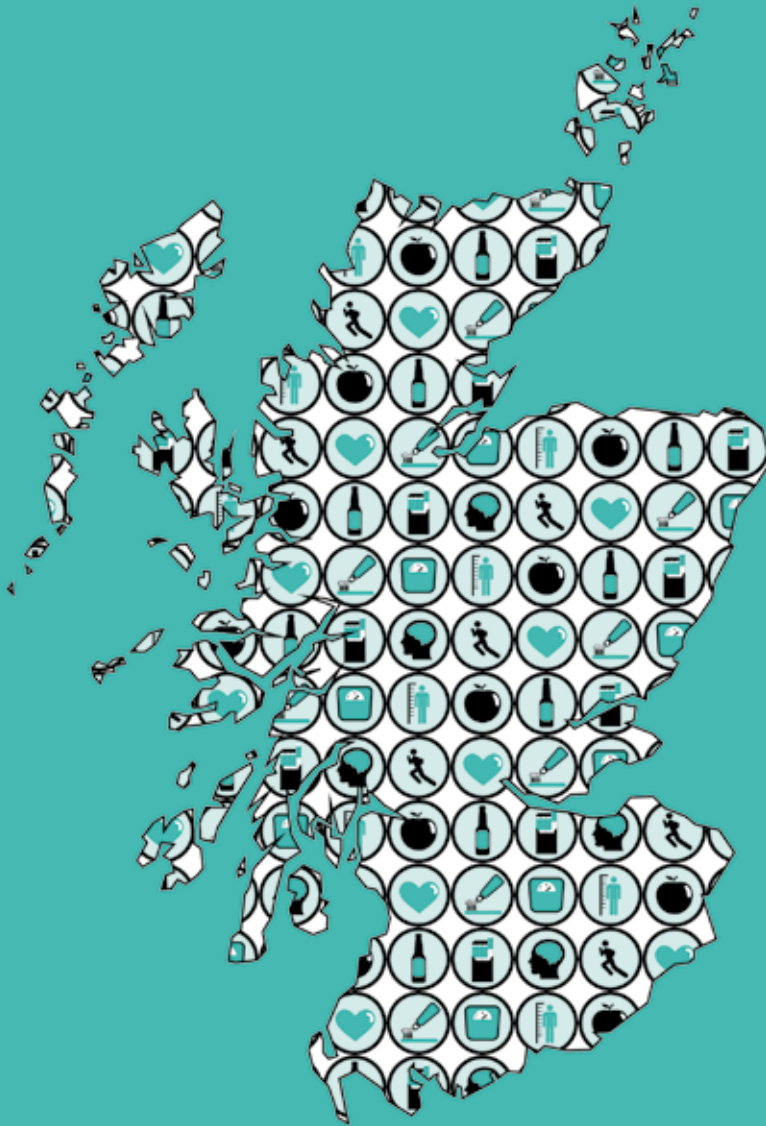




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The Scottish Health Survey

2019 edition | volume 1 | main report

A National Statistics Publication for Scotland

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Joanne McLean and Victoria Wilson.

Foreword from the Chief Medical Officer

This report presents the findings of the 2019 Scottish Health Survey. The survey provides data extending back over 24 years. The 2012-2019 surveys were commissioned by the Scottish Government and produced by a collaboration between ScotCen Social Research, the MRC/CSO Social and Public Health Sciences Unit at the University of Glasgow, The Centre for Population Health Sciences at the University of Edinburgh and The Public Health Nutrition Research Group at Aberdeen University.

The survey provides us with an immensely valuable collection of data on cardiovascular disease and related risk factors including smoking, alcohol, diet, physical activity and obesity. Information on general health, mental health and dental health are also included. The survey's rotating module, which asks certain questions every two years, includes information on accidents, dental health services, experience of discrimination and harassment, social capital and stress at work.

The 2019 report presents the first Scotland level estimates of adverse childhood experiences (ACEs) of adults. This important data allows us to gauge the prevalence of ACEs in Scotland and understand some of the impacts on health and wellbeing.

With each additional survey year, the ability to analyse trends adds considerably to the usefulness of this data source, while combining data from previous surveys allows for more detailed analysis of specific health conditions, risk factors and related health behaviours.

I am pleased to welcome this valuable report and to thank the consortium led by ScotCen Social Research for their hard work in conducting the survey and preparing this report. Most importantly, I would also like to thank the 6,881 people who gave their time to participate in the survey. The information they have provided is invaluable in developing and monitoring public health policy in Scotland.

Dr Gregor Smith
Chief Medical Officer for Scotland
Scottish Government Health Directorates

INTRODUCTION

Joanne McLean and Victoria Wilson

POLICY CONTEXT

As a study of public health, the Scottish Health Survey (SHeS) plays an important role in assessing health outcomes, health risks and the extent of health inequalities in Scotland and how these have changed over time. With one of the lowest life expectancies in Western Europe and the lowest of all UK countries, as well as continued disparity in health outcomes between those living in the most and least deprived areas¹, improving the health and wellbeing of Scotland's population continues to be a serious and complex challenge at local and national level.

In 2018, the Scottish Government launched six, whole system based, inter-related public health priorities designed to improve the health of the population and reduce unacceptable variation in life expectancy over the next decade². A revised National Performance Framework (NPF)³, developed together with the public, practitioners and experts, was also launched in 2018 with the core purpose being to create a more successful country, give opportunities to all people living in Scotland, increase their wellbeing, create sustainable and inclusive growth and reduce inequalities. It includes eleven National Outcomes that help to describe the kind of Scotland the Framework aims to create and reflect the values and aspirations of the people of Scotland. In addition, the National Outcomes have been designed to link with a number of the United Nation's Sustainable Development Goals⁴. The specific goals that the health outcomes relate to are:

- Gender equality
- Reduced inequalities
- Responsible production and consumption
- Good health and wellbeing

The eleven National Outcomes provide a means of measuring progress towards the NPF vision for Scotland, and one is focussed exclusively on health - 'we are healthy and active'. Underpinning this National Outcome are a number of National Indicators related to:

- Healthy life expectancy
- Mental wellbeing
- Healthy weight
- Health risk behaviours (smoking, harmful drinking, low physical activity and obesity)
- Undertaking recommended levels of physical activity
- Journeys by active travel (walking/cycling)
- Quality of care experience
- Work related ill-health
- Premature mortality

However, as well as these, many other National Indicators that track progress towards the national outcomes have relevance to health⁵. SHeS is used to monitor progress towards the following National Indicators:

- **Mental Wellbeing**
- **Healthy Weight**
- **Health Risk Behaviours**
- **Physical Activity**
- **Child wellbeing and happiness**
- **Food insecurity**

The Scottish Government's **Programme for Scotland: Protecting Scotland, renewing Scotland 2020-21**⁶, published on the 1st of September 2020, highlights the need to address health inequalities as well as improve population health overall.

It includes actions designed to renew the focus on tackling health inequalities, to drive efforts to improve mental health and wellbeing, as well as work to expand access to digital care for both physical and mental health⁷.

As well as being the official source for measuring progress on a number of NPF indicators, SHeS is used to monitor numerous Scottish health strategies, programmes and initiatives.

Each of the chapters included in this volume addresses an aspect of health that relates either directly or indirectly to the Government's objective that 'we are healthy and active'.

THE SCOTTISH HEALTH SURVEY (SHeS) SERIES

SHeS has been carried out annually since 2008 and prior to this was carried out in 1995⁸, 1998⁹, and 2003¹⁰. The 2019 survey was the fifteenth in the series.

Commissioned by the Scottish Government Health Directorates, the series provides regular information on aspects of the public's health and factors related to health which cannot be obtained from other sources. The SHeS series was designed to:

- estimate the prevalence of particular health conditions in Scotland
- estimate the prevalence of certain risk factors associated with these health conditions and to document the pattern of related health behaviours
- look at differences between regions and subgroups of the population in the extent of their having these particular health conditions or risk factors, and to make comparisons with other national statistics for Scotland and England
- monitor trends in the population's health over time
- make a major contribution to monitoring progress towards health targets

Each survey in the series includes a set of core questions and measurements (height and weight and, if applicable, blood pressure, waist circumference, and saliva samples), plus modules of questions on specific health conditions and health risk factors that vary from year to year. Each year the main sample has been augmented by an additional boosted sample for children. Since 2008, NHS Health Boards have also had the opportunity to boost the number of adult interviews carried out in their area.

The 2019 survey was undertaken by ScotGen Social Research, with the Office of National Statistics (ONS) sharing fieldwork. From 2012 to 2019, survey contributors have included the MRC/CSO Social and Public Health Sciences Unit (MRC/CSO SPHSU) based in Glasgow, The Centre for Population Health Sciences at the University of Edinburgh and The Public Health Nutrition Research Group at Aberdeen University.

THE 2019 SURVEY

It is important to note that, as the data presented in this report is for 2019, it will not capture the significant impact that the subsequent COVID-19 pandemic has had - and will continue to have - on the physical and mental health and wellbeing of the people of Scotland.

Topics

Cardiovascular disease (CVD) and related risk factors remains the principal focus of the survey. The main components of CVD are ischaemic heart disease (IHD) (or coronary heart disease) and stroke, both of which are clinical priorities for the NHS in Scotland^{11,12}. Diseases of the circulatory system are one of the leading causes of death in Scotland in 2018, this includes 11% of deaths which are caused by IHD, with a further 7% caused by cerebrovascular disease (including stroke)¹³. Despite a decrease in the incidence rate of cerebrovascular disease of 12% over the last ten years¹⁴, stroke remains one of the biggest killers in Scotland and the leading cause of disability¹⁵. In addition, while the coronary heart disease mortality rate decreased by 32% between 2009 and 2018, the rate of decline has slowed in the last five years¹⁶ and concern remains about continuing inequalities in relation to morbidity and mortality linked to these conditions¹⁷. The SHeS series now has trend data going back over two decades and providing time series data remains an important function of the survey.

Many of the key behavioural risk factors for CVD are in themselves of particular interest to health policy makers, public health professionals and the NHS. For example, smoking, poor diet, lack of physical activity, obesity and problematic alcohol use are all the subject of specific strategies targeted at improving the nation's health. SHeS includes detailed measures of all these factors which are reported on separately in Chapters 4-7. The other four chapters focus on health conditions and experiences which have the potential to influence health outcomes in later life - General Health, Cardiovascular Disease and Diabetes (Chapter 1), Mental Health and Wellbeing (Chapter 2), Dental Health

and Services (Chapter 3) and Adverse Childhood Experiences (ACEs) (Chapter 8).

Sample

The Scottish Health Survey is designed to yield a representative sample of the general population living in private households in Scotland every year.

The current survey design also means that estimates at NHS Health Board level are available by combining four consecutive years of data. NHS board results for the period 2016-2019 have been published at the same time as this report.

Those living in institutions, who are likely to be older and, on average, in poorer health than those in private households, were outwith the scope of the survey. This should be borne in mind when interpreting the survey findings.

A random sample of 6,451 addresses was selected from the Postcode Address File (PAF), using a multi-stage stratified design. Where an address was found to have multiple dwelling units, one was selected at random. Where there were multiple households at a dwelling unit, a single household was selected at random. Everyone within a selected household was eligible for inclusion. Where there were more than two children in a household, two were randomly selected for inclusion, to limit the burden on households. The individuals interviewed at these addresses form the 'main sample'.

Two further samples were selected for the survey in 2019: a child boost sample (5,425 addresses) in which up to two children in a household were eligible to be interviewed but adults were not, and a Health Board boost sample (213 addresses) for those Health Boards which opted to boost the number of adults interviewed in their area.

Fieldwork

A letter stating the purpose of the visit was sent to each sampled address in advance of the interviewer visit. Interviewers sought the permission of each eligible adult in the household to be interviewed, and both parents' and children's permission to interview up to two children aged 0-15.

Interviewing was conducted using a combination of Computer Assisted Interviewing (CAI), where the questionnaire answers are input directly to a laptop, and self-completed paper questionnaires. The content of the interview and full documentation are provided in the accompanying technical report.

Adults (aged 16 and over) and children aged 13-15 completed the interview themselves. Parents of children aged 0-12 completed the interview on behalf of their child.

Those aged 13 and over were also asked to complete a short paper self-completion questionnaire on more sensitive topics during the interview. Parents of children aged 4-12 years selected for interview were also asked to fill in a self-completion booklet about the child's strengths and difficulties designed to detect behavioural, emotional and relationship difficulties.

Towards the end of the interview height and weight measurements were taken from those aged 2 and over.

In a sub-sample of households, interviewers sought permission from adults (aged 16 and over) to take part in an additional 'biological module'. The biological module was administered by specially trained interviewers. In the module, participants were asked questions about prescribed medication and anxiety, depression, self-harm and suicide attempts. In addition, the interviewer also took participants' blood pressure readings and waist measurement, as well as samples of saliva. Data from the biological module are reported every second year to allow two years of survey data to be combined. Data was last reported in 2017 on the combined 2016/17 data, therefore, data has been reported in 2019 on the combined 2018/19 data. Further details of these samples and measurements are available both in the Glossary and in the accompanying technical report.

Survey response

In 2019, across all sample types, interviews were held in 3,245 households with 4,903 adults (aged 16 and over), and 1,978 children (aged 0-15). Of these, 1,281 adults completed the biological module. The number of participating households and adults in 2019 is listed in the table below. Further details on survey response in 2019 are presented in Chapter 1 of the technical report.

Main and Health Board boost samples	
Participating households	3,245
Eligible households responding	56%
Adult interviews	4,903
Eligible adults responding	49%
Adults eligible for biological module	1,828
Adults who completed biological module	1,281
Child boost sample	
Participating households	675
Eligible households responding	67%
Child interviews (child boost sample only)	1,036
Child interviews (main and child boost sample combined)	1,978

Ethical Approval

Ethical approval for the 2019 survey was obtained from the REC for Wales committee (reference number 17/WA/0371).

DATA ANALYSIS

Weighting

Since addresses and individuals did not all have equal chances of selection, the data had to be weighted for analysis. SHeS comprises of a general population (main sample) and a boost sample of children screened from additional addresses. Therefore, slightly different weighting strategies were required for the adult sample (aged 16 or older) and the child main and boost samples (aged 0-15). Additional weights have been created for the biological module and for use on combined datasets (described below). A detailed description of the weights is available in Chapter 1 of the technical report.

Weighted and unweighted data and bases in report tables

All data in the report are weighted. For each table in the report both weighted and unweighted bases are presented. Unweighted bases indicate the number of participants involved. Weighted bases indicate the relative sizes of sample elements after weighting has been applied.

Standard analysis variables

As in all previous SHeS reports, data for men, women, boys and girls are presented separately where possible. Many of the measures are also reported for the whole adult or child population. Survey variables are tabulated by age groups and in some cases also by Scottish Index of Multiple Deprivation (SIMD).

Statistical information

The SHeS 2019 used a clustered, stratified multi-stage sample design. In addition, weights were applied when obtaining survey estimates. One of the effects of using the complex design and weighting is the standard errors for the survey estimates are generally higher than the standard errors that would be derived from an unweighted simple random sample of the sample size. The calculations of standard errors shown in tables, and comment on statistical significance throughout the report, have taken the clustering, stratifications and weighting into account. Full details of the sample design and weighting are given in the technical report, Chapter 1.

Presentation of trend data

In this report, trends based on the thirteen surveys from 2003 onwards are presented for all adults aged 16 and over. Prior to this the survey eligibility criteria were set at a maximum age of 64 in 1995 and then a maximum age of 74 in 1998. Trends for children are based on the 2-15

years age group from 1998 onwards, and 0-15 years from 2003 onwards.

Presentation of results

Commentary in the report highlights differences that are statistically significant at the 95% confidence level. Statistical significance is not intended to imply substantive importance. A summary of findings is presented at the beginning of each chapter. Each chapter then includes a brief overview of the relevant policy area. These overviews should be considered alongside the higher-level policies noted above and related policy initiatives covered in other chapters. A description of the methods and key definitions are also outlined in detail in each chapter. A link to the tables showing the results discussed in the text is included at the end of each chapter.

Availability of further data and analysis

As with surveys from previous years, a copy of the SHeS 2019 data will be deposited at the UK Data Archive along with copies of the combined datasets for 2017/2019, 2018/2019 and 2016/2017/2018/2019. In addition, a detailed set of web tables for 2019, providing analysis by age, area deprivation, equivalised income and long-term condition for a large range of measures is available on the Scottish Government website¹⁸.

Key indicators for local areas are available in the Scottish Health Survey App published on the Scottish Government website alongside this report.

Further breakdowns are also available for smoking, long-term conditions, general health and caring indicators from the Scottish Survey Core Questions, which asks harmonised questions across the three major Scottish Government household surveys, available here: <https://www.gov.scot/collections/scottish-health-survey>.

Comparability with other UK statistics

Guidance on the comparability of statistics across the UK is included in the introductory section of individual chapters.

CONTENT OF THIS REPORT

This volume contains chapters with substantive results from the SHeS 2019, and is one of two volumes based on the survey, published as a set as 'The Scottish Health Survey 2019':

Volume 1: Main Report

1. General Health, CVD and Diabetes
2. Mental Wellbeing
3. Dental Health
4. Alcohol
5. Smoking
6. Diet & Obesity
7. Physical Activity
8. Adverse Childhood Experiences

Volume 2: Technical Report

Volume 2 includes a detailed description of the survey methods including: survey design and response; sampling and weighting procedures; and, information on laboratory analysis of saliva samples.

Both volumes along with a summary report of the key findings from the 2019 report are available on the Scottish Government website:

<https://www.gov.scot/collections/scottish-health-survey>.

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- 13 See: <https://www.nrscotland.gov.uk/statistics-and-data/statistics/scotlands-facts/leading-causes-of-death-in-scotland>
- 14 Public Health Scotland. (2020). Scottish Stroke Statistics. Available from: <https://beta.isdscotland.org/find-publications-and-data/conditions-and-diseases/stroke-statistics/scottish-stroke-statistics/>
- 15 NSS Information and Intelligence, NHS National Services Scotland (2018). *Scottish Stroke Improvement Programme: 2018 Report*. [Online] Available from: <https://www.strokeaudit.scot.nhs.uk/Publications/docs/2018-07-10-SSCA-Report.pdf>
- 16 Information Services Division (2020). *Scottish Heart Disease Statistics*. Available from: <https://beta.isdscotland.org/find-publications-and-data/conditions-and-diseases/heart-disease-and-blood-vessels/heart-disease-statistics/>
- 17 Public Health Reform (2020). *The reform programme: why reform is important* [Online] Available from: <https://publichealthreform.scot/the-reform-programme/why-reform-is-important>
- 18 See: <https://www.gov.scot/collections/scottish-health-survey>

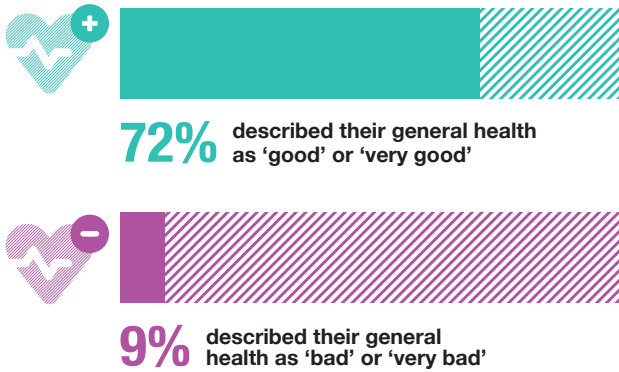
NOTES TO TABLES

- 1 The following conventions have been used in tables:
n/a no data collected
- no observations (zero value)
0 non-zero values of less than 0.5% and thus rounded to zero
[] normally used to warn of small sample bases, if the unweighted base is less than 50. (If a group's unweighted base is less than 30, data are normally not shown for that group.)
- 2 Because of rounding, row or column percentages may not add exactly to 100%.
- 3 A percentage may be quoted in the text for a single category that aggregates two or more of the percentages shown in a table. The percentage for the single category may, because of rounding, differ by one percentage point from the sum of the percentages in the table.
- 4 Values for means, medians, percentiles and standard errors are shown to an appropriate number of decimal places. Standard Errors may sometimes be abbreviated to SE for space reasons.
- 5 'Missing values' occur for several reasons, including refusal or inability to answer a particular question; refusal to co-operate in an entire section of the survey (such as a self-completion questionnaire); and cases where the question is not applicable to the participant. In general, missing values have been omitted from all tables and analyses.
- 6 The population sub-group to whom each table refers is stated at the upper left corner of the table.
- 7 Both weighted and unweighted sample bases are shown at the foot of each table. The weighted numbers reflect the relative size of each group in the population, not numbers of interviews conducted, which are shown by the unweighted bases.
- 8 The term 'significant' refers to statistical significance (at the 95% level) and is not intended to imply substantive importance.
- 9 Within the report Figures have generally been produced using data rounded to the nearest whole number. There are a small number of Figures which show data to the nearest decimal place to aid interpretation.

General Health, CVD and Diabetes



Among all adults in 2019:



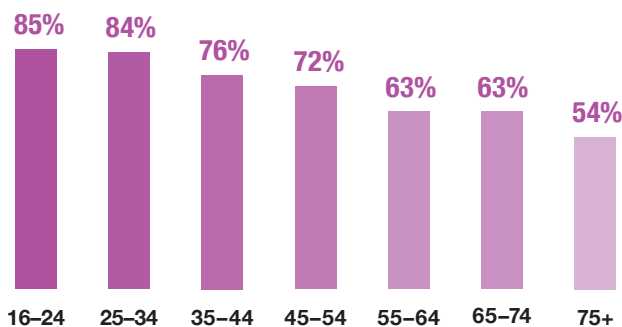
Self-assessed 'good' or 'very good' general health in all adults has reduced since 2009.



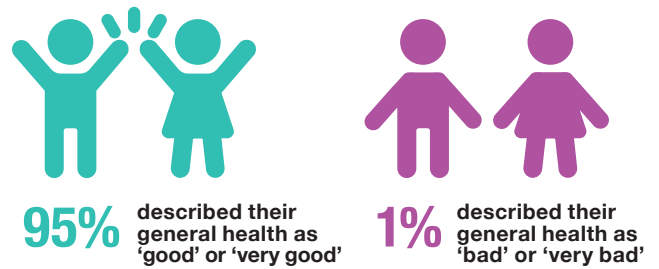
A greater proportion of men described their general health as 'good' or 'very good' in 2019.



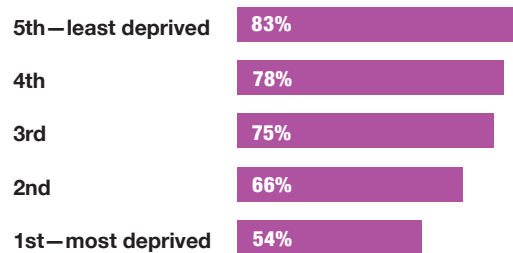
The proportion of adults who assessed their general health to be 'good' or 'very good' in 2019 decreased with age.



Among all children in 2019:



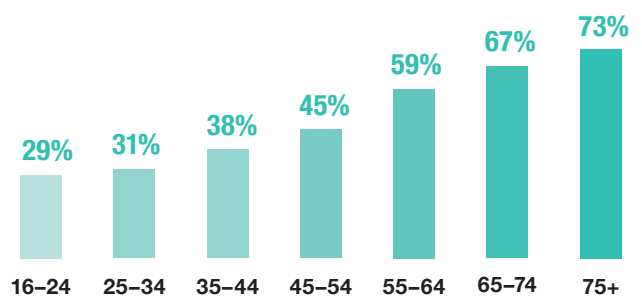
The age-standardised proportion of adults who self-assessed their general health as 'good' or 'very good' once again varied by area deprivation in 2019.



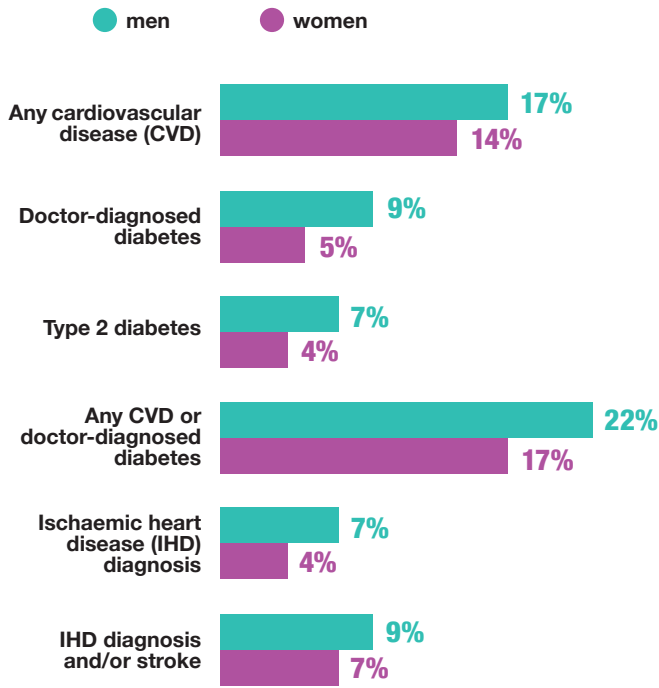
Around half of adults reported living with (limiting or non-limiting) long-term conditions.



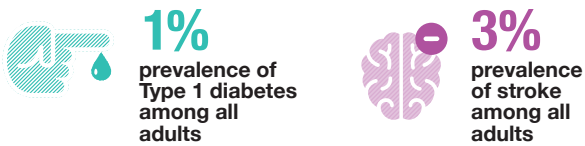
The proportion of adults with long-term conditions increased with age.



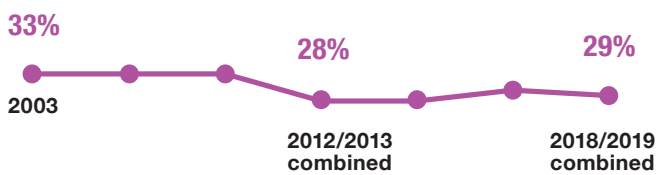
Higher proportions of men than women had:



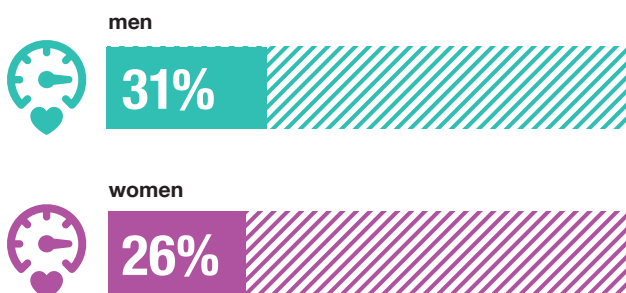
There was no variation by gender in the prevalence of Type 1 diabetes or stroke in 2019.



The proportion of adults with hypertension* has stabilised in recent years:



A higher proportion of men had hypertension than women in 2018/2019 combined.*

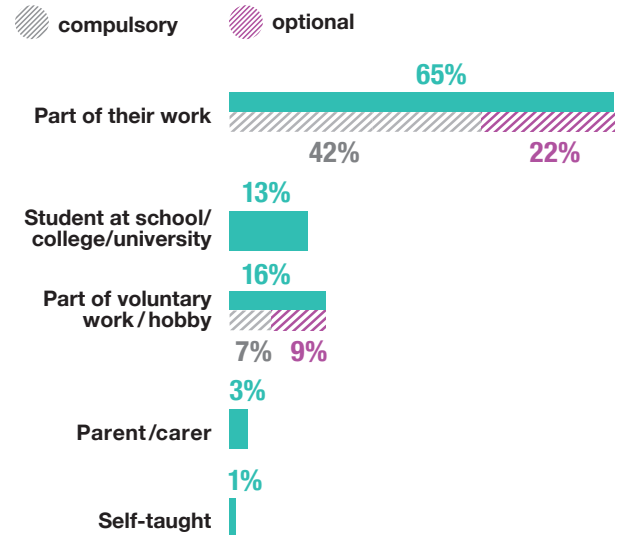


* Nurse equivalent calibrated estimates

In 2019, over half of adults reported having ever attended CPR training.



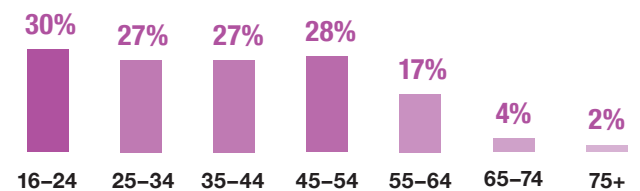
Adults who had ever attended CPR training, reported doing so as:**



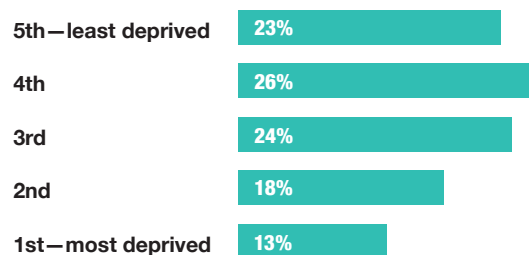
In 2019, a fifth of all adults reported attending any CPR training (original or refresher) within the past two years.



In 2019, the proportion of adults who reported attending any CPR training (original or refresher) within the past two years generally decreased with age.



Those living in the most deprived areas were less likely to have attended any CPR training in the past two years than those in the remaining quintiles.



** Combined figures may differ from individual categories due to rounding.

1 GENERAL HEALTH, CVD AND DIABETES

Hannah Biggs

1.1 INTRODUCTION

Population measures of self-reported health are evidenced to be good predictors of mortality, morbidity or use of health care¹. They can reflect subjective experiences of both diagnosed and undiagnosed illnesses both physical and mental, and their severity, which more objective measures for the whole population may overlook.

In addition to the impact on individuals, the prevalence of long-term conditions places considerable and unsustainable strain on healthcare provision². Further challenges are presented by the persistent inequalities in health outcomes and the ageing population. Significant disparities in life expectancy, which can differ by more than 20 years between the most and least deprived areas in Scotland, continue to be evident by levels of deprivation³. In addition, older people are more likely to have at least one long-term condition and often multiple conditions, which coupled with a general increase in life expectancy, means that more people are living in ill-health for longer⁴. In the context of an ageing population, where a 75% increase in the proportion of those aged 75 and over between 2004 and 2031 is expected⁵, this remains a critical health matter for Scotland.

Cardiovascular disease (CVD) is a general term describing diseases of the heart and blood vessels whereby blood flow to the heart, brain or body is restricted. Its main components are ischaemic heart disease (IHD, or coronary heart disease) and stroke, both of which are well-established clinical priorities for the NHS in Scotland^{6,7}. Since 2009, there has been a steady downward trend in incidence and deaths from coronary heart disease and stroke in Scotland. Between 2009 and 2018 the mortality rate for coronary heart disease decreased by 32% and the rate at which new cases of coronary heart disease occur has fallen by 19% in the last ten years although it has remained steady over the last four years. However, in the last five years the rate of decline in coronary heart disease has slowed and since 2016 death rates from heart attacks have increased by a small amount⁸. In the last decade overall incidence for cerebrovascular disease (of which stroke is the most common) has decreased by 12% and the mortality rate has decreased by 34%⁹. Coronary heart disease (CHD) continues to be one of the leading causes of death in Scotland with 6,615 deaths in 2018 where it was the underlying cause¹⁰. Stroke also remains one of the biggest killers in Scotland and the leading cause of disability¹¹.

