Health Survey for England 2018
Adult's health-related behaviours

Published 3 December 2019

This report provides updates to key statistics and measurements for adults aged 16 and over with commentary on prevalence in 2018 and on trends over time. It looks at health-related behaviours for smoking prevalence, alcohol consumption, problem gambling, physical activity, fruit and vegetable consumption.

Key findings

- Current cigarette smoking among adults has steadily declined between 1993 and 2018 (from 27% to 17%).

- 18% of current cigarette smokers were using e-cigarettes.

- 82% of adults had drunk alcohol in the last 12 months.

- 28% of adults were eating the recommended five portions of fruit and vegetables a day.

- 27% of adults reported less than 30 minutes of moderate or vigorous physical activity (MVPA) per week and were classified as 'Inactive'.

- 53% of adults had participated in some form of gambling activity during the previous 12 months.

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Contents

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This report may be of interest to people working in public health, policy officials, commissioners of health and care services and to the public to see the prevalence of drinking alcohol, fruit and vegetable consumption, smoking, exposure to second-hand smoke and intentions to give up smoking.

Introduction

The Health Survey for England is a series of annual surveys designed to measure health and health-related behaviours in adults and children living in private households in England. More information about the survey can be found in the Quick Guide to the Survey and in more detail in the Methods report at https://digital.nhs.uk/pubs/hse2018.

This report includes a combination of trend tables and HSE 2018 results on smoking prevalence, alcohol consumption, fruit and vegetable consumption, physical activity and gambling.

About the survey estimates

The Health Survey for England, in common with other surveys, collects information from a sample of the population. The sample is designed to represent the whole population as accurately as possible within practical constraints, such as time and cost. Consequently, statistics based on the survey are estimates, rather than precise figures, and are subject to a margin of error, shown as a 95% confidence interval. For example, the survey estimate might be 24% with a 95% confidence interval of 22% to 26%. A different sample might have given a different estimate, but we expect that the true value of the statistic in the population would be within the range given by the 95% confidence interval in 95 cases out of 100.

Where differences are commented on in this report, these reflect the same degree of certainty that these differences are real, and not just within the margins of sampling error. These differences can be described as statistically significant.[1]

Confidence intervals are quoted for key statistics within this report and are also shown in more detail in the Excel tables accompanying this report. Confidence intervals are affected by the size of the sample on which the estimate is based. Generally, the larger the sample, the smaller the confidence interval, and hence the more precise the estimate.

Additional technical information is given in the Appendix to this report.

Age Standardisation

Adult data within this report have been age-standardised to allow comparisons between groups after adjusting for the effects of any differences in their age distributions. When different sub-groups are compared in respect of a variable on which age has an important influence, any differences in age distributions between these sub-groups are likely to affect the observed differences in the proportions of interest. For information about the method used, see Section 8.6 of the HSE 2018 Methods report.

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[1] Statistical significance does not imply substantive importance; differences that are statistically significant are not necessarily meaningful or relevant.

Smoking Prevalence

Introduction

Cigarette smoking in England has been in long-term decline. Since 1998, when *Smoking kills: a White Paper on tobacco* was published,[2] cigarette smoking prevalence among adults has fallen from 28% to 17%. However, tobacco use remains the leading cause of preventable illness and premature death in England and worldwide.[3] Tobacco use contributed to around 20% of deaths in men and 12% of deaths in women aged over 35 in England in 2017.[4]

Smoking is the biggest contributor to health inequalities. It has been estimated that tobacco use accounts for around half of the difference in life expectancy between the richest and poorest groups.[5] In 2018, around 30% of unemployed people were current smokers compared with 17% of those in employment, according to the 2018 ONS report: Adult smoking habits in the UK.[6]

To tackle the health burden related to smoking, a series of laws have come into force in the past 15 years. Tobacco advertising on billboards and in printed publications was banned in 2003.[7] The legal minimum age to buy tobacco was increased from 16 to 18 in England in October 2007. In addition, tobacco displays at the point of sale have been prohibited in supermarkets and large shops since April 2012 and ceased in small shops from April 2015.[8]

To reduce exposure to the harmful effects of second-hand smoke, a smoke free law was implemented in July 2007, banning smoking in workplaces and enclosed public places.[9]

In 2017, the government published *Towards a smoke-free generation: a tobacco*

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[2] Department of Health. *Smoking kills: a White Paper on tobacco*. DH, London, 1998. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/260754/4177.pdf

[3] World Health Organization. *WHO Report on the Global Tobacco Epidemic 2017* WHO, Switzerland, 2017. http://www.who.int/tobacco/global_report/2017/en/

[4] NHS Digital. *Statistics on Smoking: England, 2019*. NHS Digital, Leeds, 2019. https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-smoking/statistics-on-smoking-england-2019/content.

[5] Marmot M, Allen J, Goldblatt P et al. *Fair Society, Healthy Lives: Strategic review of health inequalities in England post-2010*. The Marmot Review, London, 2010. https://www.gov.uk/dfid-research-outputs/fair-society-healthy-lives-the-marmot-review-strategic-review-of-health-inequalities-in-england-post-2010

[6] Office for National Statistics: Adult smoking habits in the UK: 2018 https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/adultsmokinghabitsingreatbritain/2018

[7] HM Government. *The Tobacco Advertising and Promotion Act*. Her Majesty's Stationary Office (HMSO), London, 2002. www.legislation.gov.uk/ukpga/2002/36/contents

[8]Action on Smoking and Health. *Advertising and Promotion*. ASH, London, 2012. www.ash.org.uk/current-policy-issues/advertising-and-promotion

[9] Bauld L. *The Impact of Smokefree legislation in England: Evidence Review.* Department of Health, London, 2011. www.gov.uk/government/uploads/system/uploads/attachment_data/file/216319/dh_124959.pdf

control plan.[10] This set out a five-year plan to reduce the harms of smoking, including a target to reduce adult smoking to 12% or less by the end of 2022.

Use of e-cigarettes (vaping)

In 2013, all adults were, for the first time in the Health Survey for England (HSE), asked questions on their use of electronic cigarettes[11] (also called vaporisers, or vaping).[12] In 2013, 3% of adults were current users of e-cigarettes.

There is a growing consensus that e-cigarettes are safer than tobacco cigarettes, since e-cigarettes contain no tobacco and thus no tar, with some estimating them to be around 95% safer,[13,14] although the longer-term effects of e-cigarettes have not been established. E-cigarettes may not be totally safe; there is emerging evidence that e-cigarettes emit ultrafine/fine particles in their vapour which can be damaging to the lung.[15] E-cigarettes also contain the chemical propylene glycol, which has been linked to eye, throat and respiratory irritation.[16]

The availability of e-cigarettes has given rise to considerable public health debate,[17] including concerns that the co-use of e-cigarettes with tobacco may reinforce the smoking habit or discourage cessation attempts. There is also concern over the uptake of e-cigarettes by non-smokers. However, this was rare, with 1% of non-smokers having ever used e-cigarettes as reported in HSE 2015.[18] A Cochrane review of studies on e-cigarettes found evidence that e-cigarettes could help smokers quit or reduce tobacco consumption.[14,19]

In 2018, when these data were collected, the sale of e-cigarettes was largely unregulated.

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[10] Department of Health. *Towards a smoke-free generation: a tobacco control plan for England*. DH, London, 2011. www.gov.uk/government/publications/towards-a-smoke-free-generation-tobacco-control-plan-for-england

[11] E-cigarettes deliver nicotine that is vaporised and inhaled from a liquid form via a battery-powered device that simulates cigarette smoking. Some are designed to resemble ordinary cigarettes. Once sucked on, a sensor is activated which heats the liquid within the e-cigarette to create a vapour that delivers nicotine to the individual.

[12] E-cigarettes are sometimes referred to as vaporisers or electronic nicotine delivery systems (ENDS).

[13] Goniewicz M L, Knysak J, Gawron M et al. Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. Tobacco Control 2013;**10**:133-139.

[14] McNeill A, Brose LS, Calder R, et al. *E-cigarettes: an evidence update. A report commissioned by Public Health England.* Public Health England, London 2015. www.gov.uk/government/uploads/system/uploads/attachment_data/file/457102/Ecigarettes_an_evidence_update_A_report_commissioned_by_Public_Health_England_FINAL.pdf

[15] Schripp T, Markewitz D, Uhde E et al. *Does e-cigarette consumption cause passive vaping?* Indoor Air 2012;**23**:25-31.

[16] Vardavas CI, Anagnostopoulos N, Kougias M et al. Short-term pulmonary effects of using an electronic cigarette: impact on respiratory flow resistance, impedance, and exhaled nitric oxide. Chest 2012;**141**:1400-1406.

[17] *Simon Chapman on e-cigarettes: the best and the worst case scenarios for public health*. BMJ Group Blogs, 2014. blogs.bmj.com/bmj/2014/03/14/simon-chapman-on-e-cigarettes-the-best-and-the-worst-case-scenarios-for-public-health/

[18] Health Survey for England 2015 https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/health-survey-for-england-2015

[19] McRobbie H, Bullen C, Hartmann-Boyce J et al. *Electronic cigarettes for smoking cessation and reduction.* Cochrane Database of Systematic Reviews 2014:**12**

Methods

Self-reported data

Questions about cigarette smoking have been asked of adults aged 16 and over as part of the HSE series since its inception in 1991. In 2018, the interview collected information about the use of various tobacco products including cigarettes, cigars and pipes. Those who reported smoking cigarettes were asked to estimate their daily consumption of cigarettes.

The interview also covered participants' current and previous use of nicotine delivery products including nicotine chewing gum, lozenges, mini lozenges, patch, inhaler, inhalator, mouth spray, nasal spray and other non-tobacco nicotine products. Since 2013, information has also been collected on current and previous use of e-cigarettes as well.

All participants aged 16 and over were asked to estimate the total number of hours they were exposed to other people's smoke, and to state the locations where this occurred.

Participants aged 25 and over were asked about their smoking behaviour within the face to face interview.[20] For those aged 16 to 17, information about smoking was collected through a self-completion questionnaire, to offer participants more privacy by allowing them to reply without disclosing their smoking behaviour to other household members. At the interviewer's discretion, those aged 18 to 24 could answer the smoking questions either through the face to face interview or through the self-completion questionnaire.

Definitions

Current smokers

The focus of this report is on cigarette use among adults, and cigar and pipe use are not considered in the definition of a current smoker.

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[20] Participants were also asked at the nurse visit about current smoking status and about current use of any nicotine delivery product. Results presented in the tables relating to self-reported smoking status, cigarette consumption, or use of nicotine delivery products are based on the answers given at the initial interview. For tables presenting results on cotinine, current smoking status is based on information given at the nurse visit, since this was when the saliva sample was taken. In these tables, ex-smokers (used to smoke cigarettes regularly) and never smokers (never smoked cigarettes regularly) were distinguished by combining 'non-smokers' at the nurse visit with information on smoking status as reported at the earlier interview.

Cigarette smoking status and consumption, by survey year and sex

Current smoking among adults has steadily declined from 27% in 1993 to 17% in 2018. The proportion of adults that have never regularly smoked cigarettes increased from 46% in 1993 to 58% in 2018.

Figure 1, Table 1

Figure 1 Self-reported adult smoking status, 1993-2018

Base: Adults aged 16 and over

Never regularly smoked cigarettes
Used to smoke cigarettes regularly
Current smoker

Per cent
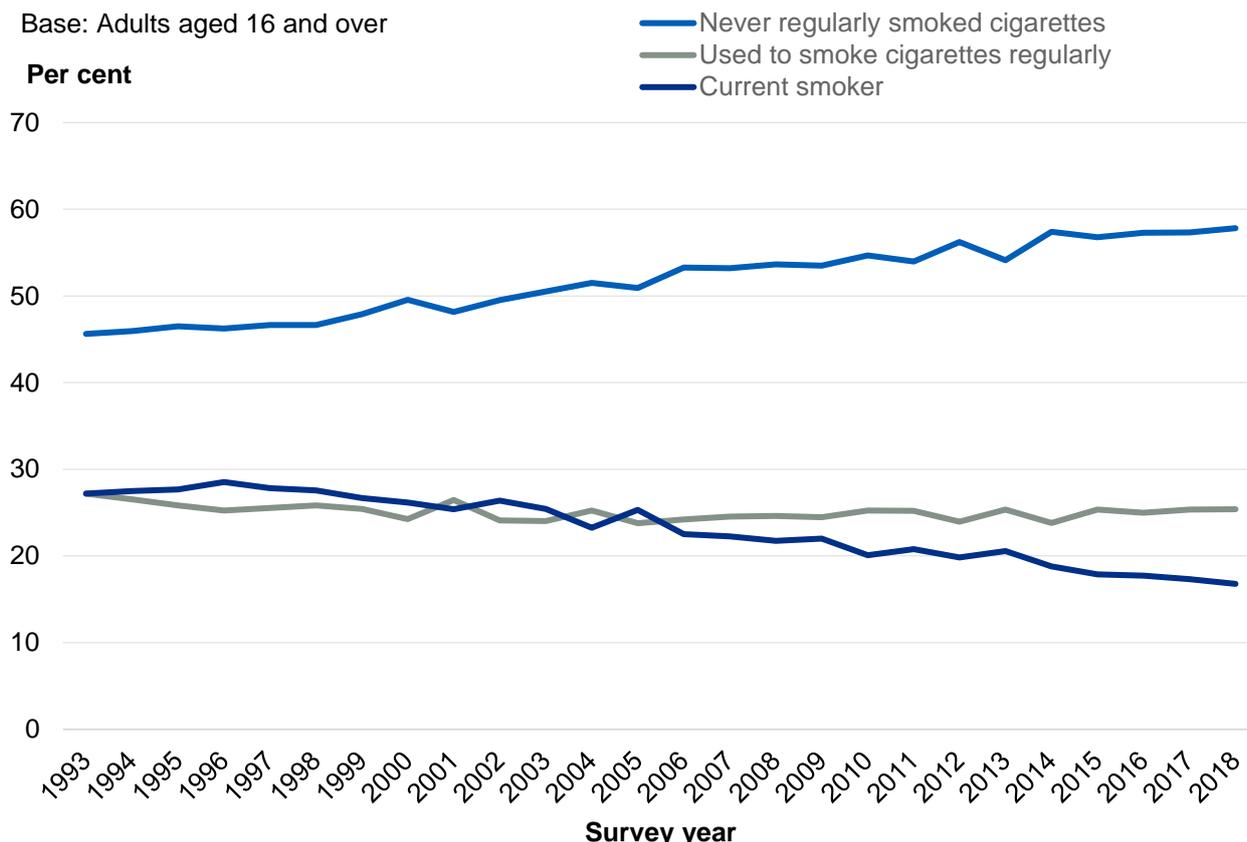
Source: NHS Digital

In 2018, current smoking prevalence among men declined to 18%, continuing the gradual downward trend. The proportion of men who had never smoked regularly increased from 39% in 1993 to 54% in 2018.

