# Alcohol harm across the drinking spectrum

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BIT

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# Foreword

Millions of us feel the negative effects of alcohol in our daily lives. But because we're surrounded by slick adverts pushing the idea that every occasion needs an alcoholic drink, and because parts of our cultures still treat alcohol as essential, rather than optional, it's much harder for us to connect the dots.

When we as a society do talk about the downsides of alcohol, it is usually something that happens to 'other people', or in hard-to-comprehend, faceless statistics about rising alcohol deaths. The reality of alcohol harm – of a much messier middle of tiredness, anxiety, accidental spending, relationship problems, health conditions, chronic illness and days off work – is pushed to the sidelines in favour of severe stories about others.

This report is a wake-up call. It shows that the negative impact of alcohol on the health and wellbeing of the UK population is widespread. Even among those of us drinking under 14 units of alcohol a week, which the Chief Medical Officers have defined as "low risk", we see links with reduced daily functioning, lower sleep quality, poorer dental health, and higher prevalence of cancer and cardiovascular disease. Those of us consuming more than 14 units of alcohol a week, but below the levels associated with alcohol dependency, are experiencing harm at a significant scale.

The report also highlights disparities in alcohol-related harms, with men, and people from lower socioeconomic groups, showing stronger links between health problems and their alcohol consumption.

This harm isn't inevitable, and the solutions are right in front of us. Our environment can be improved so that whenever we want to make a positive change to our relationship with alcohol, we are supported and not hindered: with more accurate information about the dangers of alcohol, better protection from efforts to get us to drink more, and improved access to independent, evidence-based support.

Preventing alcohol harm across the drinking spectrum is possible with strategic, cross-government action. The Health Mission Delivery Board is ideally placed to drive the changes we need: to intervene early, embedding and properly resourcing alcohol advice, support and treatment in our neighbourhoods and workplaces; tackling the rise of cheap, strong alcohol by introducing minimum unit pricing;

ensuring the societal costs of alcohol harm are properly covered by the alcohol producers through reintroducing the alcohol duty escalator (while supporting pubs, bars and restaurants); and properly regulating alcohol labelling and marketing.

The time to act is now. Three-quarters of the UK population consume alcohol and a large proportion of us are in this 'messy middle', experiencing lower mood, sleep quality, energy and daily wellbeing. If we can encourage everyone who consumes alcohol to explore the benefits of cutting back, then we will improve the UK's health and wellbeing, reduce the number of health appointments we need, increase national productivity, and enhance our quality of life and work. That better future is within our grasp.

***Dr Richard Piper, Chief Executive of Alcohol Change UK***

# Policy summary

## Prevention across the spectrum

The Government must tackle alcohol harm across the spectrum of consumption, to turn prevention rhetoric into reality. This requires joined-up working across government departments, led by the Health Mission Delivery Board.

### 1. Ensure the alcohol industry pays its share

The alcohol industry should reimburse the public purse for the harm it creates. Only a fraction of this cost is covered by the industry through alcohol duty. The Government should commit to uprating duty rates each year **above inflation** by reintroducing the effective **alcohol duty escalator as a long-term measure** until duty receipts match the costs of alcohol harm.

End 'cider exceptionalism', by bringing the duty rates for cider in line with other products of the same ABV. This loophole costs the Government tens of millions of pounds in lost revenue every year and encourages the production and consumption of cheap, strong cider.

### 2. Create an environment which prevents alcohol harm

**Legislate for statutory alcohol labelling**, enforced by the Chief Medical Officer, via the Office of Health Improvement and Disparities. Labels should provide consumers with proper information about the ingredients, nutritional values, unit levels, and the risks of alcohol consumption.

Tackle the sale of cheap, strong alcohol by introducing a **Minimum Unit Price** for alcohol in England.

**Reform the licensing system in England & Wales** to better support harm reduction, updating the laws to address new challenges posed by alcohol delivery and online sales.

Bring in tighter restrictions on **alcohol marketing and advertising**, to protect us from efforts to get us to drink more.

## 3. Make support and treatment accessible to all

Reducing spending on public health is a false economy. A **multi-year funding settlement for community alcohol treatment and support services** will allow service providers to plan services, recruit staff, and crucially, reach out to the 82% of the people dependent on alcohol who are not currently accessing services.

**The public health grant should be restored to at least 2015/16 levels**. This will enable inclusive treatment and support, as well as action on the root causes of ill health and health inequalities.

Lift the exclusion of alcohol dependence from the disability protections in the Equality Act. This will enable public bodies and workplaces to work more effectively with people who have or have had alcohol dependence and provide a supportive environment for recovery.

# Policy map

| Prevention across the spectrum | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Drinking level (units/week)** | **Never-drinking (0)** | **Past drinking (0)** | **'Low risk' drinking (1-14)** | **'Hazardous' drinking (15-35w/50m)** | **'Harmful' drinking (35w/50m +)** | | |
| | | | | | **Not yet physically dependent drinking** | **Dependent drinking** | **Chronic dependent drinking with serious unmet needs** |
| **Alcohol use disorder** | None | | Possible 'binge' drinker (heavy episodic) | Mild psychological | Moderate psychological | Severe psychological and physical | |
| **Health harms associated with alcohol consumption** | None | Increased rates of depression and anxiety, compared to never-drinkers. Poor dental health. | Low risk of injury/poisoning. Compared to never-drinkers, higher rates of cardiovascular disease, cancer and poor dental health. Worse daily functioning and sleep compared to non-drinkers. | Moderate risk of injury and long-term conditions, including cancer, obesity, cardiovascular disease. Increased rates of depression and anxiety. Higher blood pressure. Worse daily functioning and sleep, more days off work. | Higher risk of injury & long-term conditions, including stroke, cardiovascular and liver disease, cancer, diabetes. Increased rates of depression and anxiety. Worse daily functioning and sleep, more days off work. | High risk of injury & long-term conditions, including stroke, cardiovascular and liver disease, cancer, diabetes, mental ill-health. Worse daily functioning and sleep, more days off work. | Very high risk of injury and long-term conditions. High risk of long-term brain damage. Serious safeguarding risks |
| **Estimated no. (%) of UK adults**[1] | 10.3M | | 30.9M | 10.2M | 2.4M | | |

[1] Estimates based the proportion of people drinking at these levels reported in Health Survey for England (2022), as a proportion of the UK 18+ population reported in the ONS (2024) Population estimates for the UK, England, Wales, Scotland and Northern Ireland: mid-2023

<table>
<tr><th>Drinking level (units/week)</th><th>Never-drinking (0)</th><th>Past drinking (0)</th><th>'Low risk' drinking (1-14)</th><th>'Hazardous' drinking (15-35w/50m)</th><th colspan="3">'Harmful' drinking (35w/50m +)</th></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td>Not yet physically dependent drinking</td><td>Dependent drinking</td><td>Chronic dependent drinking with serious unmet needs</td></tr>
<tr><td rowspan="3">Current government policy & delivery</td><td colspan="7">Alcohol duty, covering a fraction of the cost of harm. Licensing, which needs updating to address online sales and alcohol delivery.</td></tr>
<tr><td></td><td colspan="6">For every £1 the state spends on community alcohol treatment services, it spends £11 dealing with alcohol-related harm in ambulances and A&E. Short-term funding cycles make it harder for services to plan, carry out assertive outreach and retain skilled staff.</td></tr>
<tr><td colspan="4"></td><td colspan="2">Identification & Brief Advice is provided in some settings, but stigma associated with alcohol problems, assumptions about who should receive IBA and lack of training is a barrier.</td><td>People with chronic alcohol dependency and serious unmet needs face additional barriers accessing support services. This can mean more interactions with emergency services and social services.</td></tr>
<tr><td rowspan="3">Potential government policy & delivery options</td><td colspan="2" rowspan="3">Duty escalator, removing cider exceptionalism (income generating), revised Licensing Act (negligible cost), strengthen marketing controls (negligible cost)</td><td colspan="4">Statutory labelling, enforced by the Chief Medical Officer (negligible cost), strengthen marketing controls (negligible cost), duty escalator and remove cider exceptionalism (income generating), revised Licensing Act (negligible cost), alcohol care teams in all relevant hospitals (requires funding), restoration of the public health grant to 2015/16 levels (requires funding)</td><td rowspan="3">Multi-agency approaches, assertive outreach, such as the Blue Light approach.</td></tr>
<tr><td colspan="2">Earlier prevention advice and support embedded in primary care (requires funding) and workplaces (via employers)</td><td colspan="2">Minimum Unit Price (free), increased, multi-year funding of culturally inclusive alcohol treatment (requires funding), training in Identification & Brief Advice for frontline workers in health, social care and employment support (requires funding).</td></tr>
<tr><td colspan="6"></td></tr>
</table>

# Executive summary

BIT worked with Alcohol Change UK to run an online survey on a nationally representative sample of 4,236 adults between the 18th of November and 2nd of December 2024, to explore the extent of alcohol harm across different levels of drinking. Five categories of consumption were used to group the sample: non-drinkers, past drinkers, low risk drinkers, hazardous drinkers, and harmful drinkers.

We found that:

1. **Alcohol consumption is associated with harm even at lower levels of drinking:** Even at low risk levels of consumption, we found statistically significant associations with various health outcomes. Compared to those who had never drunk alcohol, low risk drinkers showed higher rates of cardiovascular disease (5% vs 1%) and cancer (4% vs <1%), reported poorer dental health, and experienced worse sleep quality. These associations often strengthened at hazardous and harmful levels of drinking, with anxiety rates increasing from 24% among never-drinkers to 50% among harmful drinkers. Harmful drinkers showed higher rates of emergency care use and unsuccessful GP visits. Hazardous and harmful drinkers also reported more days off work.

2. **The negative impact of alcohol extends beyond the impact on the individual, and into the healthcare system and economy:** all groups who consume alcohol, including those categorised as low risk drinkers, accessed health services more in the last year than those who never consume alcohol. Our estimates very cautiously suggest that harmful drinkers may generate an additional £729[2] per person in annual NHS costs through increased GP visits, urgent care visits, A&E visits, and days spent in hospitals. However, wide variation in healthcare use within drinking categories and relatively small sample sizes in some groups limit our ability to draw firm conclusions specifically about cost differences. Additionally, hazardous and harmful

[2] This was calculated by multiplying the estimated effect of harmful drinking on GP visits, urgent care visits, A&E visits, and days spent in hospital by the average price of each. The Kings Fund estimate that on average GP visits cost £49, and urgent care visits cost £91. The National Cost Collection Data Publication from the NHS estimates that A&E visits cost £268 on average. The Secretary of State for Health and Social care has reported that a standard hospital bed costs £345.

drinkers are estimated to take 2 and 2.4 more days off work per month respectively, compared to people who have never consumed alcohol.

3. **The impact of alcohol is magnified in particular demographic subgroups:** On some outcome measures, the pattern of results differed across demographic groups, particularly the impact of low-level drinking. For example, among men and people with lower socioeconomic status (SES), even low risk drinking was associated with increased health problems compared to never drinking. This pattern was not seen among women or those with higher SES. Similarly, participants with lower SES showed an association between low risk drinking and sleep issues that was not present in participants with higher SES. Young adults (18-24) showed the highest proportion of non-drinkers (13%) of any age group and lower rates of hazardous and harmful drinking than older age groups.

