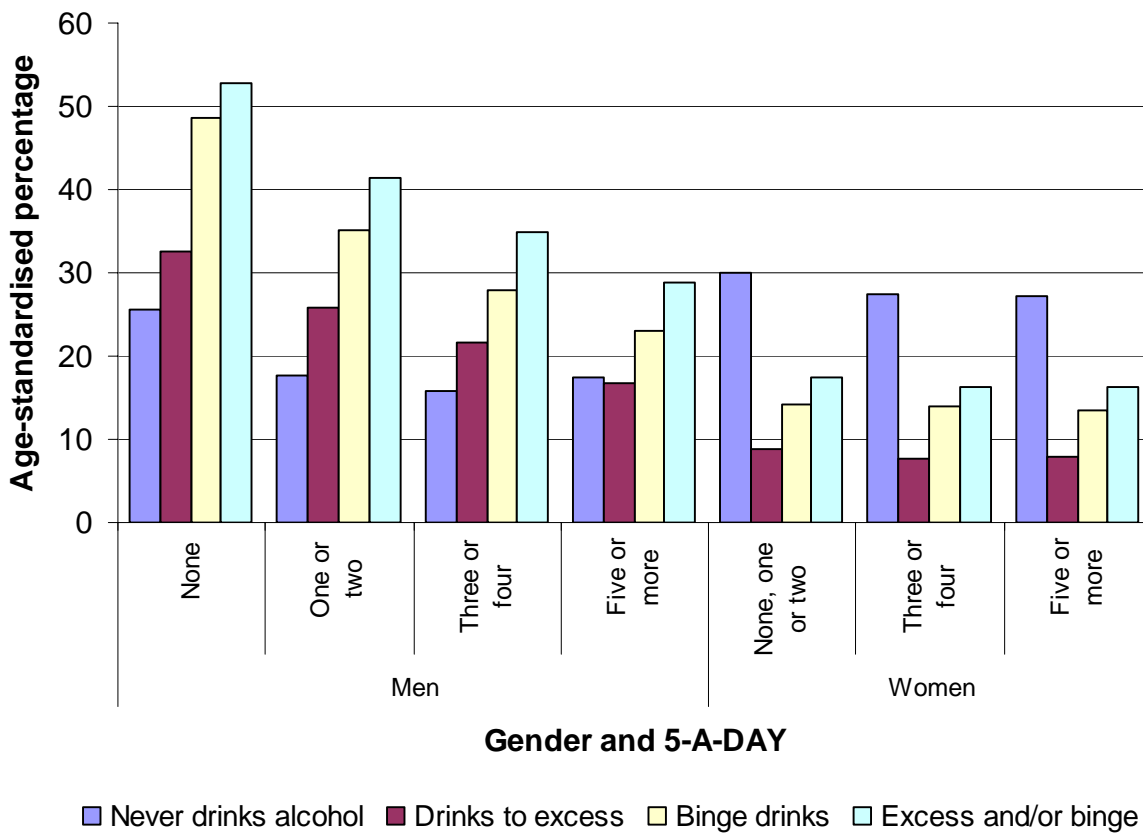


Table 33: Age-standardised prevalence of alcohol consumption in relation to 5-A-DAY

Gender	Daily portions of fruit and vegetables	Age-standardised percentages			
		Never drinks alcohol	Drinks to excess	Binge drinks	Problem drinkers
Men	None	25.6	32.6	48.5	52.8
	One or two	17.6	25.9	35.0	41.4
	Three or four	15.8	21.7	27.8	34.9
	Five or more	17.4	16.8	23.0	28.9
	None, one or two	30.1	8.8	14.3	17.4
	Three or four	27.4	7.7	13.9	16.2
	Five or more	27.3	7.9	13.5	16.4

Summary of statistically significant differences in the age-standardised prevalence of alcohol consumption among groups

The following factors influence the percentage who never drink alcohol after adjusting for age:

- Local Index of Multiple Deprivation 2004 quintile of residence (people living in most deprived areas more likely to never drink);
- Income (people with lowest incomes are more likely to never drink);
- Highest educational attainment (people with lower qualifications more likely to never drink);
- Smoking status in men (never smokers more likely to never drink compared to current smokers);
- Physical health (people with poorer physical health more likely to never drink);
- Mental health (people with poorer mental health more likely to never drink); and
- Exercise (people who never exercise more likely to never drink compared to those who fulfil national exercise guidelines).