Diabetes, the most common metabolic disorder, is a growing health challenge for Scotland. The prevalence of people registered with Type 1 diabetes increased from 27,464 in 2008 to 32,828 in 2018, which reflects better survival and the rising incidence in children. The number of people registered with Type 2 diabetes increased from 190,772 in 2008 to 267,615 in 2018 which could relate to several factors, including: demographic change - diabetes is more prevalent in older people, so the increasing number of older people each year

increases the prevalence of diabetes - better survival, and possibly better detection¹².

Cardiac arrest is when the heart suddenly stops pumping blood round the body. Cardiopulmonary Resuscitation (CPR) keeps blood circulating until attempts are made to restart the heart when someone has a cardiac arrest. Every year around 3,500 Scottish people experience a cardiac arrest and attempted resuscitation in the community with 1 in 10 currently surviving to hospital discharge compared to 1 in 20 when the **Scotland's Out-of-Hospital Cardiac Arrest (OHCA) Strategy** (see below) was released in 2015¹³, although in some European countries there have been almost 1 in 4 survival rates¹⁴. Early recognition of a cardiac arrest and administration of CPR is one of the key elements that contribute to better survival rates. Prompt bystander CPR can increase the likelihood of survival by 2 or 3 times¹⁵.

1.1.1 Policy background

The Scottish Government recognises the importance of working towards sustainable healthcare provision, particularly in the context of the changing Scottish demographic, notably an ageing population and increasing numbers of people living with long-term conditions and multi-morbidity. The strategic policy focus on promoting and improving general health and wellbeing, supporting people living with long term illnesses/conditions and equipping more people in CPR is set out in four over-arching strategies.

The National Clinical Strategy¹⁶, published in 2016, is a high level vision for how health and social care services need to and should change over a 15 year period while **the Health and Social Care Delivery Plan**¹⁷ presents a programme that is focused on prevention, early intervention and support for self-management. The aim is to enable those living in Scotland to live longer, healthier lives with the highest standard of care, be this at home or in a homely setting.

Practising Realistic Medicine¹⁸, published in 2018, outlined ways to support the translation of the principles of the previous report (Realising Realistic Medicine¹⁹) from theory through to patient-centred, practical application. In addition to encouraging a personalised approach to individual patient care and tackling sustainability of NHS service provision, the report examines the ways in which the principles of realistic medicine can be applied to positively influence the social determinants of health such as childhood experiences, social support, access to health services and more.

Underpinning these strategies, **Public Health Priorities for Scotland**²⁰ sets out six public health priorities, aimed at improving the health of Scotland and increasing healthy life expectancy including, amongst others, a range of initiatives geared towards a Scotland where people eat well, have a healthy weight and are physically active.

These priorities, along with the Scottish Government's long-term condition strategies (the over-arching **Action Plan**²¹ published in 2009 and the separate **heart disease**²², **stroke**²³ and **diabetes**²⁴ improvement plans published in 2014) support **Scotland's Public Health Priorities**²⁵ and the **National Performance Framework National Outcome** that 'we are healthy and active'²⁶.

A number of the National Indicators are linked to reducing cardiovascular disease risk factors, most notably smoking as part of the health risk behaviours indicator, but also physical activity and maintaining healthy weight^{27,28}. In addition to being a risk factor for cardiovascular disease, living with overweight or obesity is also the primary risk factor for the development of Type 2 diabetes²⁹.

Increased likelihood of survival following a cardiac arrest is supported by **Scotland's Out-of-Hospital Cardiac Arrest (OHCA) Strategy**. Launched in March 2015³⁰, the overarching aim is for Scotland to become an international leader in OHCA outcomes by 2020. This is underpinned by two high level aims:

- To increase survival rates after an OHCA in order to save 1,000 additional lives by 2020.
- To equip an additional 500,000 people in Scotland with CPR skills by 2020.

1.1.2 Reporting on general health, CVD, diabetes and CPR training in the Scottish Health Survey (SHeS)

In this chapter trends in self-assessed general health for adults and children are presented. Prevalence of self-reported long-term conditions in adults is reported for 2019 and trends for self-reported CVD conditions and diabetes prevalence in adults are presented as well as for 2019. Blood pressure level trends and detection and treatment of hypertension for 2016-19 combined are presented. Prevalence of CPR training (including refresher training) and the length of time since CPR training was last attended are also reported for 2019.

The area deprivation data are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this volume for a detailed description of both SIMD and age-standardisation.

Supplementary tables on general health and CVD are also published on the Scottish Government SHeS website
<https://www.gov.scot/collections/scottish-health-survey/>

1.2 METHODS AND DEFINITIONS

1.2.1 Methods

Self-assessed general health

Each year, participants who are aged 13 and over are asked to rate their health in general with answer options ranging from 'very good' to 'very bad'. For children under the age of 13 the question is answered by the parent or guardian completing the interview on their behalf.

CVD conditions and diabetes

Participants were asked whether they had ever suffered from any of the following conditions: diabetes, angina, heart attack, stroke, heart murmur, irregular heart rhythm, or 'other heart trouble'. If they responded affirmatively to any of these conditions, participants were asked whether they had ever been told they had the condition by a doctor and whether they had experienced the conditions in the previous 12 months. For the purposes of the analysis presented in this chapter, participants were only classified as having a particular condition if they reported that the diagnosis had been confirmed by a doctor.

It is important to note that no attempt was made to verify these self-reported diagnoses objectively. It is therefore possible that some misclassification may have occurred because some participants may not have remembered (or not remembered correctly, or not known about) diagnoses made by their doctor.

Blood pressure

Blood pressure was measured as part of the biological module³¹, using the Omron HEM device. This equipment has been used on SHeS since 2003. Prior to 2012, blood pressure was collected in a follow-up interview conducted by survey nurses. The nurse interview was discontinued in 2012, and since then specially trained interviewers have been collecting some of the less complex measures and samples previously collected by nurses, as part of the biological module. The equipment and protocol for taking blood pressure readings did not change. A validation study was carried out to assess the impact of the switch from nurse to interviewer administration³².

As a result, unadjusted measurements collected by interviewers are used within the report for more recent periods (2012/2013, 2014/2015, 2016/2017 and 2018/2019), with calibrated estimates (nurse equivalent) being used to show longer-term trends.

Three blood pressure readings were taken from consenting participants at one minute intervals using an appropriately sized cuff and on the right arm where possible. Participants were in a seated position and readings were taken after a five minute rest. Systolic and diastolic pressures and pulse measurements were displayed on the Omron for

each measure. As in previous years, pregnant participants were excluded.

Since the size of the cuff used when taking blood pressure readings is an important factor in ensuring that accurate measurements are obtained three different sizes of cuff were available for use. Full details of the protocol used to take blood pressure readings in the survey are available on request from ScotCen.

The blood pressure measures used in this chapter are the means of the second and third measurements obtained for those for whom three readings were successfully obtained. Analyses exclude results from participants who had eaten, drunk alcohol, smoked or exercised in the 30 minutes before the measurement was taken.

CPR training

Participants were asked whether they had ever had any type of training in CPR or learned CPR either through instructor led sessions or self-instruction using DVD/online instruction. Those who reported they had CPR training were asked to provide details of the time interval since the first training, whether they had attended refresher training and the type of CPR training.

1.2.2 Definitions

Any CVD condition

Participants were classified as having 'any CVD' if they reported ever having any of the following conditions confirmed by a doctor: angina, heart attack, stroke, heart murmur, abnormal heart rhythm, or 'other heart trouble'³³.

Diabetes

Participants were classified as having diabetes if they reported a confirmed doctor diagnosis. Women whose diabetes occurred only during pregnancy were excluded from the classification. In 2018, a new question was introduced asking participants to report if they had been told they had Type 1 or Type 2 diabetes. Prior to 2018 no distinction was made between Type 1 and Type 2 diabetes in the interview.

Any CVD condition or diabetes

A summary measure of the above conditions is presented in the tables as 'any CVD condition or diabetes'.

Ischaemic heart disease (IHD)

Participants were classified as having IHD if they reported ever having angina or a heart attack confirmed by a doctor. All tables refer to **ever** having had the condition.

Stroke

Participants were classified as having a stroke if they reported **ever** having had a stroke confirmed by a doctor.

IHD or stroke

A summary measure of the above conditions is presented in the tables as 'IHD or stroke'.

Blood pressure levels classification

In accordance with guidelines on hypertension management³⁴ the threshold of 140/90mmHg is used to define hypertension in SHeS. Adult participants were classified into one of four groups listed below on the basis of their systolic (SBP) and diastolic (DBP) readings and their current use of anti-hypertensive medications. For the purpose of this report, the term 'hypertensive' is applied to those in the last three categories.

Normotensive untreated	SBP below 140mmHg and DBP below 90mmHg, not currently taking medication specifically prescribed to treat high blood pressure
Hypertensive controlled	SBP below 140mmHg and DBP below 90mmHg, currently taking medication specifically prescribed to treat high their blood pressure
Hypertensive uncontrolled	SBP at least 140mmHg or DBP at least 90mmHg, currently taking medication specifically prescribed to treat their high blood pressure
Hypertensive untreated	SBP at least 140mmHg or DBP at least 90mmHg, not currently taking a drug specifically prescribed to treat their high blood pressure

Detection, treatment and control of hypertension

In addition to the objective definition of hypertension described above, participants were defined as having self-reported doctor-diagnosed hypertension if they stated during the interview that they had been told by a doctor or nurse that they had high blood pressure.

Hypertension detection was estimated by examining the proportion of those with survey defined hypertension (SBP at least 140mmHg or DBP at least 90 mmHg or on treatment for hypertension) reporting doctor-diagnosed hypertension. Treatment rates were estimated by examining the proportion of all those defined as having survey-defined hypertension who were on treatment at the time of the survey. The control of hypertension among those on treatment for hypertension at the time of the survey was estimated by calculating the proportion with blood pressure below 140/90mmHg.

When interpreting results it should be borne in mind that although three blood pressure readings were taken, these were all on a single occasion. Clinical diagnoses of hypertension are based on sustained levels of high blood pressure rather than a single measurement.

1.3 GENERAL HEALTH, CVD & DIABETES

1.3.1 Self-assessed general health, adults and children, 2008 to 2019

Self-assessed 'good' or 'very good' general health in all adults has reduced from a high of 77% in 2009 to a low of 71% in 2018 and was 72% in 2019. This pattern has been similar for men and women over the time series. Self-assessed 'bad' or 'very bad' general health has remained within the range of 7-9% since 2008 (9% in 2019) for all adults. Similar patterns have been observed for men and women over the time series.

The majority of children continued to self-assess their general health to be 'good' or 'very good' in 2019 (95%). Only 1% of children self-assessed their general health to be 'bad' or 'very bad'. These levels are consistent with those recorded since 2008 (94-96% 'good' / 'very good' and 0-1% 'bad' / 'very bad'). In 2019, there was no significant difference between the proportions of boys (94%) and girls (95%) that self-assessed their general health to be 'good' or 'very good'. **Table 1.1**

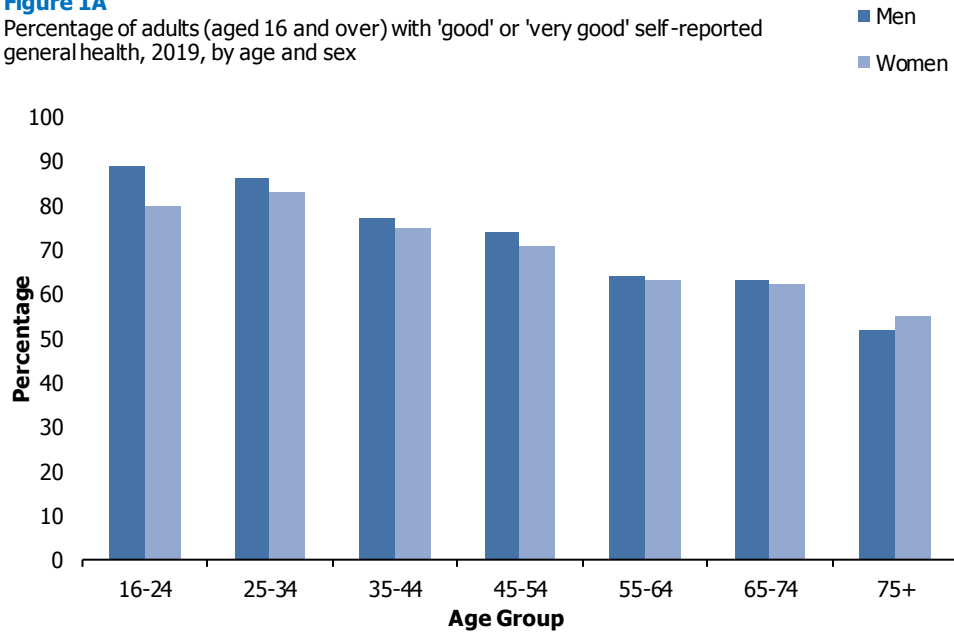
1.3.2 Adult self-assessed general health, 2019, by age and sex

In 2019, just over seven in ten adults (72%) described their general health as 'good' or 'very good', while just under one in ten (9%) described it as 'bad' or 'very bad'. A greater proportion of men than women described their general health as 'good' or 'very good' (74% compared with 70% respectively).

The proportion of adults who assessed their general health to be 'good' or 'very good' decreased with age, from 85% among those aged 16-24 to 54% among those aged 75 and over. A reversal of this pattern was seen in the proportion that self-assessed their general health to be 'bad' or 'very bad'; increasing from 4% among those aged 16-24 to 17% of those aged 75 and over. Consistent with previous survey years, the same general patterns were evident for men and women, although women aged 16-24 were less likely to report that their health was 'good' or 'very good' than men in the same age group (80% compared with 89% respectively). **Figure 1A, Table 1.2**

Figure 1A

Percentage of adults (aged 16 and over) with 'good' or 'very good' self-reported general health, 2019, by age and sex



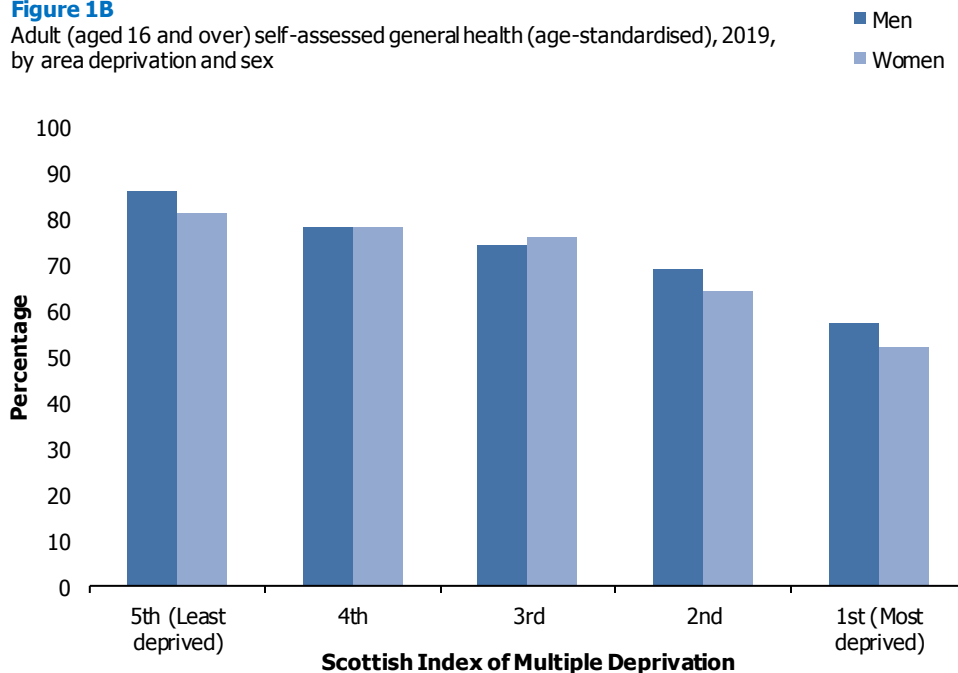
1.3.3 Adult self-assessed general health (age-standardised), 2019, by area deprivation and sex

The age-standardised proportion of adults who self-assessed their general health as 'good' or 'very good' was highest (83%) for those living in the least deprived quintile and lowest (54%) for those living in the most deprived quintile. The reverse was evident for the proportion of adults who self-assessed their general health as 'bad' or 'very bad'; this was highest (20%) for those living in the most deprived quintile and lowest (4-5%) for those who lived in the two least deprived quintiles.

This pattern was similar for men and women. **Figure 1B, Table 1.3**

Figure 1B

Adult (aged 16 and over) self-assessed general health (age-standardised), 2019, by area deprivation and sex



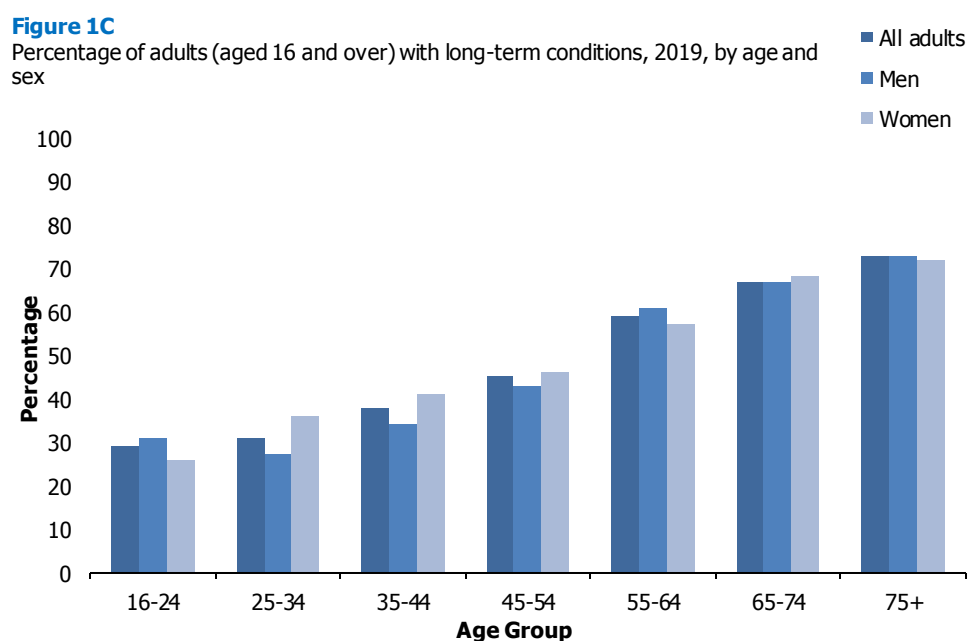
1.3.4 Prevalence of long-term conditions in adults, 2019, by age and sex

Around half (47%) of adults reported living with (limiting or non-limiting) long-term conditions. The proportion of adults living with long-term conditions increased with age. Approximately three in ten (29%) of those aged 16-24 lived with long-term conditions, while more than seven in ten (73%) of those aged 75 and over lived with long-term conditions. This pattern was similar for men and women.

The majority of those with long-term conditions lived with a limiting condition. Over a third (35%) of adults lived with limiting long-term conditions with women more likely than men to do so (37% compared to 32% respectively).

The proportion of adults living with limiting long-term conditions also increased with age. Just over a fifth (22%) of those aged 16-24 lived with limiting long-term conditions, compared with almost three-fifths (58%) of those aged 75 and over. This pattern was similar for men and women.

Figure 1C, Table 1.4



1.3.5 Trends in CVD and diabetes prevalence (age-standardised) since 2003, by area deprivation and sex

Any CVD

The extent of inequalities in age-standardised CVD prevalence by area deprivation has varied since 2003. However, since 2003, prevalence of CVD has been highest among those living in the most deprived quintile and lowest among those living in the least deprived quintile. In 2019, prevalence of CVD among those living in the most deprived quintile was 20% and between 12-16% for those living in the four other quintiles. The pattern by area deprivation was not significantly different for men and women.

Doctor-diagnosed diabetes

The prevalence of age-standardised doctor-diagnosed diabetes in 2019 was higher among those living in the most deprived quintile (10%) compared with those living in the least deprived quintile (4%). This pattern was evident for both women and men and has been consistent across previous survey years.

Ischaemic Heart Disease (IHD)

As in previous years, the prevalence of self-reported age-standardised IHD varied by area deprivation in 2019. At least twice as many adults living in the most deprived quintile reported an IHD diagnosis (10%) than those living in the least deprived quintile (4%). A similar pattern was found for men (12% compared with 6%) and for women (8% compared with 3%) in 2019. This pattern has been consistent across previous survey years.

Stroke

Stroke prevalence, for all adults and by sex, has been relatively stable since 2008. Health inequalities by area deprivation, however, have varied in previous survey years. In 2019, there was a significant difference in stroke prevalence between the most deprived (5%) and least deprived areas (2%). A similar pattern was found among men and women.

IHD or stroke

Twice as many adults living in the most deprived areas reported an IHD or stroke diagnosis (13%) than those living in the least deprived areas (6%). This pattern has been relatively consistent across previous survey years. There was no significant difference in the pattern of IHD or stroke prevalence by deprivation for men and women in 2019. **Table 1.5**

1.3.6 CVD and diabetes, 2019, by age and sex

Any CVD

In 2019, 15% of adults reported having any CVD, though a higher proportion of men (17%) reported having any CVD compared with women (14%).

Having any CVD was significantly associated with age. In 2019, 4% of those aged 16-24 reported having any CVD which increased exponentially with age to 44% of those aged 75 and over. The same pattern was found for both men and women. A higher proportion of men than women reported having any CVD across all age groups.

Doctor-diagnosed diabetes

In 2019, 7% of adults reported having doctor-diagnosed diabetes; this was primarily Type 2 (6% reported Type 2 and 1% reported Type 1). There was a significant difference in prevalence of doctor-diagnosed diabetes between men (9%) and women (5%).

The prevalence of doctor-diagnosed diabetes in 2019 generally rose with age (from 1-3% among those aged 16-44 to 6-15% among those aged 45 and over). There was a significant difference in the pattern by age for men and women, driven by differences in the younger adult age groups. For women, prevalence of doctor-diagnosed diabetes rose in a clear gradient from less than 1% in women aged 16-24 to 13% among women aged 75 and over whereas for men prevalence began to increase by age only for those aged 45 and over.

Type 1 diabetes

The prevalence of Type 1 diabetes amongst all men and women was the same in 2019 (both 1%).

Type 2 diabetes

A larger proportion of men had Type 2 diabetes in 2019 than women (7% of men compared with 4% of women). Prevalence of Type 2 diabetes increased with age, from <1% for *all* adults aged 16-24 to 14% among those aged 75 and over. Similar patterns by age were found for men and women.

Any CVD or diabetes

A fifth of adults reported having any CVD or doctor-diagnosed diabetes in 2019, figures were slightly higher for men (22%) and lower for women (17%). Prevalence was also associated with age, ranging from 6% among those aged 16-24 to 51% of those aged 75 and over.

The pattern by age was similar for men and women, though a higher proportion of men in each age group reported having any CVD or doctor-diagnosed diabetes.

IHD

In 2019, the proportion of adults reporting an IHD diagnosis was 5%, equal to that in 2017³⁵ and 2018³⁶. A greater proportion of men reported an IHD diagnosis (7% of men compared with 4% of women).

The proportion reporting an IHD diagnosis increased with age, from <1% among those aged 16-24 to 23% among those aged 75 and over. The increase in prevalence by age was steeper for men than for women.

Stroke

The prevalence of stroke for all adults in 2019 was 3%, the same rate for men and women. Stroke prevalence increased by age (from <1% for those aged 16-44 to 11% among those aged 75 and over). The pattern by age was similar for men and women.

IHD or stroke

The prevalence of an IHD diagnosis and / or stroke among all adults was 8% in 2019. Prevalence was higher among men (9%) than women (7%).

Prevalence of an IHD diagnosis and / or stroke increased steadily with age, from 1% or less among those aged 16-44 to 31% among those aged 75 and over. Prevalence increased with age for both men and women.

Table 1.6

1.3.7 Blood pressure level, 2003 to 2018/2019 combined

To increase the sample size available, the detailed analysis of blood pressure trends since 2003 used sets of two-years of combined data from 2008/2009. Using the nurse-equivalent calibrated estimates, the combined data from 2018 and 2019 showed that 29% of adults aged 16 and over had hypertension. The nurse-equivalent calibrated estimates for all adults have remained at a similar level since 2012/2013 (28%) following a significant decrease from 33% in 2010/2011. Similar patterns were found for men and women. Since 2012/2013, the nurse-equivalent calibrated estimates for women have ranged from 26-29% and 28-32% for men.

A higher proportion of men had hypertension than women in 2018/2019 (31% compared with 26% respectively).

Table 1.7

1.3.8 Detection and treatment of hypertension, 2016-2019 combined, by age and sex

To increase the sample size available, the detailed analysis of detection and treatment of hypertension, by age and sex, used data from the 2016, 2017, 2018 and 2019 surveys combined. The hypertension detection rate is the proportion of adults aged 16 and over with survey-defined hypertension who also reported doctor-diagnosed hypertension. In 2016-2019 combined, the hypertension detection level among all adults with survey-defined hypertension was 59%, the same rate for 2014-2017 combined³⁷.

In 2016-2019, the hypertension detection level increased significantly by age group, from 19% among adults aged 16-24 to 73% among adults aged 75 and over. A similar pattern was found for men and women.

In 2016-2019 combined, 24% of adults with survey-defined hypertension had normal blood pressure under medication (hypertension treated and controlled), while 21% of adults with survey defined hypertension were still having high blood pressure readings under medication (hypertension treated, but not controlled). Figures did not differ significantly between men and women or by age. **Table 1.8**

1.3.9 Adult prevalence of CPR training, length of time since original training and whether attended refresher, 2019, by age and sex

In 2019, over half of all adults (56%) reported having ever attended CPR training with no significant difference between men and women. The proportion of adults attending CPR training varied significantly by age with the highest attendance rates among those aged 45-54 (66%) and the lowest among those aged 75 and over (29%). Patterns by age were also similar for men and women.

Among those that had ever had CPR training, over three-quarters (77%) had their original training four years ago or more³⁸. The likelihood of the original CPR training being four years ago or more increased with age: 95% of those aged 75 and over attended their original CPR training four years ago or more, compared with 46% of those aged 16-24. A reversal in this trend was evident for those who attended their original CPR training within the last 12 months. Among those aged 16-24, 19% had attended their first CPR training within the last 12 months compared with 1% of those aged 75 and over. Similar patterns by age were found for men and women.

Of those who had ever attended CPR training, 45% also reported attending refresher training. The proportion of adults that had attended refresher training varied by age (41-55% among those aged 16-64, compared with 27% of those 65 and over).

Among adults who had any CPR training (original or refresher), more than a third (37%) had the training within the past two years with younger adults more likely to do so than older adults. The highest proportion of any CPR training within the past two years was found among the youngest age group (aged 16-24) at 51%; the lowest (7%) was found among the oldest age group (aged 75 and over).

In 2019, a fifth (21%) of *all* adults reported attending any CPR training (original or refresher) within the past two years; the highest level was among the youngest age group (30%) and the lowest was among the oldest group (2%).

Table 1.9

1.3.10 Adult prevalence of CPR training, length of time since original training and whether attended refresher (age-standardised), 2019, by area deprivation and sex

In 2019, the age-standardised prevalence of having ever attended CPR training was significantly associated with area deprivation. The attendance level was lowest among those living in the most deprived quintile at 43% compared with 62% of those living in the least deprived quintile. The pattern by deprivation was similar for men and women.

The length of time since original CPR training or attendance at refresher training did not differ significantly by area deprivation in 2019.

Whether any CPR training had been attended within the last two years was lowest for those living in the more deprived quintiles (29% in the 1st and 2nd most deprived quintiles compared to 34-40% in the remaining quintiles).

Of all adults, the proportion reporting having attended any CPR training (original or refresher) within the last two years also differed by deprivation with those living in the 1st and 2nd most deprived areas less likely to have done so than those in the remaining quintiles (13-18% compared with 23-26% respectively).

Patterns by deprivation did not differ between men and women.

Table 1.10

1.3.11 Type of CPR training last attended, 2019, by age and sex

In 2019, of the adults who had ever attended CPR training, almost two-thirds (65%) last attended CPR training as part of their work; either as a compulsory part of their work (42%) or they had opted to take the training as part of their work (22%). A further 13% of adults last attended CPR training whilst they were a student as part of school / college / university work. For 7%, CPR training was a compulsory part of voluntary work or a hobby and a further 9% *opted* to attend CPR training as part of voluntary work or a hobby. In addition, 3% of adults last attended CPR training because they were a parent or carer. Finally, 1% of those that had attended CPR training taught themselves from a book, the internet or another self-learning tool.

Those aged 16-24 were less likely than those in older age groups to have attended CPR training as a compulsory part of their work (22% among those aged 16-24 compared with 39-49% among those aged 25 and over). Those aged 16-24 were also less likely than older age groups to have opted to do CPR training as part of their work (6% compared with 19-29% among those aged 25 and over). For those aged 25 and over, attending CPR training as a compulsory part of their work was the most common reason for last attending CPR training, followed by opting to attend as part of their work. These patterns were similar for men and women.

Over half (51%) of those aged 16-24, last attended CPR training whilst they were a student as part of school / college / university work (compared with 1-19% of other age groups). This pattern was evident for men and women.

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The tables can be found on the main report page under supporting files:

<https://www.gov.scot/publications/scottish-health-survey-2019-volume-1-main-report/>

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Chapter 2

Mental Wellbeing

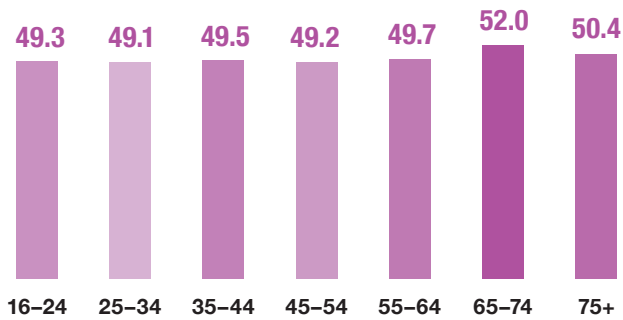
Mental Wellbeing



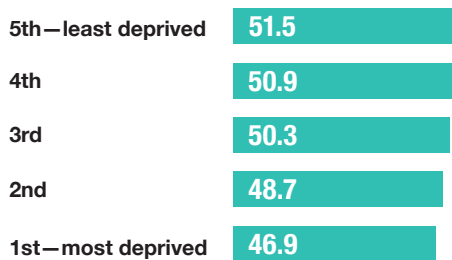
The mean WEMWBS score for adults in 2019 was 49.8.