These findings highlight the associations between alcohol consumption and various health-related outcomes, particularly at higher consumption levels. At a population level, alcohol consumption is associated with increased healthcare service use and decreased workplace attendance. The relationships between alcohol and health outcomes are not uniform across demographic groups, with stronger associations observed among men and participants with lower socioeconomic status.

# Introduction and methods

## Background and purpose

Harmful alcohol consumption is one of the most impactful and widespread public health challenges in the UK and globally.[3] Additionally, there is robust evidence linking harmful alcohol consumption to a range of mental and behavioural disorders.[4] However, much of the public and policy discourse can focus heavily on 'binge drinking' and high levels of consumption. This narrow perspective fails to

[3] Office of National Statistics (2024) Alcohol-specific deaths in the UK: registered in 2022; Shield et al. (2020). National, regional, and global burdens of disease from 2000 to 2016 attributable to alcohol use: a comparative risk assessment study. The Lancet 5(1): E51-E61

[4] World Health Organisation (2024) Global status report on alcohol and health and treatment of substance use disorders

capture alcohol harms across the spectrum of drinking behaviour, so may misrepresent the prevalence and impact of alcohol harms.[5] This project seeks to better understand the relationship between alcohol and a range of alcohol-related harms across the spectrum of drinking in the UK, including amongst alcohol consumption generally regarded to be low risk.

## Methodology

We recruited a nationally representative sample of 4,236 adults to take part in an online survey between the 18th of November and 2nd of December 2024. Participants reported their alcohol consumption patterns, both current (based on daily units consumed over the previous 14 days) and across their lifetime. The survey captured data on a wide range of self-reported outcomes, including physical health, healthcare service use, injuries, wellbeing, daily functioning, and diagnosed conditions. This approach enabled efficient collection of data from large, representative samples while controlling for demographic and other factors, such as smoking, diet, and exercise, that might influence health outcomes.

Our analysis examined both immediate and longer-term associations with alcohol consumption. Immediate impacts include sleep quality, daily functioning, workplace productivity, and healthcare service use. Longer-term impacts include diagnosed conditions, though these relationships are more complex as serious health impacts may take years to develop and our snapshot approach cannot capture future effects.

This approach, examining both immediate effects and diagnosed conditions, provides important insights into how alcohol consumption relates to daily life, public service use, and health outcomes across the UK population. While the self-reported nature of the data and single timepoint collection have inherent limitations, the findings show significant patterns in how drinking levels relate to various aspects of health, and their impact on society and the economy.

[5] Morris, J., Boness, C.L. and Witkiewitz, K. (2024) Should we promote alcohol problems as a continuum? Implications for policy and practice Drugs: Education, Prevention and Policy 31(2): 271-281

## Survey flow

Participants first answered several demographic questions. They then completed a series of questionnaires on the following topics:

- Sleep issues
- Dental health, measured with the Oral Health Impact Profile (OHIP-5)
- Diagnosis of alcohol-related conditions
- Self-reported family history of alcohol-related conditions
- Use and attempts to use healthcare services, such as visiting the GP or spending time in hospital
- Overall wellbeing, measured using the Office for National Statistics' (ONS) 4 item wellbeing scale
- A single item rating of their overall health
- Daily functioning and ability to work, measured with the 12 item version of the World Health Organisation's (WHO) Disability Assessment Schedule

After completing these questionnaires, participants were asked questions about their alcohol consumption. This was done at the end of the survey to avoid biasing the responses to the questionnaires. Participants were first asked whether they currently drink. If they do not drink, they were then asked if they had always been a non-drinker or if they had stopped drinking. If the latter, they were asked whether they stopped drinking due to a health condition.

Current drinkers were then asked to report their drinking each day for the past 14 days in terms of UK standard units. The definition of a standard unit was provided.[6] Finally, both current and past drinkers were asked questions about their alcohol consumption across their lifetime.

## Analysis

The analysis looks at patterns of behaviours and attitudes in the sample through two main approaches. First, we present descriptive statistics showing the prevalence of different drinking behaviours and outcomes across the sample. Second, we use multivariate regression analyses to investigate links between alcohol consumption

[6] See https://alcoholchange.org.uk/alcohol-facts/interactive-tools/check-your-drinking/alcohol-units for more on alcohol units.

and health outcomes while accounting for other potentially influential factors. These factors include:

- Demographic characteristics: age, gender, ethnicity, geography, and urbanicity
- Socioeconomic indicators: income, education, job status, and age left education
- Lifestyle factors: smoking, diet, and exercise
- Household composition: number of children

Current alcohol consumption was measured by asking people to report their drinking habits during the past 14 days. We also controlled for whether people reported this consumption as more than usual, about the same as usual, or less than usual. When looking at whether someone has a current health condition, the analysis also considered self-reported family history of health issues.

Alcohol consumption behaviour in the regression models was grouped into five categories based on alcohol consumption over the past 14 days:

- '**never drinker**': somebody who does not drink alcohol nowadays, and has always considered themselves a 'non-drinker'
- '**past drinker**': somebody who does not drink alcohol nowadays, but who used to drink alcohol
- '**current low risk drinker**': defined as consuming up to 14 or fewer units a week
- '**current hazardous drinker**'; defined as consuming between 15 and 34 units weekly for women, or between 15 and 49 units per week for men
- '**current harmful drinker**': defined as consuming above 35 units per week for a woman and above 50 units for a man.

This method of categorising consumption may lead to some participants being miscategorised, as their drinking over the 14 days prior to the survey may not be reflective of their normal drinking patterns. However, measures that ask about more general drinking habits are more susceptible to recall bias so may underestimate drinking in the sample. In this study, we found no evidence of recall bias, as participants reported comparable drinking in the week immediately prior to the survey and the week before that. Additionally, to mitigate the potential impact of

people's consumption over the prior 14 days not being representative of their normal drinking habits, we controlled for this in all regression analyses.

Some categories were too small to analyse in subgroup analysis (for example, there were only 31 harmful drinkers aged 18-34, too few to draw meaningful conclusions from). To allow for subgroup analysis, drinking behaviour was simplified into three categories: 'non-drinkers' (made up of both never drinkers and past drinkers), 'low risk drinkers', and 'hazardous or harmful drinkers'. Notable subgroup results are reported in the main text, and full subgroup analyses are reported in the Annex.

### Sample

The total sample size was 4,236 participants. The data is broadly nationally representative across gender, region, age, ethnicity, socioeconomic status, and alcohol consumption habits. A full breakdown is provided in the Annex.

# Findings

## Prevalence of drinking in the sample

**Section summary:**

- The prevalence of drinking in this sample broadly matches previous studies, with the majority of the sample low risk drinkers (62.7%), followed by hazardous drinkers (16.1%), past drinkers (8.8%), never drinkers (8.4%) and a small proportion of harmful drinkers (3.8%).
- Current harmful and hazardous drinkers on average started drinking younger and reached their 'peak' drinking age (in terms of volume of alcohol consumed) later compared to low risk drinkers.
- In this sample, the hazardous and harmful drinkers had a higher proportion of male, white, and older participants, compared to the demographic makeup of those who never drink.

We measured participants' consumption in the two weeks prior to completing the survey to capture their drinking habits. The majority of participants (63%) were current low risk drinkers. Hazardous drinkers accounted for 16% of the sample, while 4% were harmful drinkers. Of the remaining participants, 8% had never consumed alcohol, 3% previously consumed alcohol but stopped due to health factors, and 6%

previously consumed alcohol but stopped for other reasons. This broadly mirrors the results from NHS England data on alcohol consumption,[7] which found that within England, 19% of the population are non-drinkers, 57% are low risk drinkers, 20% are hazardous drinkers, and 4% are harmful drinkers. Among current drinkers (n = 3,504), consumption patterns varied markedly by category. Low risk drinkers consumed an average of 0.7 units per day, compared to 3.4 units among hazardous drinkers and 15.2 units among harmful drinkers. The average across all current drinkers was 1.9 units per day.

Most participants (75%) indicated that their stated consumption level was representative of their typical drinking habits, while 15% reported higher-than-usual consumption and 10% lower-than-usual consumption during the 14-day period preceding the online survey.

The survey also asked respondents about their drinking history, which is summarised in the table below.

[7] NHS Digital. (2024, September 24). *Health Survey for England*. Retrieved December 16, 2024, from https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england

***Table 1. Lifetime drinking habits.***

| Lifetime drinking | 'Past' drinker (n = 374) | Current low risk drinker (n = 2,660) | Current hazardous drinker (n = 681) | Current harmful drinker (n = 163) |
|---|---|---|---|---|
| Average age (years) | 49.1 | 46.8 | 47.0 | 48.2 |
| Age of first full drink[8] | | | | |
| Mean | 16.4 | 16.5 | 15.5 | 14.5 |
| Age began drinking regularly (at least once a month) | | | | |
| Mean | 19.4 | 20.1 | 19.1 | 18.9 |
| Age at which 'peak' alcohol consumption occurred | | | | |
| Mean | 26.2 | 26.8 | 29.5 | 33.2 |
| Normalised mean[9] | 31.5 | 26.8 | 29.6 | 45.8 |
| % who have had periods of abstinence lasting at least a year | 63% | 42% | 29% | 23% |
| Average cumulative length of periods of abstinence among those who have had at least one period of abstinence[10] | 4 years and 2 months | 2 years and 5 months | 2 years and 3 months | 2 years |
| % who have experienced periods of heavy drinking (6 drinks in a day at least one day per week for a month) | 28% | 20% | 49% | 72% |
| Average cumulative length of periods of heavy drinking among those who have had a period of heavy drinking[7] | 7 years and 4 months | 4 years and 7 months | 5 years and 8 months | 8 years and 2 months |

[8] Outliers were removed for all age variables if the age reported was greater than the participant's current age. For the age of first full drink, 10 outliers total were removed; for age of beginning drinking regularly 40 outliers were removed; and for age at which peak alcohol consumption occurred 67 outliers were removed.

[9] The normalised mean adjusts the mean to account for the differences in the current age of the different groups.

[10] Outliers were removed for both the average length of periods of abstinence and average length of periods of heavy drinking, using the interquartile range method.

Age of first consumption showed a consistent relationship with current drinking levels - harmful and hazardous drinkers reported starting earliest (15.5 years and 14.5 years respectively) while past and low risk drinkers started later (16.4 years and 16.5 years respectively).

Those currently categorised as harmful drinkers reported reaching their highest lifetime levels of alcohol consumption notably later than low risk drinkers or past drinkers, even once adjusting for the slightly older age of the harmful drinkers in this sample. Hazardous drinkers reported that their alcohol consumption peaked at an age between low risk and harmful drinkers. We measured and analysed drinking habits (full figures in the Annex), and found similar patterns. Low risk drinkers' alcohol consumption generally peaked in young adulthood, while harmful drinkers peaked between 30 and 39 years old and remained high until about the age of 60 years old.

The proportion of people who had experienced a period of abstinence from drinking for at least a year decreased as current alcohol use increased, and the cumulative length of periods of abstinence decreased as current alcohol use increased. More than half (63%) of the past drinker group reported a period of abstinence lasting over a year, suggesting that a substantial minority only recently stopped drinking.

We also asked participants to report whether they had experienced periods of drinking more than 6 drinks in a single day at least one day per week for a month, defining this type of consumption as 'heavy drinking'. As expected, the proportion of participants who reported at least one period of heavy drinking was lowest among those currently classed as low risk drinkers (20%), compared to hazardous (49%) and harmful (72%) drinkers.