The proportion of women who were current smokers decreased from 26% in 1993 to 15% in 2018, while the proportion who had never regularly smoked increased from 52% to 62% in the same period.

Estimates of the number of adults in the population for self-reported cigarette smoking status from 2003 to 2018 are available in the population number estimates tables.

Figure 2, Table 1

Figure 2 Proportion of adults who currently smoke cigarettes, by sex, 1993-2018

Base: Adults aged 16 and over

Source: NHS Digital
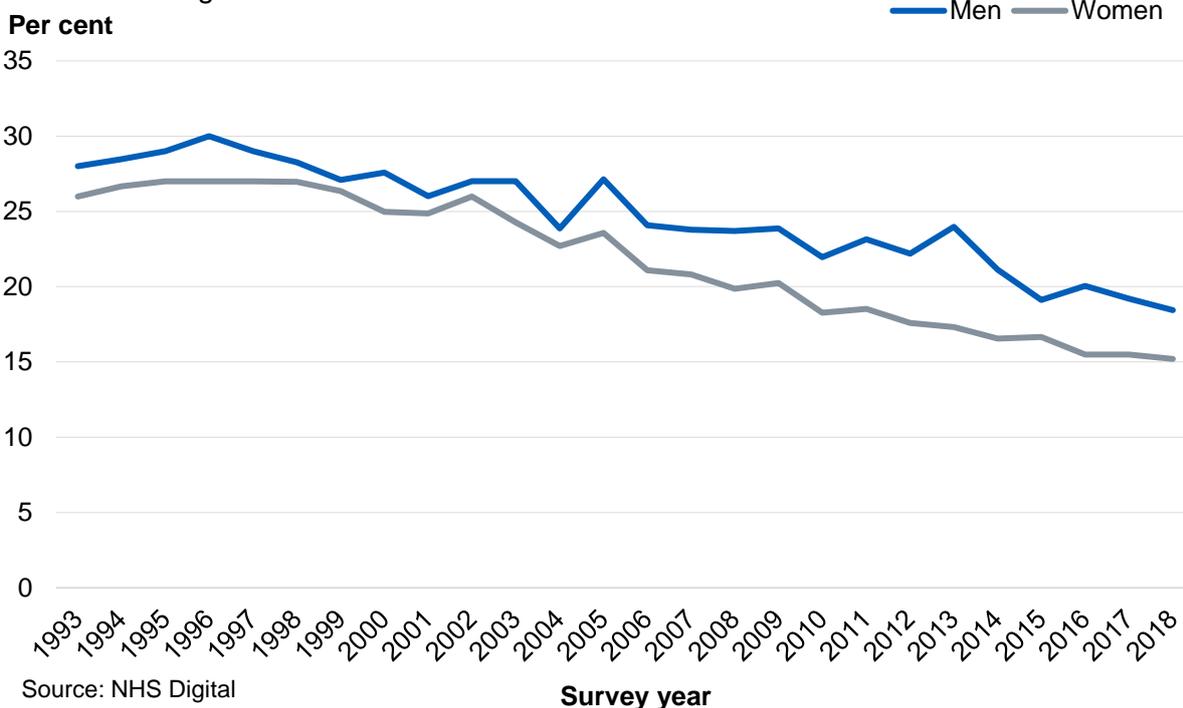
Self-reported cigarette consumption, by survey year and sex

The proportion of men who smoked 20 or more cigarettes per day fell from 11% in 1993 to 4% in 2018, and the proportion who smoked 10 to 19 cigarettes a day also fell from 10% to 6%. The proportion who smoked fewer than 10 cigarettes showed little change over the same period (9% in 2018).

As with men, there were no statistically significant changes in the proportion of women who smoked fewer than 10 cigarettes per day (7% in 2018). However, there was a decrease among women in those who smoked 10 to 19 cigarettes per day (11% in 1993 to 6% in 2018) and in those who smoked 20 or more cigarettes per day (from 8% to 2% over the same time period).

Figure 3, Table 1

Figure 3 Self-reported cigarette consumption, by survey year and sex

Base: Current smokers aged 16 and over

■ Under 10 cigarettes a day ■ 10 to under 20 cigarettes a day ■ 20 or more cigarettes a day
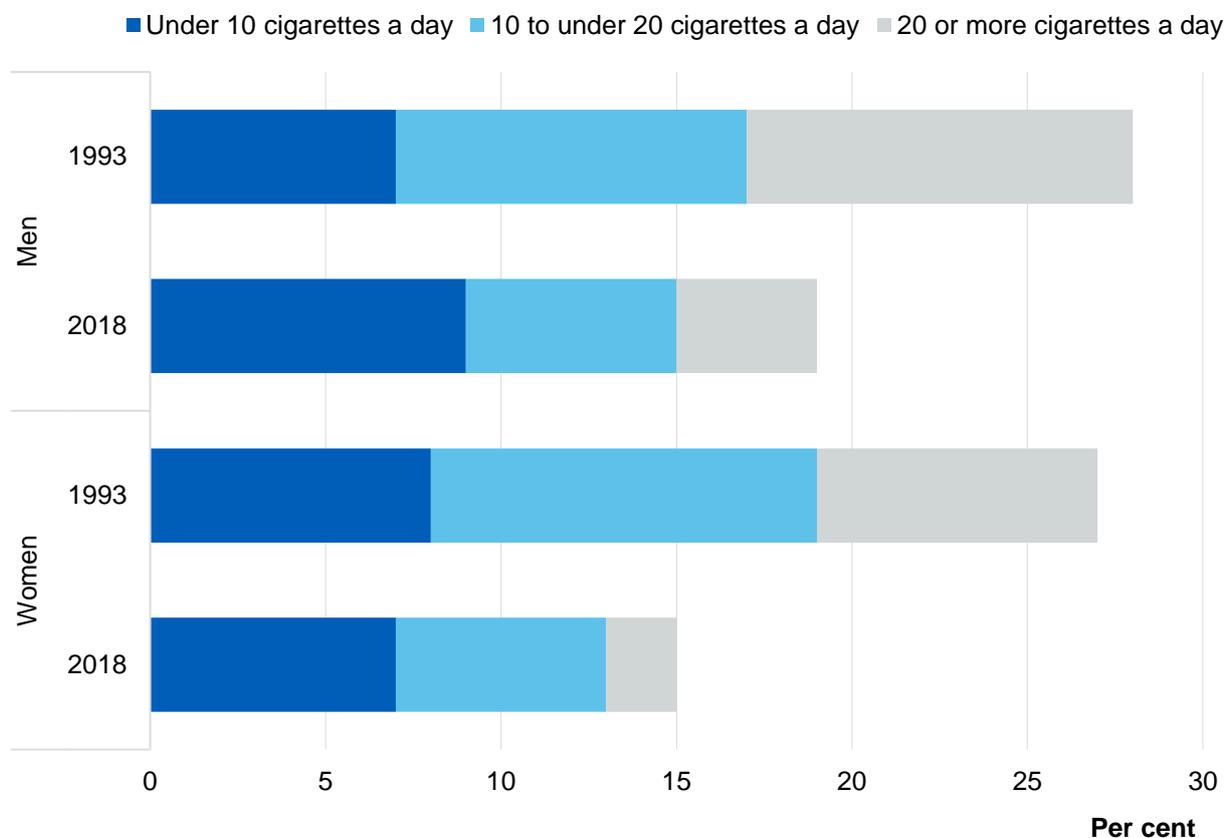
Source: NHS Digital

Self-reported cigarette smoking status, by age and sex

In 2018, the prevalence of adults that currently smoke cigarettes was highest among adults aged 25 to 34 (24%). Adults in the 75+ age group were the least likely to be current smokers (5%).

Men were more likely to be current cigarette smokers than women (18% and 15% respectively). This difference is most pronounced in the 16-24 age group (22% of men in this age group are current smokers compared with 16% of women) and the 25-34 age group (27% compared to 22%). As the age increases, the differences become less pronounced, with the 75% age group seeing a greater proportion of women being current smokers than men (6% and 3% respectively).

Figure 4, Table 2

Figure 4 Proportion of adults who currently smoke cigarettes, by age group

Base: Adults aged 16 and over

Source: NHS Digital
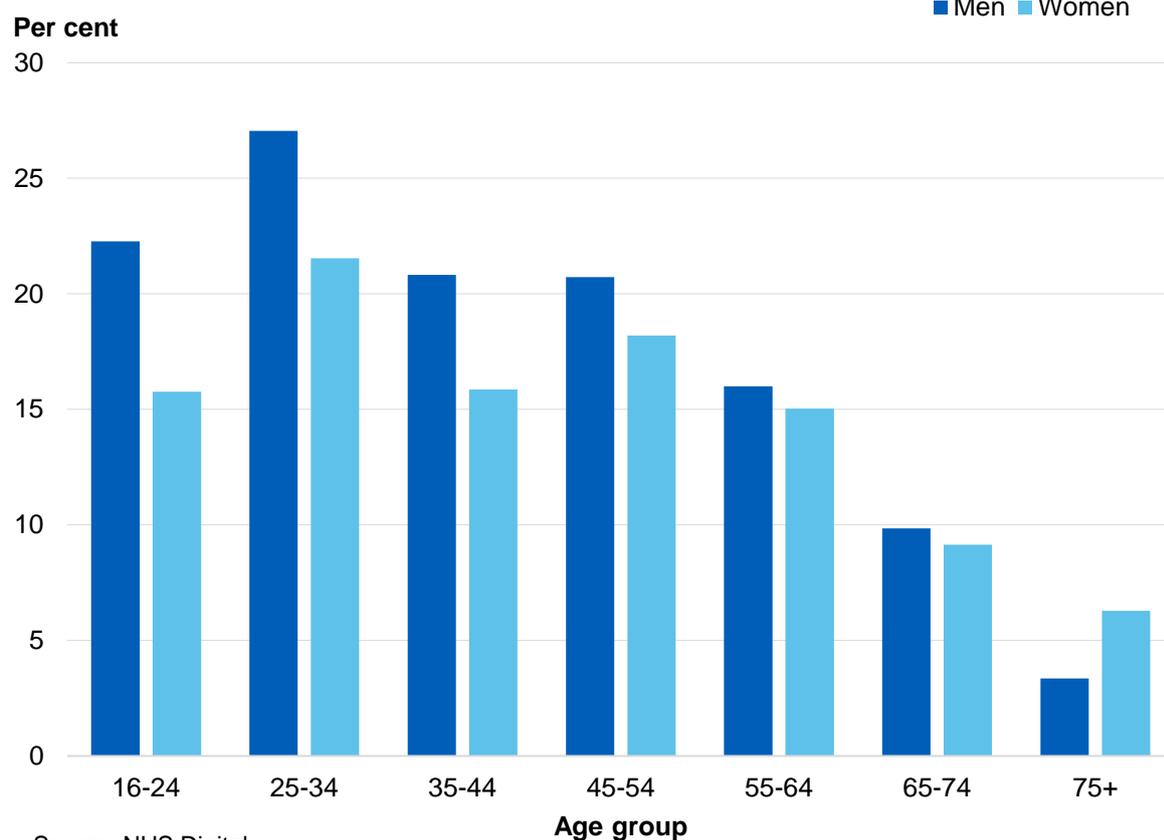
Cigarette smoking status, by region

Estimates by region are shown in the tables as both observed and age-standardised. Observed estimates show the actual levels of smoking in each region. Comparisons between regions should be based on the age-standardised data, which take into account the different regional age profiles.

The prevalence of adults that currently smoke cigarettes was similar across regions, ranging from 15% to 21%.

Table 3

Cigarette smoking status, by Index of Multiple Deprivation and sex

The English Index of Multiple Deprivation (IMD) is a measure of area deprivation, based on 37 indicators, across seven domains of deprivation.[21] IMD is a measure of the overall deprivation experienced by people living in a neighbourhood, although not everyone who lives in a deprived neighbourhood will be deprived themselves. To enable comparisons, areas are classified into quintiles (fifths).

For further information about the IMD, see Chapter 8 and Appendix B: Glossary in the HSE 2018 Methods report.

In 2018, the prevalence of adults that currently smoke cigarettes varied consistently across Index of Multiple Deprivation (IMD) quintiles, with those from the most deprived backgrounds being more likely to be current smokers. Smoking prevalence in the least deprived quintile is 10% compared with 28% in the most deprived quintile.

Figure 5, Table 4

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[21] The seven domains used to calculate IMD are: income deprivation; employment deprivation; health deprivation and disability; education; skills and training deprivation; crime; barriers to housing and services; and living environment deprivation.