The following factors influence the percentage who drink excessively, binge drink or are problem drinkers after adjusting for age:

- Smoking status in men (current and former smokers more likely to drink excessively, binge drink or be problem drinkers compared to never smokers);
- Smoking status in women (current smokers more likely to binge drink, drink excessively and be problem drinkers compared to never smokers and also former smokers relative to never smokers but only for drinking excessively not for binge drinking or problem drinking);
- 5-A-DAY in men (those eating fewer portions of fruit and vegetables are more likely to drink excessively, binge drink or be problem drinkers).

Conclusions

There was a strong association with excessive alcohol consumption and binge drinking with age. The young were much more likely to be problem drinkers, and this was particularly the case for men.

There were some statistically significant differences in the age-adjusted percentages of people never drinking alcohol. People living in the most deprived areas, on lower incomes, with lower qualifications, poorer physical health, poorer mental health and those who never exercised were all more likely to never drink.

There were very few statistically significant differences among the groups in terms of the prevalence of excessive weekly drinking, binge drinking or either of these (“problem drinkers”). The exceptions were for smoking for both men and women and 5-A-DAY for men only. Current and former male smokers were more likely to drink excessively, binge drink and be problem drinkers compared to men who had never smoked, as were female current smokers relative to female never smokers. Female former smokers were more likely to drink excessively compared to women who had never smoked, but there was no difference for binge drinking or either of these combined. The age-adjusted percentage of men drinking excessively, binge drinking and with problem drinking increased with the reduction in the daily portions of fruit and vegetables consumed.

Therefore, in terms of targeting people with regard to improving their alcohol behaviour, a broad approach should be used because no particular group has been highlighted with regard to their alcohol consumption, with the exception of young people, smokers and men who eat few portions of fruit and vegetables. It may be very difficult to send messages on the risk of alcohol consumption on health to men who consume few fruit and vegetables as it is difficult to see how the message could be targeted at these men specifically. It may be possible to target smokers more easily by combining messages about the dangers of smoking and alcohol together. The easiest group to target with health messages on alcohol would be young people aged under 45 years, and these messages should be targeted at both men and women, but with particular emphasis on the men. However, over one-third of men aged 45-64 years and almost one in five men aged 65-74 years drank more than the weekly recommended units and/or drank twice the daily recommended units at least weekly, and 17% of women aged 45-64 years. Therefore, there are still substantial numbers of older men and women where health messages on excessive alcohol consumption are required.

Recommendations

Health messages regarding excessive alcohol consumption should be targeted at people who smoke and people aged under 45 years, with particular emphasis on men. However not to the exclusion of other groups, sufficient numbers of older men and women drink too much alcohol, and a broader approach is also required.

Appendix: Statistical terms and results

Median, quartiles and quintiles

The median is used to represent a 'typical' value or summary measure in the same way that the average is used. The average is influenced by extra high values which may not be typical, so the average is less appropriate to use in these circumstances when the distribution of the values is so called skewed with a very small number of people having particularly high values. The median is not influenced by such extremes. The median is the value for which half the group have a value below this and half of the group have a value above this.

For instance, if 50 people drank five alcohol units in the previous week and five people drank 50 units then the average would be 9.1 units, but the median would be 5 units representing a more 'typical' value. Half the 55 people surveyed drank five units or more and half people drank five units or less.

The median can be further divided giving the upper and lower quartiles with one-quarter of people within a group having a value below the lower quartile, one-quarter having a value between the lower quartile and the median, one-quarter having a value between the median and the upper quartile and the remaining quarter having a value above the upper quartile.

Quintiles similarly divide a group into five groups, and this has been undertaken in relation to the local deprivation quintiles, with five groups created each containing approximately 20% of the population of Hull (although the survey population was not so evenly distributed over the local quintiles for Hull's population so the percentages for the survey responders is not 20% across all deprivation quintiles).