Participants were also asked to report the cumulative number of months of 'heavy drinking' since they began consuming alcohol. Interestingly, past drinkers (i.e. those who consumed alcohol previously but not in the present) reported both higher rates of having experienced periods of heavy drinking, *and* a higher cumulative number of months spent drinking heavily, when compared to current low risk drinkers as shown in Table 1 above. This suggests that, on average, the past drinkers in our sample were higher risk drinkers before they stopped consuming alcohol.

Table 2 below shows the prevalence of alcohol consumption across demographic subgroups of interest.

***Table 2. Alcohol risk across demographic groups.***

| | Never drinker (n = 358) | Past drinker (n = 374) | Current low risk drinker (n = 2,660) | Current hazardous drinker (n = 681) | Current harmful drinker (n = 163) |
|---|---|---|---|---|---|
| Age | | | | | |
| 18 - 24 | 15% | 6% | 11% | 8% | 5% |
| 25 - 54 | 59% | 55% | 53% | 58% | 61% |
| 55+ | 26% | 39% | 36% | 35% | 34% |
| Gender | | | | | |
| Female | 64% | 61% | 54% | 36% | 45% |
| Male | 36% | 39% | 45% | 64% | 53% |
| Other | 0% | 0% | 1% | 0% | 1% |
| Socioeconomic status | | | | | |
| Lower SES | 56% | 60% | 50% | 48% | 53% |
| Higher SES | 44% | 40% | 50% | 52% | 47% |
| Ethnicity | | | | | |
| White | 61% | 89% | 85% | 88% | 94% |
| Other ethnic groups combined | 39% | 11% | 15% | 12% | 6% |
| Employment | | | | | |
| Employed | 65% | 61% | 71% | 72% | 65% |
| Unemployed or Inactive | 34% | 38% | 28% | 28% | 35% |
| LGBTQ | | | | | |
| Heterosexual and cisgender | 92% | 94% | 91% | 89% | 93% |
| LGBTQ | 8% | 6% | 9% | 11% | 7% |

The prevalence of different consumption behaviours varied considerably across demographic groups. These results are descriptive though and do not account for any interactions between different demographic characteristics. They are intended

to provide more information on the sample of this survey rather than to generalise to the population.

Almost 2 in 3 never drinkers in this sample were women. This pattern flipped in hazardous drinkers, in which almost 2 in 3 were men. There were also age-related patterns: 15% of never drinkers were between the ages of 18-24, and only 5% of current harmful drinkers were between the ages of 18-24. This is in line with data from the NHS Health Survey which showed increases in harmful drinking by age.[11]

There were also notable differences in the ethnic makeup of the different drinking levels, with the proportion of white participants increasing from only 61% of never drinkers to 94% of harmful drinkers. Socioeconomic status did not show a clear pattern of results, as each drinking category showed a relatively similar socioeconomic split.

## Healthcare use across the spectrum of drinking

**Section Summary:**

- Higher levels of alcohol consumption were associated with increased interactions with the healthcare system, even at low levels of drinking.
- The increase in interactions with the healthcare system in hazardous and harmful drinkers was driven by increased attempts to visit the GP, visits to A&E, and days in hospital.
- Among people who used the health care system, alcohol poisoning and mental health support were more common reasons in hazardous and harmful drinkers than low risk drinkers.

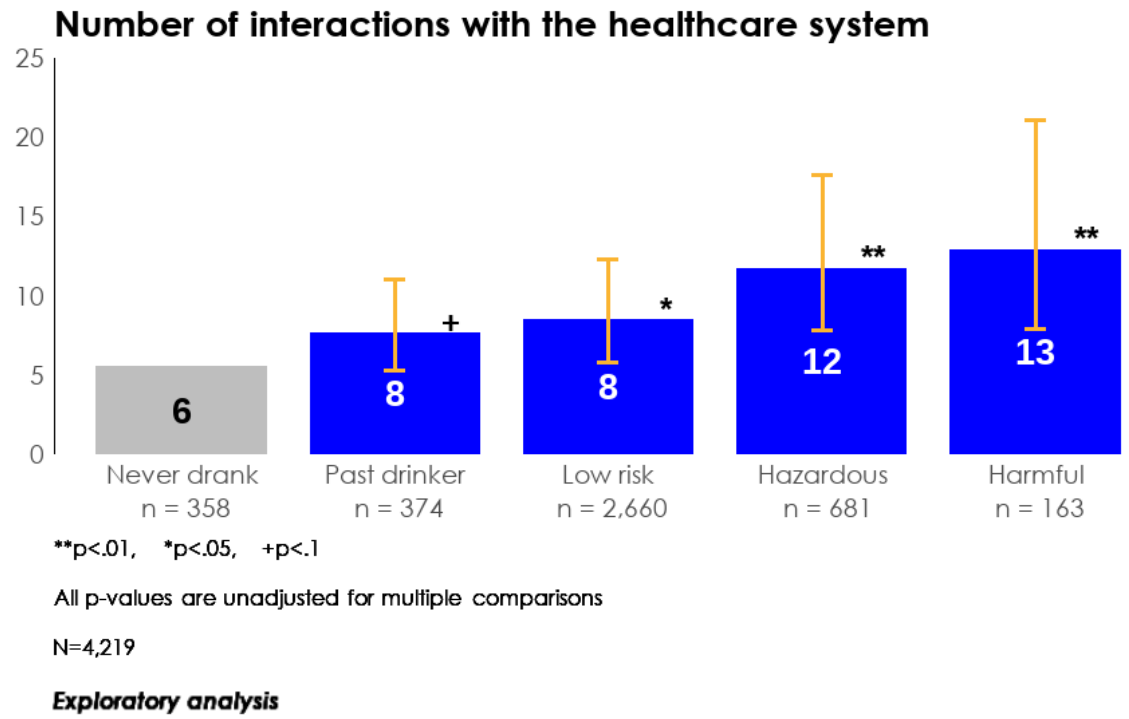
To create a combined measure of healthcare system usage,[12] we combined all the interactions with healthcare services reported by respondents in the last 12 months, including visits to a hospital or a GP, attempted visits to a healthcare setting where they ultimately were not seen, ambulance calls, and number of days spent in hospital. Figure 1 (see below) presents how the combined outcome measure of healthcare system usage is associated with current alcohol consumption. There is a statistically significant association: low risk drinkers accessed healthcare services on

[11] NHS Digital. (2024, September 24). *Health Survey for England*. Retrieved December 16, 2024, from https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england

[12] Participants were asked to only report healthcare usage for their own health, so this does not include seeking help for family members.

average two more times per year than those who have never consumed alcohol. This gap widened substantially for higher-risk drinkers: hazardous and harmful drinkers accessed services six and seven more times per year respectively than non-drinkers.

Figure 1: Association between interaction with the healthcare system and drinking level




Subgroup analysis found that female participants who had never consumed alcohol and those classified as low-risk drinkers both reported an average of about seven healthcare engagements per year, showing almost no difference in total usage. In contrast, male participants reported using healthcare services five times per year on average if they never drank, compared to nine times per year for low-risk drinkers. This indicates that the overall link between low-risk drinking and higher healthcare use was mainly driven by male drinkers.

We also descriptively explored healthcare usage broken down by visits and attempts to visit the GP, A&E, urgent care, ambulance calls, and days in hospital (full results in Annex). Due to small numbers, the following findings are not tested for statistical significance and should be interpreted cautiously.

**GP services**

- There was no obvious pattern between reported levels of alcohol consumption and the number of visits to GP, which varied between 2 to 3 per year.
- Unsuccessful attempts to see a GP varied by drinking level: non-drinkers reported 0.64 attempts per year, low risk drinkers 0.75, hazardous drinkers 1.05, and harmful drinkers 3.13.

**Emergency services**

- A&E visits per year were similar among non-drinkers (0.51), past drinkers (0.47) and low risk drinkers (0.49). Rates were higher among hazardous drinkers (1.58) and harmful drinkers (0.91).
- Urgent care visits showed comparable patterns: non-drinkers (0.38), past drinkers (0.28) and low risk drinkers (0.35) had similar rates, while hazardous drinkers averaged 1.48 visits and harmful drinkers 0.53.
- There was very little difference between the average number of hospital days per year between those who had never consumed alcohol (3.59 days) and low risk drinkers (3.33). However, the subgroup of participants with the highest number of average hospital days per year were those who consumed alcohol in the past but no longer do so (8.09) - a higher figure than the equivalent for hazardous (5.11) and harmful drinkers (5.73) respectively. This may indicate that those who have consumed alcohol in the past have more longer term health issues.

Table 3 below shows descriptive responses to reasons for engaging with the healthcare system. This is categorised in the table by current level of alcohol consumption. Among those healthcare users:

- Alcohol poisoning was listed as a reason for healthcare use even among low risk drinkers (3%), with rates increasing among hazardous (8%) and harmful drinkers (11%).
- Mental health-related hospital visits were higher among drinkers compared to those who have never consumed alcohol. While 5% of those who have never drunk alcohol cited mental health treatment as a reason for visiting hospital,

this rose to 8% among low risk drinkers and 17% among hazardous drinkers, falling to 12% among harmful drinkers.

- The data is mixed regarding injuries and accidents.
    - Primary care visits for minor injuries did not show any clear patterns by drinking level.
    - Emergency service visits for injuries in the past year showed a steady increase with alcohol consumption: from 17% of those who have never drank alcohol, rising to 26% among low risk drinkers, 34% among hazardous drinkers and 37% among harmful drinkers. However, it was just 9% among past drinkers.
- Road accident injuries showed similar rates across all drinking levels, with no clear and consistent pattern.

***Table 3. Reasons for engaging with the healthcare system.***

| | Non-drinker | Past drinker | Current low risk drinker | Current hazardous drinker | Current harmful drinker |
|---|---|---|---|---|---|
| Number who visited GP, urgent care, or A&E in the past year | 215 | 245 | 1,781 | 493 | 121 |
| Of those who visited the GP, urgent care, or A&E in the past year, the proportion who visited due to… | | | | | |
| Minor injury | 25% | 16% | 29% | 34% | 29% |
| Injury due to road accident | 4% | 2% | 4% | 6% | 3% |
| Alcohol poisoning | 0% | 1% | 3% | 8% | 11% |
| Acute pancreatitis | 0% | 2% | 1% | 4% | 4% |
| Other | 58% | 72% | 57% | 54% | 53% |
| Prefer not to say | 14% | 11% | 10% | 7% | 7% |
| Number who visited the hospital in the past year | 64 | 77 | 546 | 199 | 43 |
| Of those who visited the hospital in the past year, the proportion who visited due to … | | | | | |
| Injury or accident | 17% | 9% | 26% | 34% | 37% |
| Surgery or procedure | 27% | 25% | 24% | 23% | 19% |
| Acute illness or infection | 17% | 26% | 20% | 21% | 16% |
| Routine treatment or therapy | 12% | 6% | 14% | 16% | 12% |
| Management of chronic condition | 9% | 18% | 10% | 15% | 7% |
| Mental health treatment | 5% | 12% | 8% | 17% | 12% |
| Childbirth | 6% | 8% | 9% | 9% | 9% |
| Prefer not to say | 11% | 8% | 4% | 4% | 5% |

## Cost to healthcare system across spectrum of drinking

**Section summary:**

- We can make tentative estimates of healthcare costs associated with alcohol consumption.
- While higher levels of alcohol consumption were associated with some increased healthcare service usage - particularly GP visits among hazardous drinkers - the overall financial impact on the NHS is difficult to quantify with confidence from our data.
- The relationship between drinking levels and healthcare costs appears complex, with high variability between individuals and uncertainty in our estimates.
- We cautiously estimate that compared to those who never drink, harmful drinking may cost the NHS an additional £729 per person per year; hazardous drinking may cost an additional £522 per person per year; and low risk drinking may cost an additional £153 per person per year. However, some of this is based on directional evidence that is not statistically significant.