Figure 5 Proportion of adults who currently smoke cigarettes,

Base: Adults aged 16 and over
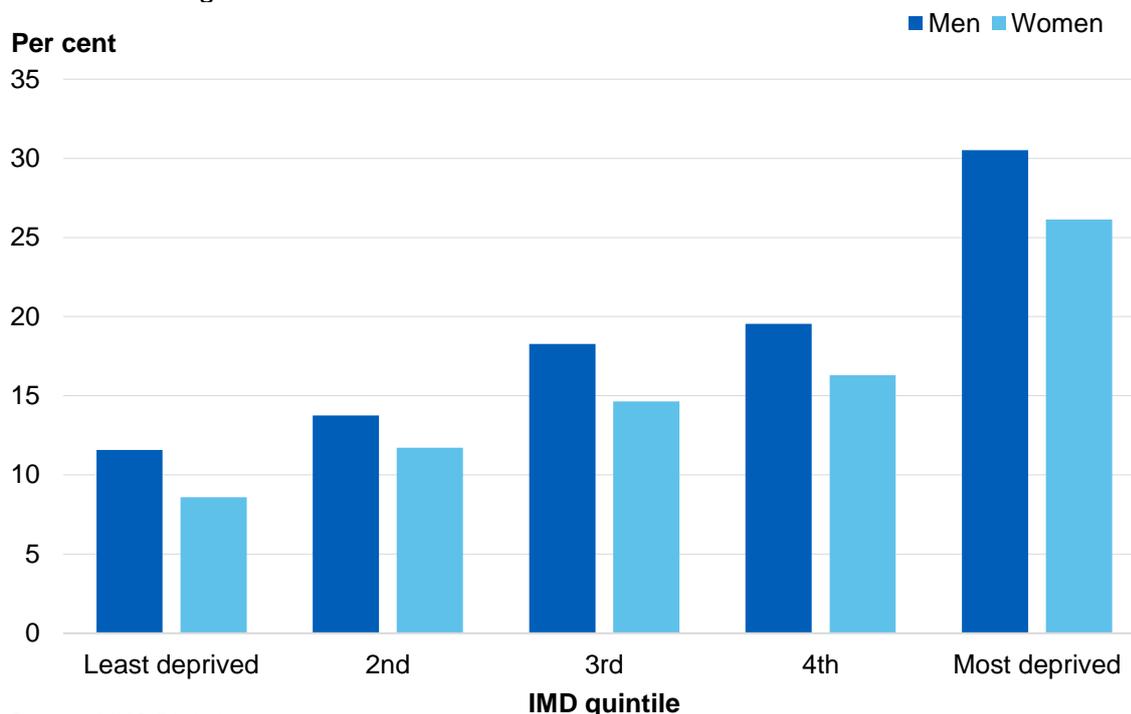
Source: NHS Digital

Cigarette smoking status, by probable mental ill health

Mental health was assessed using the 12-item General Health Questionnaire (GHQ-12), a widely used and validated measure. It was originally intended for use in general practice settings as a screening instrument for general, non-psychotic psychiatric morbidity (probable mental ill health), and should not be used to diagnose specific psychiatric problems.[22,23] The GHQ-12 concentrates on the broader components of psychological morbidity (ill health) and consists of 12 items measuring such characteristics as general levels of happiness, depression, anxiety, sleep disturbance and self-confidence. Six questions are positively phrased and six questions negatively so. Response options are not uniform but each of the 12 items is rated on a four-point response scale to indicate whether symptoms of mental ill health are 'not at all present', or, if present, 'no more than usual', 'rather more than usual', or 'much more than usual'.[24] No formal threshold exists for identifying probable mental ill health, with optimal values likely to be specific to the population under study. However, in keeping with previous HSE surveys, participants' scores are grouped according to three

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[22] Goldberg D, Williams PA. *User Guide to the General Health Questionnaire.* NFER-Nelson, Windsor, UK, 1988.

[23] The 12-item version of the GHQ has comparable psychometric properties to the longer (60-item and 28-item) versionsand is often used in research studies where it is impractical to administer a longer form.

[24] For the purpose of the HSE, the standard GHQ coding method was adopted for each of the four possible responses to each item, as advocated by the test author. Each symptom was scored either 0 if 'not at all present' or present 'no more than usual', or 1 for symptoms that were present 'rather more than usual' or 'much more than usual'). Using this method, the maximum score for any individual study participant is therefore 12.

categories: 0 (indicating no evidence of probable mental ill health), 1 to 3 (indicating less than optimal mental health), and 4 or more (indicating probable psychological disturbance or mental ill health).[25]

In 2018, people with probable mental ill health (GHQ-12 score of 4 or more) were more likely to be current cigarette smokers than people with no evidence of probable mental ill health (GHQ-12 score of 0), 23% and 15% respectively.

Figure 6, Table 5

Figure 6: Self-reporting smoking status, by probable mental ill health

Base: Aged 16 and over

Source: NHS Digital
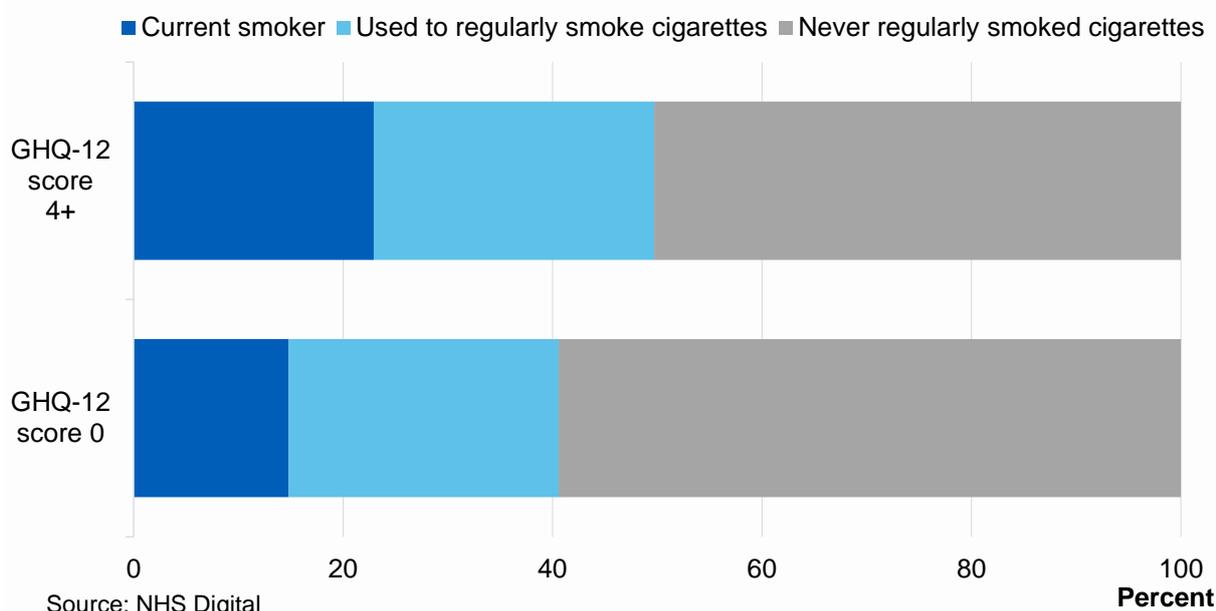
Self-reported e-cigarette use, by age and sex

6% of all adults were current users of e-cigarettes, similar to the levels in 2016. This was higher than in HSE 2013, when 3% of adults were current users of e-cigarettes.

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[25] A threshold score of 4 was chosen as the suggested level for identifying 'cases' of mental illness, i.e. individuals with a possible psychiatric illness. Although this threshold is known to generate quite a high level of false positives (individuals who have a score of 4 and above but on psychiatric examination have no psychiatric illness), it was found to be the most suitable cut-off point for the purposes of the HSE reports, providing large enough numbers for analysis. There is no universally used 'threshold' score for GHQ-12 because the populations it is used on vary considerably. The author of the questionnaire suggested that a threshold is chosen which is the same as that used on surveys among similar populations, hence both the original choice of 4 as the threshold for HSE reports, to be comparable with existing surveys, and the continued use of the same threshold in subsequent HSE reports.

The overall prevalence of e-cigarette usage across all age group shows that a higher proportion of men than women are currently using e-cigarettes (8% and 5% respectively).

Adults in the oldest age group were the least likely to be current users of e-cigarettes (97% of all adults in the 75+ age group had never used e-cigarettes).

Current use of e-cigarettes was highest for men in the 25 to 34 age group (13%) and women in the 25 to 34 and 45 to 54 age groups (7% for both age groups).

Figure 7, Table 6

Figure 7 Prevalence of current use of e-cigarettes, by age group and sex

Base: Adults aged 16 and over

Per cent

■ Men ■ Women
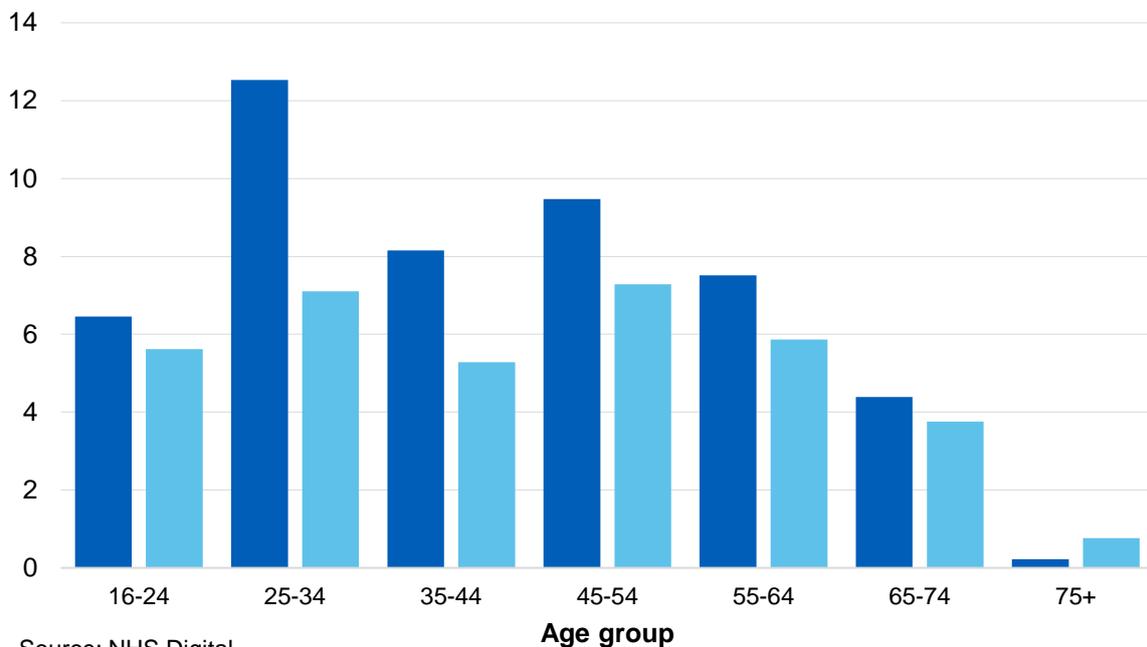
Source: NHS Digital

Self-reported e-cigarette use, by cigarette smoking status and sex

- 18% of current smokers currently use e-cigarettes compared to 13% of ex-regular smokers and 1% of adults who never regularly smoked.

- Of current smokers, 36% have never used e-cigarettes. This was similar for men and women.

- A high proportion (76%) of ex-regular smokers have never used e-cigarettes, with only 13% saying they are current users.

- Nearly all (95%) of adults that have never regularly smoked have also never used e-cigarettes.

Figure 8, Table 7

Figure 8 Self-reported e-cigarette use, by cigarette smoking status

Base: Adults aged 16 and over

■ Currently uses e-cigarettes
■ Not a current user but has tried using e-cigarettes
■ Has never used e-cigarettes
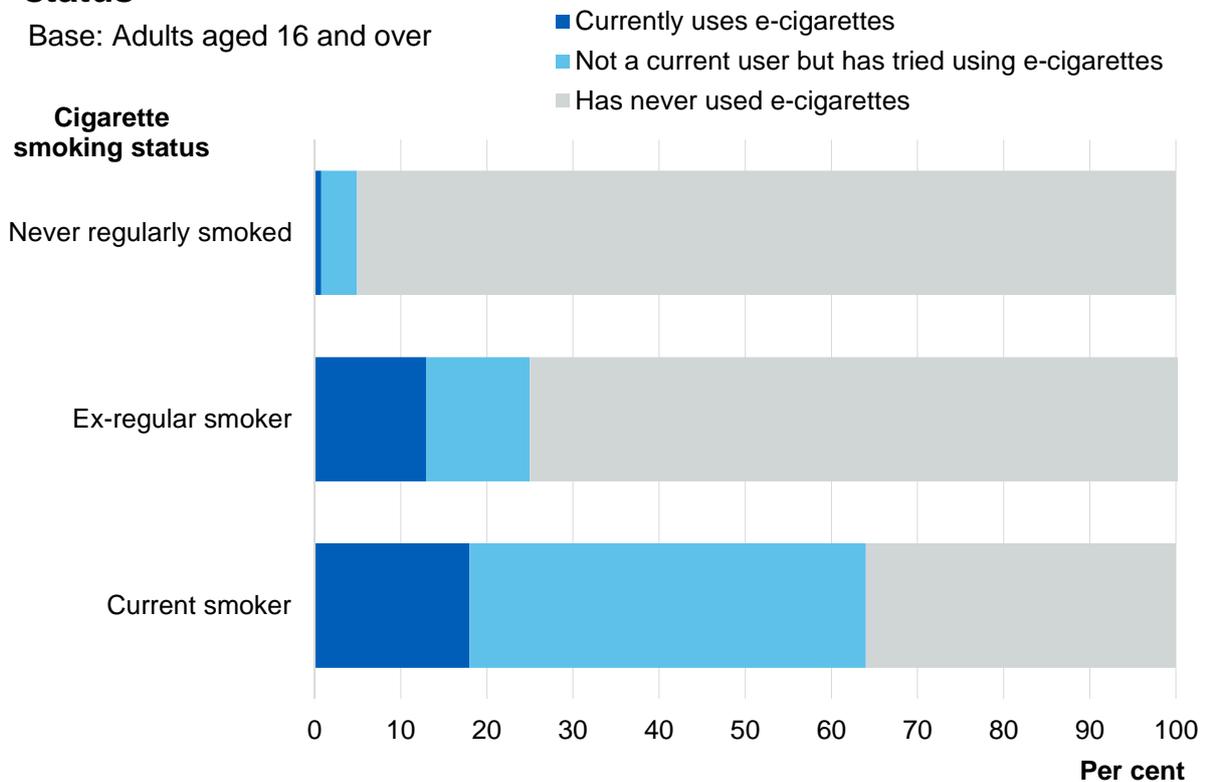
Source: NHS Digital

Exposure to other people's smoke, by age and sex

The most common location to be exposed to second-hand smoke was in 'Outdoor smoking areas of pubs/restaurants/cafes', with 15% of adults listing this as an area in which they were exposed.

Men and women were equally likely to be exposed to second-hand smoke at most locations. Men, however, were more than twice as likely to be exposed to second-hand smoke in the workplace, with 10% reporting being exposed compared with 5% of women.

The younger age groups were considerably more likely to be exposed to second-hand smoke in every location, with a gradual decline in exposure for older age groups. 34% of 16 to 24 year olds had been exposed to second hand smoke in outdoor smoking areas, compared with just 4% of those aged 75+.