Significance testing

It is often useful to compare a particular summary measure, for instance, mean, median, measure of risk among different groups. Since there is natural variation associated with virtually all measurements and since we generally only have a sample and have not measured the entire population, it is necessary to distinguish between differences which are close enough together to be explained by chance and difference which are 'unlikely' to be explained by chance. Such a comparison can be undertaken using a statistical test which takes into the account chance variation. When undertaking a statistical test, we assume that there is no difference in the summary measure among the groups, a so-called null hypothesis, and then calculate the probability of obtaining the difference we observe in our sample (i.e. in the data we have). If the calculated probability, or so-called p-value, is small then this means that there is a small chance of obtaining such a result under this null assumption of no difference. Therefore, if the probability is small enough (generally, less than one in twenty or less than 0.05) then we assume that the original assumption must be incorrect and that there really is a difference. Since this is based on probabilities and assumptions, just because a small p-value is observed, it does not necessarily mean that the original assumption of no difference between the

groups is untrue. However, clearly the smaller the p-value, the more likely it is that the original assumption is untrue. Similarly, just because you obtain a large p-value and therefore have no evidence to reject the original assumption, it does not mean that it is actually true, it could be that there is simply insufficient evidence to show otherwise (for example, a small number of people or small number of people with a particular event). If a small p-value is obtained ($p < 0.05$) then the difference is deemed '**statistically significant**'. However, this does not necessarily mean that the result is important clinically. It is possible that 50% of those living in one area report poor health compared to 47% in another area. If the number of people involved in the survey was sufficiently large, it is possible to obtain a statistically significant difference between these areas. However, from a medical point of view it may be considered not very important and the fact that both areas report high levels of poor health may be more important. That is, there could be a statistically significant difference in a particular statistic (percentage or odds-ratio) between two different groups, but that does not necessarily mean that the difference is clinically relevant/important or clinically significant

Confounders

When examining the relationship between two factors, for example, levels of exercise and deprivation, another third variable could influence the relationship indirectly if it is associated with both variables. This third variable is called a confounder, and can mask true relationships, create artificial non-existent relationships or distort a relationship. With a confounder present, the association could be observed between the two factors observed (e.g. binge drinking and the factor of interest) indirectly through *their* association with age, and there could be no real true association between alcohol and the factor of interest.

Age and gender are confounders in relation to alcohol consumption for many associations, as many of the other factors which we would like to examine in relation to alcohol are also associated with age and gender. For example, in the survey responders, health status and exercise levels are both associated with age. Younger people are more likely to drink excessively. However, as young people tend to be healthier and exercise more frequently, there could be an association between alcohol consumption and health and between alcohol consumption and exercise. However, such a relationship could exist in its own right, or it could be artificial through the link through age, i.e. that age is a confounding factor.

One solution is to age standardise the levels of binge drinking, for example, by calculating the age standardised percentage who binge drink.

Standardisation

The prevalence of ill-health, risk factors, disease and mortality within a particular population will depend on the age and gender structure of that population (as well as many other factors such as deprivation).

In terms of the provision of resources, it is best to report on the prevalence without taking into account the age and gender distribution of the population. This is because it is necessary to treat and have the provision to treat the existing population, regardless of the age and gender structure. However, if one wishes to assess whether one population has an excess rate of disease or if there is a difference in the prevalence of exercise levels among different groups of people living in areas of differing levels of deprivation, it is necessary to take any differences in the age and gender structure (and potentially other factors too) into consideration. Otherwise any differences found may be simply due to differences in the age and gender structure of the different populations, and not due to the factor of interest, e.g. deprivation. The age and gender structure can be taken into consideration by using standardisation. Generally, standardised rates are age-standardised or age-gender-standardised, but rates can also be standardised to other factors, for example, deprivation-standardised rates.

Direct standardisation involves applying the rates of disease observed in the study group of people to a 'standard' population. Indirect standardisation involves applying the rates of disease in a 'standard' population to the study group of people. The rates of disease are calculated for each gender and age group, for example, males aged 0-9, 10-19, 20-29 years etc and females aged 0-9, 10-19, 20-29 years etc. The standard population can be an English population, the European Standard Population or a local population for a specific time period. Direct standardisation results in a standardised rate of disease (often per 10,000 or 100,000 population). Indirect standardisation results in a standardised mortality (or morbidity) ratio (SMR). The SMR will take the value of 100 if the sample group has the same mortality (or morbidity) rate as the 'standard' population, and an SMR greater (less) than 100 if the sample group has a greater (lower) mortality rate relative to the standard population. Standardisation is frequently used when producing mortality rates, but the same procedures can be used to calculate other statistics such as the percentage binge drinking.