We can make some tentative estimates of the healthcare costs associated with the different levels of alcohol consumption reported among the sample of respondents. We do so based on modelling:

- Healthcare use (the reported number of GP visits, urgent care visits, A&E visits, and days spent in hospital) across drinking levels
- Controlling for demographic and other factors (as listed in the Analysis section)[13]
- Multiplying the estimated effect size by the average NHS costs of these activities,[14] with estimates and significance testing performed in comparison to respondents who have never consumed alcohol.

[13] Ambulance usage was not included in this analysis, as there were too few ambulance calls reported in the survey with which to conduct regression analysis.

[14] The Kings Fund estimate that on average GP visits cost £49, and urgent care visits cost £91. The National Cost Collection Data Publication from the NHS estimates that A&E visits cost £268 on average. The Secretary of State for Health and Social care has reported that a standard hospital bed costs £345 per day.

***Table 4. Estimated additional costs of healthcare system use for different drinking levels compared to never drinkers.***

| | Past drinker | | Current low risk drinker | | Current hazardous drinker | | Current harmful drinker | |
|---|---|---|---|---|---|---|---|---|
| **Visits to healthcare system** | **n = 344** | | **n = 2,468** | | **n = 645** | | **n = 152** | |
| | **Extra visits** | **Extra cost (£)** | **Extra visits** | **Extra cost (£)** | **Extra visits** | **Extra cost (£)** | **Extra visits** | **Extra cost (£)** |
| Visits to an NHS GP | 0.5 | £26 | 1.1 | £52 | 2.1* | £101 | 1.8$^{+}$ | £87 |
| Urgent care visits | -0.1 | -£6 | 0.3 | £23 | 0.5 | £43 | 0.3 | £24 |
| A&E visits | -0.0 | -£7 | 0.1 | £25 | 0.5$^{+}$ | £137 | 0.4 | £116 |
| **Hospital stays** | **n = 357** | | **n = 2,575** | | **n = 655** | | **n = 162** | |
| | **Extra days in hospital** | **Extra cost (£)** | **Extra days in hospital** | **Extra cost (£)** | **Extra days in hospital** | **Extra cost (£)** | **Extra days in hospital** | **Extra cost (£)** |
| Days in hospital | 0.4 | £236 | 0.2 | £53 | 0.7 | £241 | 1.5 | £502 |
| **Total cost** | **-** | **£249** | **-** | **£153** | **-** | **£522** | **-** | **£729** |

$^{+}$ p<.1, * p<.05, ** p < .01
Prefer not to say responses were omitted, leading to different sample sizes for questions on visits (GP, urgent care, and A&E) and days in hospital.

All estimates and significance testing is performed in comparison to respondents who reported never having consumed alcohol. Ambulance visits were omitted from this analysis, as there were too few reports of ambulance calls with which to obtain stable estimates. Cost estimates combine multiple healthcare interactions, not all of which showed statistically significant relationships with drinking levels. Statistical testing was performed on the frequency of healthcare interactions rather than the derived costs. Wide variation in healthcare use within drinking categories and relatively small sample sizes in some groups limit our ability to draw firm conclusions about cost differences.

Among hazardous drinkers, we found a statistically significant increase in NHS GP visits, costing an additional £101 per person annually based on our estimates. We

also found marginally statistically significant increases (p<.1) in A&E visits among hazardous drinkers and GP visits among harmful drinkers. While our descriptive analysis suggests other potential increased costs across different drinking levels and healthcare settings, these differences did not reach statistical significance when examined individually.

While these estimates suggest increased healthcare costs with higher levels of alcohol consumption compared to those who have never drank, the general lack of statistical significance means we cannot conclusively demonstrate that these differences are not due to chance or other factors. The wide variation in healthcare use within each category of alcohol consumption, combined with the relatively small sample sizes in some groups (particularly those with harmful levels of consumption), may limit our ability to detect statistically significant differences in costs. Future research with larger samples and more detailed healthcare use data may help to better determine these relationships.

## Physical health harms across the spectrum of drinking

**Section summary:**

- Harmful drinking and past drinking were both associated with significantly worse perceived general health compared to those who never drink, but low risk drinking and hazardous drinking were not associated with any differences compared to those who never drink.
- Even at low risk levels of consumption, we found statistically significant associations with various health outcomes. Compared to those who have never drunk alcohol, low risk drinkers showed markedly higher rates of cardiovascular disease (5% vs 1%) and cancer (4% vs <1%).
- Past drinkers, low risk drinkers, hazardous drinkers, and harmful drinkers all had significantly worse dental health compared to those who have never drunk alcohol.

The analysis from various measurements of physical health suggests a complex and nuanced relationship between alcohol consumption and health outcomes. Figure 2, Figure 3 and Figure 4 (all below) summarise the outcomes covered in this section.

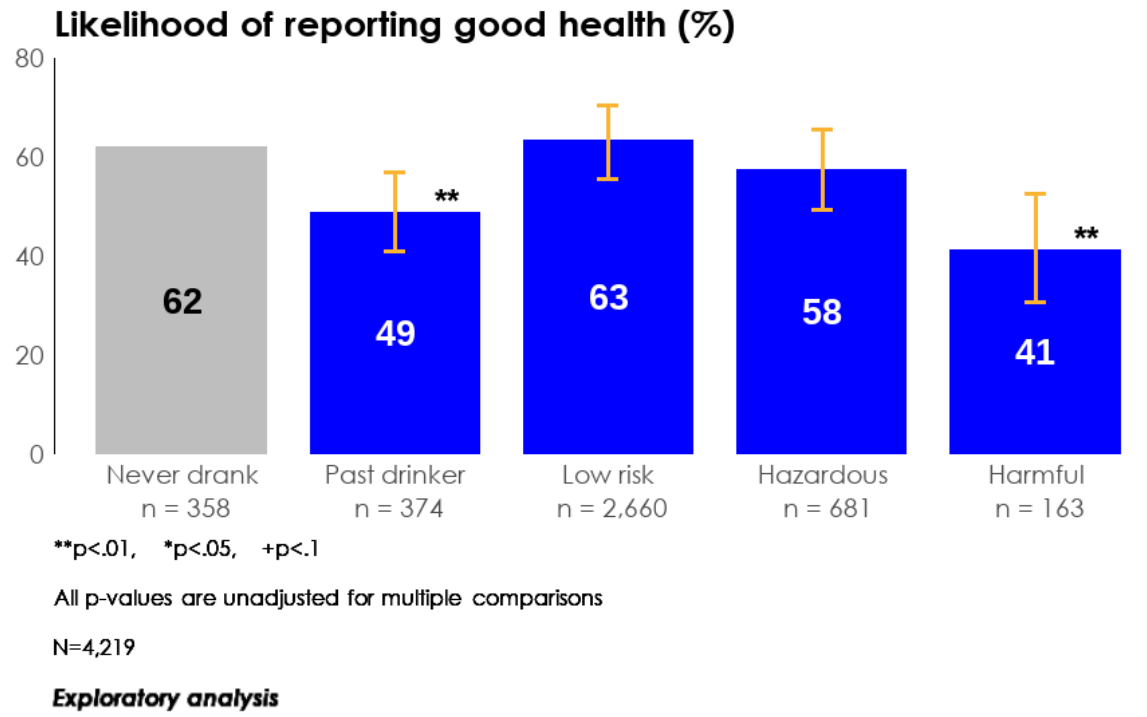
## Self-reported health

We asked all participants to respond to a single-item measure of how they perceive their health. We found that on average, 57% of participants reported their health as good. When looking at differences across drinking levels (see Figure 2), we found three distinct patterns:

1. Low risk drinkers (63%) and hazardous drinkers (58%) were as likely to report good health as those who have never consumed alcohol (62%), with no statistically significant difference between these groups.
2. Harmful drinkers (41%) were significantly less likely to report good health than those who have never drunk.
3. Past drinkers (49%) were also significantly less likely to report good health than those who have never drunk.

Past drinkers reported significantly poorer health than those who have never drunk, even after controlling for age and other demographic factors. While this could suggest lasting health impacts from previous drinking, other explanations are possible. Most past drinkers in our sample reported stopping drinking for reasons unrelated to health, but we cannot determine whether their poorer health outcomes were related to their previous alcohol consumption or to other unmeasured factors. This would be a fruitful topic for future research.

Figure 2: Association between self-reported health and drinking levels




## Diagnosed health conditions

We examined the relationship between drinking levels and a range of health conditions that have been linked in the literature - not exclusively - to alcohol consumption.[15] This includes liver disease, high blood pressure, depression, anxiety, cardiovascular disease, cancer,[16] musculoskeletal conditions, and type 2 diabetes. The prevalence of these conditions in our sample showed a clear relationship with alcohol consumption (see Figure 3).

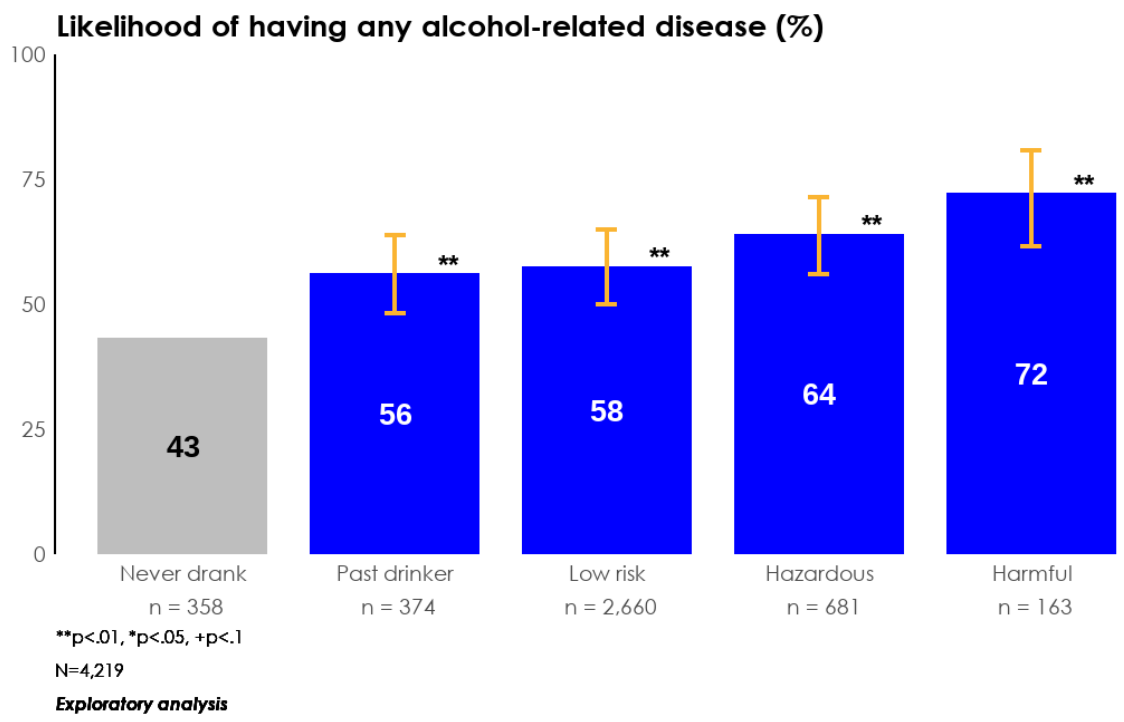
Among those who have never drunk alcohol, 43% reported at least one of these conditions, reflecting the complex nature of these diseases. However, the prevalence increased with alcohol consumption, reaching 72% among harmful

[15] World Health Organisation (2024) Global status report on alcohol and health and treatment of substance use disorders

[16] We asked about the following types of alcohol-related cancer: mouth, throat, esophageal, liver, and breast.

drinkers. Past drinkers also showed significantly higher prevalence (56%) than those who have never drunk, similar to low risk drinkers (58%).