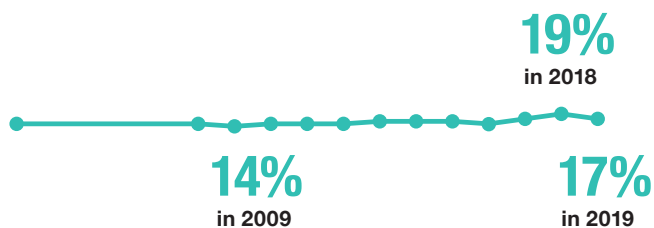
Mental wellbeing was higher amongst older than younger adults in 2019.



Differences in the WEMWBS mean scores by area deprivation continued to be evident in 2019.



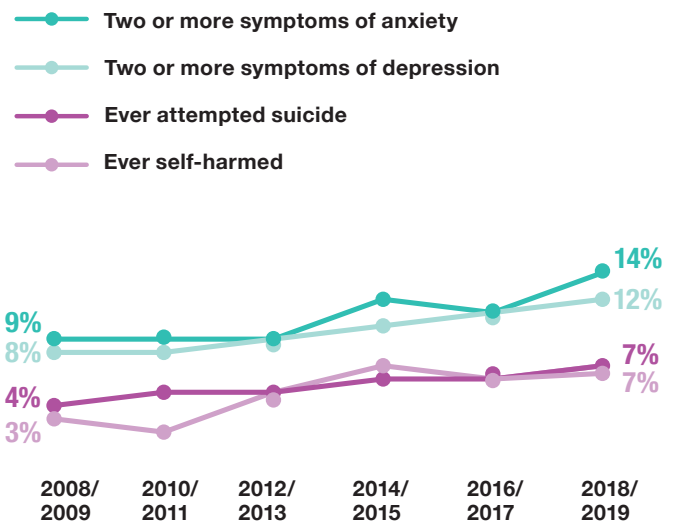
17% of adults had a GHQ-12 score of four or more* in 2019; prevalence has fluctuated between 14% and 19% since 2003.



As in previous years, women were more likely than men to record a GHQ-12 score of four or more*.



Rates of depression**, anxiety**, attempted suicide and self-harm were at their highest levels in 2018/2019 combined.

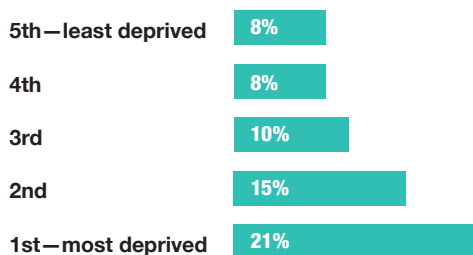


* Indicative of a possible psychiatric disorder.

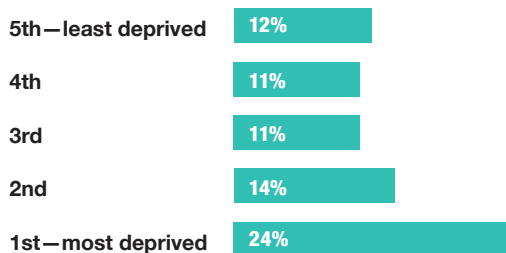
** In 2012, there was a change in mode from nurse interview to self-completion data collection.

In 2018/2019 combined, the prevalence of depression, anxiety, attempted suicide and self-harm were highest amongst those living in the most deprived areas.

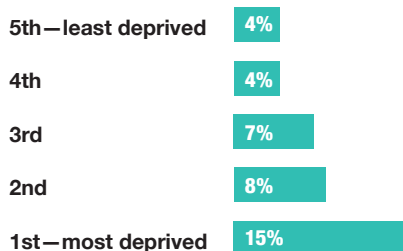
Two or more symptoms of depression



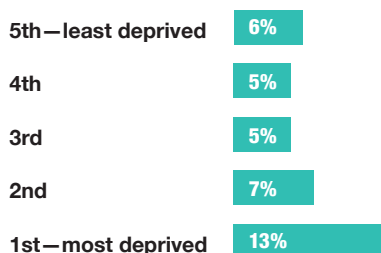
Two or more symptoms of anxiety



Ever attempted suicide



Ever self-harmed



In 2019, women were significantly more likely to have reported feeling lonely (often/all of the time) in the last two weeks compared with men.



10%
All adults

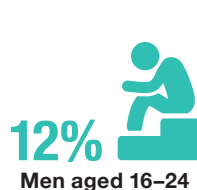
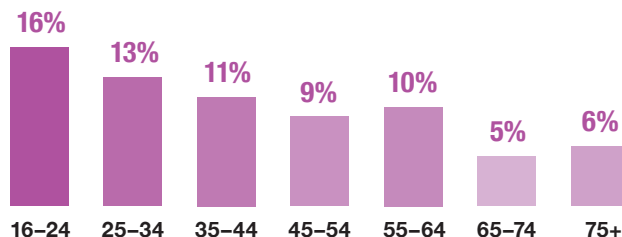


9%
Men

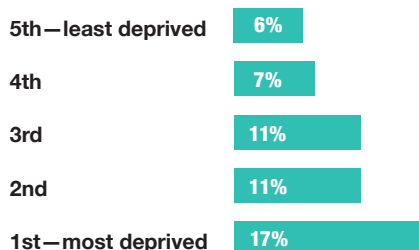


12%
Women

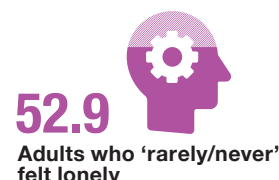
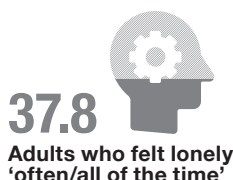
Prevalence of loneliness in the last two weeks (often/all of the time) was higher among younger people, particularly among women.



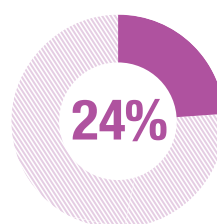
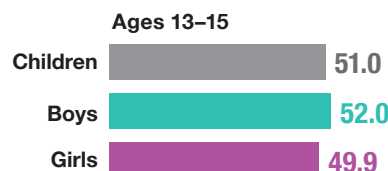
Those living in the most deprived areas were more likely to have reported feeling lonely 'often/all of the time' in the last 2 weeks than those living in the least deprived areas.



In 2019, adults who felt lonely 'often/all of the time' in the last two weeks had lower mental wellbeing (WEMWBS mean score) than those who 'rarely/never' felt lonely.



In 2016–2019 combined, boys aged 13–15 had higher mental wellbeing (WEMWBS mean score) than girls in the same age group.



of children lived with at least one parent with a GHQ-12 score of four or more* in 2019.

* Indicative of a possible psychiatric disorder.

2 MENTAL WELLBEING

Shanna Christie and Victoria Wilson

2.1 INTRODUCTION

Increasing evidence that mental health is a significant determinant of overall health has established mental health and wellbeing as a global public health priority^{1,2,3}. Mental wellbeing is defined by the World Health Organization as a state of well-being in which every individual realises their own potential, can cope with the stresses of life, can work productively, and is able to make a contribution to their community⁴. Positive mental wellbeing encourages better quality of life overall, healthier lifestyles, better physical health, improved recovery from illness, better social relationships, and higher educational attainment⁵.

Around one in four⁶ people are estimated to be affected by mental health problems in Scotland in any one year⁷. It is also evidenced that mental ill health in adolescence increases the risk of subsequent mental ill health later in life⁸. Globally, both depression and anxiety are more prevalent among women than men⁹, however, rates of suicide remain consistently higher for men than for women around the world¹⁰.

Mental disorders often co-exist with other diseases, including cancers and cardiovascular disease, diabetes, respiratory illnesses and HIV/AIDS¹¹. People with severe mental disorders have a life expectancy 15-20 years shorter than the general population¹² with most of those premature deaths being due to physical health conditions¹³.

Poor mental health, including mental disorder, has a considerable impact on individuals, their families and the wider community¹⁴ and is clearly associated with both poverty and social exclusion¹⁵. Loneliness and social isolation are increasingly recognised as significant public health matters¹⁶. Although loneliness can affect people of any age and in any circumstances, key groups are at increased risk including those with poor mental and/or physical health, those living in poverty, those with disabilities, those from LGBTI or minority ethnic communities and carers¹⁷. The risk of loneliness is greater for those with mental health problems than for those with physical health problems and particularly high for those who experience anxiety, depression or stress^{18,19}. Additionally, a bi-directional link between social isolation and loneliness and mental health is probable with loneliness itself contributing to the onset and continuation of poor mental health²⁰.

As well as specialist mental health services, all public services have a role to play in supporting the mental health and wellbeing of Scotland's population, from Local Government leisure services to primary care and education providers as well as all those living and working alongside each other in Scotland's communities^{21,22}.

This chapter examines adult and child mental health and wellbeing in Scotland in 2019.

2.1.1 Policy background

The Scottish Government is now in the fourth year of delivering the 10-year **Mental Health Strategy: 2017-2027**²³. The strategy is one of many measures to help create a **Fairer and a Healthier Scotland**²⁴. The guiding ambition for the strategy is to prevent and treat mental health problems with the same commitment, passion and drive that is given to physical health problems. Failing to recognise, prioritise and treat mental health problems harms individuals and communities, and costs the economy. As a result, the strategy focusses on prevention, early intervention and physical wellbeing, as well as equal access to safe and effective treatment and accessible services. The strategy works to ensure protection and promotion of rights, better information use and planning. The importance of improving measurement of outcomes in mental health is emphasised, to include not just data on service activity but also on effect and the experience for people.

The strategy contains 40 initial actions to better join up services and to ensure that those who need help only need to ask once. Underpinning these actions is a commitment to tackle mental health inequalities and embed a human-rights based approach across services with high aspirations for service users. The strategy aims to ensure that people in the most marginalised of situations are prioritised in achieving health.

There is also emphasis on improving support and services for children and young people, including those who come into contact with the criminal justice system. These actions include improving support for mental health and wellbeing in educational settings.

Protecting Scotland's Future²⁵, the 2019-2020 Programme for Government, sets out the government's plans to continue to support mental health including the development of a 24/7 crisis support service for children, young people and their families, a community wellbeing service that children and young people can self-refer to, additional school counsellors and investment in a community perinatal mental health service. In December 2018, the **Better Mental Health in Scotland**²⁶ delivery plan was published setting out the approach to the mental health commitments in the Programme for Government including:

- reforming children and young people's mental health services
- improving specialist services for children, young people and adults
- taking a 21st century approach to adult mental health
- respecting, protecting and fulfilling rights; and
- making suicide prevention everybody's business.

The **Mental Health (Care and Treatment) (Scotland) Act 2003**²⁷, which places duties on Local Authorities to provide care and support to people with mental health disorders whilst respecting individuals' rights, has been in force since 2005. An overarching review of Scotland's mental health legislative framework was announced by the Minister for

Mental Health in 2019. Chaired by John Scott QC, the work of this independent review is ongoing²⁸.

In December 2018 the Scottish Government published **A Connected Scotland**²⁹ its first strategy to address social isolation and loneliness. It sets out key priorities in tackling social isolation and loneliness and a roadmap for their collaborative implementation within communities including:

- empowering communities and building shared ownership to enable approaches that are tailored to local needs
- promoting positive attitudes and tackling stigma
- creating opportunities for people to connect
- supporting an infrastructure (e.g. housing, transport, culture) that fosters connections.

One of the Scottish Government's National Outcomes is the overall strategic objective for health: 'We are healthy and active'³⁰. This is supported by a number of National Indicators including '**mental wellbeing**'³¹ which is monitored using data from the Scottish Health Survey (SHeS). The 15 year, on average, premature mortality in people with severe and enduring mental illness³² has a major impact on other National Indicators including '**premature mortality**' and '**healthy life expectancy**'. Scotland also has a set of national, sustainable mental health indicators for adults and children, covering both outcomes and contextual factors that confer increased risks of, or protection from, poor mental health outcomes³³. SHeS is the data source for 28 of the 54 indicators for adults³⁴ and over 20 of the indicators for children³⁵.

2.1.2 Reporting on mental wellbeing in the Scottish Health Survey (SHeS)

This chapter updates trends in mental health and wellbeing for adults including data on the Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS), General Health Questionnaire 12 (GHQ-12) and CIS-R anxiety and depression scores, as well as data on attempted suicide and self-harm, loneliness and children living with parents with GHQ-12 scores of four or more. Figures are also reported by age, sex and area deprivation.

The area deprivation data are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this Volume for a detailed description of both SIMD and age-standardisation.

Supplementary tables on mental wellbeing are also published on the Scottish Government SHeS website <https://www.gov.scot/collections/scottish-health-survey/>

2.2 METHODS AND DEFINITIONS

2.2.1 Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

Wellbeing is measured using the WEMWBS questionnaire. It has 14 items designed to assess: positive affect (optimism, cheerfulness, relaxation) and satisfying interpersonal relationships and positive functioning (energy, clear thinking, self-acceptance, personal development, mastery and autonomy)³⁶. The scale uses positively worded statements with a five-item scale ranging from '1 - none of the time' to '5 - all of the time'. The lowest score possible is therefore 14 and the highest score possible is 70; the tables present mean scores.

The scale was not designed to identify individuals with exceptionally high or low levels of positive mental health, so cut-off points have not been developed³⁷.

WEMWBS is used to monitor the National Indicator 'mental wellbeing'³⁸ and the mean score of parents of children aged 15 years and under on WEMWBS is included in the mental health indicator set for children³⁹.

2.2.2 General Health Questionnaire 12 (GHQ-12)

GHQ-12⁴⁰ is a widely used standard measure of mental distress and mental ill-health consisting of 12 questions on concentration abilities, sleeping patterns, self-esteem, stress, despair, depression, and confidence in the previous few weeks. Responses to each of the GHQ-12 items are scored, with one point allocated each time a particular feeling or type of behaviour is reported to have been experienced 'more than usual' or 'much more than usual' over the previous few weeks.

These scores are combined to create an overall score of between zero and twelve. A score of four or more (referred to as a high GHQ-12 score) has been used here to indicate the presence of a possible psychiatric disorder. A score of zero on the GHQ-12 questionnaire can, in contrast, be considered to be an indicator of psychological wellbeing. GHQ-12 measures deviations from people's usual functioning in the previous few weeks and therefore cannot be used to detect chronic conditions.

2.2.3 Depression and anxiety

Details on symptoms of depression and anxiety are collected via a standardised instrument, the Revised Clinical Interview Schedule (CIS-R). The CIS-R is a well-established tool for measuring the prevalence of mental disorders⁴¹. The complete CIS-R comprises 14 sections, each covering a type of mental health symptom and asks about presence of symptoms in the week preceding the interview. Prevalence of two of these mental illnesses - depression and anxiety - were introduced to the Scottish Health Survey in 2008. Given the potentially sensitive nature of these topics, they were included in the nurse interview part of the survey prior to 2012⁴². Since 2012 the questions have been included in the biological module, with participants completing the questions

themselves on the interviewer laptop (CASI). The change in mode of data collection may have impacted response, and comparisons of 2018/2019 figures with pre-2012 figures should be interpreted with caution. There is a possibility that any observed changes in prevalence across this period may simply reflect the change in mode rather than any real change in the population.

2.2.4 Suicide attempts

In addition to being asked about symptoms of depression and anxiety, participants were also asked whether they had ever attempted to take their own life. The question was worded as follows:

Have you ever made an attempt to take your own life, by taking an overdose of tablets or in some other way?

Those who said yes were asked if this was in ‘the last week, in the last year or at some other time?’ Note that this question is likely to underestimate the prevalence of very recent attempts, as people might be less likely to agree to take part in a survey immediately after a traumatic life event such as this. Furthermore, suicide attempts will only be captured in a survey among people who do not succeed at their attempt.

Since 2012 these questions have been included in the biological module, with participants completing the questions themselves on the interviewer laptop (CASI). Prior to 2012 they were administered in the nurse interview, and any changes over time need to be interpreted with caution due to the change in mode.

2.2.5 Self-harm

Since 2008, participants have been asked whether they have ever self-harmed in any way but not with the intention of killing themselves. Those who said that they had self-harmed were also asked if this was ‘in the last week, last year or at some other time’. The percentage of adults who have self-harmed in the last year is one of the national mental health indicators for adults⁴³.

Since 2012 these questions have been included in the biological module, with participants completing the questions themselves on the interviewer laptop (CASI). Again, changes over time need to be interpreted in light of this change in the mode of data collection.

2.3 MENTAL WELLBEING

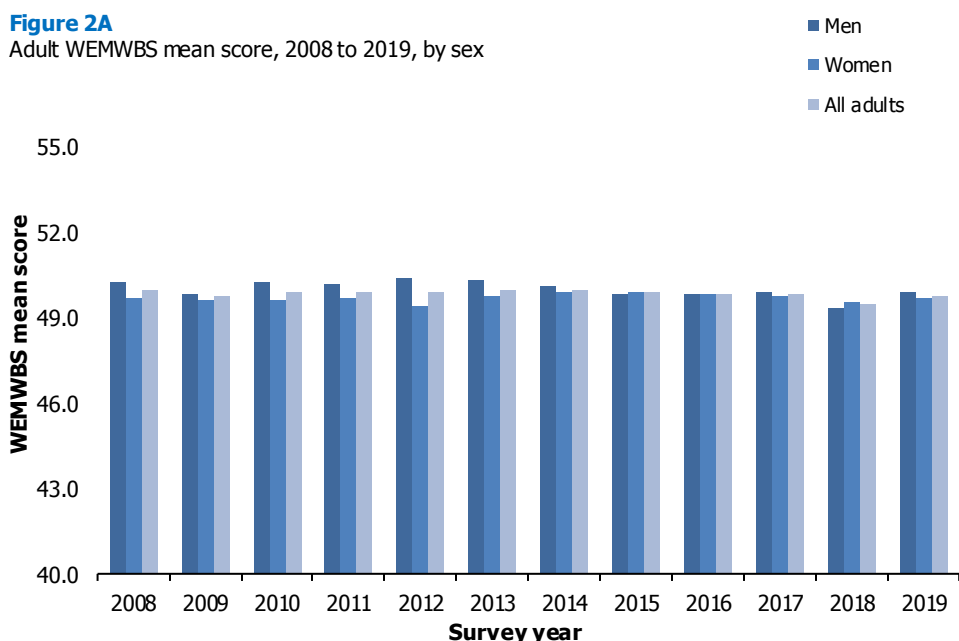
2.3.1 Adult WEMWBS mean score, 2008 to 2019

The mean WEMWBS score for adults in 2019 was 49.8, equal to that recorded in 2017⁴⁴ and not significantly different from 2018⁴⁵ (49.4). The mean in 2019 was within the range observed over the time series since 2008 (49.4 - 50.0) indicating that the lower mean score in 2018

was not the start of a downward trend in mental wellbeing among adults.

Across the time series, the mean WEMWBS scores for men and women have shown some variation with the average scores for men in the range 49.3 - 50.4 (49.9 in 2019) and for women in the range 49.4 - 49.9 (49.7 in 2019).

Figure 2A, Table 2.1



2.3.2 Adult WEMWBS mean score, 2019, by age and sex

Similar to previous survey years⁴⁵, mental wellbeing was higher among older than younger adults in 2019, with an average WEMWBS score of 52.0 recorded among those aged 65-74 and 50.4 among those aged 75 and over. By comparison, mean WEMWBS scores in the range 49.1 – 49.7 were recorded among those between the ages of 16 and 64.

Similar patterns were evident for both men and women with no significant variations by sex in 2019.

Table 2.2

2.3.3 Adult WEMWBS mean score (age-standardised), 2019, by area deprivation and sex

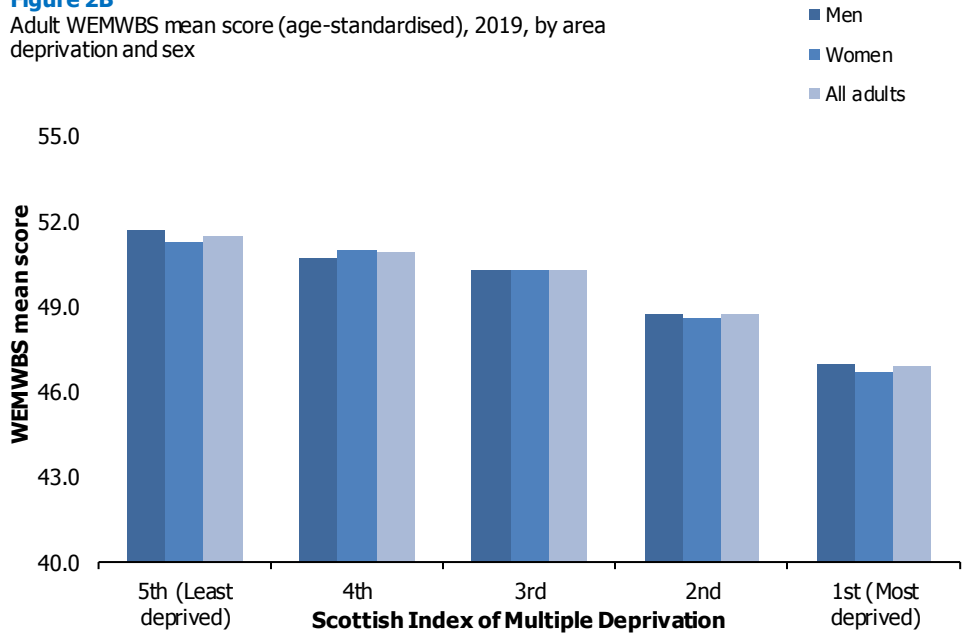
As reported in previous years⁴⁵, differences in the WEMWBS mean scores by area deprivation continued to be evident in 2019, with a linear decrease from a mean of 51.5 among adults in the least deprived quintile to a significantly lower mean of 46.9 among those in the most deprived quintile.

Similar patterns were recorded for men and women, with a decrease among men from a mean of 51.7 among those in the least deprived quintile to 47.0 among men in the most deprived quintile, with average scores of 51.3 and 46.7 respectively recorded among women.

Figure 2B, Table 2.3

Figure 2B

Adult WEMWBS mean score (age-standardised), 2019, by area deprivation and sex



2.3.4 Child (13-15) WEMWBS mean scores, 2012-2015 combined and 2016-2019 combined, by sex

To increase the sample size available, the analysis of child (13–15) WEMWBS mean scores, by age and sex, used data from the 2012 to 2015 surveys combined and the 2016 to 2019 surveys combined.

The WEMWBS mean score for all children aged 13 to 15 in 2016-2019 combined was 51.0, equal to that recorded for 2012-2015 combined. As in 2012-2015, there was a significant variation in the scores recorded by sex in 2016-2019, with a mean score of 52.0 recorded among boys and 49.9 among girls, the same figures as were recorded in the previous four-year period by sex.

Table 2.4

2.3.5 Child (13-15) WEMWBS mean scores, 2016-2019 combined, by area deprivation and sex

To increase the sample size available, the analysis of WEMWBS mean scores, by area deprivation and sex, used data from the 2016 to 2019 surveys combined.

There was no clear pattern for the average WEMWBS scores by area deprivation, which ranged from 51.8 among those aged 13-15 who lived in the least deprived quintile and 50.8 among those in the most deprived quintile to 50.4 – 51.2 among those living in the other quintiles.

Table 2.5

2.3.6 GHQ-12 score, 2008 to 2019, by sex

In 2019, the proportion of all adults with a GHQ-12 score of four or more (indicative of a possible psychiatric disorder) was 17%. This would indicate that the increase recorded in 2018, where the proportion of adults with a score of four or more rose from 17% in 2017 to 19% in

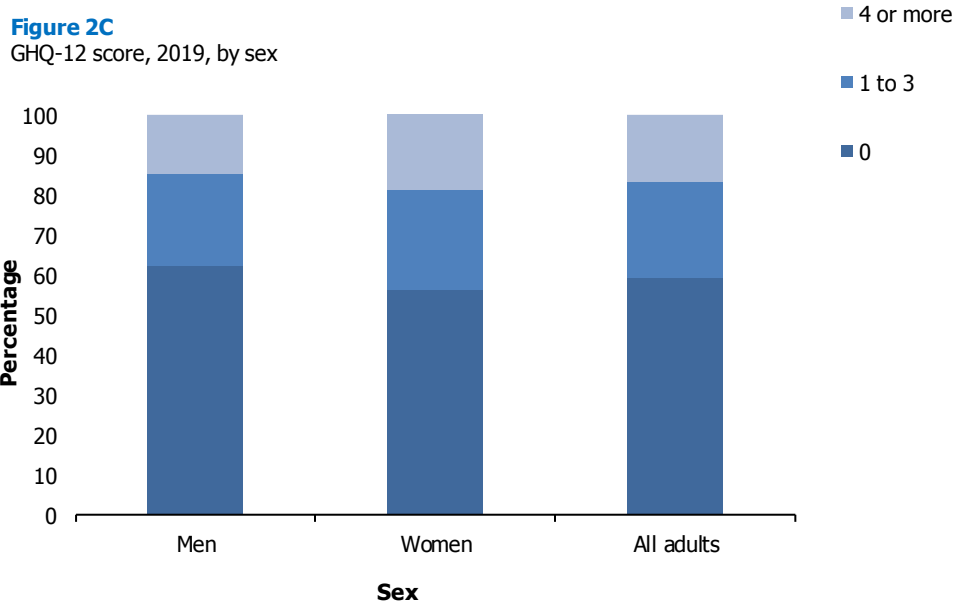
2018⁴⁵, was not the start of an upward trend. Prevalence in 2019 was similar to that recorded for most other years in the time series; prevalence has ranged between 14% and 19% since 2003.

Likewise, the proportions of adults with a GHQ-12 score of zero (59%) and those with a score of between one and three (24%) in 2019 returned to similar levels as those recorded for most years in the timeseries, with the exception of 2018.

Similar patterns were recorded for both men and women. **Table 2.6**

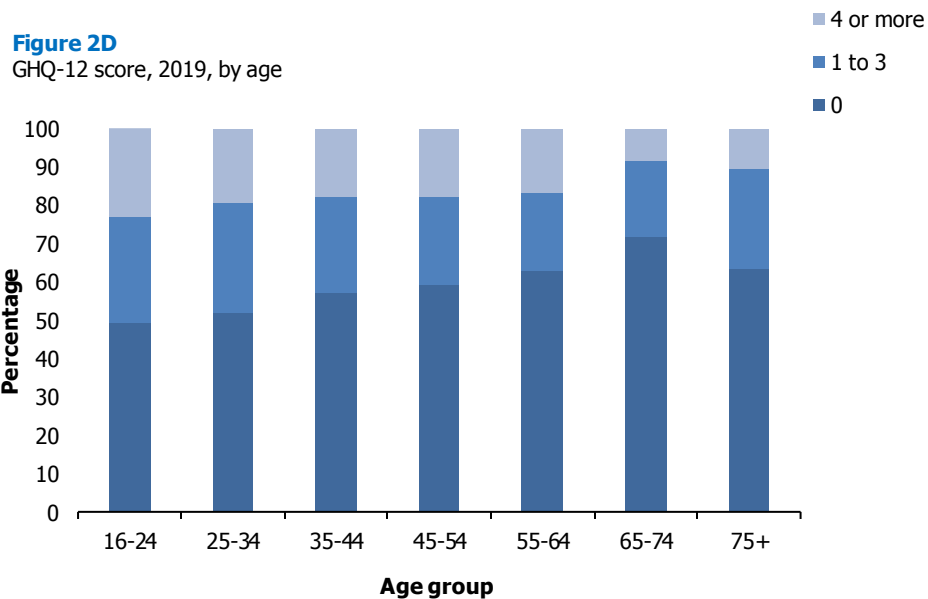
2.3.7 GHQ-12 score, 2019, by age and sex

As in previous years, women were more likely than men to record a GHQ-12 score of four or more in 2019 (19% and 15% respectively), while the reverse was evident for the proportions recording a score of zero (56% of women compared with 62% of men). There was no significant difference in the proportions that recorded scores of between one and three by sex (25% among women and 23% among men).



In 2019, the proportion of adults with a GHQ-12 score of four or more generally decreased with age from 23% among those aged 16-24 to 9% of those aged 65-74 and 11% among those aged 75 and over. A slightly different pattern was evident for the proportions with a score of zero, which increased from 49% of those aged 16-24 and to 72% of those aged 65-74 before decreasing to 63% of those aged 75 and over. Similar patterns by age were evident for both men and women.

Figures 2C & 2D, Table 2.7



2.3.8 Children living with a parent with GHQ-12 score of 4+, 2019, by age and sex

Around a quarter of children in 2019 lived with a parent(s) with a GHQ-12 score of four or more (indicative of a possible psychiatric disorder) (24%), while around three-quarters were living with a parent(s) with scores of between zero and three (76%). No statistically significant relationships for this measure were evident by sex or age. **Table 2.8**

2.3.9 CIS-R anxiety and depression scores, attempted suicide and self-harm, 2008/2009 combined to 2018/2019 combined by sex

To increase the sample size available, the analysis of anxiety and depression scores, attempted suicide and self-harm, by sex, used sets of two-years of combined data from 2008/2009 to 2018/2019.

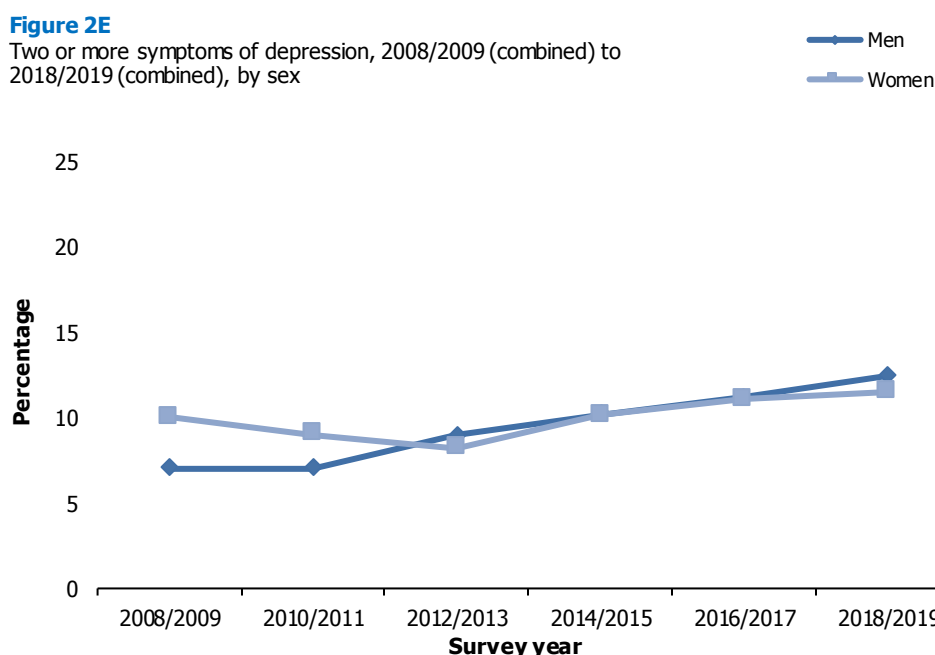
Depression

The trend of increasing prevalence of two or more symptoms of depression continued in 2018/2019 where the proportion was 12%. While not significantly higher than in 2016/2017 (11%), the 2019 figure is the highest rate recorded in the time series, representing an overall increase from 9% in 2012/2013 (when the change in mode was introduced from nurse interview to self-complete) and 8% in 2010/2011.