Figure 9, Table 8

Figure 9 Exposure to second hand smoke, by age

Base: Adults aged 16 and over

Source: NHS Digital
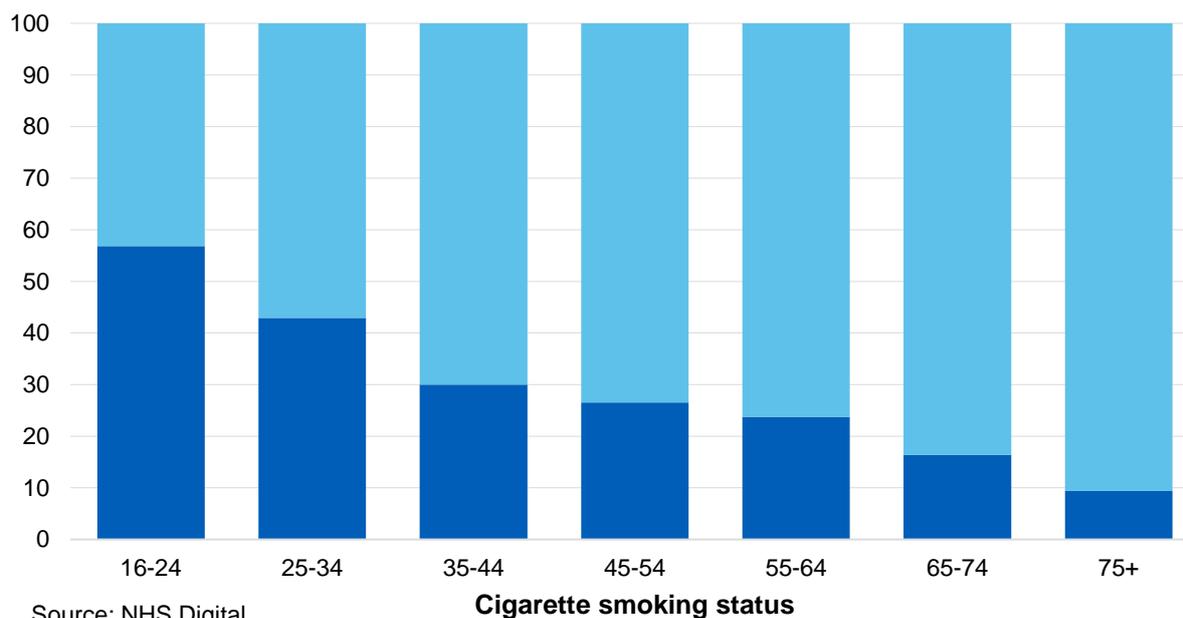
Alcohol Consumption

Introduction

Over the past few decades, increasing awareness and understanding of the health impacts of regular alcohol consumption, along with changes in drinking patterns and behaviour, have given rise to concern amongst policy makers, health professionals and the general public. Governments have published successive strategies for promoting sensible drinking and reducing alcohol-related harm: the 2004 *Alcohol Harm Reduction Strategy for England;*[26] *Safe. Sensible. Social. The next steps in the national alcohol strateg*y in 2007;[27] and *The Government's Alcohol Strategy* in 2012.[28]

The World Health Organization (WHO) places alcohol as the third biggest global risk for burden of disease,[29] and alcohol is identified as a causal factor in more than 60 medical conditions,[30] as well as some cancers including breast, throat and liver.[31,32] The risk of alcohol-related harm increases with the amount drunk on a regular basis. Short-term health risks include accidents and injuries,[33] and alcohol-related hospital admissions continue to increase. In 2017/2018 there were 1.2 million hospital admissions where an alcohol-related disease, injury or condition was the primary reason for admission or a secondary diagnosis,[34,35] with men more likely than women to be admitted for these reasons.[36] The risks are not just to those consuming alcohol, however; alcohol consumption has wider detrimental impacts on society, including harm caused to third-parties, crime and anti-social behaviour.[34]

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[26] Strategy Unit. *Alcohol Harm Reduction Strategy for England*. Cabinet Office, London, 2004.

[27] Department of Health, Home Office et al. *Safe. Sensible. Social. The next steps in the national alcohol strategy*. London, 2007. http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Publichealth/Healthimprovement/Alcoholmisuse/DH_085386

[28] HM Government. *The Government's Alcohol Strategy.* TSO, London, 2012. www.gov.uk/government/publications/alcohol-strategy

[29] Mathers C, Stevens G and Mascarenhas M. *Global health risks: mortality and burden of disease attributable to selected major risks.* Geneva: World Health Organization. 2009. www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf

[30] Alcohol Concern. *Statistics on alcohol.* https://www.alcoholconcern.org.uk/alcohol-statistics.

[31] Department of Health. *Alcohol Guidelines Review – Report from the Guidelines development group to the UK Chief Medical Officers*. Department of Health, London, 2016. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/545739/GDG_report-Jan2016.pdf

[32] The International Agency for Research on Cancer now recognises alcohol as a cause of particular cancers. IARC. *Consumption of Alcohol Beverages. In Personal habits and indoor combustions volume 100 E. A review of human carcinogens.* IARC, Lyon, 2012. http://monographs.iarc.fr/ENG/Monographs/vol100E/mono100E-11.pdf

[33] NHS Choices. *Alcohol misuse – Risks*. NHS Choices http://www.nhs.uk/Conditions/Alcohol-misuse/Pages/Risks.aspx

[34] NHS Digital. *Statistics on Alcohol, England 2018*. NHS Digital, 2019. https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-alcohol/2019/part-1

[35] Half (51%) of these admissions were for CVD conditions related to alcohol consumption and almost one fifth (17%) were for mental or behavioural disorders caused by alcohol, cited in *Statistics on Alcohol, England 2018*; see note 36.

[36] In 2016/17 men accounted for 65% of hospital admissions for an alcohol related disease, injury or condition, cited in *Statistics on Alcohol, England 2018*; see note 37.

The increase in alcohol-related morbidity and mortality has largely been attributed to the rise in alcohol consumption since the post-war years. Per head of the adult population, alcohol consumption more than doubled between the mid-1950s and 1990s.[37] There have also been changes to consumption behaviour, with an increase in alcohol purchased from off-licences and consumed at home as opposed to licenced establishments. This long-term trend is thought to be largely due to the increasing affordability of alcohol from off-licence sellers.[37]

The publication of *Drinking Sensibly* in 1981[38] defined alcohol misuse and introduced the concept of 'sensible drinking'. 'Sensible limits', that is, the amount people should limit their drinking to in order to avoid damage to health, were set at up to 21 units per week for men and up to 14 units per week for women.[39] The guidance was revised in the 1995 *Sensible Drinking* report[40] and linked to daily rather than weekly consumption. Regular consumption of between 3 and 4 units per day for men and between 2 and 3 units per day for women was deemed to be of lower risk of alcohol-related harm.

In 2016, the UK Chief Medical Officers (CMOs) published new guidelines on low risk drinking.[41] In a move away from daily limits, it is now recommended that men and women should not regularly (defined as most weeks) drink more than 14 units a week. Drinking at this level is considered to be 'low risk', and adults who regularly drink up to this amount are advised to spread their drinking over three or more days. Above this level is considered to be 'increased risk', for men this is now over 14 units and up to 50 units, and for women over 14 units and up to 35 units per week. Men who regularly drink more than 50 units a week and women more than 35 units, are described as 'higher risk drinkers' and are considered to be at particular risk of alcohol-related health problems.[41]

Methods

The Health Survey for England (HSE) has asked about drinking alcohol since it began in 1993. In 2018, the questionnaire covered the following areas:

- Frequency of drinking in the last 12 months (including those who never drink)

- For those who drank in the last 12 months, the frequency of drinking different types of drink and the amounts of each drunk on a typical day (providing average weekly consumption)

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[37] Institute of Alcohol Studies. *Alcohol consumption factsheet*. Institute of Alcohol Studies, 2013. http://www.ias.org.uk/uploads/pdf/Consumption%20docs/Alcohol%20consumption%20factsheet%20August%202013.pdf

[38] Department of Health and Social Security (1981) Prevention and Health. Drinking Sensibly. A discussion document prepared by the Health Departments of Great Britain and Northern Ireland. HMSO. London

[39] Introduced as part of the government's 1992 White paper. Department of Health. (1992) *The health of the Nation – a strategy for health in England.* Her Majesty's Stationery Office.

[40] Department of Health. *Sensible drinking: report of an inter-departmental working group*. DH, London,1995. http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4084702.pdf

[41] UK Chief Medical Officers. *Low Risk Drinking Guidelines*. Department of Health, London, 2016 https://www.gov.uk/government/publications/alcohol-consumption-advice-on-low-risk-drinking

- Number of drinking days in the last week

- For those who drank in the last week, the amounts of different types of alcohol drunk on the day they drank most ('maximum amount drunk on any day in the last week')

Information on drinking alcohol is generally collected from adults as part of the main survey interview. In 2018, as in previous years, there were two exceptions to this, designed to provide greater privacy for younger participants. Teenagers aged 16 and 17, below the legal age for buying alcohol, were asked to fill in a self-completion questionnaire covering smoking and drinking. Interviewers had the option of offering young adults aged 18 to 24 this questionnaire if the interview took place in the presence of their parents.

Measuring alcohol intake

Alcohol consumption is reported in terms of units of alcohol; one unit of alcohol is 10ml by volume of pure alcohol. Table A below shows the conversion factors used currently. Those who drank bottled or canned beer, lager, stout or cider were asked in detail about what they drank, and this information was used to estimate the amount in pints.

Table A: Conversion factors for estimating alcohol content of drinks

Type of drink	Measure	Units of alcohol
Normal strength beer, lager, stout, cider, shandy (less than 6% ABV)	Pint	2
	Can or bottle	Amount in pints multiplied by 2.5
	Small cans (size unknown)	1.5
	Large cans or bottles (size unknown)	2
Strong beer, lager, stout, cider (6% ABV or more)	Pint	4
	Can or bottle	Amount in pints multiplied by 4
	Small cans (size unknown)	2
	Large cans or bottles (size unknown)	3
Wine	Small glass (125ml)	1.5
	Medium glass (175ml)	2.0
	Large glass (250ml)	3.0
	Bottle	9.0
Spirits and liqueurs	Glass (single measure)	1
Sherry, martini and other fortified wines	Glass	1
Alcopops	Small can or bottle	1.5

Measures of usual weekly consumption are presented in line with the current guidelines for sensible drinking:

- 'lower risk' (up to 14 units for men and women);
- 'increasing risk' (above 14 and up to 50 units for men, above 14 and up to 35 units for women); and
- 'higher risk' (above 50 units a week for men, above 35 units for women).

The weekly categories are approximate only and do not take into account varying patterns of consumption, for example on different days of the week or at different times of year. By definition they cover a 'typical' day, and therefore do not reflect occasions when consumption might be higher than usual (for instance holidays, or celebrations such as parties, weddings, Christmas).

Adults' maximum alcohol consumption on any given day in the last week is presented in line with the previous guidelines for daily amounts (see Introduction section). This report looks at the proportion of adults drinking more than these levels on their heaviest drinking day in the past week, as well as the proportion drinking more than double these levels. It does not take into account how often they drink these amounts.

Frequency of drinking in the last year, by age and sex

In 2018, 82% of adults had drunk alcohol in the last 12 months. A higher proportion of men than women drank alcohol in the last year (86% and 79% respectively).

For men and women, the proportions of non-drinkers were highest in the youngest and oldest age groups.

49% of adults usually drank alcohol at least once a week or more often, with men more likely than women to do so (58% and 41% respectively). The proportion who drank once a week or more increased with age among both men and women, before gradually decreasing from the age of 55 for women and 65 for men. Within every age group, a higher proportion of men than women drank alcohol once a week or more.

Figure 10, Table 9

Figure 10 Drank alcohol in the last year, by age and sex

Base: Aged 16 and over
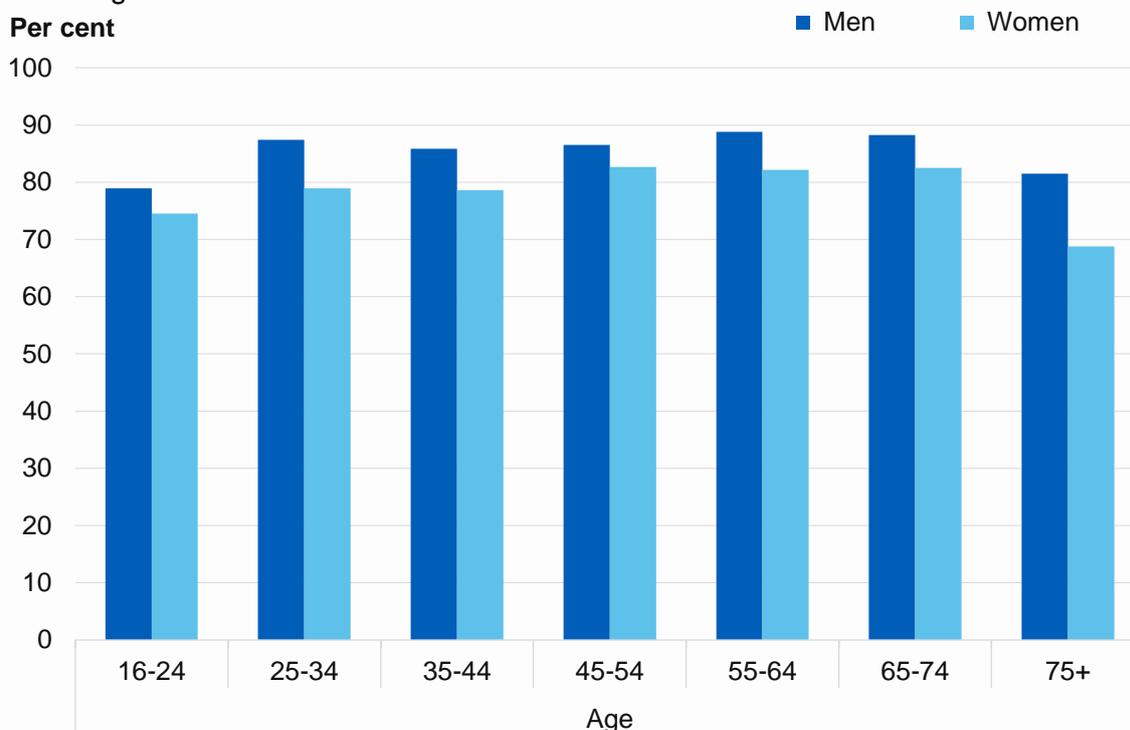
Source: NHS Digital

Estimated weekly alcohol consumption, by age and sex

The method used to estimate weekly alcohol consumption among adults is summarised in the Methods section above. These estimates are based on typical consumption across the year and do not represent consumption in any specific week.

A minority of adults,18% did not drink in the last 12 months. 60% of adults drank at levels which put them at lower risk of alcohol-related harm, that is, 14 units or less in the last week.