Figure 3: Association between alcohol-related diseases and drinking levels




The relationship between low risk drinking and health conditions varied by demographic group. Among participants with lower socioeconomic status, low risk drinkers were nine percentage points more likely to report these conditions than non-drinkers (p = .042). No such difference appeared in higher socioeconomic groups.

There were also gender differences. Among men, low risk drinkers showed significantly higher disease prevalence than non-drinkers (60% vs 45%, p = .005). Among women, low risk drinkers and non-drinkers showed similar rates (both around 60%). Women who had never drunk alcohol reported higher disease prevalence than men who had never drunk.

These gender patterns align with both healthcare use in our study and broader research on UK primary care use. Women who have never drunk alcohol show higher rates of both disease and healthcare use than men who have never drunk, but similar rates to women who are low risk drinkers. Previous research has found that women generally have higher primary care consultation rates than men, though these differences largely disappear when comparing men and women with similar underlying health conditions.[17] Further research would be helpful to better understand these nuances.

We also examined the associations between alcohol consumption and specific alcohol-related health conditions. Particularly noteworthy findings include:

- **Cardiovascular disease**
    - Just 1% of respondents who have never consumed alcohol reported a cardiovascular condition, but reports were higher among low risk (5%), hazardous (5%) and harmful (6%) drinkers.
- **High blood pressure**
    - There was no statistically significant difference between the reported rates of high blood pressure among respondents who have never consumed alcohol (16%), past drinkers (17%), low risk drinkers (18%) or harmful drinkers (21%).
    - More hazardous drinkers (25%) reported high blood pressure than never drinkers.
- **Mental ill health**
    - We found no statistically significant difference in reported rates of depression between never drinkers (18%) and low risk drinkers (22%).
    - Hazardous (26%) and harmful (37%) drinkers were statistically significantly more likely to report depression compared to never drinkers.
    - There was no statistically significant difference in rates of reported anxiety between never drinkers (24%) and low risk drinkers (30%).
    - Reported anxiety rates were higher among respondents with hazardous (32%) and harmful (50%) rates of current consumption compared to never drinkers.

[17] Wang Y, Hunt K, Nazareth I, et al (2013). Do men consult less than women? An analysis of routinely collected UK general practice data. BMJ Open.

- **Cancer**
    - Reported cancer rates were significantly lower among never drinkers (1%) compared to low risk and hazardous drinkers, who both reported 4% prevalence of the disease.
    - Harmful drinkers had a 2% prevalence of disease, but this difference was not statistically significant.

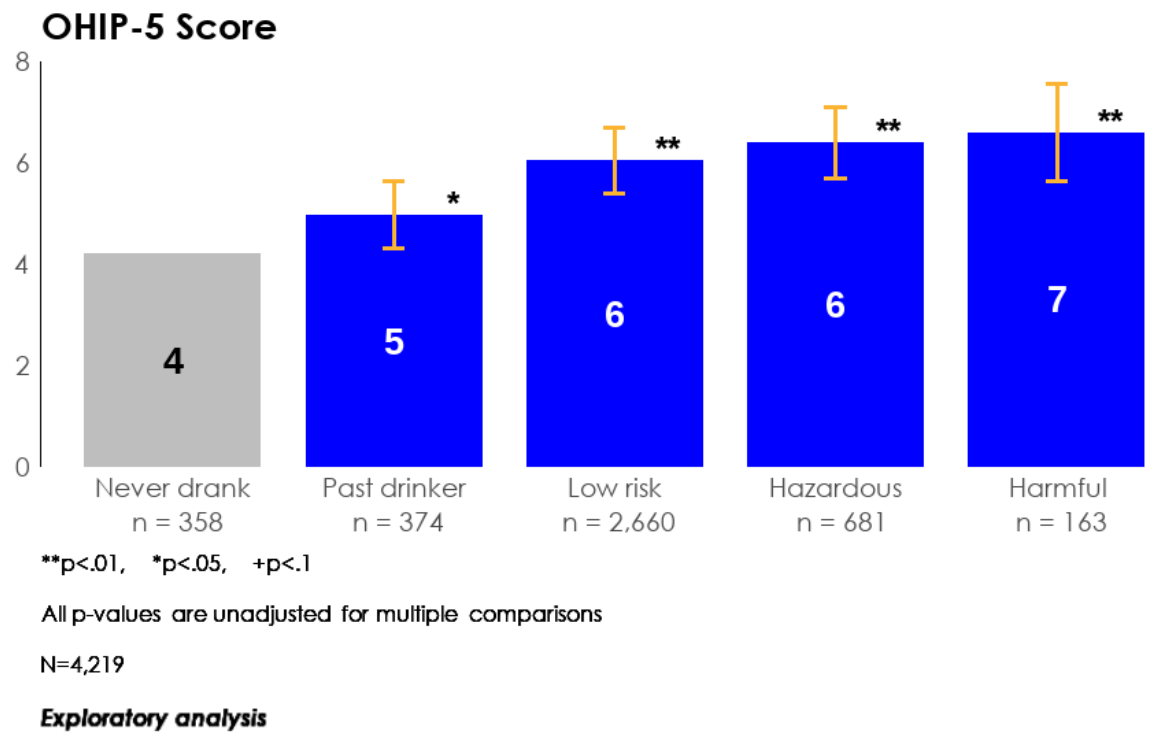
We also asked respondents about the number of bone fractures, concussions, falls, road accidents, fights, and other injuries experienced across adulthood. Compared to those who reported never having consumed alcohol, hazardous drinkers reported experiencing on average 2 more injuries and harmful drinkers reported 3 more injuries across their adulthood ($p < .001$ in both cases). Respondents with low risk levels of current consumption reported 1 more injury than never drinkers, but this difference was not statistically significant.

## Dental health

Reported dental health, measured using the OHIP-5 (Oral Health Impact Profile), was also statistically significantly worse among respondents who consume alcohol compared to those who never drank alcohol, including in the low risk category. This validated five-item questionnaire assesses oral health through questions about eating difficulties, dental pain, and general discomfort, with higher scores indicating worse dental health.

Figure 4 below shows that OHIP-5 scores are significantly worse across all categories of respondents who have consumed alcohol, including low risk drinkers and past drinkers, when compared with those who have never consumed alcohol.

Figure 4: Association between drinking level and dental issues




## Quality of life across the spectrum of drinking

**Section summary:**

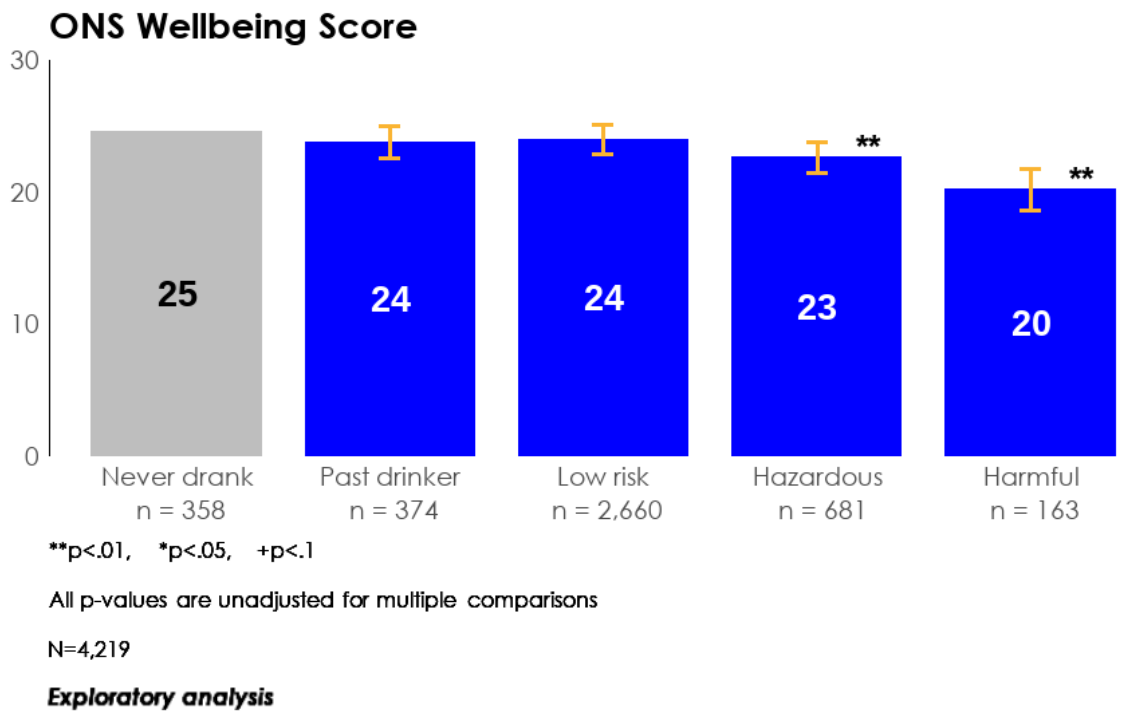
- On overall wellbeing, daily functioning, capacity to work, and sleep quality, hazardous and harmful drinking were associated with significantly worse outcomes compared to those who never drink.
- Low risk drinkers showed significantly worse daily functioning and sleep quality, but no differences in self-reported overall wellbeing or capacity to work.

We asked participants a series of survey questions covering various quality of life areas, including wellbeing, daily functioning and sleep quality. Figure 5 and Figure 6 below summarise the outcomes covered in this section.

## Wellbeing

Overall wellbeing was measured using the ONS 4-item measure (which assesses life satisfaction, sense of purpose, happiness, and anxiety on scales from 0 to 10, leading to an overall score from 0 to 40). Wellbeing was significantly lower in hazardous drinkers and harmful drinkers compared to never drinkers, as shown in Figure 5 below. However, there was no statistically significant difference in wellbeing scores of low risk drinkers and past drinkers compared to those who have never consumed alcohol.