The proportion of men that reported having two or more symptoms of depression has increased steadily from 7% in 2010/2011 to 12% in 2018/2019. The 2018/2019 figure was significantly higher than the figures observed in both 2010/2011 and 2012/2013 (9%) indicating a real change regardless of the data collection mode (i.e. nurse interview or self-report).

For women the rate has fluctuated over time, however, it remained at the highest level recorded across the time series in 2018/2019 (11%) and was significantly higher than in 2012/2013 (8%).

Figure 2E, Table 2.9



Anxiety

In 2018/2019, 14% of adults reported having two or more anxiety symptoms, the highest proportion in the time series compared with 9% as recorded between 2008/2009 and 2012/2013. The 2018/2019 figure was also significantly higher than that recorded in 2016/2017 (14% and 11% respectively).

It was highlighted in the previous SHeS report⁴⁵ that there was some evidence that the proportion of men reporting two or more symptoms of anxiety was increasing (from 7% in 2008/2009 to 9% in 2014/2015 and 2016/2017). The rate in 2018/2019 (13%) was significantly higher than that observed in 2016/2017, a further indication of a possible overall trend of increasing anxiety among men.

As reported previously⁴⁵, there was an increase over time in the prevalence of two or more symptoms of anxiety among women, which rose from 10% in 2010/2011 to 15% in 2014/2015. However, this rate has fluctuated since, with no significant difference between the 2018/2019 and 2016/2017 figures (15% and 13% respectively).

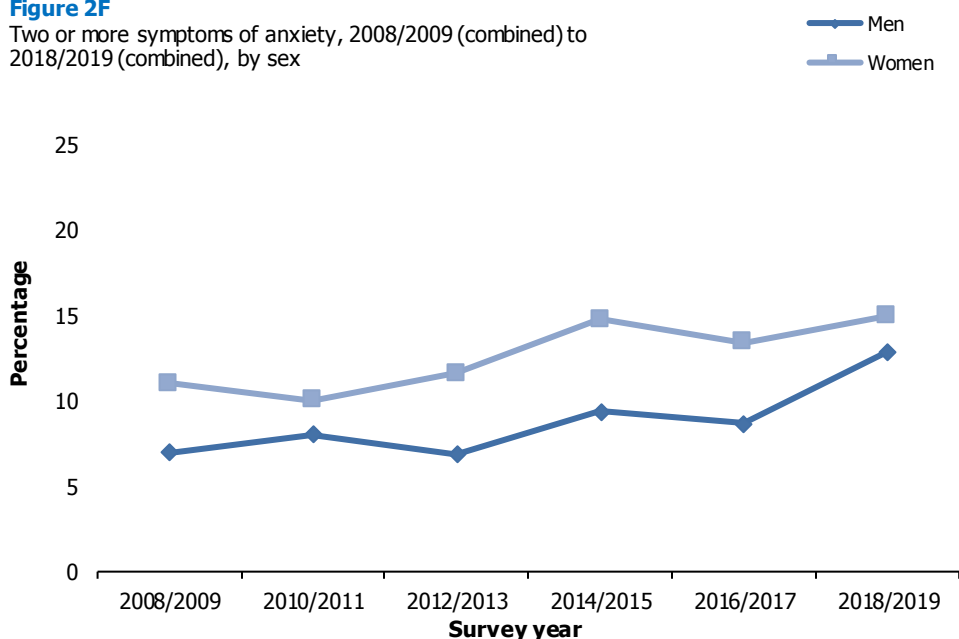
Over the time series (2008/2009 to 2016/2017), women have been more likely than men to display symptoms of anxiety (between 4 and 6 percentage points higher with the exception of 2010/2011 (2 percentage points higher)). However, the significant increase in men that reported two or more symptoms of anxiety in 2018/2019 and the absence of a significant increase for women means that the proportions of men and

women reporting two or more symptoms of anxiety in 2018/2019 were not significantly different (13% and 15% respectively).

Figure 2F, Table 2.9

Figure 2F

Two or more symptoms of anxiety, 2008/2009 (combined) to 2018/2019 (combined), by sex



Attempted suicide

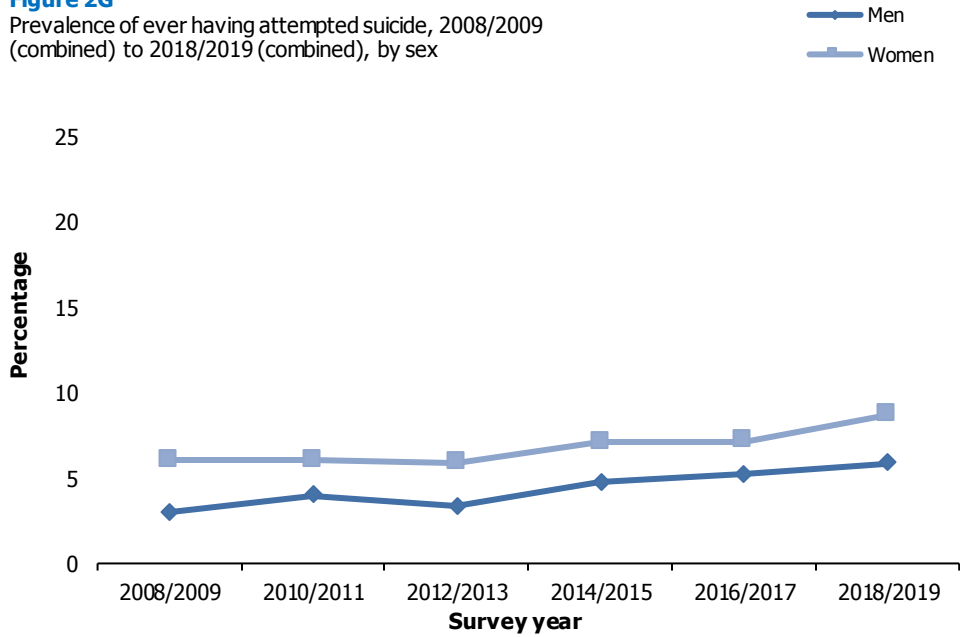
In 2018/2019, 7% of adults reported that they had attempted suicide at some point in their life, the highest rate in the SHeS time series. The 2017 SHeS report⁴⁴ highlighted evidence of an increasing trend in the attempted suicide rate, however, the difference between the 2016/2017 figure (6%) and that recorded for 2012/2013 (5%) when the mode of collection changed was not statistically significant. However, the proportion of people that reported attempting suicide in 2018/2019 is significantly higher than in 2012/2013 (5% and 7% respectively), suggestive of a real increase in attempted suicide prevalence.

In the 2017 report⁴⁴, it was suggested that the overall increase in self-reported suicide attempts may have been predominantly driven by an increase observed among men (from 3% in 2012/2013 to 5% in both 2014/2015 and 2016/2017). However, overall increases are evident for both men and women in 2018/2019 (from 3% in 2012/2013 to 6% in 2018/2019 among men and 6% to 9% respectively among women). Prevalence of suicide attempts has consistently been higher for women compared with men over the time series (2-3 percentage points), with the difference just outside of the 95% significance level in 2018/2019.

Figure 2G, Table 2.9

Figure 2G

Prevalence of ever having attempted suicide, 2008/2009 (combined) to 2018/2019 (combined), by sex



Self-harm

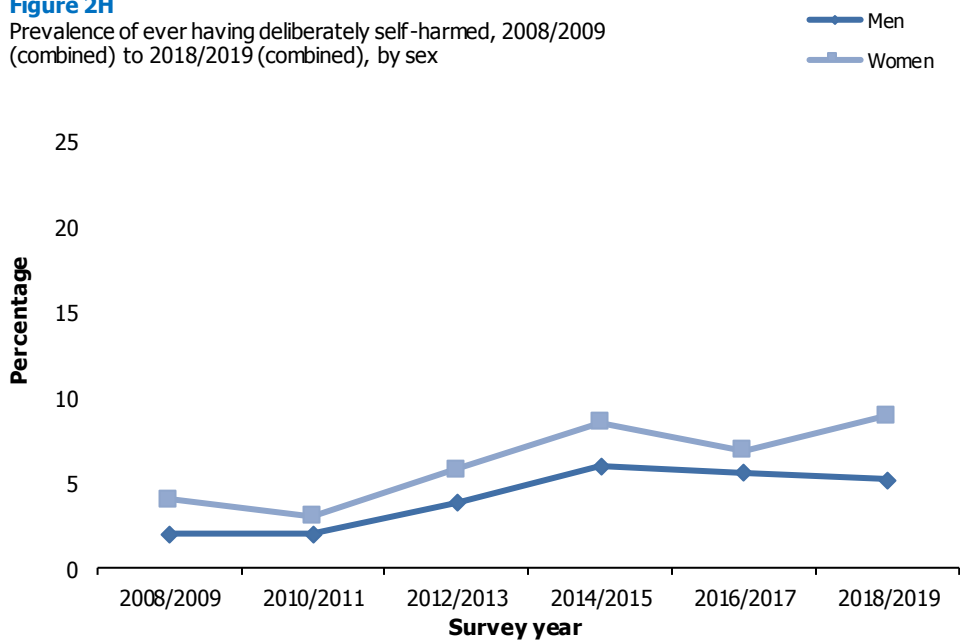
The proportion of adults that reported having ever self-harmed was 7% in 2018/2019, within the range 6 - 7% recorded since 2014/2015. The 2018/2019 figure remains significantly higher than in 2010/2011 (2%) and 2012/2013 (5%) when there was a change in mode from nurse administered to self-completion questionnaires.

The patterns over time for men and women were similar, however, women have consistently been more likely than men to report having self-harmed with the largest difference being observed in 2018/2019 (4 percentage points).

Figure 2H, Table 2.9

Figure 2H

Prevalence of ever having deliberately self-harmed, 2008/2009 (combined) to 2018/2019 (combined), by sex



2.3.10 CIS-R anxiety and depression scores, attempted suicide and self-harm, 2018/2019 combined, by age and sex

To increase the sample size available, the analysis of anxiety and depression scores, attempted suicide and self-harm, by age and sex, used data from the 2018 and 2019 surveys combined.

In 2018/2019, there was no significant difference in the proportion reporting two or more symptoms of depression between men and women (12% and 11% respectively). However, prevalence of reporting two or more symptoms of depression varied significantly by age for all adults, with the highest proportion among those aged 45-54 (17%) and lowest among those aged 65-74 (8%).

The overall patterns by age were not significantly different between men and women, however, men aged 45-54 were significantly more likely than women of the same age to report two or more symptoms of depression (23% and 11% respectively).

In 2018/2019, the proportion of men and women that reported two or more symptoms of anxiety were similar (13% and 15% respectively). Prevalence decreased with age, with the highest rate recorded among younger people aged 16-24 and lowest among older people aged 75 and over (21% and 8% respectively). The patterns by age were not significantly different between men and women.

Women were more likely than men to report having ever attempted suicide in the 2018/2019 survey (9% and 6% respectively), with this difference just outside of the 95% significance level. Attempted suicide rates varied significantly by age with those aged 45-54 most likely to report having ever tried to take their own life (12%) and those aged 65 and over least likely to report having done so (3%). A similar pattern by age was observed for both men and women.

Women were more likely to report ever having self-harmed than men in 2018/2019 (9% and 5% respectively) and younger people were more likely than older people to have ever self-harmed (16% of those aged 16-24 compared with 0% of those aged 75 and over).

While there were no significant differences in the overall patterns by age between men and women, a significant difference was recorded between the proportion of women aged 25-34 who had ever self-harmed compared with men of the same age (18% and 5% respectively), while the difference between women aged 16-24 (22%) and men in the same age group (9%) was marginally significant.

Table 2.10

2.3.11 CIS-R anxiety and depression scores, attempted suicide and self-harm (age-standardised), 2018/2019 combined, by area deprivation and sex

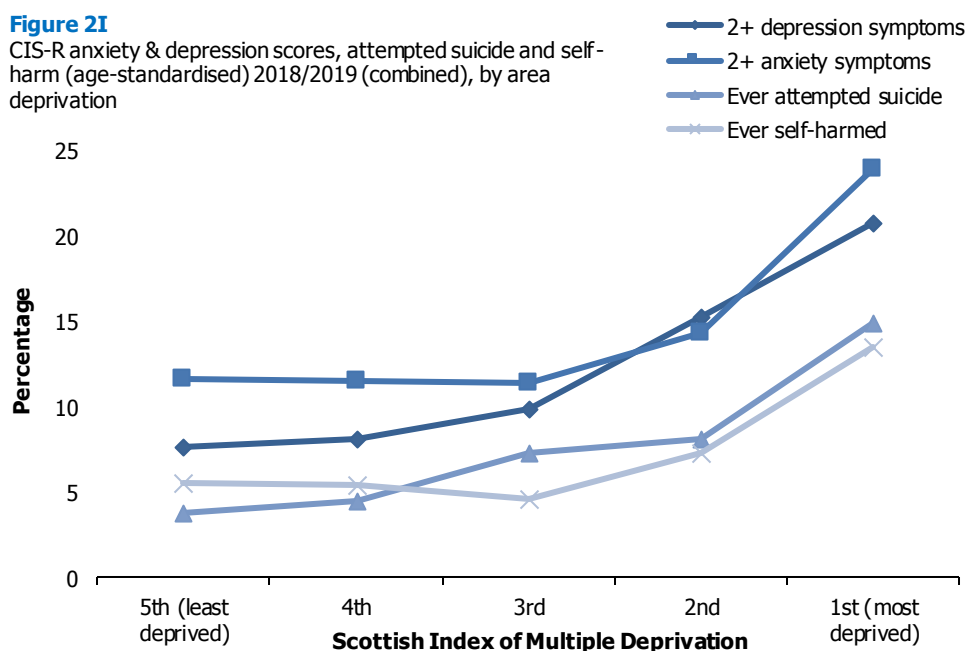
To increase the sample size available, the analysis of anxiety and depression scores, attempted suicide and self-harm, by area deprivation, used data from the 2018 and 2019 surveys combined.

The prevalence of two or more symptoms of depression varied significantly by area deprivation with adults living in the most deprived quintile more than twice as likely in 2018/2019 to report two or more symptoms of depression than those living in the least deprived quintile (21% and 8% respectively).

The likelihood of reporting two or more symptoms of anxiety was also higher among those living in the most deprived areas (24%) compared with those living in other, less deprived areas (11 – 14%).

A similar pattern was evident for having ever attempted suicide, where adults living in the most deprived areas were around two to four times as likely as those living in less deprived areas to report having ever attempted suicide (15% compared with 4 - 8%).

Rates of self-reported self-harm also varied significantly with area deprivation, with the highest prevalence recorded among those living in the most deprived quintile (13% compared with 5 – 7% among those living in less deprived quintiles).



Similar patterns were reported for both men and women for depression, anxiety, suicide and self-harm when analysed by area deprivation in 2018/2019.

Figure 2I, Table 2.11

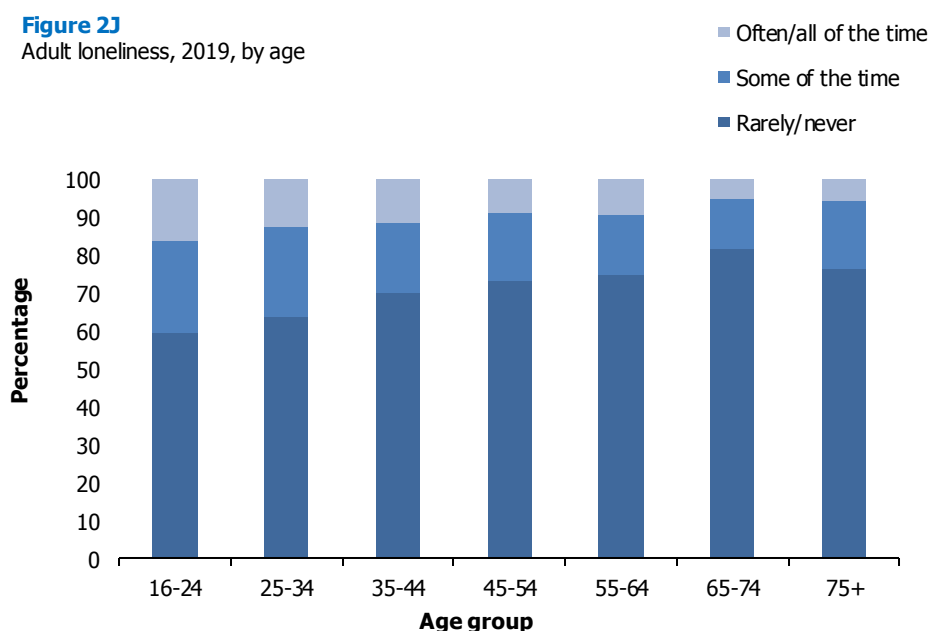
2.3.12 Adult loneliness, 2019, by age and sex

In 2019, one in ten (10%) adults reported having felt lonely 'often' or 'all of the time' in the two weeks prior to being interviewed. Around two in ten adults (19%) reported having felt lonely 'sometimes' while seven in ten (71%) reported 'rarely' or 'never' feeling lonely in the past two weeks.

Among women, 12% reported feeling lonely 'often' or 'all of the time' in the previous two weeks in 2019, a significantly higher proportion than men (9%). Women were also significantly more likely than men to have reported feeling lonely 'sometimes' (21% compared with 17% respectively) while men were more likely than women to have reported feeling lonely 'rarely' or 'never' in the previous two weeks (75% and 68% respectively).

Young adults were more likely than older adults to have felt lonely 'often' or 'all of the time' in the previous two weeks with around one in six (16%) adults aged 16-24 reporting this compared with around one in twenty (5 - 6%) aged 65 and over. While the overall pattern by age for men and women was not statistically different, women aged 16-24 were significantly more likely than men of the same age to report feeling lonely 'often' or 'all of the time' (21% and 12% respectively).

Figure 2J, Table 2.12



2.3.13 Adult loneliness (age-standardised), 2019, by area deprivation and sex

Those living in the most deprived areas were more likely than those in the least deprived areas to experience loneliness (17% of those living in the most deprived quintile reported having felt lonely 'often/all of the time' compared with 6% of those living in the least deprived quintile).

A linear decrease by deprivation was evident in the proportion that reported 'rarely' or 'never' having felt lonely in the two weeks prior to being interviewed, from just under 8 in 10 of those living in the least deprived quintile (78%) to around six in ten of those living in the most deprived quintile (62%). Similar patterns were evident for men and women.

Table 2.13

2.3.14 Adult WEMWBS mean score (age-standardised), 2019, by loneliness and sex

In 2019, a significant association between loneliness and mental wellbeing was evident in adults. Those who felt lonely 'often/all of the time' had the lowest mean WEMWBS score (37.8) and the highest mean WEMWBS score was recorded among those that reported 'rarely/never' having felt lonely in the last two weeks (52.9) in 2019. This pattern was evident for both men and women.

Table 2.14

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The tables can be found on the main report page under supporting files:

<https://www.gov.scot/publications/scottish-health-survey-2019-volume-1-main-report/>

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- 42 The nurse interview is conducted with one adult at a time, whereas the main interview can be conducted concurrently with up to four household members present. It was therefore easier to ensure that these questions could be answered in confidence. Nurses were also thought to be better placed to handle very sensitive topics such as these than interviewers conducting a general health survey who would have required additional specialist briefing. A leaflet with various help lines was handed to all participants in the nurse visit. From 2012, these questions have been included in the biological module of the survey, conducted by specially trained interviewers, and will be completed by participants using a self-completion computer aided questionnaire.
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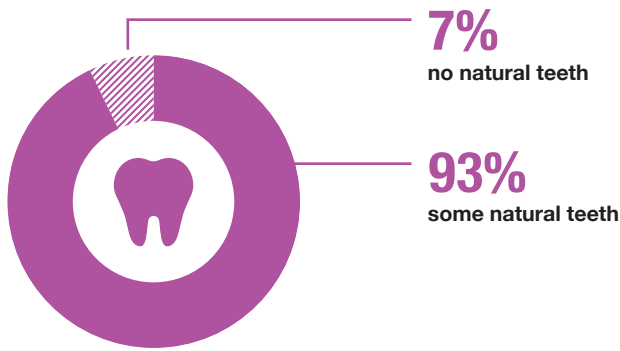
Chapter 3

Dental Health

Dental Health



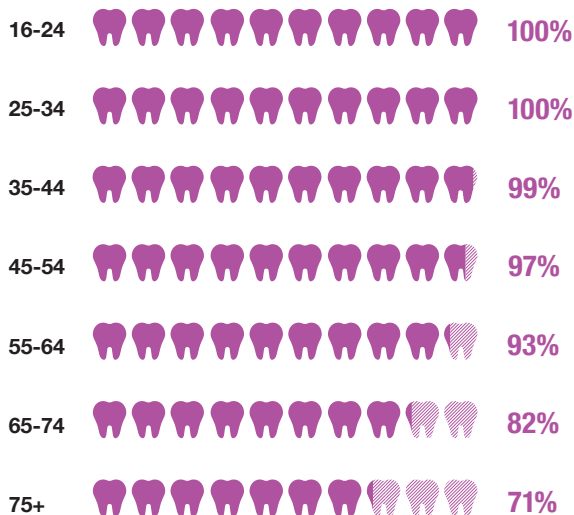
In 2019, the majority of adults in Scotland had some natural teeth while a small proportion had no natural teeth.



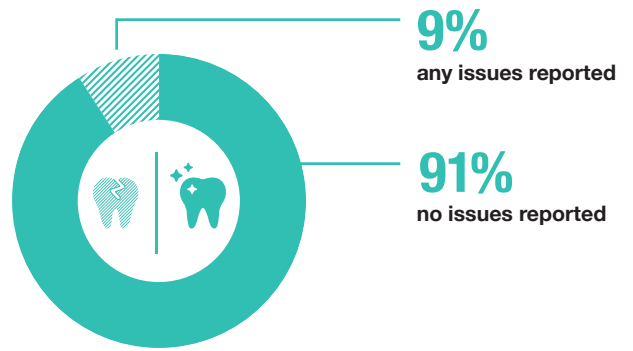
More than three quarters of adults, 78%, had 20 or more natural teeth.



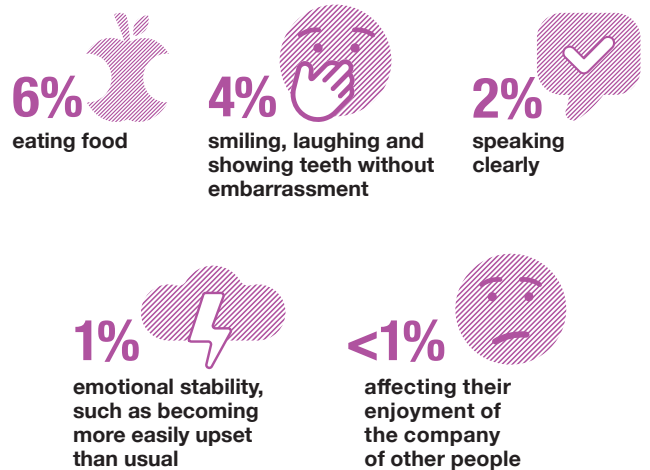
Natural teeth prevalence reduced with age from almost all adults aged 16–54 having some natural teeth to 71% of those aged 75 and over.



In 2019, most adults in Scotland reported having no issues with their mouth, teeth or dentures.



The most common issues adults had with their mouth, teeth or dentures were:



In 2019, adults who had any issues with their mouth, teeth or dentures had lower mental wellbeing (mean WEMWBS score) than those who had no such issues.



3 DENTAL HEALTH

Claire Elliott

3.1 INTRODUCTION

In most industrialised countries between 60-90% of school children and the vast majority of adults have tooth decay¹. The most common types of oral disease are tooth decay and gum disease. As tooth decay is so widespread and is largely preventable, it is considered a public health issue. It is now widely recognised that a healthy mouth has a significant impact on physical health as well as on other aspects of day-to-day life including engaging with others socially and as a result, may have wider socio-economic consequences².

Oral cancer is the oral condition of greatest concern due to its seriousness and increasing incidence³. Head and neck cancer, of which oral cancer and oropharyngeal cancer are types, account for around 3% of total cases of cancer in the UK⁴. Around 530 people are diagnosed with oral cancer per year in Scotland; this is twice the rate found in England and Wales⁵. Major risk factors for oral cancer include tobacco use, excessive alcohol consumption⁶ and low fruit and vegetable intake⁷ and as a result, incidence is higher in men and older age groups⁸.

Child and adult dental registration rates have continued to grow in recent years; 96% of the Scottish population was registered with a dentist as at 30 September 2019 with rates similar among children and adults (94% and 96%, respectively). Around 7 in 10 patients registered with an NHS dentist had visited their dentist in the previous 2 years with children more likely to have done so than adults (84% and 65% respectively)⁹.

The cost of provision of General Dental Services and Public Dental Service increased between 2017/18 and 2018/19 by 3%¹⁰, reflecting the increase in demand, an ageing population and the increase in people retaining their teeth¹¹. Further improvements to oral health are evidenced by the findings of the Detailed Inspection Programme of Primary 7 children in 2019 which found that 80% of P7 children had no obvious signs of tooth decay in their permanent teeth; a significant increase from 53% in 2005¹².

While overall progress has been made, inequalities by age and deprivation remain. It is estimated that one in five residents of Scotland aged 75 or over are not registered with an NHS dentist¹³. In addition, as of September 2019, 72% of adults in the least deprived areas in Scotland had visited an NHS dentist in the last two years compared to 61% in the most deprived areas (89% and 79% amongst children)¹⁴. Also 88% of P7 children living in the least deprived areas had no obvious tooth decay experience compared to only 70% of P7 children living in the most deprived areas¹⁵.

3.1.1 Policy background

Protecting Scotland's Future: The Government's Programme for Scotland 2020-21¹⁶ reaffirms the government's commitment to accelerate the reform programme for NHS dental services and introduce

a new model of preventive oral health care for adult patients. Patients will receive a comprehensive assessment of their oral health, including gums, tooth decay and soft tissues, and along with lifestyle risk factors such as smoking and alcohol, will receive an appropriate treatment plan. The intervention could be either preventive, self-care or restorative.

These commitments continue to pursue the general objectives set out in the **Oral Health Improvement Plan**¹⁷, which was published in January 2018 following extensive consultation with professionals and the public. The plan recognises the link between oral health and other public health problems, such as poor diet as well as smoking and alcohol consumption. It sets out strategies to improve the oral health of the population and to provide high quality NHS dental services under a new model of care that was reflective of the NHS dental service before COVID-19 and for the adult population. The plan proposed a move away from restorative dentistry to a preventative mode, with recognition of the impact that poor oral health can have on overall quality of life, as well as health behaviours and health status.

The Oral Health Improvement plan has several aims including:

- Developing a preventative model for oral healthcare
- Reducing oral health inequalities
- Meeting the needs of an ageing population
- Providing more services on the high street
- Improving information for patients
- Increasing quality assurance and improvement
- Developing and enhancing the dental workforce

The New Model of Care was developed during 2019 through a collaborative approach between government and a range of dental interests, including academic and clinical. The main focus of this activity was to develop the preventive policy, centred around the Oral Health Assessment, which provides for an assessment of general oral health alongside wider health risks such as smoking and alcohol. The NHS offer for restorative dentistry was taking an early look at the general framework around which the new system would deliver packages of treatment, as required for each individual patient.

The COVID-19 pandemic has meant that the preparation of the New Model of Care was paused as the government focused on the public health issue. Further development of the New Model of Care will be considered to reflect the requirements of the NHS dental service in the longer term to ensure that preventive care is at the centre of the NHS dentistry.

Prevention

Childsmile¹⁸ is a preventative programme that encourages tooth brushing and fluoride varnish application in nursery and primary school age children while also aiming to reduce inequalities in dental health and access to dental services. This programme also distributes

toothpaste and brushes for home use and involves dental practices providing preventative care for children such as supervised brushing in nurseries for 3-4 year olds. The **Oral Health Improvement Plan** aims to ensure that good habits learned through **Childsmile** are maintained throughout childhood and into adulthood. This aim is further supported by a preventative care programme for adults with personalised care plans based on the degree of risk of developing oral cancer, gum disease and decay due to lifestyle factors such as diet, alcohol consumption and smoking status.

Reducing oral health inequalities

Despite encouraging progress in overall levels of dental health, higher levels of decay are still recorded amongst children living in the most deprived communities in Scotland compared with those in the least deprived¹⁹. The **Oral Health Improvement Plan** will ensure that community-level interventions form a significant part of the overall approach to addressing health inequalities as a means to engage 'hard-to-reach' groups. Further, the plan will ensure that practitioners working in deprived areas have appropriate payments and allowances to reflect the needs of their patients. This will encourage dental practices to continue to provide care to patients in areas of greatest oral health need, such as those with a high degree of deprivation.

Meeting the needs of an ageing population

Over the next ten years the number of people over 75 is projected to increase by 25%²⁰. The increasingly ageing population, combined with more adults retaining some or all of their natural teeth, is likely to mean there will be a significant increase in people requiring domiciliary dental care, either in their own home or in residential care. The **Oral Health Improvement Plan** aims to provide a greater system of care for those in care homes. In addition to the arrangements implemented to facilitate dental services in care homes, there are plans to extend this to people who are cared for in their own homes²¹.

Providing more services on the high street

This aim is to ensure that patients are treated in the appropriate setting i.e. within Hospital Dental Services (HDS) or by General Dental Practitioners (GDPs). This involves obtaining adequate data on primary-secondary care pathways as well as ensuring that GDPs are trained and accredited to deliver a wide range of treatments such as some oral surgeries and intravenous sedations.

Improving information for patients

By way of recognition that the public do not consider themselves to have enough information about oral services available from the NHS and the associated costs, action is being taken to ensure that this information is made available and that it is streamlined across all GPs. This includes the engagement of groups including those not currently attending check-ups, living in deprived areas and/or engaging in risk related behaviours (smoking, drinking heavily etc.).