Odds ratio

The odds-ratio is used as a measure of risk (but it is not the same as but similar to another commonly used measure of risk, the relative risk). The odds of people being binge drinkers is the ratio of the number of people who are binge drinkers to the number of people who are not binge drinkers. The odds-ratio is obtained from the odds of being a binge drinker in one group, for example, people living in the most deprived local quintile, divided by the odds of being a binge drinker in another comparison group, for example, people living in the next most deprived local quintile. It is used to compare the odds (or risk) of binge drinking in one group relative to a reference group (generally the next category within the group). For a factor with just two categories, it is a straightforward comparison, for example, between males and females. However, for a factor with more than two categories, it is comparison of one category with the next categories, for example, the most deprived quintile compared to the second most deprived quintile, or the second least deprived quintile compared to the least deprived quintile. An odds-ratio of more than one means that there is increased odds (or risk) of being a binge drinker in the group compared to the reference group, and an odds-ratio less than one means that the odds (or risk) of being a binge drinker in the group is less

than the reference group. For example, an odds-ratio of 1.15 means that the odds of being a binge drinker in the most deprived group is 15% higher than the next most deprived group.

Confidence interval

Since we only have a sample and have not examined data from the entire population¹² (e.g. all residents in the PCT at a particular time point), we only have an estimate of the particular characteristic we wish to measure, for example, the percentage of men aged 18-24 years who drink alcohol excessively. The 95% confidence interval (CI) gives a range of values for which we are 95% confident that the interval will contain the true, underlying statistic (e.g. percentage or mean or difference between two means) of the entire population. Having a range of values for which the population statistic lies is much more useful than having a single value. The interval also takes into consideration the number of people for which the estimate is based, so that if there are many people surveyed the interval tends to be narrower (and therefore more useful). The 95% confidence interval for a difference in a percentage or mean between two groups that does not include the value zero (i.e. the percentage or mean is not the same for both groups) will have a p-value less than 0.05¹³. Confidence intervals can also be produced for odds-ratios resulting from logistic regression models. This then gives a better indication of the range of the odds (or risk) for a particular factor. For example, if the odds-ratio was 1.8 for binge drinking for current smokers relative to never smokers, and the 95% confidence interval ranged from 1.4 to 2.2 then we would be 95% confident that the true underlying odds-ratio within the population was somewhere between 1.4 and 2.2, that is, that the odds of being a binge drinker were at least 40% higher in current smokers compared to never smokers and could be as high as double in the current smokers.

¹² In some public health cases, we do have data from the entire population, e.g. information on all deaths which occurred in Hull for a particular year. However, such deaths for that particular year, are still subject to inherent variability and it would be this variation that is been assessed.

¹³ In rare cases this is not the case depending on the way in which the statistical test is undertaken and the assumptions made, however, if it is not true then the p-value will be close to 0.05.

Results from logistic regression models

Results noted below if $p < 0.01$ for entire group. All other factors are not statistically significant. However, whilst statistically significant factors have been found they explain very little of the differences observed.