Figure 5: Association between drinking level and ONS wellbeing score

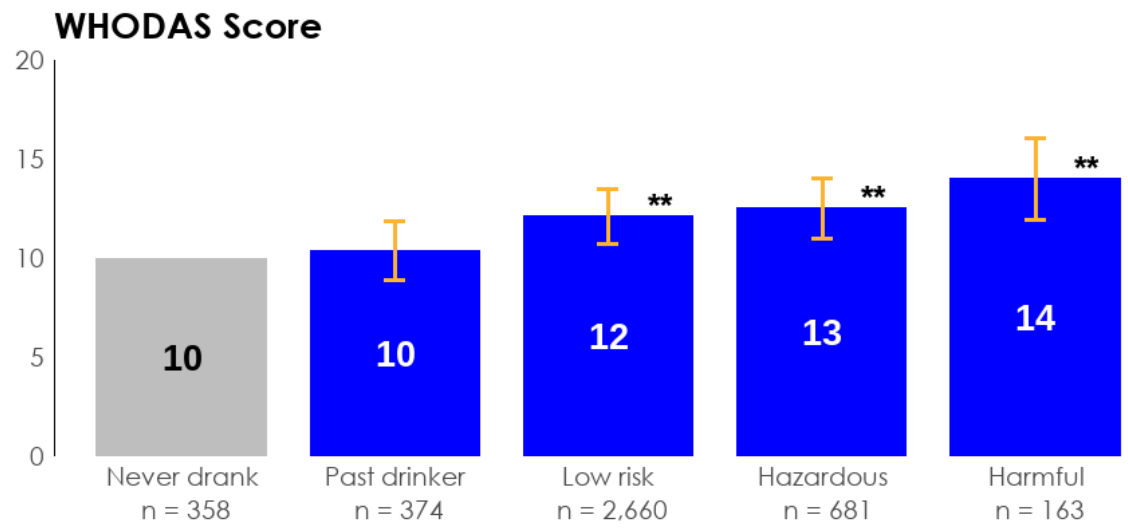



## Daily functioning and employment

We used the 12-item WHO Disability Assessment Schedule (WHODAS 2.0) to examine functioning across different domains of daily life, including household responsibilities, relationships, and concentration. A higher overall WHODAS score indicates a higher level of limitations in daily life.

Those who currently drink alcohol reported greater limitations in daily functioning compared to those who have never drunk alcohol. This relationship appears at all levels of current drinking, including low risk drinking. Past drinkers show no significant difference in functioning compared to those who have never drunk.

Figure 6: Association between drinking level and WHODAS score




**p<.01, *p<.05, +p<.1

All p-values are unadjusted for multiple comparisons

N=4,219

***Exploratory analysis***

The relationship between alcohol and WHODAS scores showed different patterns by employment status.

- Among the employed: those who do not currently drink reported an average score of 9, compared to an average score of 12 and 13 among those with low risk and hazardous or harmful levels of current consumption respectively.
- Among the unemployed or economically inactive: those who do not currently drink alcohol started with a higher baseline score of 11, then there was no statistically significant increase among those who drink alcohol.

We also examined how drinking affects workplace performance among employed participants (n = 2,995). Compared to those who have never drunk alcohol, hazardous drinkers took 2.0 more days off work in the past 30 days, while harmful

drinkers took 2.4 more days off. These differences were statistically significant. There was no statistically significant difference among low risk drinkers.

Additionally, when asked about reduced work capacity, hazardous drinkers reported 3.2 more days of reduced capacity in the past 30 days compared to those who have never drunk, while harmful drinkers reported 2.6 more days. These differences were also statistically significant. There was no statistically significant difference among low risk drinkers.

To illustrate the potential scale of these workplace impacts: NHS estimates suggest 24% of adults (8.75 million) drink at hazardous or harmful levels. If this pattern held true among employed adults, and if our findings about missed workdays were representative of this broader population, this would suggest that between 17.5 million and 21 million missed days of work every month might be attributable to high levels of alcohol consumption. This extrapolation should be treated cautiously and be a prompt for further research into the nuanced relationships between employment, alcohol consumption and workplace attendance.

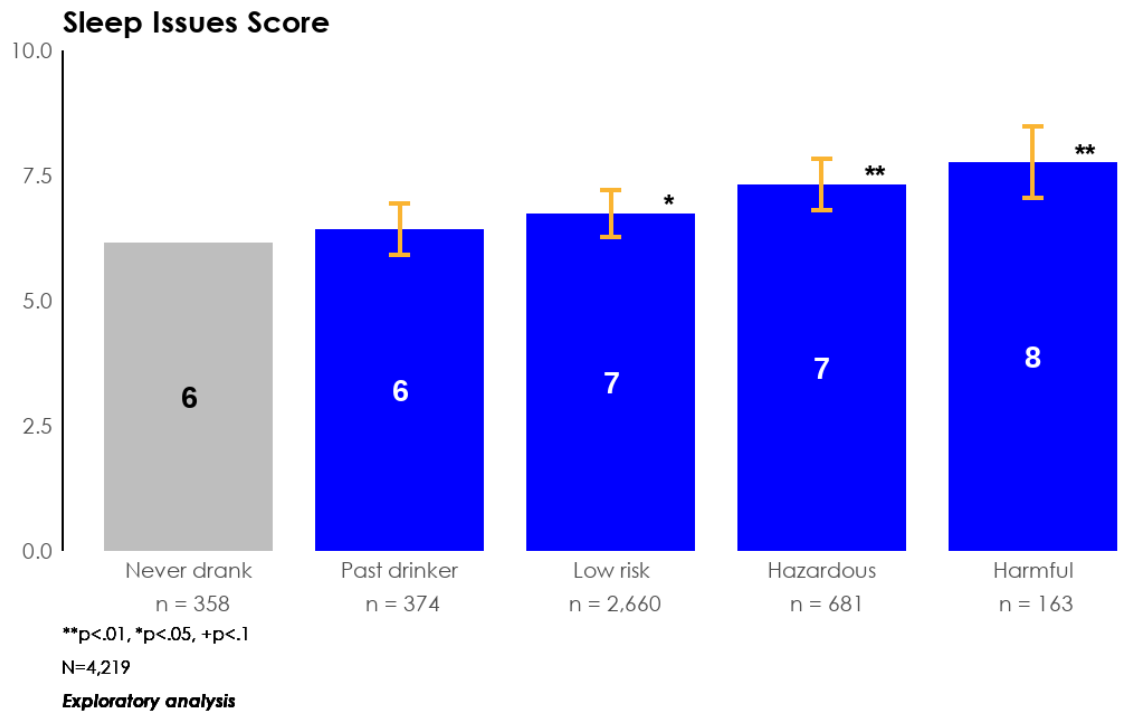
## Sleep quality

Sleep quality was measured using a composite score covering multiple aspects of sleep:

- time taken to fall asleep,
- hours of sleep,
- night-time disturbances, and
- a self-assessment of overall sleep quality.

Higher scores represent poorer sleep quality. As shown in Figure 7, current drinkers report statistically significantly poorer sleep quality than those who have never consumed alcohol. This relationship appears even among those who reported low risk levels of alcohol consumption, but appears to strengthen with higher consumption levels.

Figure 7: Association between drinking level and sleep quality




The relationship between alcohol consumption and sleep varied across demographic groups. Among low risk drinkers, poorer sleep outcomes were particularly evident in certain populations. Among lower socioeconomic status participants there was a statistically significant negative association between low risk drinking and sleep quality, which was not present among higher socioeconomic status groups. Men also showed stronger associations between low risk drinking and poor sleep than women. Similarly, those aged 55 years and older demonstrated a more pronounced relationship between low risk drinking and sleep difficulties. These patterns suggest that alcohol's impact on sleep may be experienced differently across the population, with some groups showing greater susceptibility even at lower consumption levels.

# Future research opportunities

This research investigated the prevalence of health harms in relation to alcohol consumption, with important findings in relation to the association between alcohol and illnesses, injuries and health harms. By examining multiple outcomes - from diagnosed conditions to daily functioning, sleep, and healthcare use - we have built a more complete picture of how alcohol affects both individuals and public services.

In doing so, this report has highlighted several areas where future research could expand upon this work.

1. **Longitudinal patterns of consumption and impacts**. While this study provides important insights into associations between drinking levels and various health outcomes, future research could examine these relationships over time. For example:
    a. How drinking patterns and their impacts evolve across different life stages.
    b. The immediate versus cumulative effects of alcohol consumption on outcomes like sleep quality and daily functioning.
    c. More detailed tracking of consumption patterns through diary studies to better understand the relationship between drinking occasions and immediate impacts.
2. **Healthcare access and service use**. Our findings about attempted versus successful healthcare contacts, particularly among those engaged in hazardous levels of consumption, suggest a need to better understand barriers to accessing support. Future research could consider:
    a. Why certain groups show higher rates of unsuccessful attempts to access services.
    b. How healthcare services can better accommodate patients with different alcoholic consumption patterns and behaviours.
    c. The relationship between alcohol consumption and the usage of emergency and primary care.
3. **Demographic disparities in alcohol impact**. The stronger associations between (generally regarded) low risk consumption and health impacts

among both men and lower SES groups warrant targeted investigation for two reasons:

   a. The underlying reasons for this are unclear from this work.
   b. Understanding what support mechanisms might help to reduce these disparities would be a beneficial contribution of future research.

4. **Economic effects of low and moderate alcohol consumption**. This survey has contributed to our understanding of the effects of low and moderate alcohol consumption across a broad range of health and wellbeing outcomes, as well as some work-related measures. Future research could build on this further to understand the potential economic impact in more detail, such as:
   a. The impacts on labour market activity across different occupations and sectors.
   b. How alcohol consumption patterns affect career trajectories.
   c. Qualitative analysis of workplace impacts.

# Annex

## Demographic characteristics of the sample

Table A1 below shows the demographic breakdown of the sample. It was broadly nationally representative. However, it should be noted that the sample does not include the digitally excluded or people not inclined to complete online surveys.

***Table A1. Sample demographics.***

| **Variables** | **Mean (SD)<br>(N = 4,236)** |
|---|---|
| Age | 47 (17) |
| Age the person left education | 19 (4) |
| Number of children | 1.3 (1.5) |
| **Variables** | **%<br>(N = 4,236)** |
| Gender<br>Female<br>Male<br>Other | <br>52<br>47<br><1 |
| Education<br>No degree<br>Bachelor's degree or above<br>None of the above | <br>69<br>29<br>2 |
| Income<br>Below £40,000<br>Above £40,000<br>Prefer not to say | <br>62<br>37<br>1 |
| Socioeconomic status<br>Lowest grade, unemployment, and manual occupations<br>Managerial, administrative, and professional occupations | <br>49<br>51 |

| | |
|---|---|
| Urban | |
| Urban | 33 |
| Rural | 20 |
| Suburban | 47 |
| Ethnicity | |
| White | 84 |
| Asian or Asian British | 6 |
| Black or Black British | 6 |
| Mixed or Other | 4 |
| Region | |
| London | 13 |
| Midlands | 17 |
| North | 25 |
| South and East | 31 |
| Scotland | 8 |
| Wales | 5 |
| Northern Ireland | 1 |
| Employment | |
| Employed | 70 |
| Unemployed or Inactive | 30 |
| Smoking | |
| Never | 46 |
| Past smoker | 29 |
| Current smoker | 26 |
| Sexual orientation | |
| Straight / Heterosexual | 92 |
| Gay or Lesbian | 3 |
| Bisexual | 4 |
| Other sexual orientation | 1 |
| Prefer not to say | 1 |
| Gender identity | |
| I consider myself transgender | 1 |
| I do not consider myself transgender | 98 |
| Prefer not to say | <1 |

## Lifetime alcohol consumption figures

Figures A1, A2, and A3 show participants' alcohol consumption habits over the course of their lifetime, according to their current level of alcohol consumption. It is important to note that the sample size naturally decreases as age increases, as we can only measure participants' consumption in age categories less than or equal to their current age. Therefore, the estimates for older ages are less likely to generalise to the population.