Quality assurance and improvement

The aim is to enhance and improve service delivery, scrutiny and quality assurance in NHS dental care through a number of actions including introducing a Director of Dentistry in each Health Board area to drive national policy and provide assurance at a local level and developing a single database for quality improvement information for NHS Boards. Much of this work will build on **Building a comprehensive approach to reviewing the quality of care: Supporting the delivery of sustainable high-quality services** which established the need to develop a new framework in dentistry that will improve care within practices, NHS Boards and nationally²².

Workforce

The NHS dental practitioner workforce has increased significantly over the past ten years, with a 12% increase from 3,227 dentists in 2010 to 3,603 in 2018²³. The plan sets out the need for the workforce to continuously develop and adapt with an emphasis on working within a healthcare setting which promotes prevention, and which needs to adapt to the increased demands as a result of an increase in the older population people.

3.1.2 Reporting on dental health in the Scottish Health Survey (SHeS)

This chapter presents findings on the prevalence of natural teeth in the Scottish population in 2019 by age and sex. Additionally, the impacts of issues with the mouth, teeth or dentures on daily life and mental health are reported.

Supplementary tables are also available on the Scottish Government SHeS website <https://www.gov.scot/collections/scottish-health-survey/>

3.2 METHODS AND DEFINITIONS

Adults aged 16 and over are asked questions on dental health annually and on dental health services and actions taken to improve dental health biennially. This report presents data for 2019 only, however, it is important to be aware when referring to data in previous reports that several changes were made to the questions on dental health prior to 2008. More information about the changes made in 2008 is provided in the 2008 and subsequent reports²⁴.

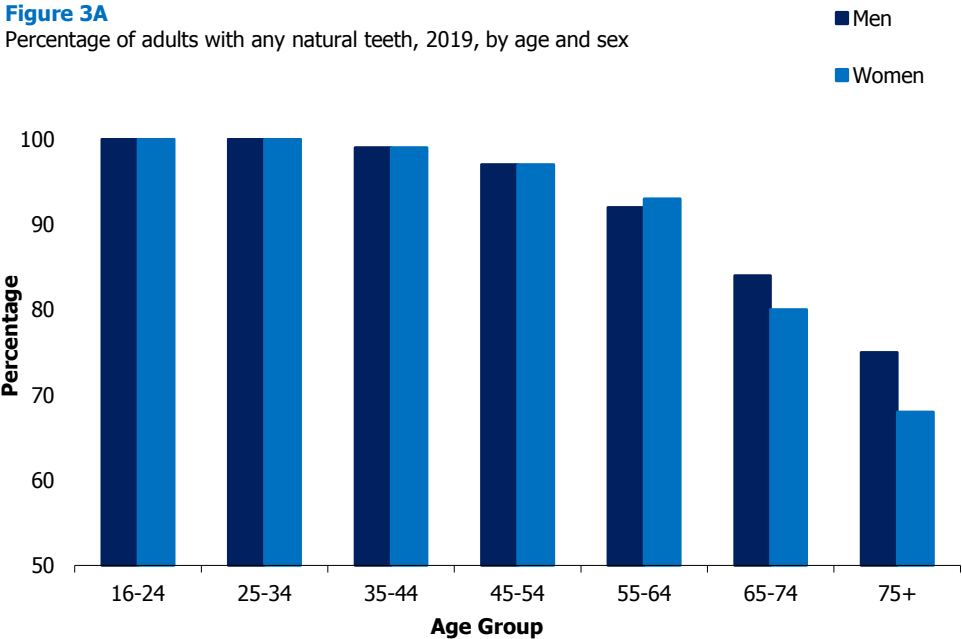
3.3 DENTAL HEALTH

3.3.1 Number of natural teeth/no natural teeth (adults), 2019, by age and sex

In 2019, the vast majority (93%) of adults in Scotland had at least some natural teeth whilst 7% had none. More than three in four adults (78%) had 20 or more natural teeth.

As noted in previous SHeS reports, natural teeth prevalence was significantly associated with age. Almost all adults (97-100%) aged 16-54 reported having at least some natural teeth, prevalence then decreased by age group to 71% among those aged 75 and over.

There was no significant difference in natural teeth prevalence by sex with similar patterns by age for both sexes. **Figure 3A, Table 3.1**



3.3.2 Issues with mouth, teeth or dentures, 2019, by age and sex

In 2019, most adults (91%) in Scotland reported having no issues with their mouth, teeth or dentures whilst 9% reported having issues.

Prevalence of having issues with mouth, teeth or dentures did not vary significantly with age.

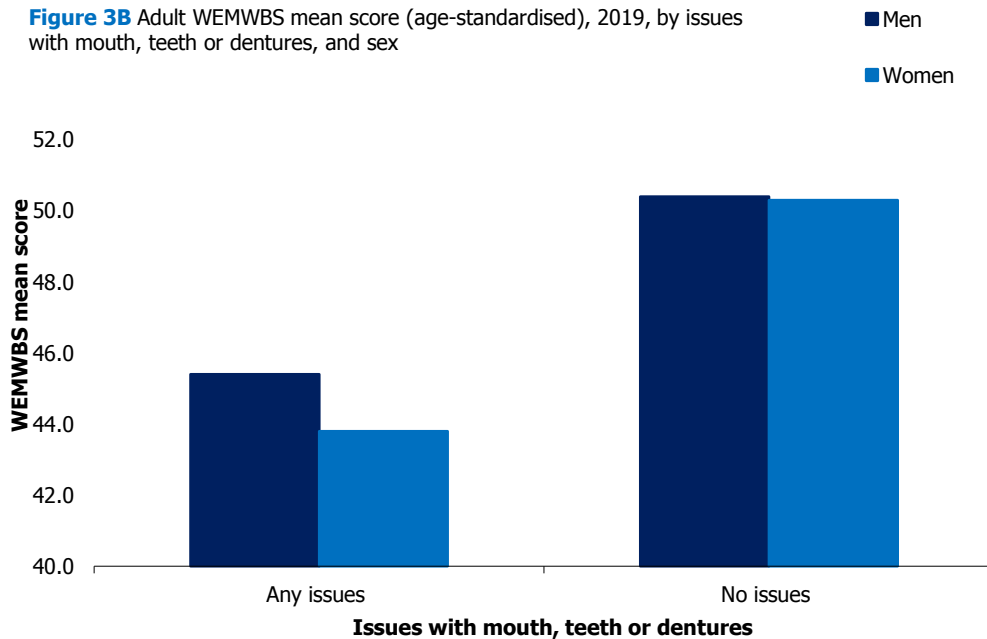
The most common issue reported with mouth, teeth and dentures was eating food: 6% of adults in Scotland had this issue. The second most common was issues with smiling, laughing and showing teeth without embarrassment (4%) followed by issues with speaking clearly (2%) and then issues with emotional stability, such as becoming more easily upset than usual (1%). Less than 1% of adults reported that having issues with their mouth, teeth or dentures affected their enjoyment of the company of other people.

Sex was not a significant determinant of issues with mouth, teeth or dentures among adults of any age. **Table 3.2**

3.3.3 Adult WEMWBS mean score (age-standardised), 2019, by issues with mouth, teeth or dentures, and sex

In 2019, adults who had any issues with their mouth, teeth or dentures had lower mental wellbeing than those who had no such issues as measured by age-standardised mean WEMWBS scores (44.6 compared with 50.3 respectively). As shown in Figure 3B, this was the case for both men and women.

Figure 3B Adult WEMWBS mean score (age-standardised), 2019, by issues with mouth, teeth or dentures, and sex



Although not statistically significant, having issues with mouth, teeth or dentures appeared to have had a greater negative impact on the mental wellbeing of women than men; the WEMWBS mean score for women with any issues with their mouth, teeth or dentures was 43.8 compared with 45.4 for men. **Figure 3B, Table 3.3**

Table List

Table 3.1	Number of natural teeth/no natural teeth (adults), 2019, by age and sex
Table 3.2	Issues with mouth, teeth or dentures, 2019, by age and sex
Table 3.3	Adult WEMWBS mean score (age-standardised), 2019, by issues with mouth, teeth or dentures and sex

The tables can be found on the main report page under supporting files:

<https://www.gov.scot/publications/scottish-health-survey-2019-volume-1-main-report/>

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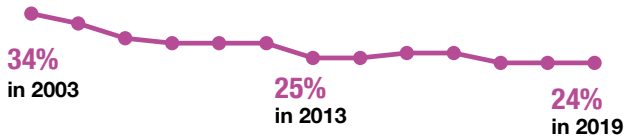
Chapter 4

Alcohol

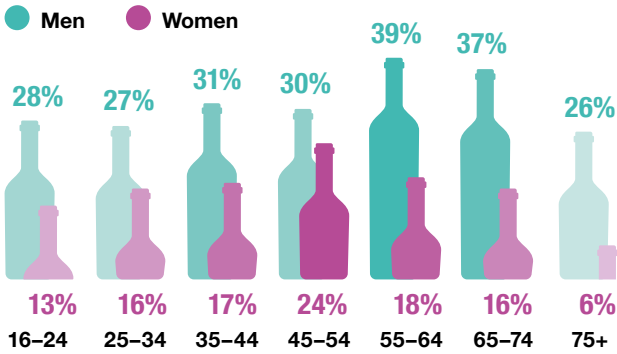
Alcohol



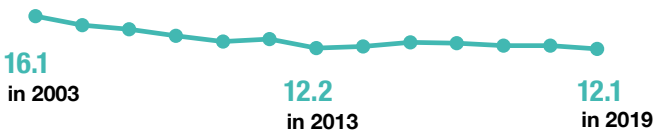
Following a significant decrease in prevalence of hazardous or harmful drinking between 2003 and 2013, prevalence for all adults has remained relatively stable.



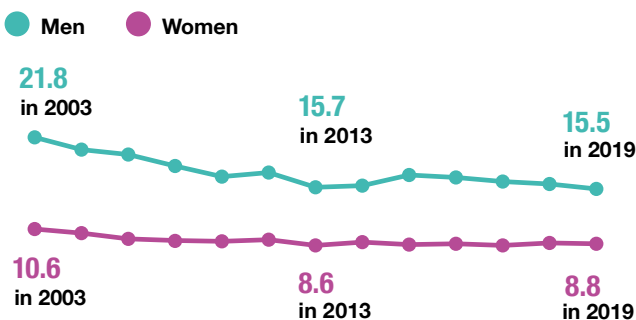
The highest prevalence of hazardous or harmful drinking for men was among those aged 55–64 and for women among those aged 45–54.



The mean number of units of alcohol consumed per week by adults has decreased over the time series to its lowest so far in 2019*.

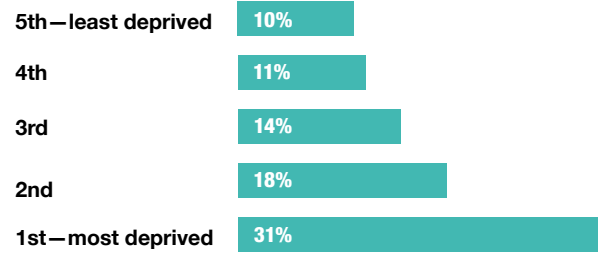


Since 2003, the mean number of units consumed per week among both men and women has decreased, with the 2019 mean the lowest in the time series for men.

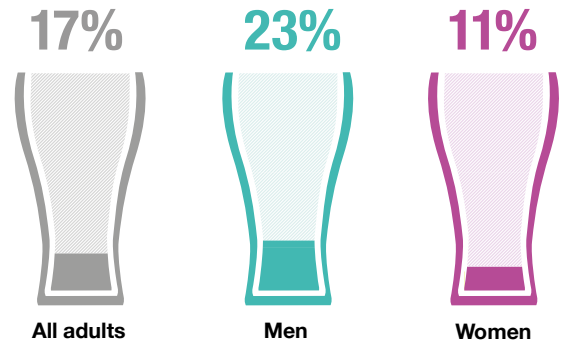


* Although not significantly different from 2018.

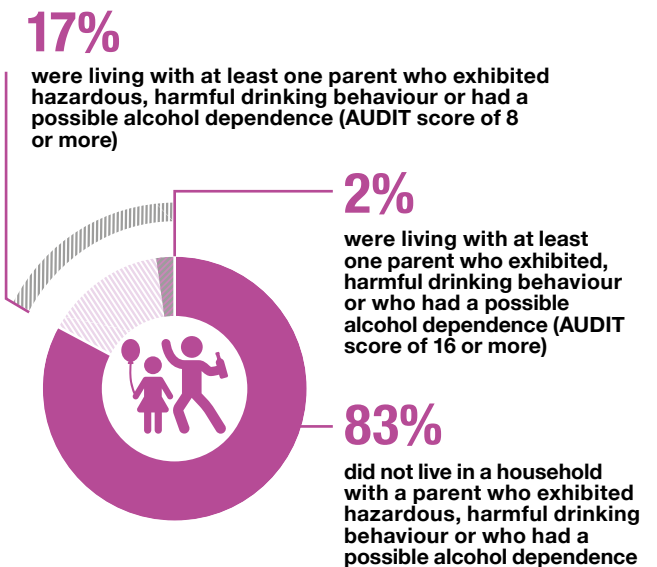
In 2019, the highest proportion of adult non-drinkers was in the most deprived areas and the lowest was in the least deprived areas.



In 2019, prevalence of hazardous, harmful or possibly dependent drinking behaviour (AUDIT scores of 8 or more) was higher for men than for women.



Among all children in 2017/2019 combined:



4 ALCOHOL

Jessica Shields

4.1 INTRODUCTION

Harmful alcohol consumption has been recognised as a major, long-lasting public health challenge in Scotland. Harmful drinking carries with it a risk of physical and mental health problems, as well as social and economic losses to individuals and society¹. Excessive alcohol consumption at a chronic level results in increased risk of high blood pressure, chronic liver disease and cirrhosis, pancreatitis, some types of cancer, mental ill-health and accidents². Recent evidence has also established links between harmful drinking and the incidence of infectious diseases such as tuberculosis and HIV/AIDS³.

According to the most recent World Health Organisation (WHO) data (2016), harmful alcohol use is the seventh leading risk factor for premature death and disability and the highest risk factor among the population of 15-49 year olds worldwide⁴, with 3 million deaths (5.3% of all deaths) worldwide the result of the harmful use of alcohol in 2016. Death and disability caused by alcohol consumption can occur relatively early in life with 13.5% of the total deaths among those aged 20-39 being alcohol-attributable as well as 7.2% of all premature deaths (among those aged 69 years and younger). The leading contributors to alcohol-attributable deaths were digestive diseases (21.3%), unintentional injuries (20.9%) and cardiovascular diseases and diabetes (19%)⁵.

In 2019, 9.9 litres (L) of pure alcohol were sold per adult in Scotland (same as in 2018), equivalent to 19.1 units per adult per week, representing enough alcohol for every adult to substantially (by 36%) exceed the low risk weekly drinking guideline (14 units); 23% of off-trade alcohol sold was on promotion in 2019, a decrease from 55% in 2011. The 9.9 litres of pure alcohol per adult represents a 3% decrease from 2017 (10.2 litres) and is the lowest level seen since in Scotland since 1994. As in 2018, the volume of alcohol sold in Scotland in 2019 was 9% higher than in England & Wales which is the smallest difference since 2004⁶.

In 2018, alcohol mortality in Scotland increased by 1% compared with the previous year, with 1,136 alcohol-specific deaths in 2018, up from 1,120 in 2017. This represents an average of 22 deaths per week, and it is still more than three times the number of alcohol-specific deaths in the early 1980s. The number of alcohol-specific deaths was more than twice as high among men than women in 2018 in Scotland⁷. In 2018/19, alcohol-related problems resulted in 35,685 stays in general acute hospitals and while the rate has declined over the past 10 years (at its lowest in 2018/19 – 668.8 per 100,000 population), it was still over four times higher in 2018/19 than in 1981/82⁸.

Alcohol-related morbidity and mortality are not evenly distributed throughout the population and the burden is greatest among those living in the most deprived areas^{9,10}. The rate of alcohol-specific mortality among those aged 45-74 years in Scotland's most deprived areas in 2018 was 5 times higher than in the least deprived areas (93.1 compared with 18.6 per 100,000 population). Since it was first measured in 1997, the largest gap in alcohol-specific mortality rates

between those living in the most and least deprived areas of Scotland was recorded in 2002 (184.7 per 100,000). Since then, this gap has fluctuated between 72.8 and 167.4 per 100,000, with 2018 (74.5 per 100,000) the third lowest gap in this time series¹¹. Alcohol-related admissions to general hospitals are also linked to deprivation with seven times as many stays (per 100,000 population) with at least one alcohol-related admission from the most deprived areas compared to the least deprived areas in 2018/19. In the psychiatric setting the difference was more pronounced. In 2018/19, the stay rates in the most deprived areas of Scotland were 13 times higher than those in the least deprived areas (154 compared to 12 per 100,000 population)¹².

Harmful alcohol use carries considerable economic costs; in 2010 the Scottish Government estimated that the excessive consumption of alcohol in Scotland costs £3.6 billion a year, equivalent to £900 per adult¹³. This was estimated to include £267 million to the NHS, £209 million to social care services and £727 million to the justice system.

4.1.1. Policy background

Being 'healthy and active' is recognised as one of the **National Outcomes** underpinning the Scottish Government's revised **National Performance Framework** to improve the wellbeing and quality of life of people in Scotland¹⁴. Tackling harmful alcohol use is integral to ensuring that people in Scotland are healthy and to reducing social inequalities. The government's commitment to addressing harmful alcohol consumption is evidenced by the inclusion of a **National Performance Framework National Indicator** to 'reduce the proportion of people with multiple health risk behaviours'¹⁵.

The UK Chief Medical Officers (CMOs) published new guidelines on alcohol consumption in January 2016, advising both men and women that it is safest not to regularly consume more than 14 units of alcohol per week. This represented a reduction in the low risk guidelines for men. Advice was also included to spread the amount drunk over a number of days and limit the amount consumed in a single session¹⁶.

Following the **Alcohol (Minimum Pricing) (Scotland) Act 2012** the Scottish Government introduced a statutory minimum price of 50 pence for a unit of alcohol, below which it cannot be sold. This was considered to provide a proportionate response to tackling harmful alcohol use whilst providing a reasonable balance between public health and social benefits and intervention in the market. It is estimated that twenty years after implementation of the policy, when it is considered to have reached full effectiveness, there would be around 120 fewer alcohol-related deaths per annum and around 2,000 fewer hospital admissions per annum¹⁷.

Before Minimum Unit Pricing (MUP)¹⁸ was introduced in Scotland on 1 May 2018, it was possible to exceed the low risk guidelines for alcohol (14 units per week) for around £2.50; whereas, with the 50 pence minimum unit price, that figure rose to at least £7¹⁹. In 2019, alcohol sold in the UK was 75% more affordable than it was in 1987²⁰.

The impact of Minimum Unit Pricing is subject to a comprehensive evaluation undertaken by Public Health Scotland over five years with a final report due in 2023. The evaluation has four outcome areas: implementation and compliance; alcohol market; consumption; and health and social harms. Some reports in these outcomes have been published²¹.

One of the reports, which was published on 10 June 2020, was a statistical analysis of 12 months off-trade alcohol sales following the introduction of Minimum Unit Pricing. This showed that the introduction of Minimum Unit Pricing in Scotland was associated with a net reduction in per adult off-trade alcohol sales of between 4% and 5% in Scotland in the 12 months following the implementation of MUP²². Another report published in May 2020 concluded that the available evidence so far strongly suggests Minimum Unit Pricing has reduced alcohol consumption in Scotland²³.

It is too early to assess the impact of this reduced consumption on alcohol harms as this will take longer to feed through.

The annual Monitoring and Evaluating Scotland's Alcohol Strategy (MESAS) Report includes headline statistics for high-level indicators relevant to Scotland's alcohol strategy **Alcohol Framework 2018: Preventing Harm**²⁴. The most recent report was published in June 2020²⁵. The Alcohol Framework 2018 endorses the WHO Safer initiative of five evidence-based strategies that WHO recommends governments should prioritise to tackle alcohol alcohol-related harm²⁶. It continues to take an evidence-based approach to tackling the three central themes of Scotland's 2009 alcohol strategy; reducing consumption; positive attitudes, positive choices and supporting families and communities. The key actions for the next few years are to:

- Put the voices of young people at the heart of developing preventative measures on alcohol
- Reduce alcohol consumption through affordability and sales and review the Minimum Unit Price of 50 pence two years after implementation
- Keep the licensing system under review to ensure it can deliver for public health
- Consult on marketing restrictions to protect children and young people from alcohol marketing
- Press the UK Government to improve measures to protect children and young people from exposure to alcohol marketing
- Improve the programme of substance use education in schools
- Continue to raise awareness of the UK CMO guidelines and the harmful effects of alcohol
- Review evidence on alcohol brief interventions to ensure they are being carried out in the most effective manner.

4.1.2. Measuring alcohol consumption in surveys

The alcohol consumption estimates discussed in this chapter are based on self-reported data collected during the survey interview. It is, however, important to note that surveys consistently obtain lower consumption estimates than those implied by alcohol sales or tax revenue data. This discrepancy can largely be explained by participants' under-reporting of consumption, due in part to a lack of accounting for atypical/special occasion drinking²⁷, and there is also some evidence that survey non-responders are more likely than responders to engage in hazardous alcohol use among other risky health behaviours^{28,29,30}. The most recently available annual estimates of alcohol sales in Scotland show that 9.9 litres (19.1 units per adult per week) of pure alcohol per person aged 16 years and over were sold in 2019 (the equivalent figure for England and Wales in 2019 was 9.1 litres (17.5 units per adult per week)³¹.

While self-reported survey estimates of consumption are typically lower than estimates based on sales data, surveys provide valuable information about the social patterning of individuals' alcohol consumption. Findings from the Scottish Health Survey (SHeS) are used in the MESAS evaluation of the Alcohol Framework and in the modelling of estimated impact of minimum unit pricing on consumption patterns across different groups in society.

4.1.3. Reporting on alcohol consumption in the Scottish Health Survey (SHeS)

Key trends and breakdowns for weekly and daily alcohol consumption are updated and presented in this chapter. For weekly consumption, categories are based on the revised guidelines; hence all weekly consumption category figures for men, going back to 2003, have been revised. Figures for mean consumption are presented for drinkers only. Problem drinking including levels of alcohol dependency and high risk alcohol use, as measured by the Alcohol Use Disorders Identification Test (AUDIT), are also presented as well as figures for children living with a parent with medium or high levels of alcohol problems.

The area deprivation data are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this volume for a detailed description of both SIMD and age-standardisation.

Supplementary tables on alcohol consumption are also published on the Scottish Government SHeS website
<https://www.gov.scot/collections/scottish-health-survey/>

4.1.4 Comparability with other UK statistics

The Health Surveys for England and Northern Ireland and the National Survey for Wales all provide estimates for alcohol consumption. A

report published by the Government Statistical Service in 2016 advised that alcohol estimates across the UK were 'not comparable' at that time³². While questions are similar in each of the surveys, questions on alcohol consumption were delivered through self-completion in the Welsh Health Survey prior to 2015/16, complicating comparisons. These questions are now included in the National Survey for Wales which is delivered face-to-face; the same mode of collection as SHeS. However, categorisation of drinkers and non-drinkers is also inconsistent across the surveys and further differences exist in the way some alcoholic drinks are categorised. On these bases, no attempt is made to compare alcohol estimates from SHeS to those from other surveys.

4.2 METHODS AND DEFINITIONS

4.2.1. Methods

Questions about drinking alcohol have been included in SHeS since its inception in 1995. Questions are asked either face-to-face via the interviewer or included in the self-completion questionnaire if they are deemed too sensitive for a face-to-face interview (e.g. if being interviewed with a parent). All those aged 16-17 years are asked about their consumption via the self-completion, as are some of those aged 18-19 years, at the interviewers' discretion. The way in which alcohol consumption is estimated in the survey was changed significantly in 2008. A detailed discussion of those revisions can be found in the chapter on alcohol consumption in the 2008 report³³.

In 2019, the SHeS questionnaire covered the following aspects of alcohol consumption:

- usual weekly consumption
- daily consumption on the heaviest drinking day in the previous week
- problem drinking

Weekly consumption

Participants (aged 16 years and over) were asked preliminary questions to determine whether they drank alcohol at all. For those who reported that they drank, these were followed by further questions on how often during the past 12 months they had drunk each of six different types of alcoholic drink:

- normal strength beer, lager, stout, cider and shandy
- strong beer, lager, stout and cider
- spirits and liqueurs
- sherry and martini
- wine
- alcoholic soft drinks (alcopops)

From these questions, the average number of days per week the participant had drunk each type of drink was estimated. A follow-up question asked how much of each drink type they had usually drunk on each occasion. These data were converted into units of alcohol (see Section 4.2.2) and multiplied by the amount they said they usually drank on any one day³⁴.

Daily consumption

Participants were asked about drinking in the week preceding the interview, with actual consumption on the heaviest drinking day in that week then examined in more detail³⁵. Details on the amounts consumed for each of the six types of drink listed in the weekly consumption section above were collected and converted into units of alcohol consumed.

Problem drinking

Since 2012 the AUDIT questionnaire has been used to assess problem drinking. AUDIT is widely considered to be the best screening tool for detecting problematic alcohol use. It comprises ten indicators of problem drinking: three indicators of consumption, four of use of alcohol considered harmful to oneself or others, and three of physical dependency on alcohol. Given the potentially sensitive nature of these questions, they were administered in self-completion format for all participants.

4.2.2. Calculating alcohol consumption in SHeS

The guidelines on lower risk drinking are expressed in terms of units of alcohol consumed. As discussed above, detailed information on both the volume of alcohol drunk in a typical week and on the heaviest drinking day in the week preceding the survey was collected from participants. The volumes reported were not validated. In the UK, a standard unit of alcohol is 10 millilitres or around 8 grams of ethanol. In this chapter, alcohol consumption is reported in terms of units of alcohol.

Questions on the quantity of wine drunk were revised in 2008. Since then, participants reporting drinking any wine have been asked what size of glass they drank from: large (250ml), medium (175ml) and small (125ml). In addition, to help participants make more accurate judgements they are also shown a showcard depicting glasses with 125ml, 175ml and 250ml of liquid. Participants also had the option of specifying the quantity of wine drunk in bottles or fractions of a bottle; with a bottle treated as the equivalent of six small (125ml) glasses. There are numerous challenges associated with calculating units at a population level, not least of which are the variability of alcohol strengths and the fact that these have changed over time. Table 4A below outlines how the volumes of alcohol reported in the survey were converted into units (the 2008 report provides full information about how this process has changed over time)³⁶. 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.

4.2.3. Age-standardised estimates for weekly alcohol consumption

The area deprivation data presented for weekly alcohol consumption are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Readers should refer to the Glossary at the end of this volume for a detailed description of SIMD and age-standardisation.

Table 4A Alcohol unit conversion factors

Type of drink	Volume reported	Unit conversion factor
Normal strength beer, lager, stout, cider, shandy (less than 6% ABV)	Half pint	1.0
	Can or bottle	Amount in pints multiplied by 2.5
	Small can (size unknown)	1.5
	Large can / bottle (size unknown)	2.0
Strong beer, lager, stout, cider, shandy (6% ABV or more)	Half pint	2.0
	Can or bottle	Amount in pints multiplied by 4
	Small can (size unknown)	2.0
	Large can / bottle (size unknown)	3.0
Wine (including champagne and prosecco)	250ml glass	3.0
	175ml glass	2.0
	125ml glass	1.5
	750ml bottle	1.5 x 6
Sherry, vermouth and other fortified wines	Glass	1.0
Spirits	Glass (single measure)	1.0
Alcopops	Small can or bottle	1.5
	Large (700ml) bottle	3.5

4.2.4. Definitions

The UK CMO alcohol guidelines consist of three recommendations:

- A weekly guideline on regular drinking;
- Advice on single episodes of drinking; and
- A guideline on pregnancy and drinking.

According to the weekly guideline, adults are safest not to regularly drink more than 14 units per week, to keep health risks from drinking alcohol to a low level. If you do drink as much as 14 units a week, it is best to spread this evenly over three days or more. On a single episode

of drinking, advice is to limit the total amount drunk on any occasion, drink more slowly, drink with food and alternate with water. The guideline on drinking and pregnancy, or planning a pregnancy, advises that the safest approach is not to drink alcohol at all³⁷.

Consumption of more than three units (women) or four units (men) on a single day is also reported in this chapter. This allows comparison with previous SHeS reports although these daily amounts of alcohol are no longer included in the most recent guidance from the UK Chief Medical Officers. Consumption of double this amount (six units for women and eight for men) is also reported.

Alcohol Use Disorders Identification Test (AUDIT) scale

The AUDIT questionnaire was primarily designed to screen for levels of alcohol dependency or high-risk use. In line with the WHO guidelines on using the tool, responses to each of the ten AUDIT questions were assigned values of between 0 and 4³⁸. Scores for the ten questions were summed to form a scale, from 0 to 40, of alcohol use.

The WHO guidelines³⁹ for interpreting AUDIT scale scores are as follows:

Score	Category description
0 to 7	low-risk drinking behaviour, or abstinence
8 to 15	medium level of alcohol problems, with increased risk of developing alcohol-related health or social problems (sometimes described as hazardous drinking behaviour)
16-19	high level of alcohol problems, for which counselling is recommended (harmful drinking behaviour)
20 or above	warrants further investigation for possible alcohol dependence.

4.3 ALCOHOL

4.3.1. Estimated usual weekly alcohol consumption level, 2003 to 2019

Following a significant decrease in prevalence of hazardous or harmful drinking levels for all adults from 34% in 2003 to 25% in 2013, levels have remained between 24% and 26% since then (24% in 2019). The prevalence of hazardous or harmful drinking levels has been around twice as high for men than for women across the time series (32% for men and 16% for women in 2019).