Predicting people who *never drink alcohol*

Gender	Comparison group	Factor	Odds-ratio (95% CI)	p-value	In relation to comparison group...
Men	Least deprived quintile	Second least deprived	0.89 (0.60, 1.32)	0.56	...no significant difference in odds of never drinking
		Middle quintile	1.55 (1.05, 2.27)	0.027	...no significant difference in odds of never drinking (at 1%)
		Second most deprived quintile	1.94 (1.30, 2.89)	0.001	...those living in second most deprived quintile have increased odds 1.94 times the comparison group of never drinking alcohol
		Most deprived	1.77 (1.20, 2.61)	0.004	...those living in most deprived quintile have increased odds 1.77 times the comparison group of never drinking alcohol
	Est after tax household income £20,000+	£10,000 – £19,999	1.31 (0.81, 2.12)	0.28	...no significant difference in odds of never drinking
		<£10,000	3.04 (1.89, 4.87)	<0.001	...those with incomes <£10,000 have increased odds 3.04 times the comparison group of never drinking alcohol
	Degree or higher or equivalent	O or A levels or equivalent	0.75 (0.53, 1.06)	0.11	...no significant difference in odds of never drinking
		None or basic qualifications	2.05 (1.48, 2.84)	<0.001	...those with none or basic qualifications have increased odds 2.05 times the comparison group of never drinking alcohol
	Current smoker	Former smoker	1.02 (0.72, 1.46)	0.91	...no significant difference in odds of never drinking
		Never smoker	2.07 (1.54, 2.77)	<0.001	...those who have never smoked have increased odds 2.07 times the comparison group of never drinking alcohol
	Excellent or very good health	Good health	1.02 (0.77, 1.37)	0.88	...no significant difference in odds of never drinking
		Fair or poor health	1.73 (1.26, 2.38)	<0.001	...those who have fair or poor health have increased odds 1.73 times the comparison group of never drinking alcohol
	Happy and interested in life (HUI)	Somewhat happy	1.05 (0.76, 1.44)	0.76	...no significant difference in odds of never drinking
		Somewhat unhappy	2.00 (1.21, 3.29)	0.007	...those who are somewhat unhappy have increased odds 2.00 times the comparison group of never drinking alcohol
		Very unhappy or so unhappy life not worthwhile	2.55 (1.38, 4.70)	0.003	...those who are very unhappy or so unhappy that life is not worthwhile have increased odds 2.55 times the comparison group of never drinking alcohol

Gender	Comparison group	Factor	Odds-ratio (95% CI)	p-value	In relation to comparison group...
Men	Mental Health Index best (score 86-100)	76-85	0.78 (0.55, 1.11)	0.16	...no significant difference in odds of never drinking
		61-75	0.92 (0.64, 1.31)	0.63	...no significant difference in odds of never drinking
		0-60 (worst)	2.15 (1.54, 3.00)	<0.001	...those who have worst mental health have increased odds 2.15 times the comparison group of never drinking alcohol
	30+ mins mod/vig exercise 5+ times per week	<5 times per week	0.76 (0.56, 1.04)	0.092	...no significant difference in odds of never drinking
		Light exercise only	1.04 (0.72, 1.51)	0.84	...no significant difference in odds of never drinking
		Never exercises	2.61 (1.74, 3.90)	<0.001	...those who never exercise have increased odds 2.61 times the comparison group of never drinking alcohol
Women	Least deprived quintile	Second least deprived	1.35 (0.98, 1.84)	0.063	...no significant difference in odds of never drinking
		Middle quintile	1.91 (1.36, 2.67)	<0.001	...those living in middle deprived quintile have increased odds 1.91 times the comparison group of never drinking alcohol
		Second most deprived	1.38 (0.91, 2.10)	0.13	...no significant difference in odds of never drinking
		Most deprived	2.59 (1.83, 3.66)	<0.001	...those living in most deprived quintile have increased odds 2.59 times the comparison group of never drinking alcohol
	Est after tax household income £20,000+	£10,000 – £19,999	1.58 (1.03, 2.42)	0.038	...no significant difference in odds of never drinking (at 1%)
		<£10,000	2.44 (1.58, 3.77)	<0.001	...those with incomes <£10,000 have increased odds 2.44 times the comparison group of never drinking alcohol
	Degree or higher or equivalent	O or A levels or equivalent	0.65 (0.47, 0.89)	0.008	...those with O or A levels have reduced odds (0.65 times) the comparison group of never drinking alcohol
		None or basic qualifications	1.65 (1.17, 2.33)	0.004	...those with none or basic qualifications have increased odds 1.65 times the comparison group of never drinking alcohol
	Current smoker	Former smoker	0.56 (0.41, 0.78)	<0.001	...former smokers have reduced odds 0.56 times the comparison group of never drinking alcohol
		Never smoker	1.15 (0.89, 1.48)	0.28	...no significant difference in odds of never drinking (at 1%)
	Affect of disability on daily activities: none/mild	Moderate/severe	1.53 (1.22, 1.91)	<0.001	...those who have their daily activities moderately or severely affected by their disabilities have increased odds 1.53 times the comparison group of never drinking alcohol
	Excellent or very good health	Good health	1.54 (1.20, 1.98)	0.001	...those who have good health have increased odds 1.54 times the comparison group of never drinking alcohol
		Fair or poor health	2.64 (2.00, 3.51)	<0.001	...those who have fair or poor health have increased odds 2.64 times the comparison group of never drinking alcohol
	No limiting illness/disability	With limiting long-term disability	1.69 (1.32, 2.17)	<0.001	...those who have fair or poor health have increased odds 1.69 times the comparison group of never drinking alcohol