There were some differences between men and women in typical alcohol consumption. 14% of men and 21% of women did not drink in the last 12 months. 55% of men and 64% of women drank at levels which put them at lower risk of

alcohol-related harm, that is, 14 units or less in the last week. More than twice as many men than women drank at an increasing risk level (25% and 11% respectively); for men this was defined as more than 14 units and up to 50 units, and for women more than 14 units and up to 35 units. A higher proportion of men than women also drank at increasing and higher risk levels (that is over 14 units for both men and women); 30% of men and 14% of women. 5% of men drank over 50 units and 3% of women drank over 35 units (higher risk levels) in the last week.

The proportion of men and women usually drinking over 14 units in a week varied across age groups and was most common among men and women aged 55 to 64 (38% and 19% respectively). Proportions drinking at these levels then declined among both sexes from the age of 65. Across all age groups, men were more likely than women to drink at increasing and higher risk levels.

Figure 11, Table 10

Figure 11 Proportion of adults drinking at increased or higher risk of harm, by age and sex

Base: Aged 16 and over

■ Increasing risk ■ Higher risk

Source: NHS Digital

Per cent
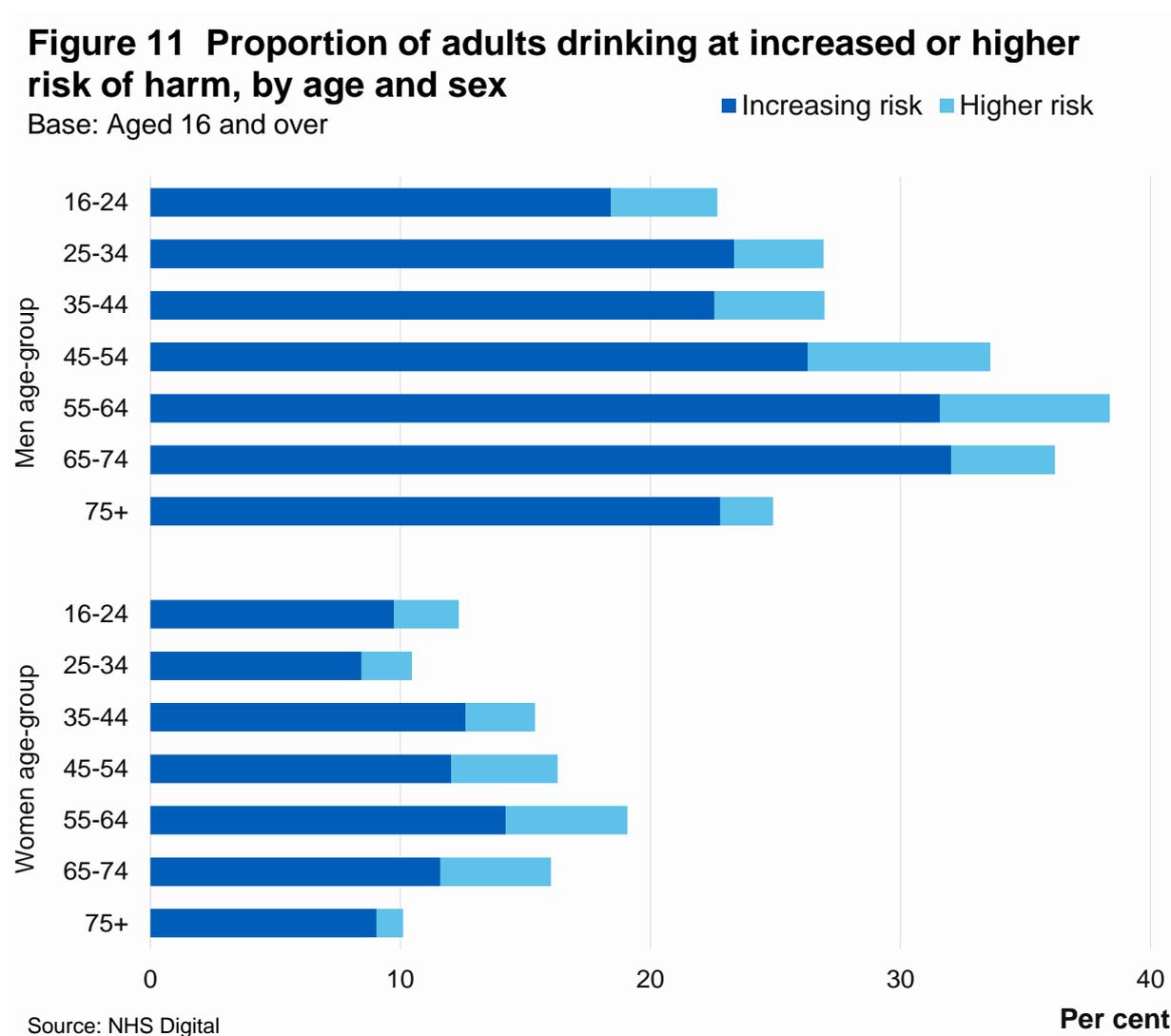
Among those adults that drank alcohol, the average (mean) amount drunk was 12.3 units of alcohol in a typical week (15.5 units for men and 9.0 units for women).

Estimated weekly alcohol consumption, by region and sex

Regional data are shown in the data tables both as observed and age-standardised estimates. Observed data show the actual prevalence rate found in the survey. Age-standardised data enable comparisons between regions that take into account the different age profiles within regions.

The proportions of men and women who had not drunk alcohol varied across regions. Among both men and women, the highest proportions of non-drinkers were in London (28%) and the lowest proportions in the East of England (9%).

Figure 12, Table 12

Figure 12 Estimated weekly alcohol consumption, by region and sex

Base: Aged 16 and over

Source: NHS Digital
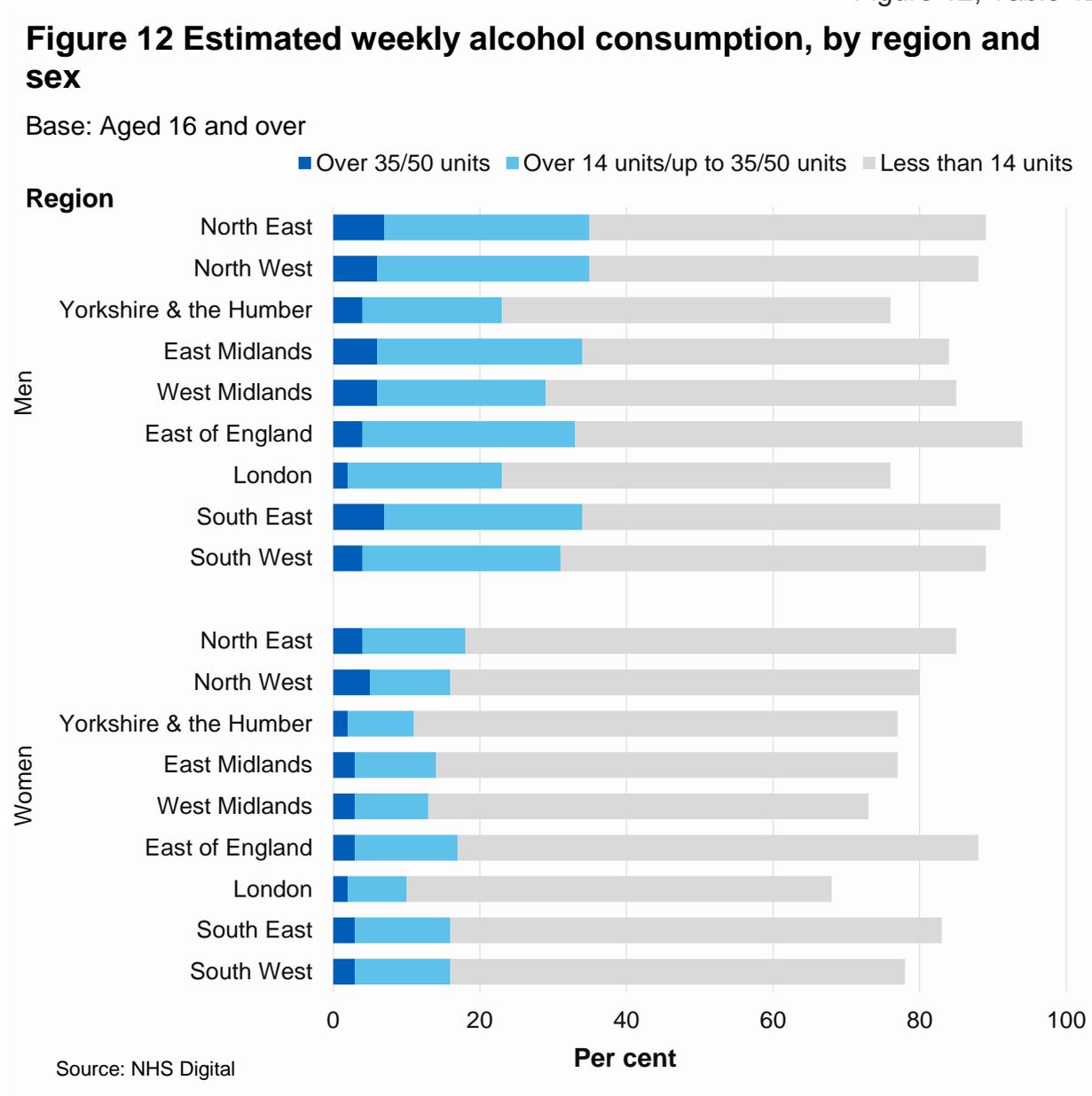
Estimated weekly alcohol consumption, by Index of Multiple Deprivation

The English Index of Multiple Deprivation (IMD) is a measure of area deprivation, based on 37 indicators, across seven domains of deprivation. IMD is a measure of the overall deprivation experienced by people living in a neighbourhood, although not everyone who lives in a deprived neighbourhood will be deprived themselves. To enable comparisons, areas are classified into quintiles (fifths).

For further information about the IMD, see section 8.7 of the HSE 2018 Methods report[42].

The proportion of adults who were non-drinkers was highest in most deprived areas (29%) compared with 10% in the least deprived areas.

Adults in least deprived areas were more likely to drink over 14 units in a usual week (27%) than those in most deprived areas (18%). 36% of men in the least deprived areas drank at increasing and higher risk levels, compared with 27% of men in the most deprived areas. 17% of women in the least deprived areas drank more than 14 units compared with 10% of woman in the most deprived areas.

The variation in weekly alcohol consumption by deprivation was accounted for by differences in the proportions of men and women drinking at increasing levels of risk (that is, over 14 units and up to 50 units for men and over 14 units and up to 35 units for women) rather than the smaller proportions in the higher risk category (over 50 units for men and over 35 units for women). The proportion of men and women drinking at higher levels of risk was similar by IMD quintile.

Figure 13, Table 13

Figure 13 Proportion of adults drinking at increased or higher risk of harm, by Index of Multiple Deprivation and sex

Base: Aged 16 and over

Source: NHS Digital
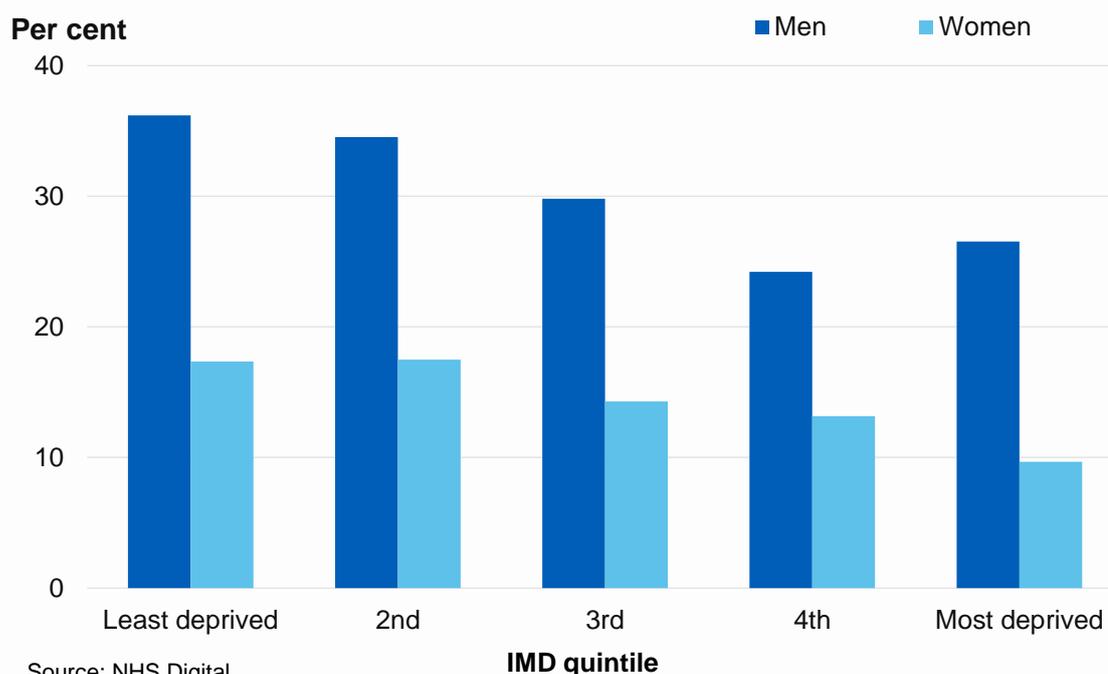
Alcohol consumption in the last week

65% of men and 50% of women had drunk alcohol in the last week. The proportion of men and women drinking in the last week increased with age and was highest among both men and women aged 65 to 74 (71% and 58% respectively). In the 75+ age group the prevalence of drinking in the last week decreased among both sexes.