A corresponding increase in the proportion of non-drinkers was recorded between 2003 and 2013 when prevalence among all adults rose from 11% to 16%. Since 2013, the prevalence of non-drinking among all adults has remained between 16% and 17% (17% in 2019). There were small differences between men and women in the prevalence of non-drinking across the time series. Among men,

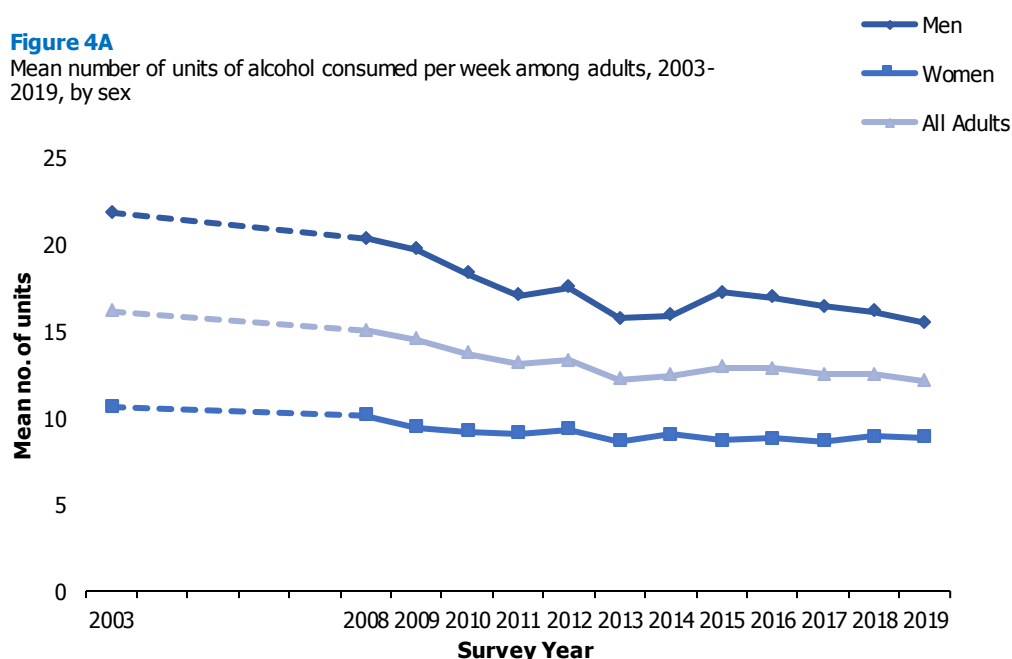
following a rise from 8% in 2003 to 14% in 2014, levels have since remained relatively stable fluctuating between 13% and 15% (15% in 2019). Prevalence of non-drinking among women rose from 13% in 2003 to 20% in 2013 and has remained in the range of 18 - 19% since (18% in 2019).

There has been an overall decrease over time in the mean number of units of alcohol consumed per week by all adult drinkers from 16.1 units in 2003 to 12.1 units in 2019, the lowest recorded across the time series. Although the means have consistently been higher for men than for women, trends across the time series are similar for both sexes: the mean number of units consumed per week has decreased from 21.8 units for men and 10.6 units for women in 2003 to 15.5 units and 8.8 units respectively in 2019.

Figure 4A, Table 4.1

Figure 4A

Mean number of units of alcohol consumed per week among adults, 2003-2019, by sex



4.3.2. Estimated usual weekly alcohol consumption level, 2019, by age and sex

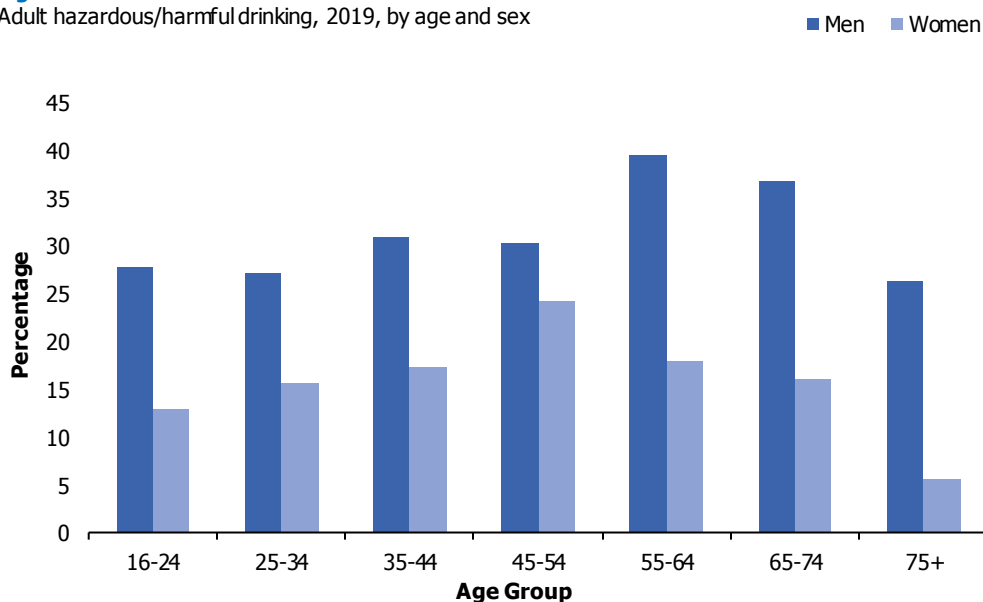
The prevalence of hazardous or harmful drinking for all adults was 24% in 2019, with men twice as likely to report hazardous or harmful drinking levels than women (32% and 16% respectively). The prevalence of hazardous or harmful drinking also differed by age, increasing from 20% among those aged 16-24 to 26 - 28% among those aged 45-74 before falling to the lowest proportion among adults aged 75 and over (14%).

As shown in Figure 4B, patterns of hazardous or harmful drinking levels by age were found to differ for men and women. Among men, the younger and oldest age groups recorded the lowest prevalence of hazardous or harmful drinking: 27- 28% among those aged 16-34, and 26% among those aged 75 and over and prevalence was highest

among men aged 55-74 (37 - 39%). Among women, prevalence of hazardous or harmful drinking levels was lowest among those aged 75 and over (6%) and those aged 16-24 (13%) and peaked among those aged 45-54 (24%).

Figure 4B

Adult hazardous/harmful drinking, 2019, by age and sex



The mean number of units of alcohol consumed per week by all adult drinkers was 12.1 units with men likely to consume more than women (15.5 units compared with 8.8 units per week respectively).

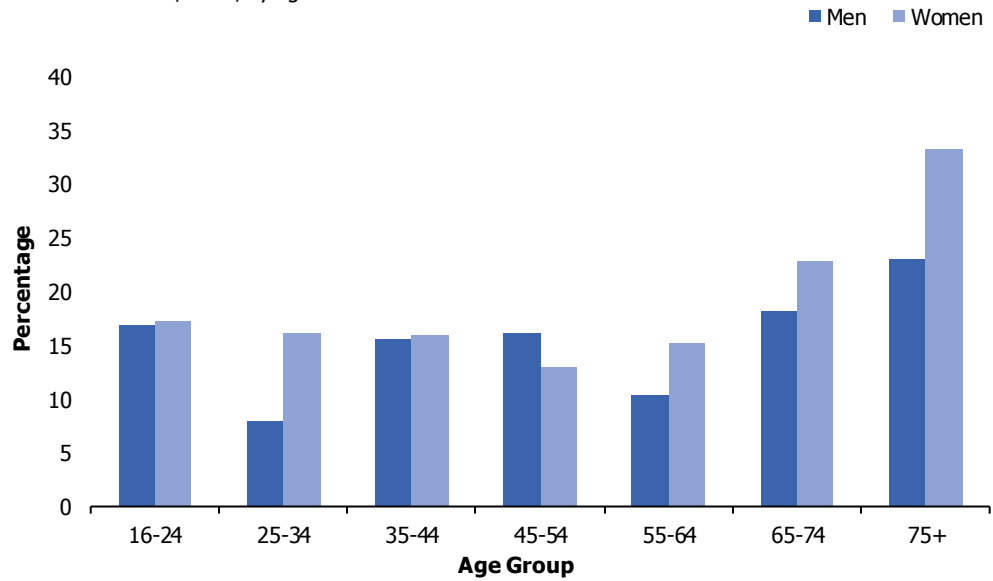
The mean number of units of alcohol consumed per week was lowest among adults aged 75 and over (8.2 units) and highest among those aged 55-64 (14.1 units). However, different patterns by age were found for men and women. Among men, the mean number of units of alcohol consumed per week was highest for those aged 55 to 64 (19.3 units) and lowest for those aged 25-34 (12.1 units). Among women, those aged 45-54 reported the highest mean number of units consumed per week (11.9 units) while those aged 75 and over reported the lowest (4.8 units).

The prevalence of non-drinking among all adults was 17% in 2019, with variations by both age and sex (see Figure 4C). Prevalence of non-drinking was higher among women (18%) than among men (15%) and it was higher among all adults aged 65 and over (21% of those aged 65-74 and 29% of those aged 75 and over) than among those in younger age groups (prevalence ranged from 12% to 17% in those aged between 16 and 64).

Figures 4B & 4C, Table 4.2

Figure 4C

Adult non-drinkers, 2019, by age and sex



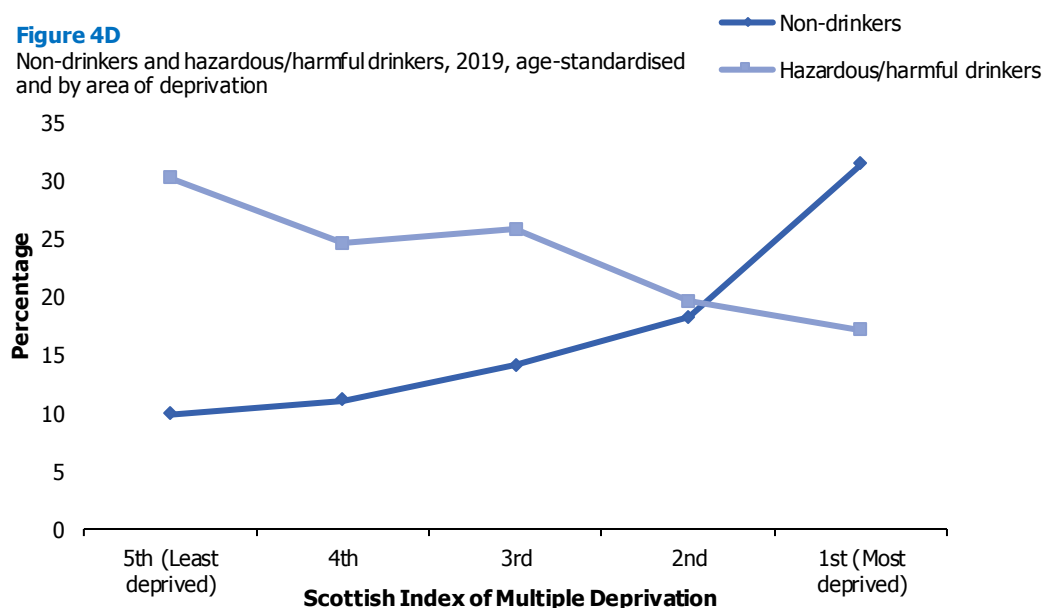
4.3.3. Estimated usual weekly alcohol consumption level (age-standardised), 2019, by area deprivation and sex

In line with results from previous years⁴⁰, the estimated levels of weekly alcohol consumption differed by area deprivation in 2019. Among all adults, the prevalence of hazardous or harmful drinking levels was highest among those living in the least deprived areas (30%) and lowest among those living in the most deprived areas (17%). Similar patterns were found for men and women.

There continued to be a significant association between area deprivation and non-drinking prevalence in 2019, with the highest proportion of non-drinkers in the most deprived areas (31%) and lowest proportion in the least deprived areas (10%). Again, similar patterns were recorded for men and women.

Figure 4D

Non-drinkers and hazardous/harmful drinkers, 2019, age-standardised and by area of deprivation



The mean number of units of alcohol consumed per week for all drinkers did vary by area of deprivation in 2019 but with no clear pattern. For men drinking at a hazardous or harmful level, the consumption pattern observed in 2018 was also evident in 2019, with a higher mean number of alcohol units per week recorded among men living in the most deprived areas (40.1 units) than among men living in the other areas (28.9 - 31.9 units). These differences were not statistically significant. This pattern was not evident for women drinking at a hazardous or harmful level.

Figure 4D, Table 4.3

4.3.4. AUDIT scores, 2019, by age and sex

Using the AUDIT score to determine alcohol dependency or high-risk use, 83% of all adults were abstinent or drinking in a way that conferred low risk in 2019, an equal proportion to that reported for 2016/2017 combined. Women were more likely than men to be abstinent or drinking in a way that conferred low risk (89% compared to 77% respectively).

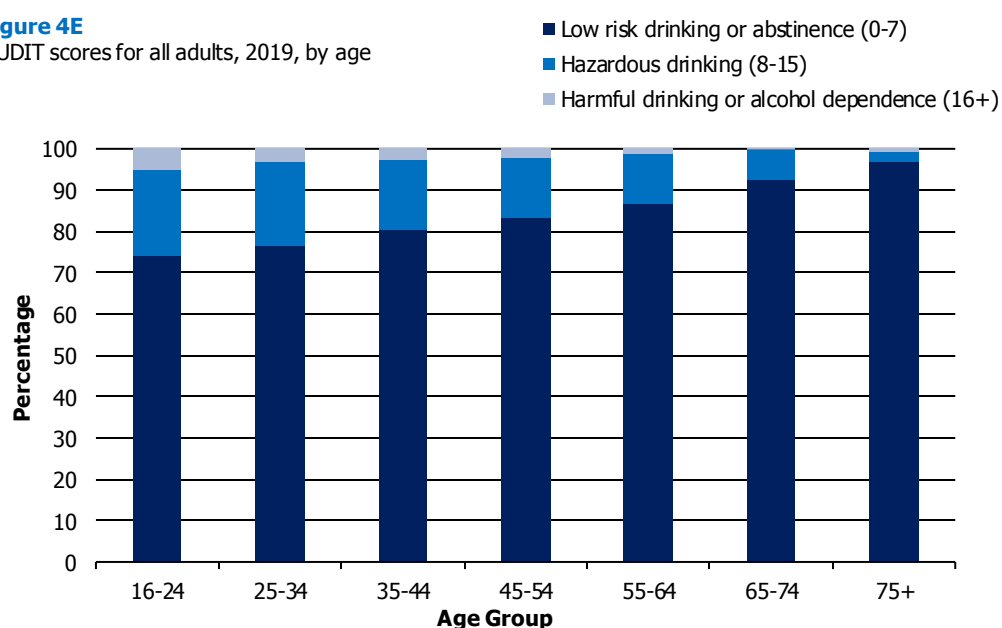
The prevalence of hazardous, harmful or possibly dependent drinking behaviour (AUDIT scores of 8 or more) in 2019 among all adults was 17% but was higher for men than for women (23% compared with 11%).

Hazardous drinking behaviour (AUDIT scores of 8-15) and harmful or possibly dependent drinking behaviour (AUDIT scores of 16 or more) also differed by sex. Among men, 20% reported hazardous drinking behaviour and 3% harmful or possibly dependent drinking behaviour while among women, these figures were 9% and 1% respectively.

Among all adults in 2019, the prevalence of hazardous drinking behaviour decreased with age from 21% among those aged 16-24 to 3% among those aged 75 and over. Similar patterns were found for men and women.

Harmful or possibly dependent drinking (AUDIT scores of 16 or more) also decreased with age from 5% among those aged 16-24 to 1% or less among those aged 55 and over. Patterns by age differed for men and women. For men, the prevalence of harmful or possibly dependent drinking ranged between 3% and 6% among those aged 16-64 before dropping to 1% or less for those aged 65 and over. For women the prevalence dropped from 5% among those aged 16-24 to between less than 1% and 2% for all other age groups.

Figure 4E
AUDIT scores for all adults, 2019, by age



The prevalence of abstinence or low risk drinking showed a corresponding increase with age, from 74% of those aged 16-24 to 97% of those aged 75 and over. Patterns by age differed for men and women. For men, the prevalence of abstinence or low risk drinking was lowest among those aged 25-44 (71%) while for women it was lowest among those aged 16-24 (75%).

Figure 4E, Table 4.4

4.3.5. AUDIT scores (age-standardised), 2019, by area deprivation and sex

There was no clear association between area deprivation and the prevalence of hazardous, harmful or possibly dependent drinking behaviour among all adults or by sex. However, although not statistically significant, the proportion of men who reported harmful or possibly dependent drinking behaviour (AUDIT scores of 16 or more) was higher among those who lived in the most deprived areas than the proportions in the less deprived areas (7% compared with 2-3% in the other areas). A lower proportion of men in the most deprived areas reported low risk drinking or abstinence (70% compared with 75 - 82% in other less deprived areas).

Table 4.5

4.3.6. Children living with a parent with an AUDIT score of 8+ and 16+, 2017/2019 combined, by age and sex

To increase the sample size available, the detailed analysis of children living with parents with an AUDIT score of 8 or more and 16 or more, by age and sex used data from the 2017 and 2019 surveys combined.

Among all children in 2017/2019 combined, the majority (83%) were not living in a household with a parent exhibiting hazardous drinking behaviour or with a possible alcohol dependence (AUDIT scores of 0-7). Just under a fifth of children (17%) were living with at least one parent in their household who exhibited hazardous, harmful drinking behaviour or had a possible alcohol dependence (AUDIT score of 8 or more). Two per cent lived with at least one parent in their household who was drinking at a harmful level or who had possible alcohol dependence (AUDIT score of 16 or more). There were no significant differences by age or sex of the child in the proportion of children who had at least one parent who exhibited hazardous or harmful drinking behaviour or with a possible alcohol dependence.

Table 4.6

Table List

Table 4.1	Estimated usual weekly alcohol consumption level, 2003 to 2019
Table 4.2	Estimated usual weekly alcohol consumption level, 2019, by age and sex
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Table 4.4	AUDIT scores, 2019, by age and sex
Table 4.5	AUDIT scores (age-standardised), 2019, by area deprivation and sex
Table 4.6	Children living with a parent with an AUDIT score of 8+ and 16+, 2017/2019 combined, by age and sex

The tables can be found on the main report page under supporting files:

<https://www.gov.scot/publications/scottish-health-survey-2019-volume-1-main-report/>

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- | Drinking frequency | Multiplying factor |
|-------------------------|--------------------|
| Almost every day | 7.0 |
| 5 or 6 times a week | 5.5 |
| 3 or 4 times a week | 3.5 |
| Once or twice a week | 1.5 |
| Once or twice a month | 0.375 |
| One every couple months | 0.115 |
| Once or twice a year | 0.029 |
- The separate consumption figures for each type of drink were rounded to two decimal places and then added together to give an overall weekly consumption figure.
- 35 Participants were first asked if they had drunk alcohol in the past seven days. If they had, they were asked on how many days and, if on more than one, whether they had drunk the same amount on each day or more on one day than others. If they had drunk more on one day than others, they were asked how much they drank on that day. If they had drunk the same on several days, they were asked how much they drank on the most recent of those days. If they had drunk on only one day, they were asked how much they had drunk on that day.
- 36 See: <https://www.gov.scot/publications/scottish-health-survey-2008/pages/29/>
- 37 See: <https://www.drinkaware.co.uk/alcohol-facts/alcoholic-drinks-units/latest-uk-alcohol-unit-guidance/>
- 38 AUDIT questionnaire

Questions	0	1	2	3	4
1. How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week
2. How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more
3. How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
4. How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
5. How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
7. How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
8. How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
9. Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year
10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking last year?	No		Yes, but not in the last year		Yes, during the last year

- ³⁹ Babor, T.F., Higgins-Biddle, J.C., Saunders, J.B. and Monteiro, M.G (2001). *AUDIT – The Alcohol Use Disorders Identification Test – Guidelines for Use in Primary Care*, Second Edition. Geneva: World Health Organization.
- ⁴⁰ Vosnaki, K (2018). Chapter 3: Alcohol. In: McLean, J, Dean, L and Hinchcliffe, S. (eds.) *The Scottish Health Survey 2018 – Volume 1: Main Report*. Edinburgh: Scottish Government. 2020. Available from: <https://www.gov.scot/publications/scottish-health-survey-2018-volume-1-main-report/>



Chapter 5

Smoking

Smoking

Adult self-reported current smokers



17% of adults smoked in 2019, the lowest level in the time series *

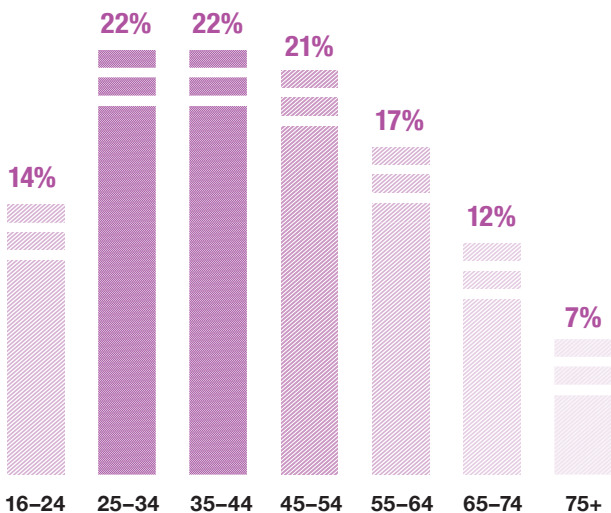
Men smoked a higher number of cigarettes per day on average than women in 2019.



13.1
mean number of cigarettes smoked per day by men

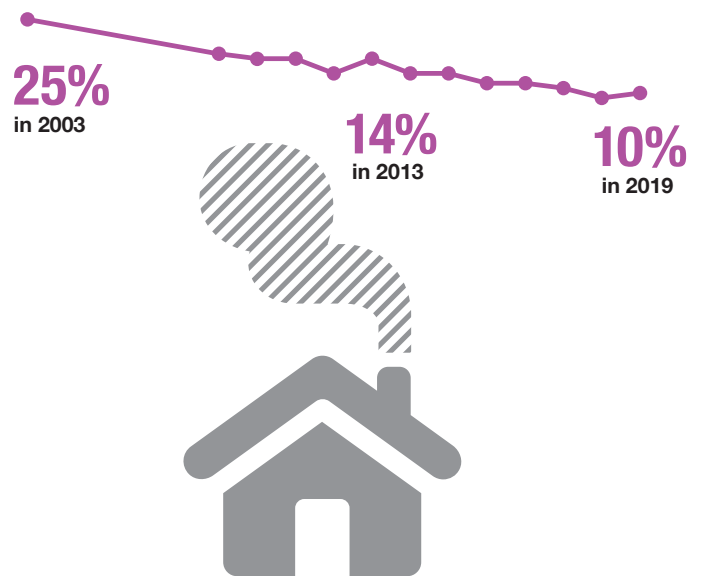
11.3
mean number of cigarettes smoked per day by women

Smoking prevalence in 2019 was highest among those aged 25–54 and lowest among those aged 75 and over.

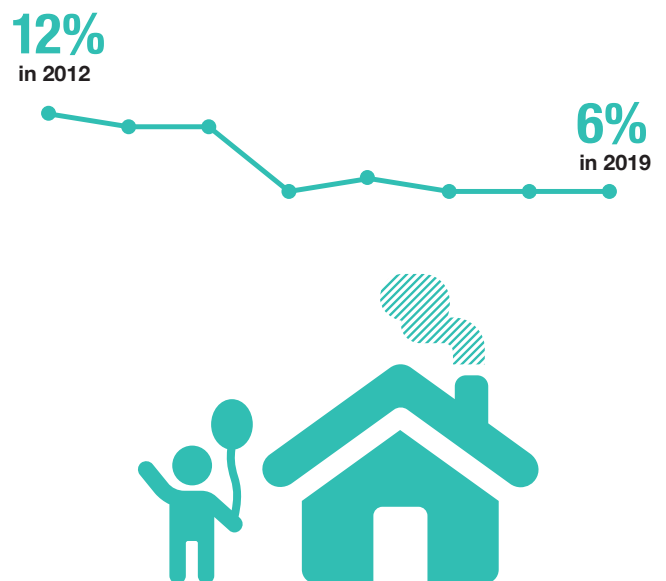


* Although not significantly different from 2018 (19%) or 2017 (18%).

The proportion of non-smokers that reported being exposed to second-hand smoke in their own or another person's home has decreased over the years.

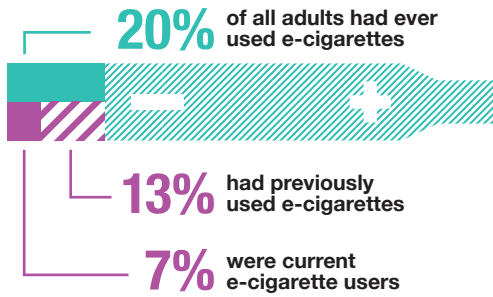


The proportion of children exposed to second-hand smoke in their own home has stabilised at 6-7% in recent years.**

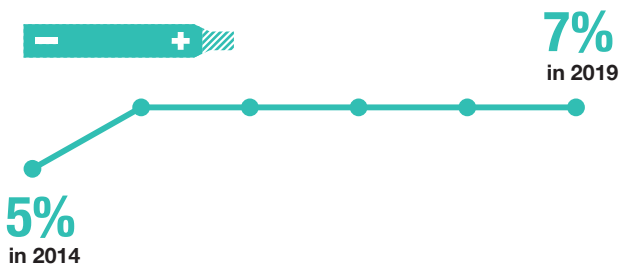


** Note that a ban on smoking in enclosed public places was introduced in Scotland in 2006.

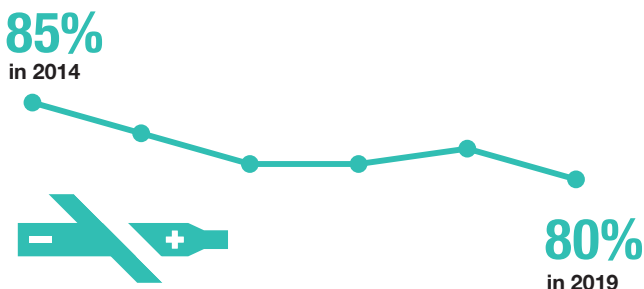
E-cigarette use in 2019



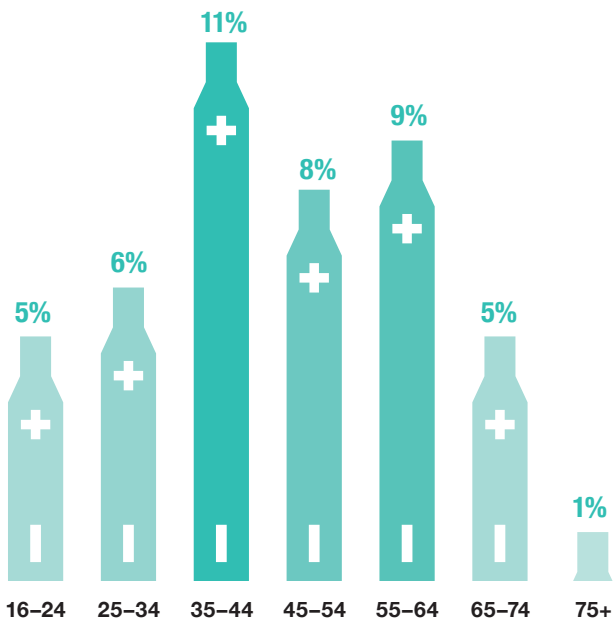
Current e-cigarette use has remained stable since 2015.



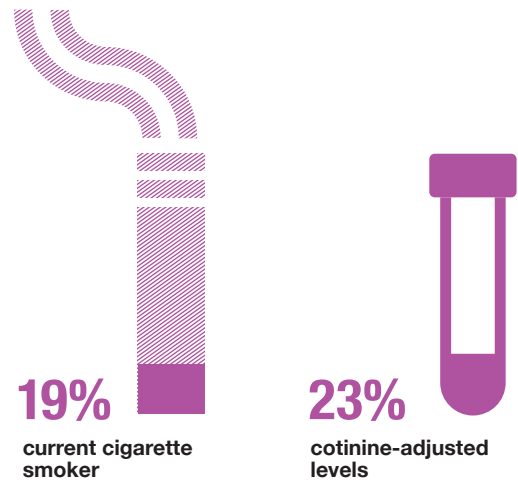
There has been an overall decrease in the percentage of adults that have never used e-cigarettes.



The highest proportion of current e-cigarette users in 2019 was among those aged 35–44 and the lowest among those aged 75 and over.



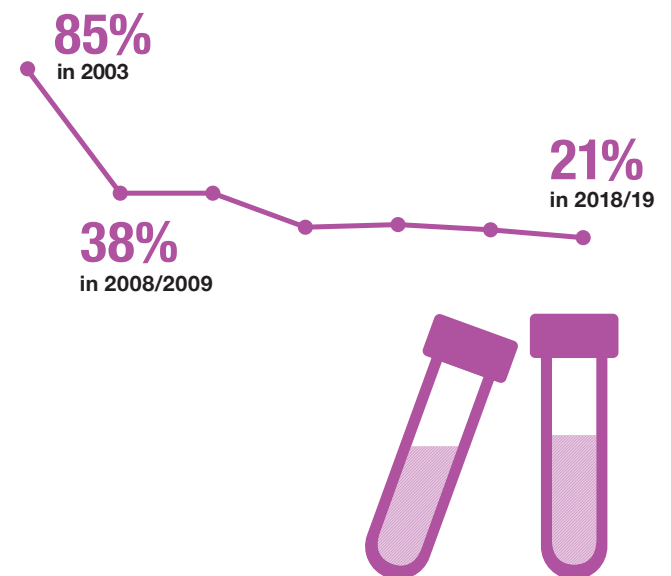
Around one in five adults self-reported as a current cigarette smoker in 2018/2019, a figure which did not vary significantly when adjusted for cotinine levels for the same period.



In 2018/2019, more than one in five non-smokers had a detectable level of cotinine in their saliva.



The proportion of non-smokers with detectable cotinine exposure decreased over time.^{***}



^{***} Note that a ban on smoking in enclosed public places was introduced in Scotland in 2006.

5. SMOKING

Konstantina Vosnaki

5.1 INTRODUCTION

The World Health Organisation describe tobacco as ‘one of the biggest public health threats the world has ever faced’ with more than 7 million deaths worldwide a direct result of tobacco use and a further 1.2 million attributed to second-hand smoke exposure¹. In Scotland, smoking was associated with around 9,360 deaths in those aged 35 and over² and an estimated 99,296 hospital admissions in 2018, with a smoking-attributable disease or condition the primary reason for 51,969 of these admissions³. Tobacco use is associated with stillbirths and infant deaths, childhood respiratory diseases, and communicable as well as non-communicable diseases in adulthood⁴. As the cause of around one in five deaths and the primary preventable cause of premature death, smoking represents the chief threat to Scotland’s public health⁵. Smoking rates continue to be highest in Scotland’s most deprived areas underlining smoking as a key ongoing health inequality challenge⁶.

The risks associated with smoking increase the longer a person continues smoking. However, these risks can reduce substantially when a person stops, adding further weight to the importance of cessation policies, interventions and initiatives. Smoking cessation interventions, including pharmacotherapy such as nicotine replacement therapy (NRT), are among the most cost-effective health care interventions available⁷.

5.1.1 Policy background

Part of the Scottish Government's **National Outcomes Framework** is the overall strategic objective for health: ‘We are healthy and active’⁸. Scottish Health Survey (SHeS) data are used as a National Indicator to measure the proportion of adults with two or more of the following health risk behaviours: currently smoking, harmful drinking, low physical activity and obesity⁹.

In 2013, the Scottish Government set out its ambition to create a ‘tobacco-free generation’ (defined as ‘a smoking prevalence among the adult population of 5% or lower’) by the year 2034¹⁰. The **Scottish Ministerial Working Group on Tobacco Control** was formed in 2015 to provide expert advice to the Scottish Government that would inform policy development, as well as monitoring existing policies and sharing best practice¹¹.