Figure A1: Frequency of drinking across participant's lifetime

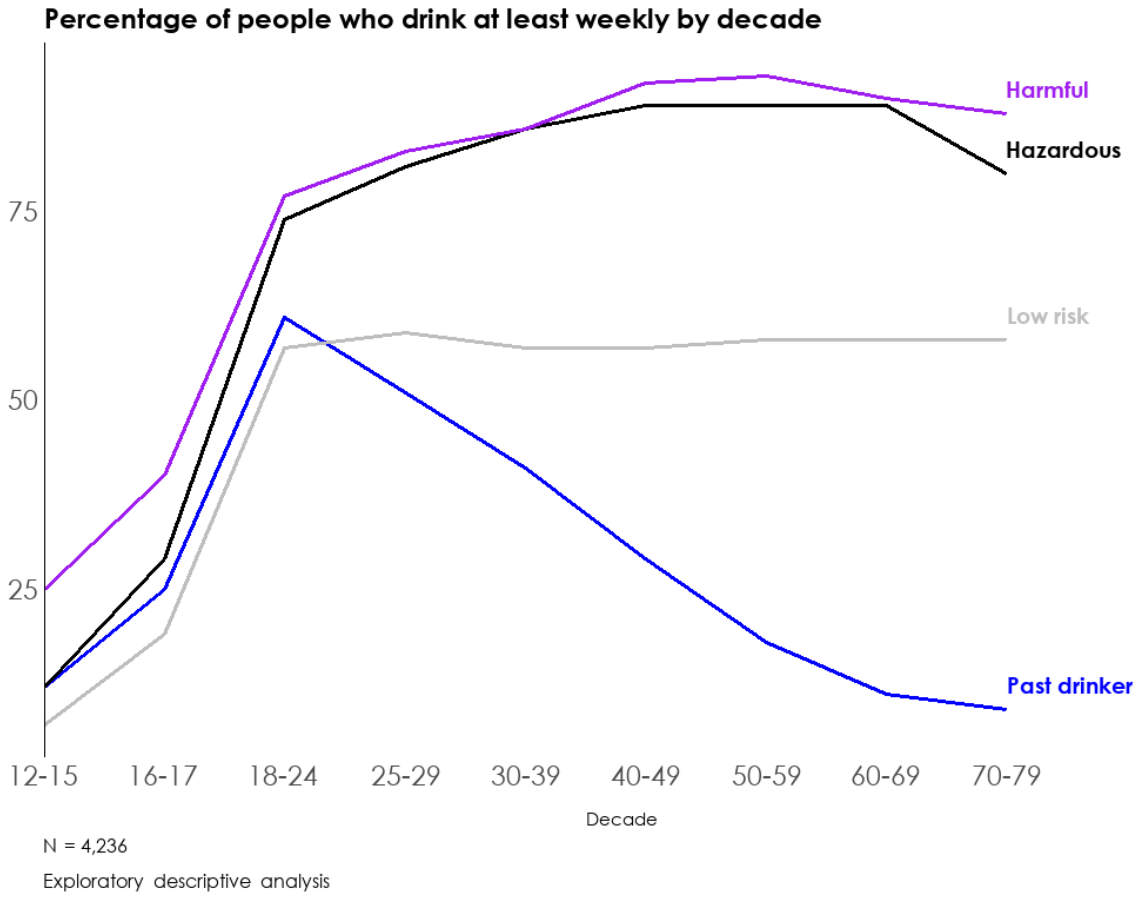


Figure A2: Frequency of heavy drinking across participants' lifetime

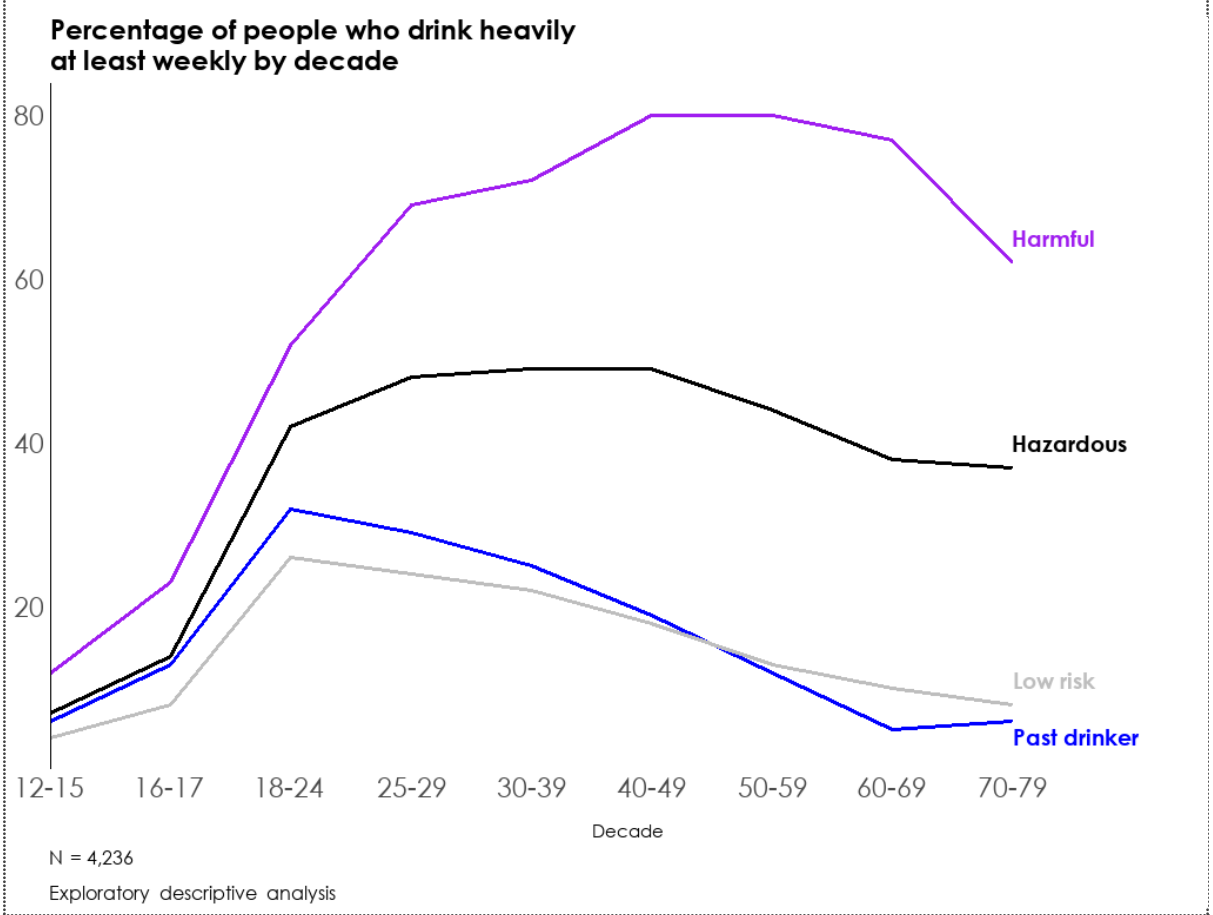
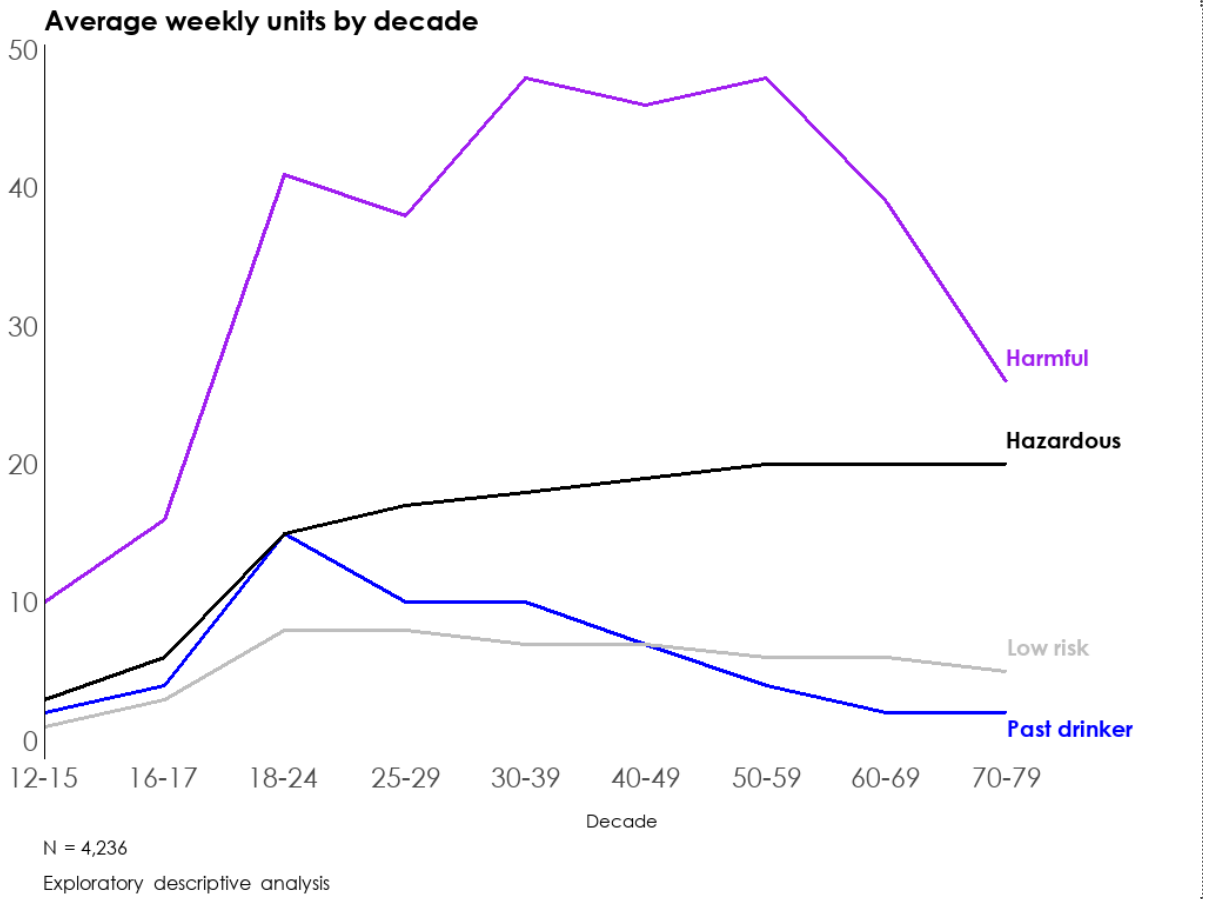


Figure A3: Average units across participants' lifetime




## Detailed healthcare use by current drinking

The table below presents the mean of each type of healthcare use (or attempted use) in the last year that was measured in this survey split by current level of alcohol consumption.