Gender	Comparison group	Factor	Odds-ratio (95% CI)	p-value	In relation to comparison group...
Women	Happy and interested in life (HUI)	Somewhat happy	1.29 (1.00, 1.66)	0.051	...no significant difference in odds of never drinking
		Somewhat unhappy	2.05 (1.32, 3.19)	0.001	...those who are somewhat unhappy have increased odds 2.05 times the comparison group of never drinking alcohol
		Very unhappy or so unhappy life not worthwhile	2.45 (1.34, 4.47)	0.004	...those who are very unhappy or so unhappy life is not worthwhile have increased odds 2.45 times the comparison group of never drinking alcohol
	Mental Health Index best (score 86-100)	76-85	0.62 (0.44, 0.88)	0.008	...those who have score 76-85 on Mental Health Index have reduced odds 0.62 times the comparison group of never drinking alcohol
		61-75	0.77 (0.55, 1.08)	0.13	...no significant difference in odds of never drinking
		0-60 (worst)	1.50 (1.10, 2.06)	0.012	...no significant difference in odds of never drinking (at 1%)
	30+ mins mod/vig exercise 5+ times per week	<5 times per week	0.66 (0.49, 0.87)	0.003	...those who exercise <5 times a week have reduced odds 0.66 times the comparison group of never drinking alcohol
		Light exercise only	1.12 (0.81, 1.53)	0.49	...no significant difference in odds of never drinking
		Never exercises	2.41 (1.57, 3.70)	<0.001	...those who never exercise have increased odds 1.50 times the comparison group of never drinking alcohol

Even after adjusting for age, there was no significant difference in the percentage of people never drinking alcohol for the following factors:

- among the three Localities (for both men and women);
- among the two categories of disability based on the Health Utility Index (for men only);
- between those with limiting long-term illnesses/disabilities and those without (for men only); and
- among the four 5-A-DAY categories (for both men and women).

Predicting people who **drink excessive alcohol** (exceed weekly recommended guidelines for alcohol units)

Gender	Comparison group	Factor	Odds-ratio (95% CI)	p-value	In relation to comparison group...
Men	None or basic qualifications	O or A levels or equivalent	1.64 (1.21, 2.23)	0.002	...those with O or A levels or equivalent have increased odds 1.64 times comparison group of drinking alcohol excessively
		Degree or higher	1.34 (0.97, 1.86)	0.081	...no significant difference in odds of drinking excessively
	Never smoker	Former smoker	2.12 (0.52, 2.95)	<0.001	...former smokers have increased odds 2.12 times comparison group of drinking alcohol excessively
		Current smoker	2.84 (2.19, 3.70)	<0.001	...current smokers have increased odds 2.84 times comparison group of drinking alcohol excessively
	5-A-DAY: 5+	3-4	1.47 (1.05, 2.05)	0.027	...no significant difference in odds of drinking excessively (at 1%)
		1-2	1.79 (1.27, 2.51)	0.001	...those who eat 1-2 portions of fruit/veg daily have increased odds 1.79 times comparison group of drinking excessively
None		3.76 (2.18, 6.48)	<0.001	...those who eat no portions of fruit/veg daily have increased odds 1.79 times comparison group of drinking excessively	
Women	Never smoker	Former smoker	1.91 (1.17, 3.11)	0.009	...former smokers have increased odds 1.91 times comparison group of drinking alcohol excessively
		Current smoker	2.60 (1.73, 3.90)	<0.001	...current smokers have increased odds 2.60 times comparison group of drinking alcohol excessively

Even after adjusting for age, there was no significant difference in the percentage of people exceeding the weekly recommended alcohol units for the following factors:

- among the five deprivation quintiles (for both men and women);
- among the three income categories (for both men and women);
- among the three qualification categories (for women only);
- among the three Localities (for both men and women);
- among the four levels of disability affecting everyday living on the Health Utilities Index (for both men and women);
- among the three health categories (for both men and women);
- between those with limiting long-term illnesses/disabilities and those without (for both men and women);
- among the four levels of emotion on the Health Utilities Index (for both men and women);
- among the four Mental Health Index categories (for both men and women);
- among the four 5-A-DAY categories (for women only); and
- among the four exercise categories (for both men and women).