Raising Scotland’s Tobacco-free Generation was published in June 2018¹² outlining interventions and policies that aim to ensure that when those born in 2013 reach the age of 21, they will be a ‘tobacco free’ generation. The actions include awareness raising campaigns, encouraging healthier behaviour in public settings, improving cessation services, regulations on smoking in prisons, the advertisement of e-cigarettes and restrictions on heated tobacco products. In addition, in

2018, the Scottish Prison Service implemented a smoking ban in prisons, accompanied by cessation support¹³.

The 'quit your way' branding was established as part of **Raising Scotland's Tobacco-free Generation**. This was brought to life through the '**Quit Your Way – with our support**' campaign, which under the banner of a single national identity for smoking cessation support in Scotland¹⁴, aims to support individuals to stop smoking in a way that works for them with information on the benefits of quitting, local support services, personal quit plans and more¹⁵.

Working with COSLA, NHS Health Scotland published **Smoke-free Local Authority Implementation Guidance**¹⁶ in January 2017 which set out actions related to the themes of smoking prevention, protection and cessation. The 2015/16 **NHS Local Delivery Plan (LDP) Standards** and subsequent 2019 report on progress¹⁷, while focused on delivering a universal smoking cessation offer, also includes a target of helping those living in Scotland's most deprived areas. The targeting of these areas through LDP Standards has been recognised by organisations such as Cancer Research UK as a positive approach to tackling this health inequality¹⁸.

The **Health (Tobacco, Nicotine etc. and Care) (Scotland) Act 2016**¹⁹ commenced on 1 April 2017. The Act includes provisions to regulate:

- the introduction of a minimum age of 18 for the sale of Nicotine Vapour Products (NVPs) – including electronic cigarettes
- a ban on the purchase of NVPs on behalf of an under 18 – 'proxy purchase'
- the introduction of mandatory registration for the sale of NVPs
- bans on certain forms of domestic advertising and promotion of NVPs
- the introduction of an age verification policy for sales of tobacco and NVPs by under 18s ('Challenge 25')
- a prohibition on the sale of NVPs from vending machines.
- a ban on unauthorised sales of tobacco and NVPs by under 18s
- the introduction of statutory smoke-free perimeters around buildings on NHS hospital sites.

Regulation on most of these provisions came into force in 2017. The results of a consultation on proposals to ban smoking outside hospital buildings found that the majority of respondents were in favour, with around seven in ten in support of a 15 metre no-smoking perimeter²⁰.

Additional legislation on smoking passed by the Scottish Parliament includes the **Smoking Prohibition (Children in Motor Vehicles) (Scotland) Act 2016** which deems it an offence for an adult to smoke in cars in a public place in the presence of children²¹. While across the UK, regulations came into force on 21 May 2017 making it an offence to sell cigarettes in any pack containing less than 20 cigarettes, and ensuring all cigarettes are sold in standardised brand-neutral packs²².

5.1.2 Reporting on smoking in the Scottish Health Survey (SHeS)

Reliable data on smoking behaviour, cessation, nicotine replacement therapy (NRT) use and exposure to second-hand smoke are vital to effective monitoring of trends relevant to the various targets in place. This chapter presents prevalence of adult cigarette smoking and e-cigarette use for 2019 as well as trends in prevalence of both. Exposure to second-hand smoke among children and adult non-smokers is also reported with and without adjustments for cotinine.

The area deprivation data are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. Readers should refer to the Glossary at the end of this Volume for a detailed description of SIMD.

Supplementary tables are also available on the Scottish Government SHeS website <https://www.gov.scot/collections/scottish-health-survey/>

5.1.3 Comparability with other UK statistics

The Health Survey for England, Health Survey for Northern Ireland and the National Survey for Wales provide estimates of smoking prevalence in the other home nations within the UK. The surveys are conducted separately and have different sampling methodologies, so smoking prevalence estimates across the surveys are only partially comparable²³. Smoking prevalence estimates from the UK-wide Integrated Household Survey for Scotland, Wales, England and Northern Ireland have been deemed to be fully comparable²⁴.

5.2 METHODS AND DEFINITIONS

5.2.1 Methods of collecting data on smoking behaviour

Adults aged 20 and over were asked about their smoking behaviour during the face to face interview. For those aged 16 and 17, information was collected in a self-completion questionnaire offering more privacy and reducing the likelihood of concealing behaviour in front of other household members. Those aged 18 and 19 could answer the questions either face to face or via the self-completion booklet, at the interviewer's discretion.

5.2.2 Questions on smoking behaviour

Questions on smoking have been included in SHeS since 1995. Some small changes were made to the questions in 2008 and 2012. These are outlined in the relevant annual reports^{25,26}.

The current questions in the survey focus on:

- current smoking status
- frequency and pattern of current smoking
- the number of cigarettes smoked by current smokers
- exposure to second-hand smoke

- past smoking behaviour, current and ex-smokers
- quit attempts and desire to give up smoking
- medical advice on giving up smoking
- NRT use (including questions on NRT that led to successful cessation)
- e-cigarette use (including as part of a quit attempt).

The self-completion questions were largely similar to those asked in the face to face interview. However, given the age of the participants completing the self-completion questionnaire, questions on past smoking behaviour, desire to give up smoking and medical advice to stop smoking were excluded.

5.2.3 Questions on e-cigarette use

SHeS has gathered information on the use of e-cigarettes among the Scottish adult population since 2014, in response to their increased availability and high profile. The questions ask whether participants have ever used an e-cigarette as well as whether they currently use an e-cigarette.

5.2.4 Definitions

Cigarette smoking status

Smoking status categories reported here are:

- current cigarette smoker
- ex-regular cigarette smoker
- never regular cigarette smoker
- never smoked cigarettes at all

Information on cigar and pipe use is collected in the survey but as prevalence is low these are not considered in the definition of current smoking.

Exposure to second-hand smoke (children)

Exposure to second-hand smoke for children is measured in two ways in the survey:

- whether there is someone who regularly smokes inside the accommodation where the child lives, and
- parents' and older children's (aged 13-15) reports of whether children are exposed to smoke at home.

Exposure to second-hand smoke (adults)

Exposure to second-hand smoke in adults is measured in two ways in the survey:

- by asking respondents to self-report where they have been exposed to second-hand smoke

- collecting saliva samples from a sub-set of the adult respondent sample asked the biological module in order to determine whether cotinine, an indicator of exposure to second-hand smoke, is detectable for non-smokers.

The approach used to calculate mean cotinine levels among non-smokers was updated for the 2019 report. The analysis of saliva samples uses equipment which can detect cotinine levels as low as 0.1 ng/mL. In previous reports, for the purpose of calculating mean levels of cotinine across the population, any sample below this limit of detection was assumed to have a level of 0.05 ng/mL. However, over time, the proportion of non-smokers with levels of cotinine below the limit has increased to the point that it was necessary to review this assumption in light of its impact on reported population levels of exposure to second-hand smoke²⁷.

The analysis method was therefore changed to utilise Tobit regression. This method assumes that the distribution of values below the level of detection follows the same pattern as those above the method of detection. Thus, as the mean levels of cotinine among those with a cotinine level of between 0.1 ng/mL and 12 ng/mL (the level at which someone is deemed to be a cotinine-validated smoker) fall, so too do the assumed mean levels of those with a cotinine level of below 0.1 mg/mL²⁷. Because of this change in method, figures presented in Table 5.7 differ from those presented in the 2017 report.

Further details on the collection and analysis of saliva samples for cotinine can be found in the 2019 technical report²⁸.

5.3 SMOKING

5.3.1 Cigarette smoking status, 2019, by age and sex

In 2019, 17% of adults identified as current smokers, the lowest level in the time series, though not significantly different to the proportions recorded in 2018²⁹ (19%) and 2017³⁰ (18%).

Smoking prevalence did not significantly differ by sex, with 19% of men and 16% of women identifying themselves as current smokers in 2019. However, on average, men smoked a higher number of cigarettes per day than women (13.1 mean cigarettes per day for men compared with 11.3 for women; 12.2 for all adults).

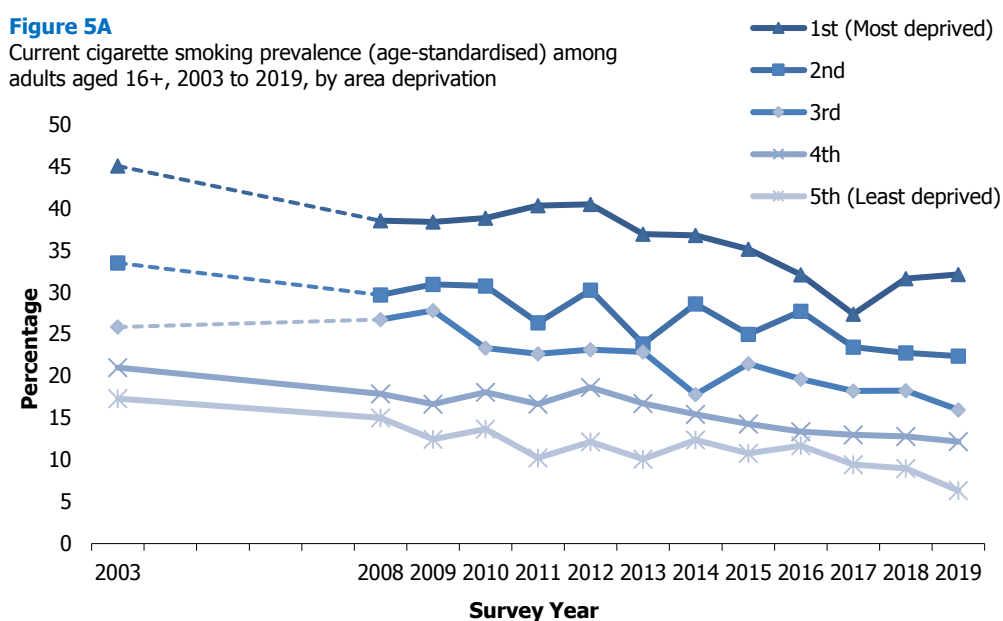
As seen in previous years³¹, there were significant differences in smoking prevalence by age group in 2019. The highest proportions of self-reported current smokers were recorded among those aged 25-54 (21 - 22%) and the lowest smoking prevalence was among those aged 75 and over (7%).

The highest mean number of cigarettes smoked per day by current smokers in 2019 was among those aged 45-74 (14.6 - 15.0 cigarettes) and the lowest among those aged 16-24 (7.6 cigarettes).

In 2019, 23% of all adults identified as ex-regular smokers. There was a significant association between age and previous smoking status in 2019, which again is consistent with previous years. Among all adults, the lowest proportion of ex-regular smokers in 2019 was found among those aged 16-24 (6%) while 35 - 37% of those aged 65 and over reported having smoked regularly in the past. **Table 5.1**

5.3.2 Cigarette smoking status (age-standardised), 2003 to 2019, by area deprivation and sex

Adults living in more deprived areas were more likely to be current regular smokers than those in less deprived areas: prevalence in 2019 was 32% among those who lived in the most deprived quintile with step-decreases across the intermediate quintiles to 6% in the least deprived quintile. Despite overall decreases in smoking prevalence, this has been a consistent pattern since 2003 when 45% of those who lived in the most deprived areas were current regular smokers compared with 17% in the least deprived areas.



A similar overall pattern by area deprivation was recorded for the mean number of cigarettes smoked per day. In 2019, the mean number of cigarettes smoked per day among current smokers that lived in the most deprived areas (13.1 cigarettes) was higher than that among current smokers in the least deprived areas (10.2 cigarettes).

Since 2003, both smoking levels and the average number of cigarettes smoked have reduced significantly for all area deprivation quintiles. However, the gap between current smoking prevalence in the most deprived and least deprived areas increased from 18 percentage points in 2017 (27% in most deprived and 9% in least deprived) to 26 percentage points in 2019 (32% in most deprived and 6% in least deprived).

Figure 5A, Table 5.2

5.3.3 Adult non-smokers' exposure to second-hand smoke, 2003 to 2019

The proportion of adult non-smokers that reported being exposed to second-hand smoke in their own or another person's home has reduced over the time series, with an overall decrease from 25% in 2003 to 10% in 2019. This pattern was evident for both men (24% in 2003 and 9% in 2019) and women (27% in 2003 and 10% in 2019).

There have been no significant variations over the time series since 2012 in the proportions of adult non-smokers that reported being exposed to second-hand smoke outside of buildings for either men or women, with proportions fluctuating between 11% and 15% for all adults since 2012.

The percentage of adult non-smokers who reported that they were not exposed to second-hand smoke in any of the places included in SHeS³² has been relatively stable at 70% from 2012 to 2014 and then remaining in the range of 73 - 74% since 2015. Similar patterns and levels were found for men and women. **Table 5.3**

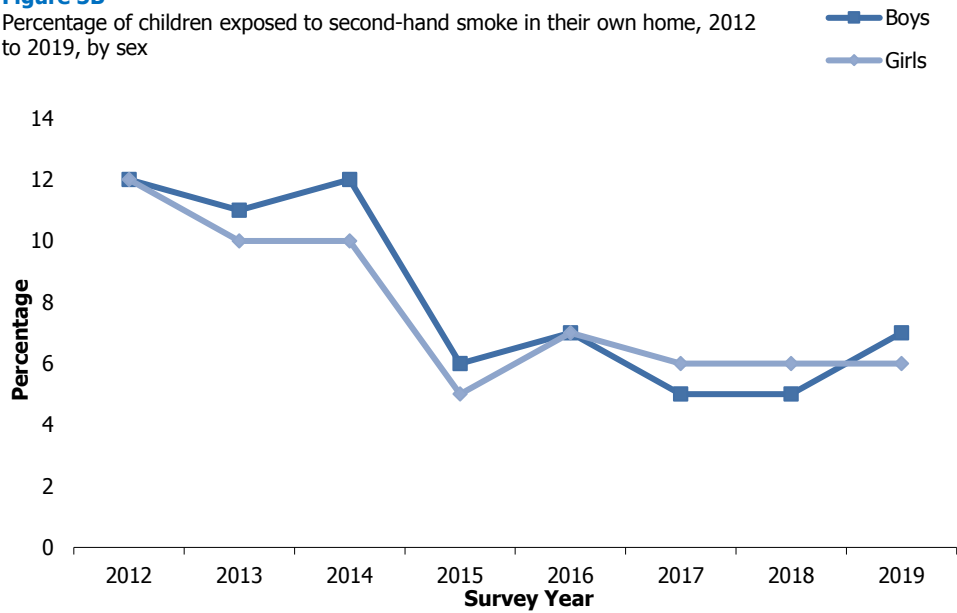
5.3.4 Children's exposure to second-hand smoke, 2012 to 2019

In 2019, 11% of children were living in accommodation in which someone regularly smoked indoors; a figure which was consistent for both boys and girls. There was a significant decrease between 2012 and 2015 in the proportion of children living in accommodation with someone who smoked indoors (from 19% to 12%). Since 2016, this figure has remained in the range 10 - 11%.

A small percentage of children were exposed to second-hand smoke in their own home in 2019 (6%). Over the time series, this exposure followed a similar pattern to the proportion of children living in accommodation in which anyone regularly smoked indoors. Between 2012 and 2014, 11 - 12% of children were exposed to second-hand smoke in their own home, a proportion that decreased to 6% in 2015 and that has remained in the range of 6 - 7% since. This pattern was similar among boys and girls in 2019. **Figure 5B, Table 5.4**

Figure 5B

Percentage of children exposed to second-hand smoke in their own home, 2012 to 2019, by sex



5.3.5 E-cigarette use among adults, 2014 to 2019, by age and sex

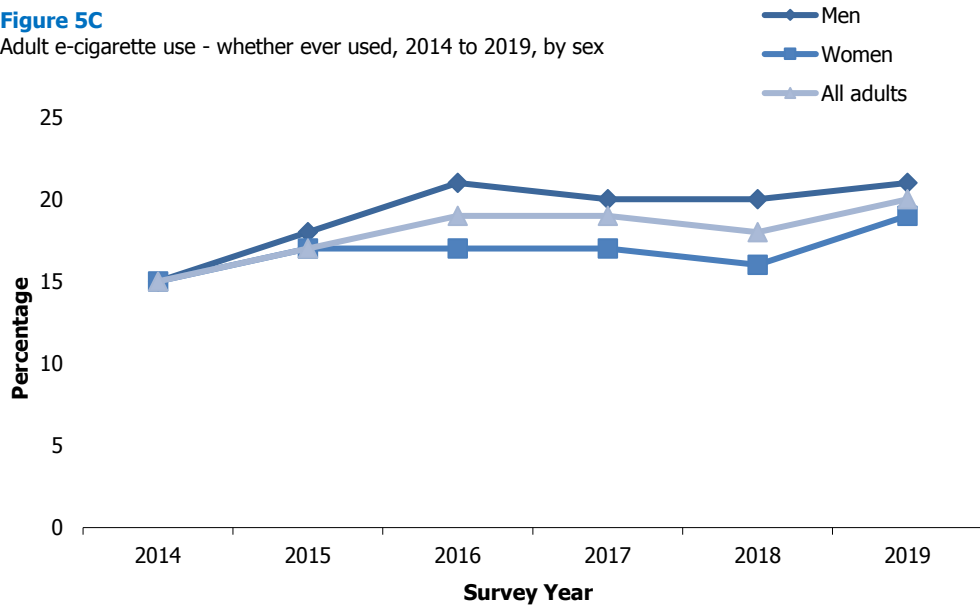
In 2019, 20% of all adults reported that they had ever used e-cigarettes: 7% reported being current users and 13% having previously used them. Four out of five adults (80%) had never used e-cigarettes.

Men and women were equally likely to be current users of e-cigarettes (7% for both men and women) in 2019. Similarly, there were no statistically significant differences in the proportion of men and women in 2019 who had used e-cigarettes in the past (14% and 12% respectively) or that reported never having used them (79% and 81% respectively).

The highest proportion of current e-cigarette users in 2019 was recorded among those aged 35-44 (11%) with the lowest proportions among those aged 75 and over (1%) and those aged 16-24 and 65-74 (both 5%). The highest proportion of former e-cigarette users was among those aged 25-34 (21%), while the lowest was among those aged 75 and over (3%).

Figure 5C

Adult e-cigarette use - whether ever used, 2014 to 2019, by sex

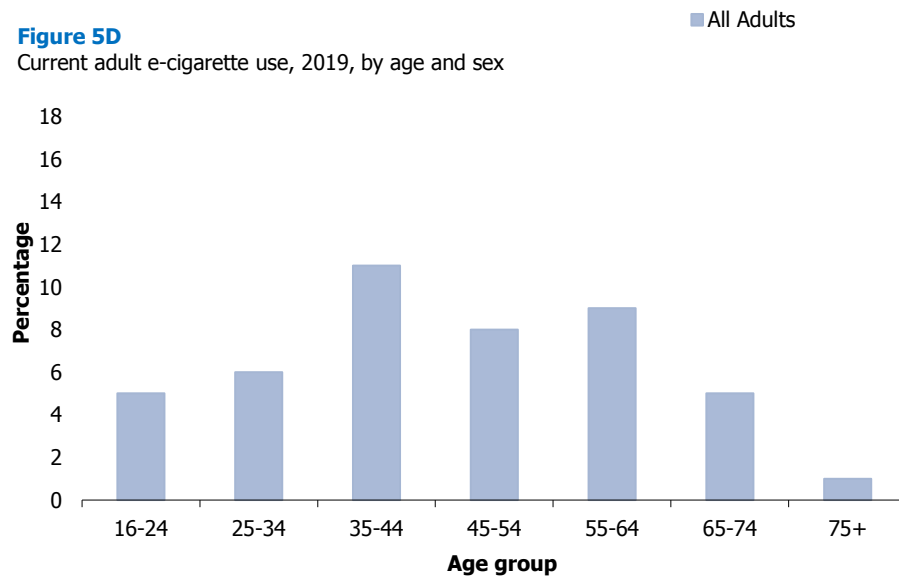


Current e-cigarette use has remained stable at 7% since 2015, having increased from 5% in 2014. There has been an overall decrease in the percentage of adults that have never used e-cigarettes from 85% in 2014 to 80% in 2019. Over the time series, the proportion of adults that reported never trying e-cigarettes has consistently been highest among those aged 75 and over (95 - 98% between 2014 and 2019).

Figures 5C & 5D, Table 5.5

Figure 5D

Current adult e-cigarette use, 2019, by age and sex



5.3.6 Smoking prevalence estimates without and with saliva cotinine adjustment, 2018/2019 combined, by age and sex

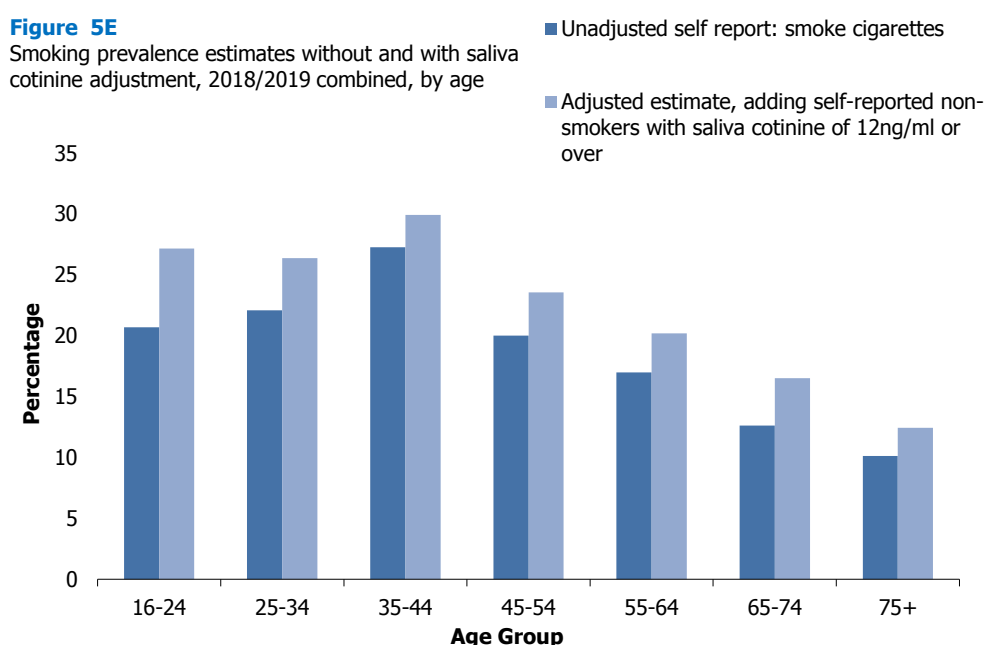
To increase the sample size available, the detailed analysis of smoking prevalence estimates without and with saliva cotinine adjustment by age and sex, used data from the 2018 and 2019 surveys combined for those with a valid cotinine measurement. Around one in five adults (19%) self-reported as a current cigarette smoker in 2018/2019, which

did not differ significantly when adjusted for cotinine levels (23%). The 2018/2019 gap of four percentage points between self-reported smoking and cotinine adjusted levels for all adults was similar to those reported for 2016/2017 (five percentage points) and 2014/15 (three percentage points)³⁰.

There were no significant differences between men and women for either of these measures. The difference between self-reported smoking status and cotinine-adjusted smoking prevalence in 2018/2019 was four percentage points for all adults, as well as for men (20% and 24%) and women (18% and 22%).

The difference between self-reported smoking prevalence and the cotinine-adjusted smoking prevalence for adults aged 16 and over did not vary significantly with age.

Figure 5E, Table 5.6



5.3.7 Self-reported, cotinine validated adult non-smokers' exposure to second-hand smoke, 2003 to 2018/2019 combined

To increase the sample size available, the analysis for self-reported cotinine validated adult non-smokers' exposure to second-hand smoke used data from 2003 alone and then subsequently combined data for two survey years at a time from 2008/2009 combined to 2018/2019 combined.

Adult non-smokers' geometric mean cotinine levels reduced significantly from 0.40 ng/ml in 2003 to 0.05 ng/ml in 2008/2009. In 2012/2013 there was a further significant decrease in the non-smokers' geometric mean cotinine levels to 0.02 ng/ml and it has remained at this level for each of the combined survey periods since, including in 2018/2019.

In 2018/2019, around one in five non-smokers (21%) had a detectable level of cotinine in their saliva. The largest drop in the proportion of non-smokers with detectable cotinine exposure was between 2003 (85%) and 2008/2009 (38%), a 47 percentage point decrease. There was a subsequent fall of 13 percentage points in 2012/2013 (to 25%) with a gradual decrease since from 26% in 2014/2015 to 21% in 2018/2019.

Across the time series, both geometric mean cotinine levels and the proportions with detectable cotinine exposure have generally been very similar for male and female non-smokers. **Figure 5F, Table 5.7**

Figure 5F

Percentage of self-reported non-smokers exposed to cotinine, 2003 to 2018/2019 combined

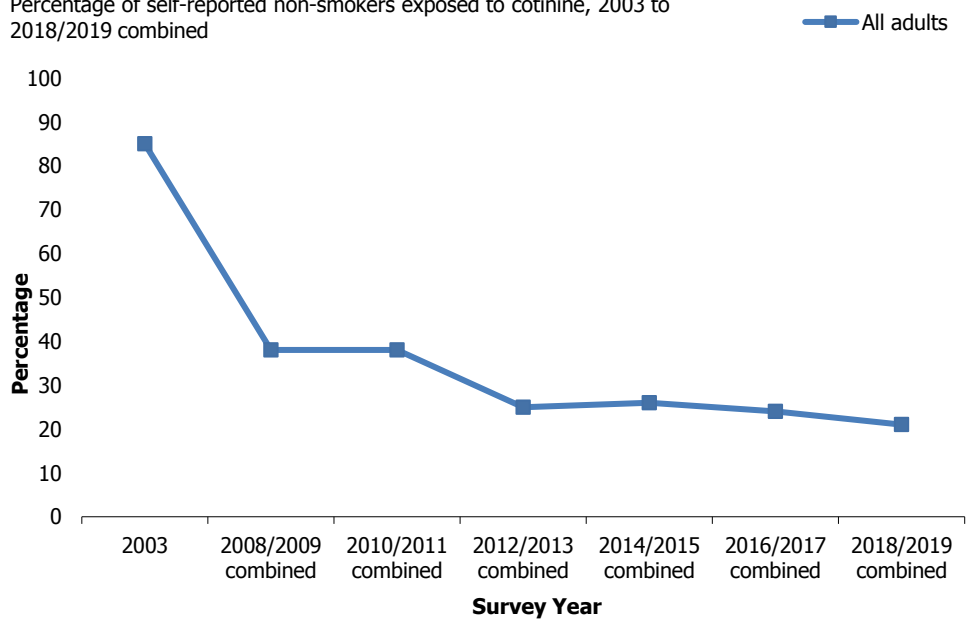


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The tables can be found on the main report page under supporting files:

<https://www.gov.scot/publications/scottish-health-survey-2019-volume-1-main-report/>

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- 19 See http://www.legislation.gov.uk/asp/2016/14/pdfs/asp_20160014_en.pdf
- 20 See <https://www.gov.scot/news/smoking-ban-proposals-1/>

- 21 Smoking Prohibition (Children in Motor Vehicles) (Scotland) Act 2016. See: <http://www.legislation.gov.uk/asp/2016/3/contents>
- 22 See <http://ash.org.uk/media-and-news/press-releases-media-and-news/all-tobacco-packs-on-sale-will-be-in-standardised-plain-packs-from-20th-may-2017/>
- 23 *Comparing official statistics across the UK*. Government Statistical Service, 2016. Available from: <https://www.statisticsauthority.gov.uk/wp-content/uploads/2016/11/Comparing-Official-Statistics-Across-the-UK.pdf>
- 24 See: https://fingertips.phe.org.uk/documents/smoking_prevalence_comparisons_AUG2016.pdf
- 25 Gray L & Leyland AH (2009). Chapter 4: Smoking. In: Bromley, C., Bradshaw, P. and Given, L. (eds.) *The 2008 Scottish Health Survey – Volume 1: Main Report*. Edinburgh: Scottish Government. 2009. www.gov.scot/Publications/2009/09/28102003/0
- 26 Gray L & Leyland AH (2013). Chapter 4: Smoking. In: Rutherford, L., Hinchcliffe, S. and Sharp, C. (eds.) *The Scottish Health Survey 2012 – Volume 1: Main Report*. Edinburgh: Scottish Government. Available from: www.gov.scot/Publications/2013/09/3684
- 27 Semple, S., Mueller, W., Leyland, A H., Gray, L. & Cherrie, J W. (2019). Assessing progress in protecting non-smokers from secondhand smoke. *Tobacco Control*. Available from: <https://tobaccocontrol.bmj.com/content/28/6/692.info>
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- 29 Dean, L & Mirani, K. (2018). Chapter 4: Smoking. In: McLean, J., Dean, L. and Hinchcliffe, S. (eds.) *The Scottish Health Survey 2018: main report – revised 2020*. Edinburgh: Scottish Government. Available from: <https://www.gov.scot/publications/scottish-health-survey-2018-volume-1-main-report/>
- 30 Gray, L & Leyland, A H. (2017). Chapter 5: Smoking. In: McLean, J., Christie, S., Hinchcliffe, S. and Gray, L. (eds.) *The Scottish Health Survey 2017: volume one - main report*. Edinburgh: Scottish Government. Available from: <https://www.gov.scot/publications/scottish-health-survey-2017-volume-1-main-report/>
- 31 Dean, L & Mirani, K. (2018). Chapter 4: Smoking. In: McLean, J., Dean, L. and Hinchcliffe, S. (eds.) *The Scottish Health Survey 2018: main report – revised 2020*. Edinburgh: Scottish Government. Available from: <https://www.gov.scot/publications/scottish-health-survey-2018-volume-1-main-report/>
- 32 At their own / other's home, at work, in cars / vans, outside buildings, or in public places



Chapter 6

Diet and Obesity

Diet and Obesity



In 2019, around one in five of all adults consumed five or more portions of fruit and vegetables a day*, similar to levels recorded since 2003.

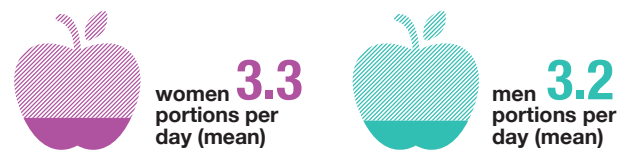


Contrary to the previous trend of women being more likely than men to consume the recommended five-a-day portions of fruit and vegetables, there was no significant difference between men and women in 2019.