Figure 14, Table 14

Figure 14 Number of days on which drank alcohol in the last week, by age and sex

Base: Aged 16 and over
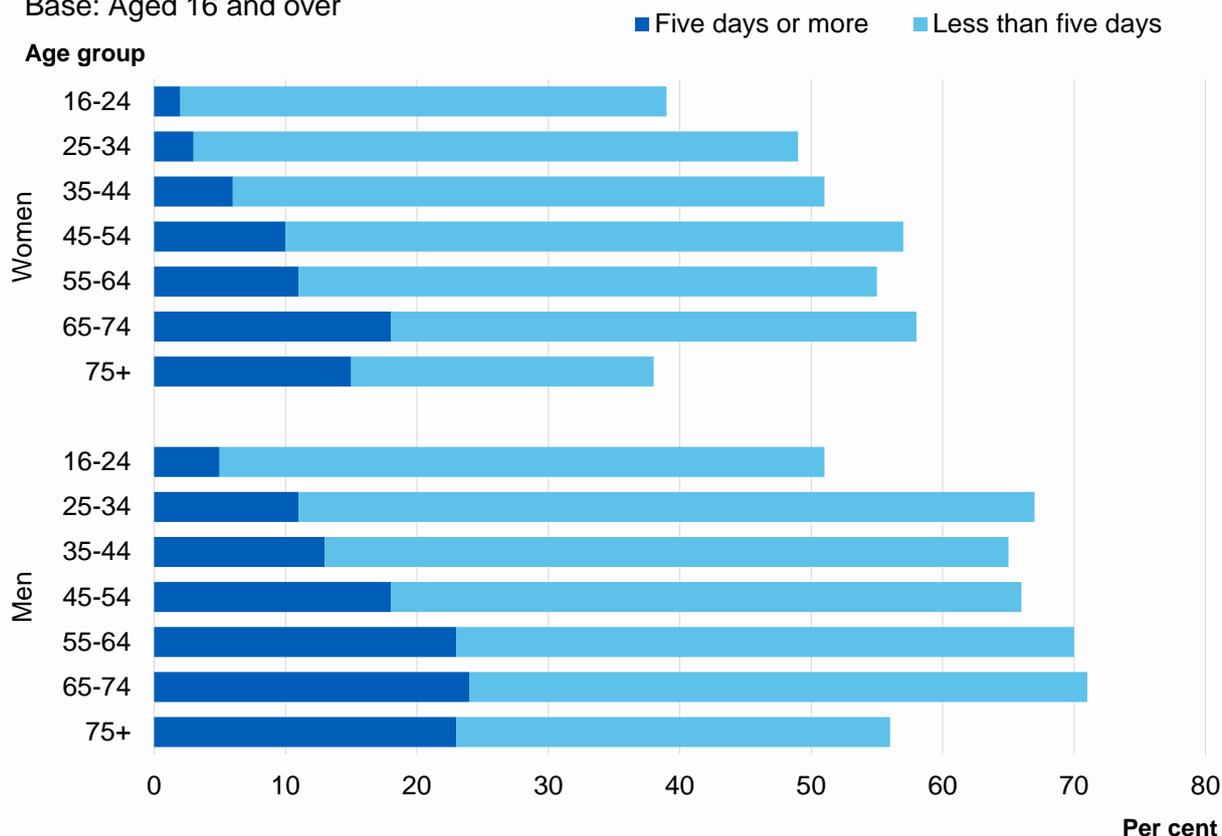
Source: NHS Digital

13% of adults drank on five or more days in the last week (17% of men and 9% of women). Drinking on five or more days increased from 3% of adults aged 16 to 24 to 21% of adults aged 65 to 74.

The mean number of days on which adults drank alcohol in the last week was 2.9 and was higher among men than women (3.1 days and 2.7 days respectively). As with the proportion of adults drinking alcohol, the mean number of days increased with age, from 2.1 days among adults aged 16 to 24 to 3.7 days among adults aged 75 and over.

Estimated maximum alcohol consumption on any day in the last week, by survey year, age and sex

Trends in alcohol consumption between 1998 and 2018, based on the maximum amount drunk on any day in the last week are shown in Table 15. The methodology used to estimate the number of units of alcohol changed in 2006 and more details are in the Appendix at end of this report. Table 15 shows both the original and revised estimates for 2006, and the revised estimates for 2007 onwards; the revised methodology has been used to measure trends in subsequent years.

The proportion of men drinking more than 4 units on any day in the last week was lower in 2018 (34%) than in 2006 (41%). There has been a gradual decline from a peak of 43% in 2009.

The proportion of men who drank more than 8 units in a day dropped from 24% in 2006 to 19% in 2018, with a gradual decline since 2009.

There was a similar pattern of decrease among women: between 2006 and 2013 the proportion consuming more than 3 units on any day in the last week dropped from 33% to 27%. Since 2013, this proportion has fluctuated between 25% and 27%; in 2018, it was 25%.

The proportion of women drinking more than 6 units in a day decreased between 2006 and 2018 from 16% to 12%.

Figure 15, Table 15

Figure 15 Maximum amount drunk on any day in the last week, 2006-2018

Base: Adults aged 16 and over

Men: More than 4 units
Women: More than 3 units
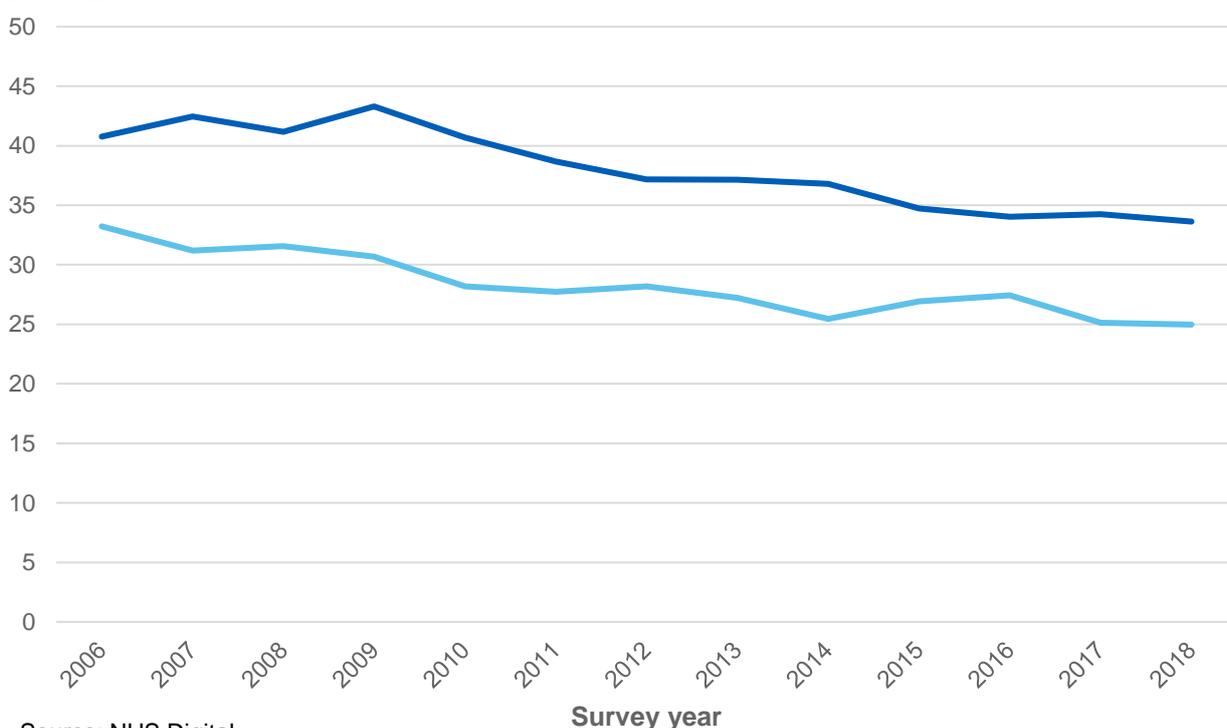
Source: NHS Digital

Fruit and Vegetable Consumption

Introduction

In 2002, the World Health Organization (WHO) began to develop a global strategy on diet, physical activity and health in the context of the rising burden of chronic diseases. Diseases like cardiovascular disease, stroke, diabetes and cancer present a major challenge to public health, particularly in developed countries. These diseases, and the associated unhealthy behaviours, cluster among poor communities and contribute to social and economic inequalities.[43]

A 2005 report estimated that food-related ill-health in the UK is responsible for about 10% of deaths and illness, costing the NHS £6 billion annually. The vast majority of this burden is due to unhealthy diets rather than food-borne diseases.[44] Dietary goals to prevent chronic diseases emphasise eating more fresh vegetables, fruits, and pulses.[45] The 5 A Day guidelines were developed based on the recommendation from WHO that consuming 400g fruit and vegetables a day can reduce risks of chronic diseases, e.g. heart disease, stroke, and some cancers.[46] These guidelines state that everyone should eat at least five portions of a variety of fruit and vegetables every day.[47] Fruit and vegetables may also play an important role in weight management, when combined with reduced fat intake,[48] and may reduce the risk of Type 2 diabetes[49] and impaired cognitive function.[50]

Questions about fruit and vegetable consumption were first included in the HSE in 2001 and are designed to assess fruit and vegetable consumption in terms of portions per day (roughly 80g per portion). The questions were not included in 2012 or 2014.

[43] World Health Organization. *Global strategy on diet, physical activity and health.* The Fifty-seventh World Health Assembly, World Health Organization, Geneva, 2004. www.who.int/dietphysicalactivity/strategy/eb11344/strategy_english_web.pdf

[44] Rayner M, Scarborough P. *The burden of food related ill health in the UK.* J Epidemiol Community Health 2005;**59**:1054-1057.

[45] Commission on Social Determinants of Health. Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health. World Health Organization, Geneva, 2008. www.who.int/social_determinants/thecommission/finalreport/en/index.html

[46] *Diet, nutrition and the prevention of chronic diseases: report of a Joint FAO/WHO Expert Consultation.* WHO Technical Report Series, No. 916. World Health Organization, Geneva, 2003. www.who.int/dietphysicalactivity/publications/trs916/en/

[47] www.nhs.uk/livewell/5aday/pages/5adayhome.aspx/

[48] Tohill B. *Dietary intake of fruit and vegetables and management of body weight.* Background paper for the Joint FAO/WHO Workshop on Fruit and Vegetables for Health, World Health Organization, 2004. www.who.int/dietphysicalactivity/publications/f&v_weight_management.pdf

[49] Bazzano L, Li T, Kamudi J, Hu F. Intake of Fruit, Vegetables, and Fruit Juices and Risk of Diabetes in Women. Diabetes Care 2008;**31**:7:1311-1317.

[50] Loef M, Walach H. *Fruit, vegetables and prevention of cognitive decline or dementia: a systematic review of cohort studies.* J Nutrit Health Aging. 2012 Jul;**16**(7):626-30. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2696613/

Fruit and vegetable consumption, by survey year, age and sex

In 2018, 28% of adults were eating the recommended five portions of fruit and vegetables a day.

For both men and women, the proportion consuming five or more portions per day increased from 2001, when it was 22% for men and 25% for women, reaching a peak in 2006 at around 28% for men and 32% for women.

Since 2008, figures for men have remained stable at around 24-26%; in 2018 it was 25%.

For women, the proportion of women consuming five or more portions per day remained stable between 2008-2016 at around 27-29% and, after a jump to 32% in 2017, has declined to 30% in 2018.

Figure 16, Table 16

Figure 16 Trends in prevalence of eating five or more portions per day, 2001-2018, by sex

Base: Aged 16 and over
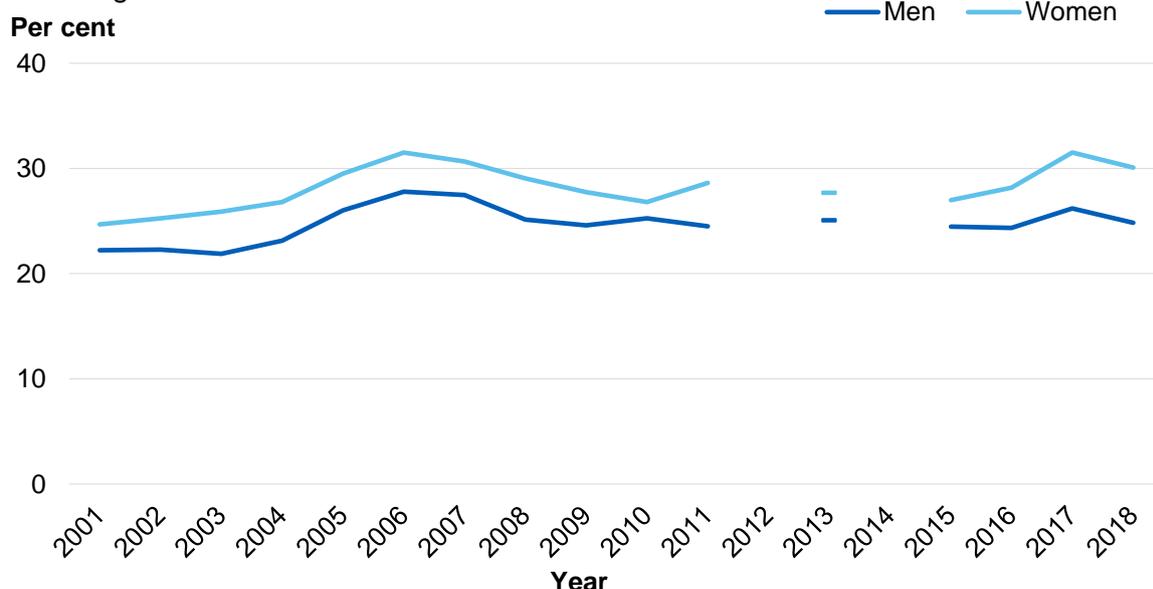
Note: Data from 2003 onwards are weighted for non-response. Data were not collected in 2012 and 2014
Source: NHS Digital

The mean number of portions of fruit and vegetables consumed by adults between 2009 and 2017 ranged between 3.5 and 3.8 per day. In 2018 it was 3.7 portions per day.

Consumption varied with age, young people aged 16 to 24 consumed on average the lowest number of portions of fruit and vegetables, 3.0 a day, and were the least likely age group to eat their five a day recommendation, 22%.

Figure 17, Table 16

Figure 17 Portions of fruit and vegetables eaten per day, by age

Source: NHS Digital
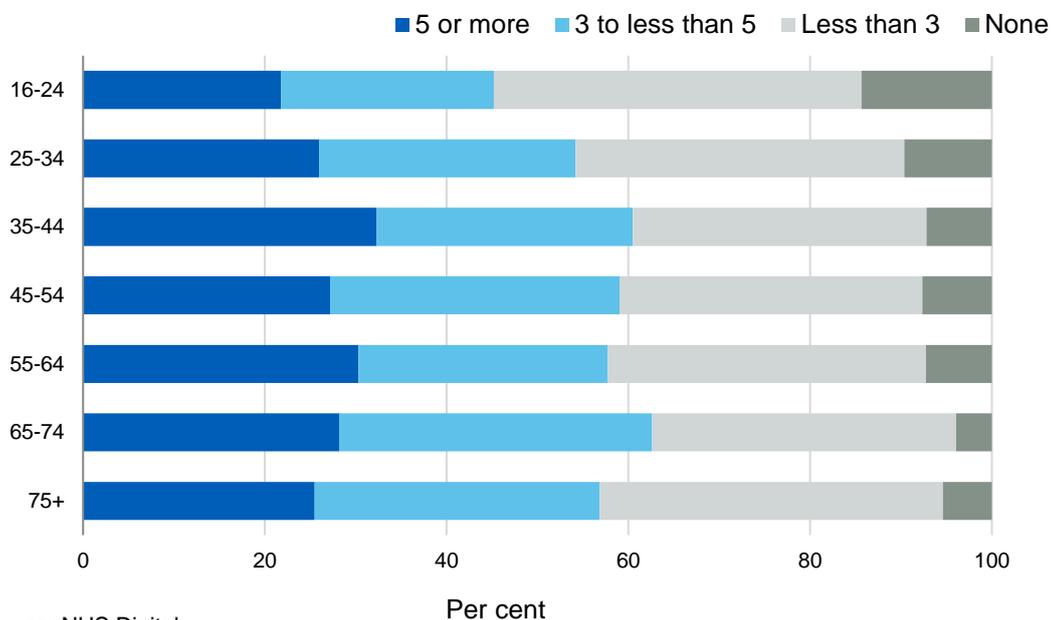
Adult Physical Activity

Introduction

Physical activity is important for cardiovascular health. The UK analysis of the Global Burden of Diseases, Injuries and Risk Factors Study found physical inactivity and low physical activity to be the fourth leading risk factor contributing to deaths and the burden of disease globally, ranking ahead of overweight or obesity.[51] Physical inactivity was estimated in that study to contribute to almost one in ten premature deaths from coronary heart disease (CHD) and one in six deaths from any cause.