Predicting people who **binge drink alcohol** (exceed twice the daily recommended guidelines for alcohol units at least once a week)

Gender	Comparison group	Factor	Odds-ratio (95% CI)	p-value	In relation to comparison group...
Men	Never smoker	Former smoker	1.76 (1.31, 2.37)	<0.001	...former smokers have increased odds 1.76 times comparison group of binge drinking alcohol
		Current smoker	2.88 (2.27, 3.66)	<0.001	...current smokers have increased odds 2.88 times comparison group of binge drinking alcohol
	5-A-DAY: 5+	3-4	1.35 (1.00, 1.82)	0.048	...no significant difference in odds of binge drinking
		1-2	1.87, 1.38, 2.53)	<0.001	...those who eat 1-2 portions of fruit/veg daily have increased odds 1.87 times comparison group of binge drinking alcohol
		None	3.13 (1.85, 5.31)	<0.001	...those who eat no portions of fruit/veg daily have increased odds 3.13 times comparison group of binge drinking alcohol
Women	Never smoker	Former smoker	1.28 (0.88, 1.86)	0.19	...no significant difference in odds of binge drinking
		Current smoker	1.90 (1.39, 2.59)	<0.001	...current smokers have increased odds 1.90 times comparison group of binge drinking alcohol

Even after adjusting for age, there was no significant difference in the percentage of people binge drinking for the following factors:

- among the five deprivation quintiles (for both men and women);
- among the three income categories (for both men and women);
- among the three qualification categories (for both men and women);
- among the three Localities (for both men and women);
- among the four levels of disability affecting everyday living on the Health Utilities Index (for both men and women);
- among the three health categories (for both men and women);
- between those with limiting long-term illnesses/disabilities and those without (for both men and women);
- among the four levels of emotion on the Health Utilities Index (for both men and women);
- among the four Mental Health Index categories (for both men and women);
- among the four 5-A-DAY categories (for women only); and
- among the four exercise categories (for both men and women).

Predicting people who are **problem drinkers** (*drink alcohol excessively and/or binge drink alcohol*)

Gender	Comparison group	Factor	Odds-ratio (95% CI)	p-value	In relation to comparison group...
Men	Never smoker	Former smoker	1.86 (1.40, 2.46)	<0.001	...former smokers have increased odds 1.86 times comparison group of being problem drinkers
		Current smoker	2.75 (2.18, 3.46)	<0.001	...current smokers have increased odds 2.75 times comparison group of being problem drinkers
	5-A-DAY: 5+	3-4	1.42 (1.08, 1.88)	0.013	...no significant difference in odds of being problem drinkers (at 1%)
		1-2	2.83 (1.38, 2.44)	<0.001	...those who eat 1-2 portions of fruit/veg daily have increased odds 2.83 times comparison group of being problem drinkers
		None	2.92 (1.73, 4.94)	<0.001	...those who eat no portions of fruit/veg daily have increased odds 2.92 times comparison group of being problem drinkers
Women	Never smoker	Former smoker	1.40 (0.99, 1.98)	0.058	...no significant difference in odds of being problem drinkers
		Current smoker	2.02 (1.51, 2.70)	<0.001	...current smokers have increased odds 2.02 times comparison group of being problem drinkers
	Fair or poor health	Good health	1.88 (1.26, 2.81)	0.002	...those who have good health have increased odds 1.88 times comparison group of being problem drinkers
		Excellent or very good health	1.63 (1.10, 2.42)	0.015	...no significant difference in odds of being problem drinkers (at 1%)

Even after adjusting for age, there was no significant difference in the percentage of problem drinkers for the following factors:

- among the five deprivation quintiles (for both men and women);
- among the three income categories (for both men and women);
- among the three qualification categories (for both men and women);
- among the three Localities (for both men and women);
- among the four levels of disability affecting everyday living on the Health Utilities Index (for both men and women);
- among the three health categories (for men only);
- between those with limiting long-term illnesses/disabilities and those without (for both men and women);
- among the four levels of emotion on the Health Utilities Index (for both men and women);
- among the four Mental Health Index categories (for both men and women);
- among the four 5-A-DAY categories (for women only); and
- among the four exercise categories (for both men and women).

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