***Table A2. Detailed healthcare use by current drinking.***

| | Never drinker (n = 358) | Past drinker (n = 374) | Current low risk drinker (n = 2,660) | Current hazardous drinker (n =681) | Current harmful drinker (n = 163) |
|---|---|---|---|---|---|
| Visits to A&E | 0.51 | 0.47 | 0.49 | 1.58 | 0.91 |
| Visits to GP | 3.04 | 2.77 | 2.21 | 3.10 | 2.70 |
| Visits to urgent care | 0.38 | 0.28 | 0.35 | 1.48 | 0.53 |
| Visits to private GP | 0.28 | 0.35 | 0.44 | 1.59 | 0.48 |
| Attempts to visit A&E | 0.22 | 0.24 | 0.19 | 0.41 | 0.41 |
| Attempts to visit GP | 0.64 | 1.17 | 0.75 | 1.05 | 3.13 |
| Attempts to visit private GP | 0.18 | 0.11 | 0.19 | 0.44 | 0.36 |
| Attempts to visit urgent care | 0.10 | 0.12 | 0.16 | 0.42 | 0.37 |
| Ambulance calls | 0.30 | 0.34 | 0.48 | 0.67 | 0.37 |
| Hospital days | 3.59 | 8.09 | 3.33 | 5.11 | 5.73 |

## Prevalence of individual alcohol-related diseases by current drinking

Table A3 below shows the prevalence of individual alcohol-related diseases by current consumption level. This table represents the mean prevalence for people who have never consumed alcohol, and the estimated prevalence at each level of consumption based on the results of a regression analysis as specified in the 'Analysis' section.

***Table A3. Prevalence of individual alcohol-related diseases by current drinking.***

| | Never drinker (n = 358) | Past drinker (n = 374) | Current low risk drinker (n = 2,660) | Current hazardous drinker (n = 685) | Current harmful drinker (n = 159) |
|---|---|---|---|---|---|
| | Prevalence (%) | Estimated prevalence (%) | | | |
| Liver disease | 1 | 2 | 1 | 2 | 5* |
| High blood pressure | 16 | 17 | 18 | 25* | 21 |
| Depression | 18 | 28** | 22 | 27** | 37** |
| Anxiety | 24 | 32* | 30$^{+}$ | 33* | 50** |
| CVD | 1 | 2 | 5** | 5** | 6** |
| Cancer | <1 | 2$^{+}$ | 4* | 4* | 3$^{+}$ |
| MSK | 13 | 15 | 13 | 13 | 16 |
| Type 2 diabetes | 7 | 8 | 9 | 8 | 9 |

$^{+}$ p<.1, * p<.05, ** p < .01
Exploratory analysis. p-values are not adjusted for multiple comparisons.

## Full subgroup results

The following tables show the results of subgroup analysis of key results. As discussed in the Analysis section, only three categories of alcohol consumption were used in the subgroup analysis to retain sample size in each combination of demographics group and consumption: 'not currently a drinker'; 'current low risk drinker'; and 'current hazardous or harmful drinker'. Gender, age, and SES were identified as subgroups of interest for all analyses, and employment was added for analysis of the WHODAS score (as the WHODAS relates to ability to work). Ethnicity was also of interest, but however the specific ethnic categories were too small in number on which to detect significant results.

Table A4 shows the association between current alcohol consumption and number of times participants have interacted with the healthcare system in the past year, across each subgroup. This outcome is the sum of visits to a hospital or a GP (private or NHS), attempted visits to a healthcare setting, ambulance calls, and number of days spent in hospital.

***Table A4. Use of healthcare system subgroup analysis.***

| **Average number of interactions with healthcare over the past year** | **Not currently a drinker** | **Current low risk drinker** | **Current hazardous or harmful drinker** |
|---|---|---|---|
| | **Mean** | **Estimated mean** | |
| Gender | | | |
| Male | 5 | 9** | 11** |
| Female | 7 | 7 | 13** |
| SES | | | |
| Lower | 7 | 9 | 13** |
| Higher | 5 | 7 | 9** |
| Age | | | |
| 18 - 34 | 8 | 10 | 16** |
| 35 - 54 | 5 | 11** | 12** |
| 55 + | 6 | 5 | 7 |

[+] p<.1, * p<.05, ** p < .01
Exploratory analysis. p-values are not adjusted for multiple comparisons.

Table A5 shows the association between current consumption and likelihood of reporting generally good health in each subgroup.

***Table A5. Likelihood of reporting good health subgroup analysis.***

| % likely to report good health | Not currently a drinker | Current low risk drinker | Current hazardous or harmful drinker |
|---|---|---|---|
| | Mean | Estimated mean | |
| Gender | | | |
| Male | 56 | 62 | 54 |
| Female | 49 | 58* | 50 |
| SES | | | |
| Lower | 43 | 55* | 47 |
| Higher | 63 | 68 | 58 |
| Age | | | |
| 18 - 34 | 60 | 68 | 60 |
| 35 - 54 | 51 | 55 | 46 |
| 55 + | 45 | 51 | 44 |

[+] p<.1, * p<.05, ** p < .01
Exploratory analysis. p-values are not adjusted for multiple comparisons.

Table A6 shows the association between current alcohol consumption and prevalence of any alcohol-related disease in each subgroup.

***Table A6. Prevalence of alcohol-related disease subgroup analysis.***

| Prevalence of any alcohol-related disease | Not currently a drinker | Current low risk drinker | Current hazardous or harmful drinker |
|---|---|---|---|
| | Mean | Estimated mean | |
| Gender | | | |
| Male | 45 | 60** | 65** |
| Female | 58 | 60 | 72** |
| SES | | | |
| Lower | 59 | 68* | 75** |
| Higher | 46 | 51 | 60** |
| Age | | | |
| 18 - 34 | 43 | 50 | 58* |
| 35 - 54 | 51 | 56 | 63* |
| 55 + | 65 | 73 | 80* |

[+] p<.1, * p<.05, ** p < .01
Exploratory analysis. p-values are not adjusted for multiple comparisons.
Diseases included in this analysis were liver disease, high blood pressure, depression, anxiety, cardiovascular disease, cancers (mouth, throat, oesophageal, liver, and breast - participants could also list another cancer type), musculoskeletal conditions, and type 2 diabetes

Table A7 shows the association between current consumption levels and dental issues in each subgroup.

***Table A7. Dental issues subgroup analysis.***

| OHIP-5 Score (lower score is more favourable) | Not currently a drinker | Current low risk drinker | Current hazardous or harmful drinker |
|---|---|---|---|
| | Mean | Estimated mean | |
| Gender | | | |
| Male | 5 | 7** | 7** |
| Female | 5 | 6** | 6** |
| SES | | | |
| Lower | 5 | 6** | 7** |
| Higher | 4 | 6** | 6** |
| Age | | | |
| 18 - 34 | 5 | 8** | 8** |
| 35 - 54 | 5 | 6** | 6* |
| 55 + | 4 | 4 | 5 |

[+] p<.1, * p<.05, ** p < .01
Exploratory analysis. p-values are not adjusted for multiple comparisons.

Table A8 shows the association between current levels of alcohol consumption and ONS wellbeing scores in each subgroup. The ONS wellbeing scale is the sum of responses across the following 4 items which are all scored from 0 to 10: overall satisfaction with life, feeling that life is worthwhile, feeling happy on the day prior, and feeling anxious on the day prior.

***Table A8. ONS scores subgroup analysis.***

| **Total ONS Wellbeing Score** | **Not currently a drinker** | **Current low risk drinker** | **Current hazardous or harmful drinker** |
|---|---|---|---|
| | **Mean** | **Estimated mean** | |
| Gender | | | |
| Male | 25 | 23[+] | 22** |
| Female | 24 | 24 | 22* |
| SES | | | |
| Lower | 23 | 23 | 21** |
| Higher | 25 | 25 | 23* |
| Age | | | |
| 18 - 34 | 23 | 23 | 22 |
| 35 - 54 | 23 | 22 | 20** |
| 55 + | 26 | 26 | 24* |

[+] p<.1, * p<.05, ** p < .01
Exploratory analysis. p-values are not adjusted for multiple comparisons.

Table A9 shows the association between current alcohol consumption and WHODAS scores in each subgroup. The WHODAS is a measure of ability to function and complete everyday activities.

***Table A9. WHODAS scores subgroup analysis.***

| **WHODAS scores (lower score represents better ability to complete daily activities)** | **Not currently a drinker** | **Current low risk drinker** | **Current hazardous or harmful drinker** |
|---|---|---|---|
| | **Mean** | **Estimated mean** | |
| Gender | | | |
| Male | 10 | 13** | 13** |
| Female | 10 | 12* | 13**` |
| SES | | | |
| Lower | 11 | 13* | 13* |
| Higher | 9 | 11** | 12** |
| Age | | | |
| 18 - 34 | 12 | 14* | 14 |
| 35 - 54 | 10 | 13** | 13** |
| 55 + | 8 | 9 | 10$^{+}$ |
| Employment | | | |
| Employed | 9 | 12** | 13** |
| Unemployed or Inactive | 11 | 11 | 12 |

$^{+}$ p<.1, * p<.05, ** p < .01
Exploratory analysis. p-values are not adjusted for multiple comparisons.

Table A10 shows the association between current alcohol consumption level and sleep issues in each subgroup.

***Table A10. Sleep issues subgroup analysis.***

| Sleep Issues Score | Not currently a drinker | Current low risk drinker | Current hazardous or harmful drinker |
|---|---|---|---|
| | Mean | Estimated mean | |
| Gender | | | |
| Male | 6 | 6* | 7** |
| Female | 7 | 7 | 8** |
| SES | | | |
| Lower | 7 | 7* | 8** |
| Higher | 6 | 6 | 7** |
| Age | | | |
| 18 - 34 | 6 | 6 | 6 |
| 35 - 54 | 7 | 7 | 8** |
| 55 + | 6 | 8** | 8** |

+ p<.1, * p<.05, ** p < .01
Exploratory analysis. p-values are not adjusted for multiple comparisons.

## Subgroup analysis: low risk drinkers

Alcohol Change UK are particularly keen to understand the potential harms across the spectrum, with a particular focus on the large section of the population which consumes alcohol in a fashion generally categorised as low risk.

To build on the analysis in the main report, we reran the main analysis from the main report, but this time divided the low risk sample into two categories:

1. **"Always low risk"**. Low risk drinkers who have always been low risk drinkers - 77% of the low risk group is in this category
2. **"Previously high risk"**. Low risk drinkers who have been in a higher consumption category in at least one decade previously in their lifetime, based on self-reported past consumption - 23% of the low risk group is in this category

Current consumption patterns showed some expected differences between these groups. "Always low risk" drinkers reported consuming fewer units per week nowadays on average (4.2 units) compared to previously high risk drinkers (6.5 units).

In general there is little to no discernible difference between the two groups on the main exploratory analyses: the "always low risk" group generally moves on most analyses slightly towards the past/no drinkers groups, while the "previously high risk" group moves slightly towards the hazardous groups.

However, we found no statistically significant differences between these two subgroups of low risk drinkers. If past periods of heavier drinking do create lasting effects among current low risk drinkers, these differences were not large enough to be detected within our sample size (and the trial was not designed to test for such differences). This may provide support for reducing current consumption levels from hazardous and harmful levels, as it may be a stronger predictor of health outcomes than past consumption. However, longitudinal cohort studies would be needed to fully understand the relationship between drinking patterns over time and health outcomes.

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