In addition to the health burden, physical inactivity imposes a significant financial burden, with the direct costs to the National Health Service estimated to be more than £900 million in 2009/10.[52] Participation in sport is beneficial for the economy, contributing £39 billion every year.[53] Regular physical activity is also beneficial for mental wellbeing and for reducing the risk of developing depression.[54] Among older people, physical activity is associated with better health and cognitive function[55] and can reduce the risk of falls in those with mobility problems.[56,57]

In 2011, the Chief Medical Officers of the four UK countries introduced revised guidelines for physical activity that reflected current evidence on what is needed to benefit health and what are the incremental benefits from undertaking physical activity.[58] Separate guidelines were issued for aerobic activity (recommending a combination of moderate and vigorous intensity activities); muscle-strengthening activities; and, among older people, activities to improve balance and co-ordination. The recommendations provide more flexibility towards achieving physical activity goals, recognising that the overall volume of physical activity is more important for health than the specific type of activity or frequency of sessions. Data from the Health Survey for England are used to monitor adherence to the guidelines; the HSE 2016 provides the first opportunity to measure the extent to which the proportion of adults meeting them has changed since 2012.[59] As the Health Survey for England includes occupational activity in the overall measure of physical activity, it complements the

[51] Lee IM, Shiroma EJ, Lobelo F, et al. *Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy*. Lancet 2012;**380**:219-229.

[52] Townsend N, Wickramasinghe K, Williams J, et al. *Physical activity statistics 2015*. British Heart Foundation, 2015.

[53] HM Government. *Sporting Future: A New Strategy for an Active Nation*. Cabinet Office, London, 2015.

[54] Mammen G and Faulkner G. *Physical Activity and the Prevention of Depression: A Systematic Review of Prospective Studies*. Am J Prev Med 2013;**45(5)**:649-657.

[55] Paillard T, Rolland Y, de Souto Barreto P. *Protective effects of physical exercise in Alzheimer's disease and Parkinson's disease: A narrative review*. J Clin Neurol 2015;**11**:212-219.

[56] Lusa Cadore E, Rodríguez-Mañas L, Sinclair A, et al. *Effects of Different Exercise Interventions on Risk of Falls, Gait Ability, and Balance in Physically Frail Older Adults: A Systematic Review*. Rejuvenation Research 2013;**16**:105-114.

[57] Bauman A, Merom D, Bull FC. *Updating the Evidence for Physical Activity: Summative Reviews of the Epidemiological Evidence, Prevalence, and Interventions to Promote "Active Aging"*. The Gerontologist 2016;**56** Suppl 2:S268–S280.

[58] Department of Health. *Start Active, Stay Active. A report on physical activity for health from the four home countries' Chief Medical Officers*. DH, London, 2011. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216370/dh_128210.pdf

[59] Scholes S, Mindell J. *Physical activity in adults*. Chapter 2 in Craig R, Mindell J (eds). *Health Survey for England 2012*. Health and Social Care Information Centre, Leeds, 2013.

local measurement of aerobic physical activity and sport through Sport England's Active Lives Survey.[60]

The 2011 guidelines also highlighted the importance of minimising the amount of time spent being sedentary (sitting) for extended periods. Sedentary behaviour is defined as activity with very low energy expenditure, undertaken primarily sitting or lying down. Sedentary behaviours are undertaken in a range of settings, including home, travel, work, and in leisure time. Evidence suggests that sedentary behaviour is strongly associated with poor health, independent of overall levels of physical activity.[61]

Helping more people to be more active, more often is an over-arching policy objective of the government. The previous government's strategy for sport and physical activity published in 2015 included broadening Sport England's remit to take responsibility for sport outside school from the age of five, rather than 14, and an emphasis on making future funding decisions on the basis of the social good that sport and physical activity could deliver, not simply on the number of participants.[62] The strategy committed to distributing funding to focus on those groups with participation rates well below the national average, including women, disabled people, those in lower socioeconomic groups and older people. The commitment to and the rationale for reducing levels of physical inactivity had been set out in the 2014 *Moving More, Living More* report.[63] Public Health England's *Everybody Active, Every Day* report, also published in 2014, set out clear guidance for public sector bodies and others to promote physical activity, under the four themes of: active society (creating a social movement); moving professionals (activating networks of expertise); active environments (creating the right spaces); and moving at scale (interventions that make us active).[64]

[60] Sport England. *Active Lives Survey 2016-17. May 16/17 Report.* Sport England 2017. www.sportengland.org/media/12458/active-lives-adult-may-16-17-report.pdf

[61] Owen N, Healy GN, Matthews CE, et al. *Too Much Sitting: The Population-Health Science of Sedentary Behavior.* Exerc Sport Sci Rev. 2010;**38(3)**:105-113.

[62] HM Government. *Sporting Future: A New Strategy for an Active Nation.* Cabinet Office, London, 2015.

[63] HM Government. *Moving More, Living More: The physical activity Olympic and Paralympic Legacy for the Nation.* HMG, London, 2014. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/279657/moving_living_more_inspired_2012.pdf

[64] Public Health England. *Everybody active, every day.* Public Health England, London, 2014. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374914/Framework_13.pdf

Definitions

Summary activity levels

In 2018, information on physical activity was collected using the Short-Form International Physical Activity Questionnaire (IPAQ). This questionnaire defines activity levels based on reported moderate or vigorous physical activity (MVPA). Respondents reporting below 30 minutes MVPA per week have been defined as "inactive" whereas those reporting 30 minutes or more MVPA per week have been defined as "active".

Note: this differs from the UK Chief Medical Officers' Physical Activity Guidelines for sufficient levels of aerobic activity (at least 150 minutes/week of MVPA)[65].

Physical activity by age and sex

In 2018, 27% of adults reported less than 30 minutes of moderate of vigorous physical activity (MVPA) and were classified as 'Inactive'.

Overall, inactivity levels were similar between both men and women, with 26% and 27% respectively.

Inactivity levels tended to increase across age groups, especially for men, with men aged 16-24 being the least likely to be inactive (18%), and 45% of men aged 75+ reporting inactivity.

Women follow a similar trend to men for inactivity. Women age 35 to 44 were the least likely to be inactive (18%), and those age 75+ the most likely to be inactive (59%).

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[65]
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/832868/uk-chief-medical-officers-physical-activity-guidelines.pdf

Figure 18 Physical activity, by age and sex

Base: Aged 16 and over

Per cent

Source: NHS Digital
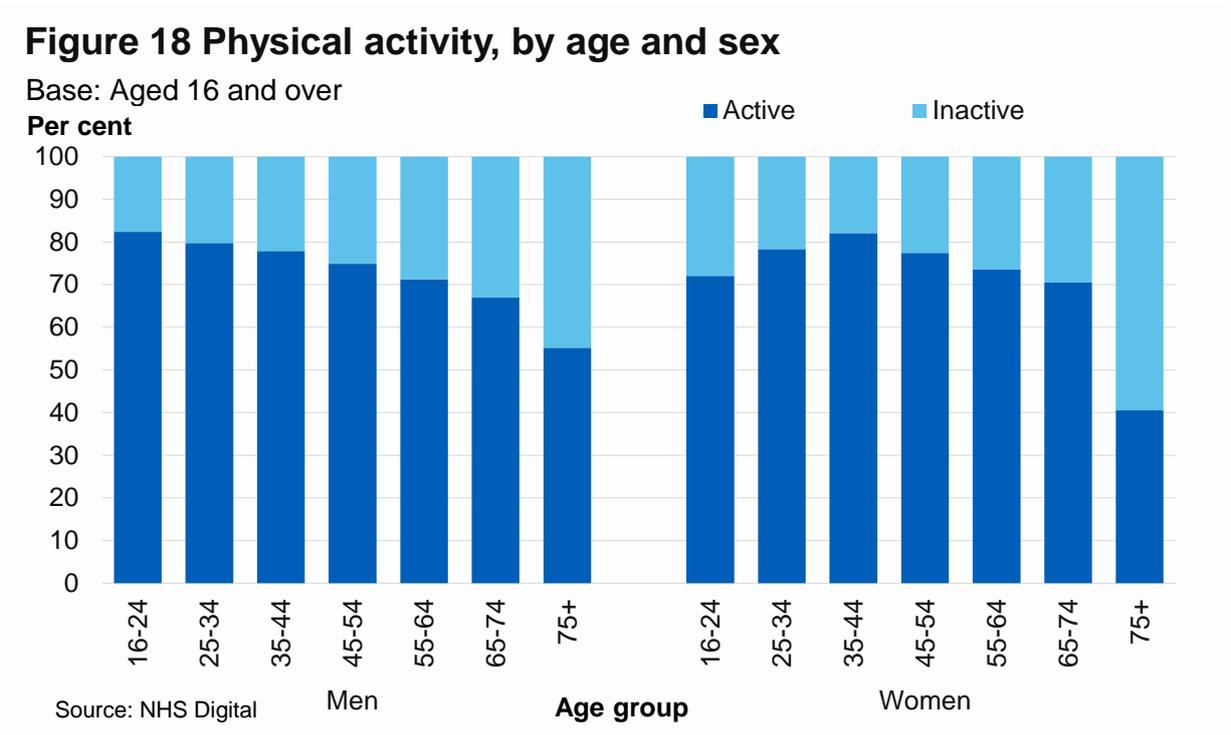
Gambling behaviour

Introduction

Great Britain has one of the most accessible gambling markets in the world. Opportunities to gamble exist on most high streets and, with the spread of the internet, in virtually every home.

The gambling industry is increasingly being called upon to do more to protect participants and prevent problem gambling from occurring, and the National Responsible Gambling Strategy[66] emphasises the need for joint action between industry, government, healthcare providers and other public bodies to tackle gambling-related harm.

This chapter looks at levels of participation in gambling, and whether these vary by age and sex. It covers overall participation in any form of gambling. For all gambling activities, participation was defined as having spent money on the activity over the past year. Participants were shown a list of gambling activities and were asked to think about any gambling they had done over the past 12 months. The activities included in the list were intended to cover all types of gambling available. However, to allow for the possibility that an activity was missed or that participants may have misunderstood an activity description, an option was provided for participants to mention another form of gambling.

This chapter also presents information about the prevalence of problem gambling among adults aged 16 and over. 'Problem gambling' is typically defined as gambling to a degree that compromises, disrupts or damages family, personal or recreational pursuits[67].

Definitions

Problem gambling
The HSE uses the following screening tools to identify at risk or problematic gambling: the DSM-IV criteria[68] and the Problem Gambling Severity Index (PGSI).[69] A score of 3 or more for DSM-IV or a score of 8 or more for PGSI is indicative of problem gambling.

At-risk gambling
A score of 1 or more for PGSI is indicative of at-risk gambling. A score of 1 to 2 is considered low risk and a score of 3 to 7 is considered moderate risk.

Problem gambling screening

Diagnostic and Statistical Manual of Mental Disorders, fourth version (DSM-IV)

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[66] http://www.rgsb.org.uk/PDF/Strategy-2016-2019.pdf

[67] Lesieur, H.R., Rosenthal, M.D. (1991). Pathological gambling: A review of the literature (prepared for the

American Psychiatric Association Task Force on DSM-IV Committee on disorders of impulse control not

elsewhere classified). Journal of Gambling Studies, 7 (1), 5-40.

[68] American Psychiatric Association (1993). Diagnostic and statistical manual of mental disorders, 4th edition. Washington DC: American Psychiatric Association.

[69] Ferris, J., Wynne, H. (2001). The Canadian Problem Gambling Index: Final Report. Canada: The Canadian Centre on Substance Abuse.

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The DSM-IV screening instrument is based on criteria from the fourth edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-IV)[70.] It was created as a clinical diagnostic tool and was not intended for use as a screening instrument among the general population. An adapted version of the DSM-IV for use in a survey setting was developed for the British Gambling Prevalence Survey (BGPS) series and was subject to a rigorous development and testing process, including cognitive testing and piloting.

The DSM-IV contains ten diagnostic criteria ranging from 'chasing losses' to 'committing a crime to fund gambling'. Each item is assessed on a four-point scale, ranging from 'never' to 'very often'[71.] This report follows the scoring method used by the BGPS; each item is coded according to whether the respondent had a positive score, resulting in a total score between 0 and 10.

Among clinicians, a diagnosis of pathological gambling is made if a person meets five out of the ten criteria. Many surveys, when adapting the DSM-IV criteria into a screening instrument for use within a general population survey, have included a further category of problem gambler for those who meet at least three of the DSM-IV criteria[72,73,74,75].

Problem Gambling Severity Index (PGSI)

The PGSI was designed for use among the general population rather than within a clinical context. It was developed, tested and validated within a general population survey of over 3,000 Canadian residents[76]. The instrument itself has been subject to critical evaluation and was revised in 2003[77].

The PGSI consists of nine items ranging from 'chasing losses' to 'gambling causing health problems' to 'feeling guilty about gambling'. Each item is assessed on a four-point scale: never, sometimes, most of the time, almost always. Responses to each item are given the following scores: never = 0; sometimes = 1; most of the time = 2; almost always = 3. When scores to each item are summed, a total score ranging from 0 to 27 is possible. A PGSI score of 8 or more represents a problem gambler. This is

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[70] The HSE and Scottish Health Survey (SHeS) were both planned and implemented prior to the formal publication of the DSM-V and therefore used the DSM-IV. This replicates the version used in the BGPS series

[71] This is with the exception of the 'chasing losses' item which is rated on a scale ranging between 'never' to 'every time I lost'. See Appendix D for the full question wording.

[72] Fisher, S.E. (1996). Gambling and problem gambling among casino patrons, Report to the British Casino Industry Consortium, Plymouth UK

[73] National Gambling Impact Study Commission (NGISC) 1999. [USA] Final Report. http://govinfo.library.unt.edu/ngisc/reports/fullrpt.html

[74] Australian Productivity Commission (APC) (1999). Australia's Gambling Industries. Report No. 10, Canberra: Ausinfo.

[75] Clarke D., Abbott M., Tse S., Townsend S. (2006). Gender, Age, Ethnic and Occupational Associations with Pathological Gambling in a New Zealand Urban Sample. New Zealand Journal of Psychology, 35(2), 84-91.

[76] Ferris, J., Wynne, H. (2001). The Canadian Problem Gambling Index: Final Report. Canada: The Canadian Centre on Substance Abuse.

[77] Wynn, H. (2003). Introducing the Canadian Problem Gambling Index. Wynne Resources: Canada.

the threshold recommended by the developers of the PGSI and the threshold used in this report. The PGSI was also developed to give further information on sub-threshold problem gamblers.

PGSI scores between 3 and 7 are indicative of moderate risk gambling and a score of 1 or 2 is indicative of low risk gambling.

Participation in gambling activities in the last 12 months, by age and sex

In 2018, 53% of adults had participated in some form of gambling activity during the previous 12 months. This proportion falls to 39% when gambling on the National Lottery is excluded.

The proportion of adults who had participated in gambling activities was highest in the 45 to 54 age group at 59% compared with 38% in the 16 to 24 age group.

Among men, the highest proportions were among the 25 to 34 age group (64%) with the 16 to 24 age group being the lowest with 44%. Note: most forms of gambling (excluding lotteries or scratch cards) are illegal for the under 18s and this will affect gambling prevalence in the 16 to 24 age group.

For women, the highest proportions participating in any gambling activity were the 45 to 64 age group, with 57% having participated in gambling activities. When gambling on the national lottery is excluded, women aged between 25 and 64 are most likely to have participated in the last 12 months. As with men, the lowest prevalence of any gambling activity was among the 16 to 24 age group, with 32% having participated.

Figure 19, Table 18

Figure 19: Participation in gambling activities in the last 12 months, by age

Base: Aged 16 and over
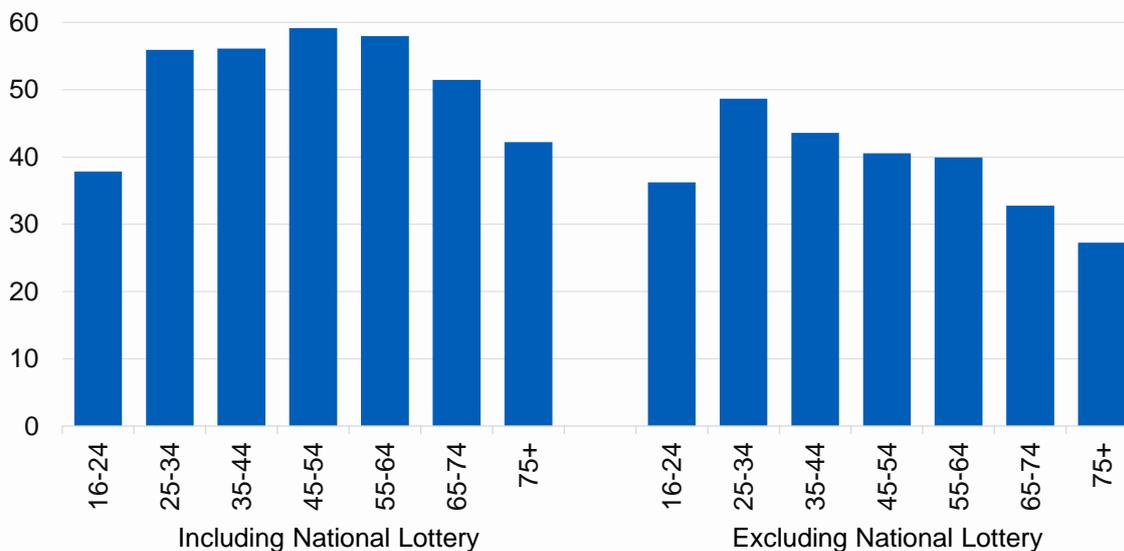
Source: NHS Digital

The most pronounced differences across both age and sex were for online gambling other than the National Lottery.

15% of men had participated in online gambling in the previous 12 months, compared with 4% of women.

After reaching a peak in the 25 to 34 age group, participation in online gambling then gradually declines with age for both sexes. 29% of the 25-34 age group for men had participated in online gambling, compared with less than 5% of those aged 65 and over. Similarly, 9% of women in the 25 to 34 age group had participated in online gambling.

Figure 20, Table 18

Figure 20: Participation in any online gambling (excluding National Lottery) in the last 12 months, by age and sex

Base: Aged 16 and over

Source: NHS Digital
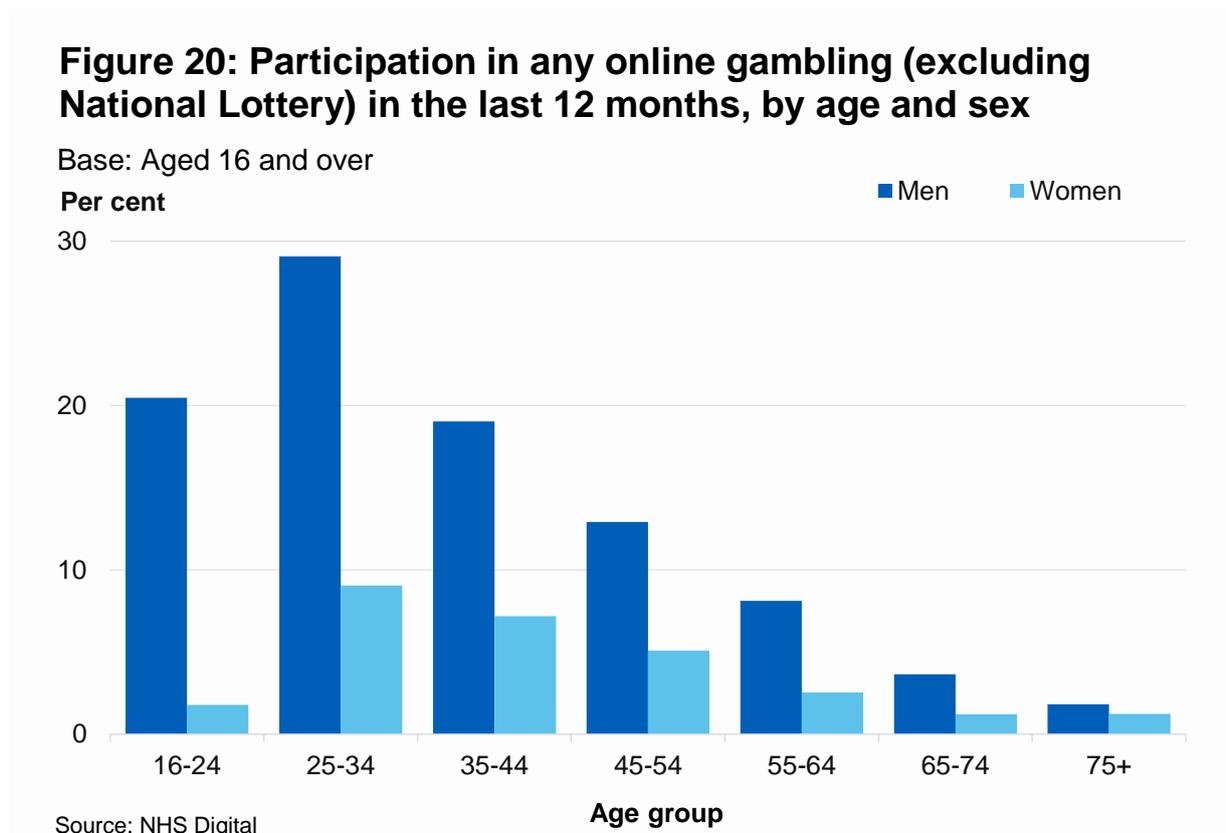
Prevalence of at-risk and problem gambling (DSM-IV and PGSI scores), by sex and age

Using PGSI scores, 0.4% of adults were identified as problem gamblers (score 8+) and 3.6% as problem or at-risk gamblers (score 1+). Using the DSM-IV scores, 0.5% of adults were identified as problem gamblers, defined as DSM-IV score 3+.

Using the PGSI scores, the proportion of men identified as problem or at-risk gamblers is substantially higher than women, with 6% of men and 2% of women identified. The proportion of problem or at-risk gamblers decreases with age from between 5% and 7% in those age 16 to 44 to 1% of those age 75+.

Tables 19 and 20

Appendix – Technical information

Methods

Full questionnaires are included in the survey documentation. Further details of the protocols for collecting measurements can be found in the HSE 2018 Methods report. Both of these are available via https://digital.nhs.uk/pubs/hse2018.

Technical details about trend tables

Trend tables present the results within the general population sample, although in some years boost sample data have been included. For example, some estimates for 2002 are based on data from young adults in both boost and general population samples to increase the precision of the results. For 2005, the boost sample of older people is included in the estimates for people aged 65 and over. In these years, boost sample cases have been excluded from the estimates for all men, all women and all adults.[78]

Since 2013, standard errors (shown in some tables) have been calculated for all survey years using a complex samples module of the statistical package. In 2014, standard errors for adult estimates in years up to 2002 were also recalculated using the complex samples module. This complex samples module takes account of the complex survey design and weighting used in the HSE rather than assuming a simple random sample.[79] In the earlier trend tables, standard errors for years up to 2002 did not use a complex samples module, and therefore indicated narrower margins of error than those shown in the tables from 2013 onwards.

In 2003, non-response weighting was introduced for the first time in the HSE series. Since the weighted data provide more accurate information for the individual years for which they are available, the analysis of trends in this report focuses on the weighted estimates for 2003 onwards.[80]

The impact of the weighting can be seen in the 2006 adults' trend tables, available at Health Survey for England - 2006 trends. These present unweighted estimates (directly comparable with previous years) and weighted estimates for 2003 to 2006.

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[78] Data from older people in care homes collected for the 2000 survey are not included in trend tables as there are likely to be significant differences in the health of older people living in private households and in care homes.

[79] Full details of the HSE sample can be found in the HSE 2017 Methods report available via https://digital.nhs.uk/pubs/hse2017

[80] In 2003, key survey variables using weighted and unweighted estimates were compared. This comparison showed that there are small differences between weighted and unweighted results, which are generally larger for men than women. See Blake, M. *Weighting the data*. Section 7.4.2, in Sproston K, Primatesta P (eds). *Health Survey for England 2003. Volume 3: Methodology and documentation.* The Stationery Office, London, 2004.

Changes in the conversion of drinks to alcohol units

Trends in alcohol consumption between 1998 and 2018 based on the maximum amount drunk on any day in the last week are shown in Table 15.

The method used by the HSE to convert drinks to units remained essentially unchanged from 1991 until 2005, based on assumptions introduced by the General Household Survey (GHS) in 1990.[81] By the mid-2000s, it became clear that these assumptions were no longer valid. The average strengths of beers and wines had increased in the intervening years, and pubs, bars and restaurants served drinks in a broader range of measures.[82] Standard glasses of wine, formerly 125ml, are likely to be 175ml. From 2006, changes have been made in the way the HSE and other surveys estimate alcohol consumption. The table below shows the original conversion factors used by the HSE until 2005 and the revised conversion factors used from 2006.

Type of drink	Measure	Original equivalent units of alcohol	Revised equivalent units of alcohol
Normal strength beer, lager, stout, cider, shandy (less than 6% ABV)	Pint	2	2
	Can or bottle	amount in pints multiplied by 2	amount in pints multiplied by 2
	Small cans (size unknown)	1	1.5
	Large cans or bottles (size unknown)	2	2
Strong beer, lager, stout, cider (6% ABV or more)	Pint	3	4
	Can or bottle	amount in pints multiplied by 3	amount in pints multiplied by 4
	Small cans (size unknown)	1.5	2
	Large cans or bottles (size unknown)	3	3
Spirits and liqueurs	Glass (single measure)	1	1
Sherry, martini and other fortified wines	Glass	1	1
Wine	Glass	1	2
Alcopops	Small can or bottle	1	1.5

The changes have an impact on the estimated consumption of beer, wine and alcopops; the most significant of these is the revision to the unit equivalent of a glass

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[81] Smyth M, Browne F. *General Household Survey 1990.* HMSO, 1992.

[82] Goddard E. *Estimating alcohol consumption from survey data: improved method of converting volume to units.* ONS, 2007.
http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/guide-method/method-quality/specific/gss-methodology-series/index.html

of wine. In 2006, the conversion for a glass of wine was changed from one unit to two units; in 2007, a further adjustment was made, and separate conversion rates were used for 125ml, 175ml and 250ml wine glasses as follows:

- Large glass 250ml   3.0 units
- Standard glass 175ml   2.0 units
- Small glass 125ml   1.5 units.

Table 17 shows both the original and revised estimates for 2006, and the revised estimates for 2007 onwards; the revised methodology has been used to measure trends in subsequent years. For information on trends using the original method, and differences between the original and revised estimates for 2006, see the 2006 trend tables commentary, available at: https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/health-survey-for-england-2006-latest-trends

Further details of the effects of this on estimates are included in Chapter 7, sections 7.2 and 7.5 of the 2007 report see: https://files.digital.nhs.uk/publicationimport/pub00xxx/pub00415/heal-surv-life-know-atti-beha-eng-2007-rep-v2.pdf

Gambling activities

The activities included in the list were intended to cover all types of gambling available. However, to allow for the possibility that an activity was missed or that respondents may have misunderstood an activity description, an option was provided for respondents to mention another form of gambling.

In total, there are 19 separate categories of gambling activity:

Lotteries and related products
National Lottery Draws
Scratchcards
Other lotteries

Machines/games
Football pools
Bingo (not online)
Slot Machines
Machines in a bookmakers
Casino table games (not online)
Machines in a bookmakers
Online gambling on slots, casino or bingo games

Betting activities
Online betting with a bookmaker
Betting exchange
Horse races (not online)
Dog races (not online)
Sports events (not online)

Other events (not online)
Spread-betting
Private betting

Other gambling activity
Any other gambling

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