Consumption of 5 or more fruit and veg portions a day in 2019



Mean portions of fruit and vegetables per day



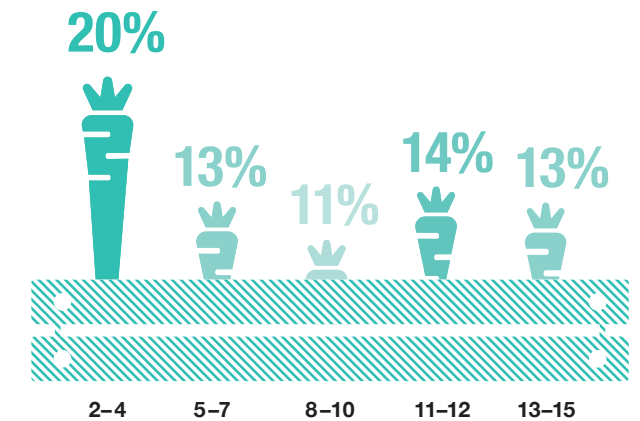
In 2019, around one in seven children aged 2–15 met the five-a-day recommendation for consumption of fruit and vegetables.



Girls were significantly more likely to meet the recommendation than boys.

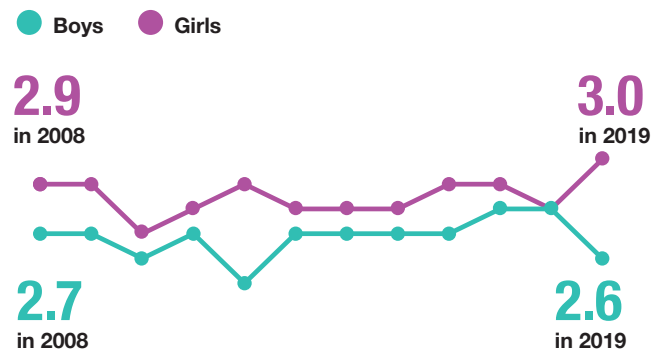


In 2019, children aged 2–4 years were more likely to consume five or more portions of fruit and vegetables on a typical day than older children.



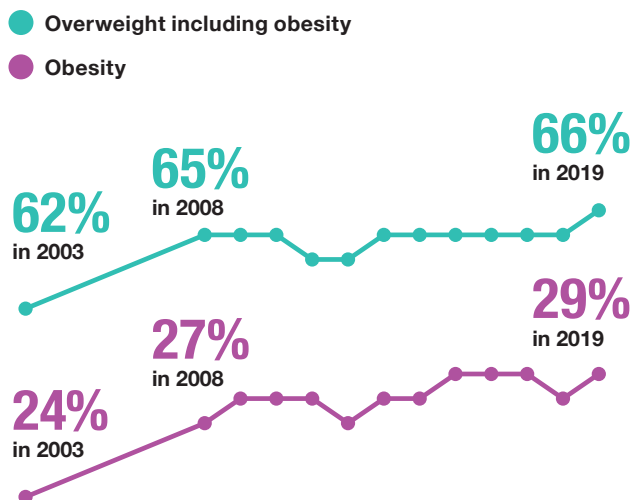
Girls have consumed higher levels of fruit and vegetables per day* than boys in most years since 2008.

Mean portions of fruit and vegetables per day

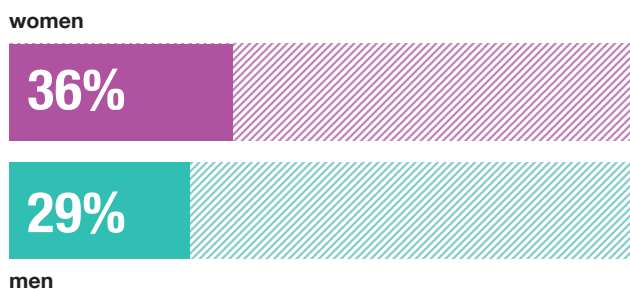


* Data based on consumption the day before the interview.

In 2019, two in three adults were overweight including obesity**, the highest prevalence in the time series since 2003. Obesity*** prevalence has remained relatively stable since 2008.



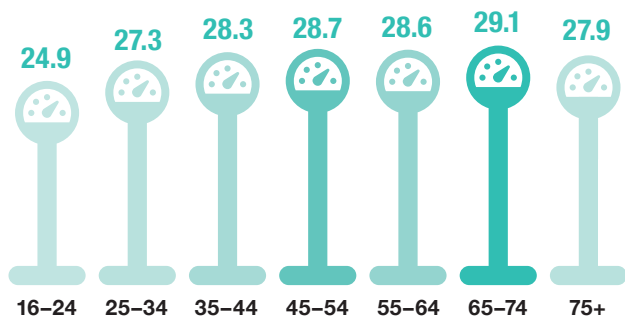
In 2019, women were more likely than men to be within the healthy weight range†.



The mean BMI of women was significantly higher than men in the youngest age group in 2019.



In 2019, mean BMI increased with age.



** BMI of 25 kg/m² or over.

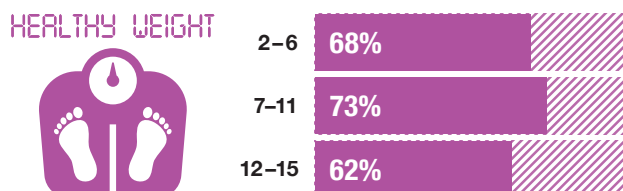
*** BMI of 30 kg/m² or over.

† BMI of 18.5 to less than 25 kg/m².

The proportion of children (aged 2–15) in the healthy weight range†† has remained fairly stable since 1998.



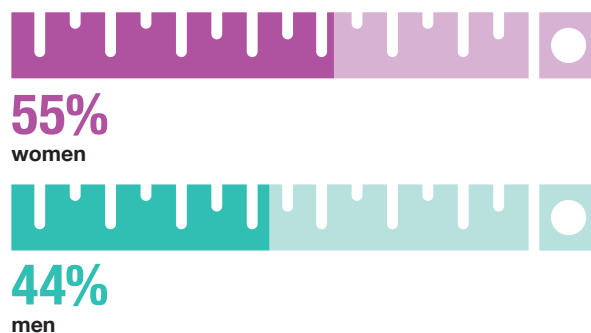
The highest proportion of children in the healthy weight range was among those aged 7–11, and the lowest among those aged 12–15.



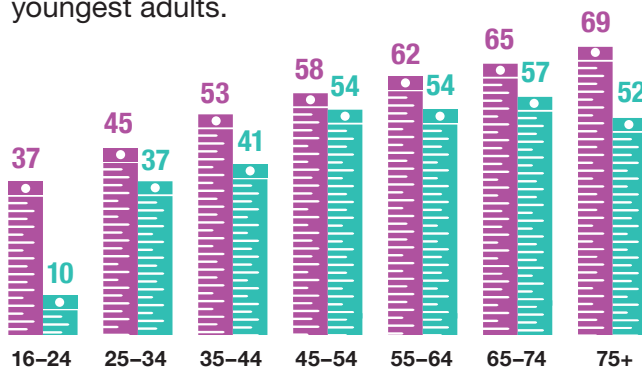
Just under a fifth of children were at risk of obesity in 2019 with similar levels observed for boys and girls.



Women were more likely than men to be categorised as 'high health risk or above' based on their BMI and waist circumference†††.



This difference was clearest among the youngest adults.



†† BMI above the 2nd percentile or below the 85th percentile.

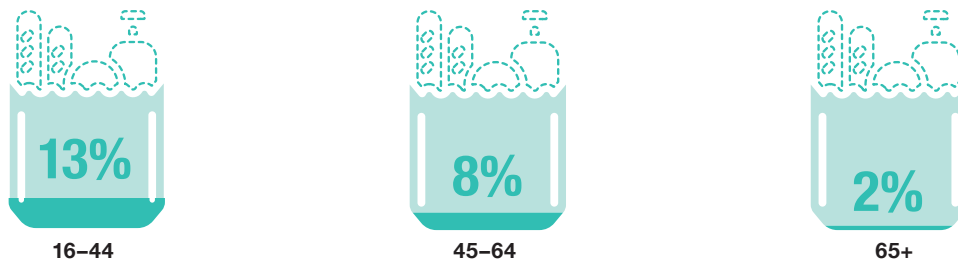
††† According to SIGN guidelines.

Food insecurity levels (as defined by being worried during the past 12 months that they would run out of food due to lack of money or resources) remained at 9% in 2019.

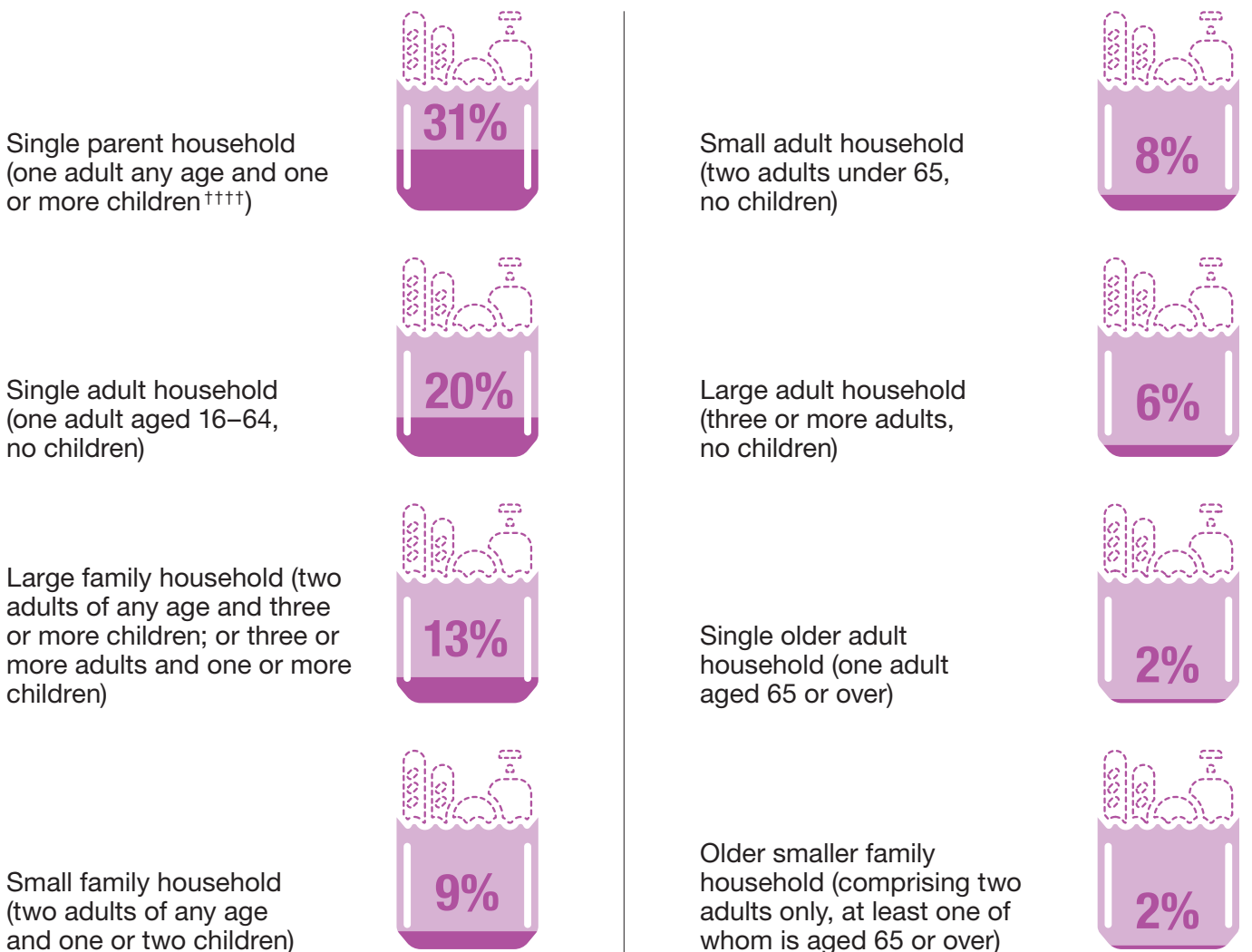
Food insecurity



Food insecurity was more prevalent among younger than older adults in 2019.



Adults living in single parent households were most likely to report being food insecure.



^{††††} Largely single mothers

6 DIET AND OBESITY

Joe Rose

6.1 INTRODUCTION

Globally, poor diet is a leading risk factor for ill health¹ while obesity, as defined in adults as having a body mass index (BMI) of 25 kg/m² or greater², has been linked to a range of comorbidities including diabetes, cardiovascular disease (CVD), hypertension and certain cancers^{3,4}. Overweight and obesity is not the only cause of such health problems, poor diet also increases the risk of health problems, for example salt increases the risk of high blood pressure and stroke, saturated fat increases the risk of CVD and sugary drinks increase the risk of type 2 diabetes⁵. In 2017, poor diet accounted for 11 million (one in five) deaths across 195 countries; with diets low in wholegrains and fruits and high in sodium accounting for more than half of these deaths⁶.

Research suggests a reciprocal link between obesity and mental health problems such as depression and anxiety^{7,8,9}. There is also evidence of a link between overweight and obesity in midlife and dementia in late life^{10,11,12} and of younger generations in the UK becoming obese at earlier ages and staying obese longer¹³.

Worldwide, 8% of deaths in 2017 were attributed to obesity, an increase from 4.5% in 1990¹⁴. In 2016, 39% of adults aged 18 and over across the world were overweight and 13% were obese, while the rate of overweight and obesity among children and young people aged 5-19 was over four times higher in 2016 (18%) than it was in 1975 (4%)¹⁵. Obesity levels in Scotland are among the highest of the OECD countries with the energy density of the average person's diet in Scotland estimated to be 40% over the Scottish dietary goal¹⁶.

Being overweight and obese increases the risk of many cancers¹⁷ and is implicated in about a third of cardiovascular disease¹⁸ worldwide. Such conditions could be prevented by improvements in the nutritional content of diets and overall reductions in body mass¹⁹. Evidence has shown that consumption of fruit and vegetables and oil-rich fish decrease the risk of CVD, fruit and vegetables have also been shown to reduce some cancers and fibre decreases the risk of bowel cancer²⁰.

The full extent of the economic burden of poor diet is difficult to ascertain²¹, however, the most recent evidence suggests that unhealthy diet had an economic burden of £5.8 billion in 2006-07; a greater burden on the NHS than smoking, alcohol consumption, overweight and obesity or physical inactivity²². The cost to the health service in Scotland of overweight and obesity combined is estimated to be between £363 and £600 million (most of these costs are incurred because of associated conditions such as cardiovascular disease and type 2 diabetes, rather than direct costs of treating or managing overweight and obesity)²³.

With considerable individual, social, and economic consequences, obesity continues to be a top public health priority for the Scottish government, the NHS and other public services.

6.1.1 Policy background

The World Health Organisation states that improving diets, along with other lifestyle measures such as increased physical activity, reduces the risks of chronic diseases for death and disability while concurrently reducing the financial burden on healthcare services²⁴.

The Scottish Government published **A Healthier Future: Scotland's Diet and Healthy Weight Delivery Plan**²⁵ in July 2018. The delivery plan set out an ambition to halve child obesity by 2030 and significantly reduce diet-related health inequalities. It sets out a wide range of actions aimed at ensuring:

- Children have the best start in life – they eat well and have a healthy weight.
- The food environment supports healthy choices.
- People have access to effective weight management services.
- Leaders across all sectors promote healthy weight and diet.
- Diet-related inequalities are reduced.

The **Scottish Dietary Goals**, revised in 2016²⁶, provide the basis for a healthy balanced diet. The Goals describe, in nutritional terms, a diet that will improve and support the health of the Scottish population including:

- The World Health Organisation 5-a-day recommendation for adults (to consume at least five varied 80g portions of fruit and vegetables per day).
- Reduced salt intake from around 9g to 6g per day for adults.
- Reduced average calorie intake by 120 kcal per day and average intake of red meat to 70g per day.
- Advice on limiting fat and sugar intake and increasing consumption of fibre and oil-rich fish.
- Reduced the average intake of free sugars to 5% of total dietary energy.
- Increased intake of dietary fibre to 30g per day for adults.
- Maintained intake of starchy carbohydrates at 50% of total dietary energy.

It is recognised at a national policy level that a 'whole system approach', including eating well, maintaining a healthy weight and regular physical exercise, is a key public health priority for Scotland²⁷. Reducing the prevalence of overweight and obesity also contributes to the National Performance Framework outcome 'we are healthy and active'²⁸. There is a related indicator to monitor the proportion of healthy weight adults and children of which the Scottish Health Survey is the official source of data.

Food insecurity is the outcome of wider poverty and inequality. The Scottish Government committed to monitoring household food insecurity in 2016, following recommendations from an Independent 136 Working Group on Food Poverty²⁹. The working group was

established in response to food bank data which reported a significant increase in the number of people seeking their support. Measurement of food insecurity in SHeS provides valuable data for reporting on the food insecurity indicator in the National Performance Framework, which has been aligned with the UN Sustainable Development Goals including Goal 2 - “Zero Hunger”.

Work to tackle food insecurity is underpinned by the Scottish Government’s £3.5 million Fair Food Fund which supports dignified responses to food insecurity that help to tackle the causes of poverty. The Fair Food Fund sits within a wider package of funding that supports a range of policies aiming to tackle poverty and inequality. Since March 2020, the Scottish Government have committed over £110 million to tackling food insecurity due to COVID-19, however, any impact of this funding will not be captured in the SHeS 2019 data.

6.1.2 Reporting on diet and obesity in the Scottish Health Survey (SHeS)

This chapter provides information on fruit and vegetable consumption and BMI among adults and children from 2003 to 2019. In addition, adult health risk categories associated with BMI and waist circumference are reported for 2018/2019 combined. Figures on food insecurity for adults are also provided by age and sex and by household type for 2018/2019 combined.

The anthropometric measures presented in this chapter focus on measurements relevant to adult and child obesity. Height, weight and waist measurements have been collected during the survey interview every year since its inception in 1995. SHeS is one of a small number of surveys that collects height, weight and waist measures rather than using self-reported measures, which are known to be less accurate^{30,31}. Height and weight are used to calculate Body Mass Index (BMI), the primary measure of obesity used in the SHeS series.

Supplementary tables on diet are also published on the Scottish Government SHeS website <https://www.gov.scot/collections/scottish-health-survey/>

6.1.3 Comparability with other UK statistics

Adult obesity is defined consistently in the Scottish Health Survey (SHeS) and the other health surveys within the UK using BMI classifications. Height and weight measurements are self-reported in the National Survey for Wales and are therefore not directly comparable with equivalent statistics in Scotland, England and Northern Ireland, where direct measurements are taken. Sampling methodologies differ between the surveys. Of the four UK health surveys, SHeS and Health Survey for England are the most closely aligned.

6.2 METHODS AND DEFINITIONS

6.2.1 Measuring fruit and vegetable consumption

The module of questions on fruit and vegetable consumption was designed with the aim of providing sufficient detail to monitor population-level adherence to the 5-a-day recommendation. These questions have been asked of all adults (aged 16 and over) participating in the survey since 2003 and of children aged 2 to 15 since 2008.

The module includes questions on consumption of the following food types in the 24 hours to midnight preceding the interview:

- vegetables (fresh, frozen or canned);
- salads;
- pulses;
- vegetables in composites (e.g. vegetable chilli);
- fruit (fresh, frozen or canned);
- dried fruit;
- fruit in composites (e.g. apple pie);
- fresh fruit juice.

A portion is defined as the conventional 80g of a fruit or vegetable. Since 80g is difficult to visualise, survey respondents were asked to describe the amount of each fruit or vegetable they consumed using more everyday terms, such as tablespoons, cereal bowls and slices. These everyday measures were then converted to 80g portions prior to analysis. Examples are given in the questionnaire to aid the recall process, for instance, tablespoons of vegetables, cereal bowls full of salad, pieces of medium sized fruit (e.g. apples) or handfuls of small fruits (e.g. raspberries). In spite of this, there may be some variation between participants' interpretation of how much they consumed. The following table shows the definitions of the portion sizes used for each food item included in the survey:

Food item	Portion size
Vegetables (fresh, frozen or canned)	3 tablespoons
Pulses (dried)	3 tablespoons
Salad	1 cereal bowlful
Vegetables in composites, such as vegetable chilli	3 tablespoons
Very large fruit, such as melon	1 average slice
Large fruit, such as grapefruit	Half a fruit
Medium fruit, such as apples	1 fruit
Small fruit, such as plums	2 fruits
Very small fruit, such as blackberries	2 average handfuls
Dried fruit	1 tablespoon
Fruit in composites, such as stewed fruit in apple pie	3 tablespoons
Frozen fruit/canned fruit	3 tablespoons
Fruit juice	1 small glass (150 ml)

Since the 5-a-day recommendation stresses both volume and variety, the number of portions of fruit juice, pulses and dried fruit is capped so that no more than one portion of each can contribute to the total number of portions consumed. Interviewers record full or half portions, but nothing smaller.

6.2.2 Height

Height was measured using a portable stadiometer with a sliding head plate, base plate and four connecting rods marked with a metric measuring scale. Participants were asked to remove shoes. One measurement was taken, with the participant stretching to the maximum height and the head positioned in the Frankfort plane³². If the reading was between two millimetres it was recorded to the nearest even millimetre. No measurement was taken from participants who were pregnant, aged under 2, or unsteady on their feet.

6.2.3 Weight

Weight was measured using Seca electronic scales, which use a digital display. Participants were asked to remove shoes and any bulky clothing. A single measurement was recorded to the nearest 100g. A weight measurement was not collected from participants who were pregnant, aged under 2 years, or unsteady on their feet. Due to the scale limits, estimates were required for those weighing more than 200 kg. These estimated weights were included in the analysis presented in this chapter.

In the analysis of height and weight, data from those who were considered by the interviewer to have unreliable measurements, for example those who had excessive clothing on, were excluded.

6.2.4 Waist

Since 2012, specially trained interviewers have taken waist measurements from respondents. These interviewers followed a different protocol for taking the measurements than the nurses who previously took the measurements (see below for details). Results in this chapter are calibrated to allow the comparison of interviewer measurements with those previously taken by nurses.

Waist circumference is now defined as around the navel or tummy button. Waist was measured using a tape with an insertion buckle at one end. Interviewers took each measurement twice, using the same tape, and recorded readings. If the reading fell between two millimetres the reading was taken to the nearest even millimetre. Those participants whose two waist measurements differed by more than 3 cm had a third measurement taken. The mean of the two valid measurements (the two out of the three measurements that were the closest to each other, if there were three measurements) was used in the analysis presented in this chapter. Participants were excluded if they reported that they were pregnant, had a colostomy or ileostomy, or were unable to stand. All those with measurements considered

unreliable by the interviewer, for example due to excessive clothing or movement, were excluded from the analysis presented in this chapter.

6.2.5 Definitions

Body Mass Index (BMI)

BMI is a widely accepted measure that allows for differences in weight due to height. It is defined as weight (kg)/square of height (m²). This has been used as a measure of obesity in the Scottish Health Survey (SHeS) since its inception in 1995. BMI was calculated from valid measures collected by the interviewer.

Adult BMI classification

Based on their BMI, adult participants were classified into the following groups based on the World Health Organisation (WHO) classification³³:

BMI (kg/m²)	Description
Less than 18.5	Underweight
18.5 to less than 25	Normal
25 to less than 30	Overweight, excluding obese
30 to less than 40	Obese, excluding morbidly obese
40+	Morbidly obese

In this chapter, both mean BMI and prevalence for the five categories outlined in the table above are presented for adults. Although obesity has the greatest ill-health and mortality consequences, overweight is also a major public health concern, not least because overweight people are at high risk of becoming obese. Being underweight can also have negative health consequences.

Child BMI classification

BMI is defined for children in the same way as it is for adults: weight (kg)/square of height (m²). The International Obesity Task Force concluded that BMI is a reasonable measure of adiposity in children³⁴ and it is the key measure of overweight and obesity for children used in the SHeS series.

Despite the relatively wide acceptance of the use of BMI as an adiposity indicator, the establishment of an agreed specific obesity and overweight classification system for children and young people remains challenging. Constant changes in body composition during growth mean that the relationship between weight-for-height and adiposity during childhood and adolescence is age-dependent, and this relationship is further complicated by both ethnicity and gender³⁵.

The classification of children's BMI used in this chapter, set out below, has been derived from BMI percentiles of the UK 1990 reference curves^{36,37} (referred to as the national BMI percentiles classification); these have been used in each SHeS to date. The national BMI percentiles classification has been shown to be reasonably sensitive

(i.e. not classifying obese children as non-obese) and specific (i.e. not classifying non-obese children as obese)^{38,39}. SIGN recommends that these reference curves and thresholds should be used for population surveillance in Scotland⁴⁰. The 85th/95th percentile cut-off points are commonly accepted thresholds used to analyse overweight and obesity in children. These thresholds have previously been used to describe childhood overweight and obesity prevalence trends in the UK^{41,42,43,44}.

Percentile cut-off	Description
At or below 2 nd percentile	At risk of underweight
Above 2 nd percentile and below 85 th percentile	Healthy weight
At or above 85 th percentile and below 95 th percentile	At risk of overweight
At or above 95 th percentile	At risk of obesity

SHeS uses a method developed by Public Health Scotland to plot the exact ages of the children in the sample against the reference population data⁴⁵. While children's exact age was used to calculate the BMI grouping prevalence rates (based on the interview date and the date of birth), results are presented using grouped ages based on age at last birthday.

As noted in the introduction to this chapter, one of the Scottish Government's national indicators relates to healthy weight in both children and adults, defined as neither underweight nor overweight or obese⁴⁶. The presented data for children have been categorised to show the total proportions that are: healthy weight, at risk of overweight, at risk of obesity, and at risk of underweight.

Raised waist circumference (WC)

BMI has some limitations and does not, for example, distinguish between mass due to body fat and mass due to muscular physique⁴⁷. Nor does it take account of the distribution of fat in the body. It has therefore been suggested that WC may be a better means of identifying those with a health risk than BMI^{48,49,50}.

In accordance with the definition of abdominal obesity used by the National Institutes of Health (USA) ATP (Adult Treatment Panel) III, a raised WC is defined as more than 102 cm for men and more than 88 cm for women⁵¹. Following the protocol introduced to SHeS in 2012, described in Section 6.2.4, the equivalent cut-offs on SHeS are 102.75cm for men and 91.35cm for women⁵².

These thresholds help identify people at risk of metabolic syndrome. Abdominal obesity is reported as more highly correlated with metabolic risk factors (high levels of triglycerides, low HDL-cholesterol) than elevated BMI. It has recently been shown that these levels correspond fairly closely to the 95th percentile of waist circumference for healthy people, indicating that few healthy people have a waist circumference above these thresholds⁵³.

Combined assessment of health risk from obesity

The SIGN guideline on obesity cites the WHO's recommendation that an individual's risk of conditions such as type 2 diabetes and CVD is better estimated using a combination of both BMI and WC than using either measure on their own⁵⁴.

The classification categories suggested by SIGN⁵⁵ are set out in the following table. BMI, derived from height and weight data collected in the main interview, in combination with waist measurements collected in the biological module have been used to estimate the proportion of adults who fall into each of the risk categories. This combined classification designates those with a raised WC as 'very high' WC, while those towards the upper end of the 'not raised' WC range are designated 'high' WC. As the table indicates, the health risk is similar for adults with very high WC and class I obesity and for adults with high WC and class II obesity. The SIGN guidance notes that increased WC can be a marker for disease even among people of normal weight. The analysis presented in this chapter classifies people with normal weight and a very high WC as at increased risk of disease.

Assessment of health risk from obesity

BMI Classification	'High' WC Men WC 94-102cm Women WC 80-88cm	'Very high' WC Men WC >102cm Women WC >88cm
Normal weight (BMI 18.5 - <25(kg/m ²))	-	-
Overweight (BMI 25 - <30(kg/m ²))	Increased	High
Obese		
I - Mild (BMI 30 - <35(kg/m ²))	High	Very high
II - Moderate (BMI 35 - <40(kg/m ²))	Very high	Very high
III - Extreme (BMI 40+(kg/m ²))	Extremely high	Extremely high

Source: based on Table 3, P11, in SIGN 115⁵⁶.

6.3 DIET & OBESITY

6.3.1 Adult fruit and vegetable consumption, 2003 to 2019, by sex

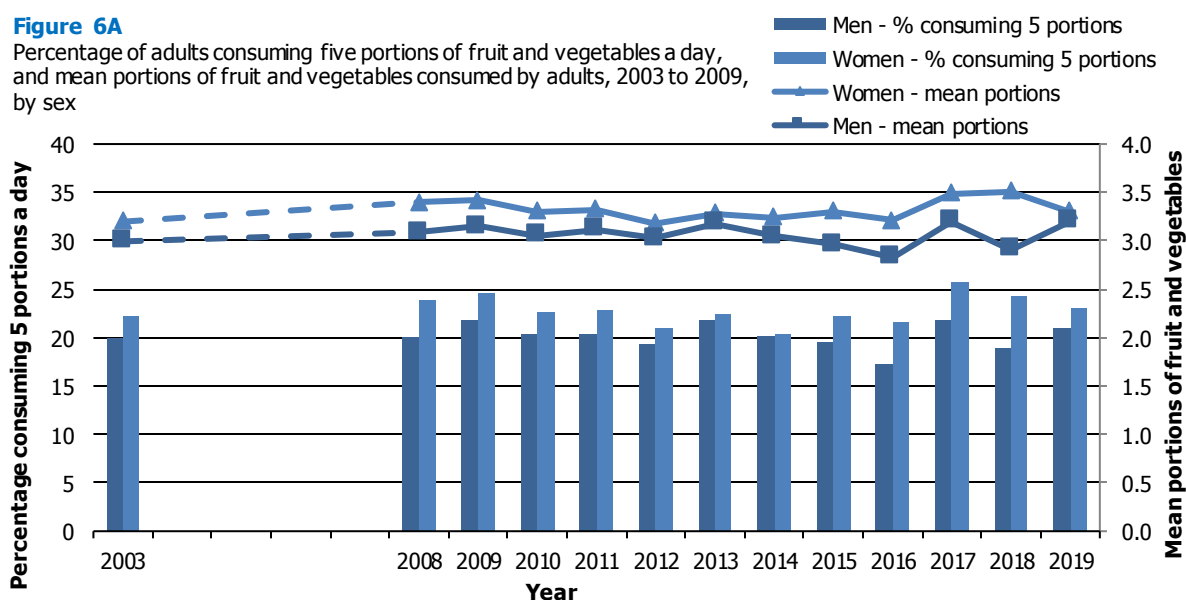
The proportion of adults meeting the five-a-day recommendation for consumption of fruit and vegetables has remained fairly constant since 2003, ranging between 20 - 24% (22% in 2019). In most years since 2003, women have been more likely than men to consume the recommended five a day portions of fruit and vegetables, yet in 2019

there was no significant difference between the sexes (23% of women compared with 21% of men met the five-a-day recommendation).

The proportion of adults consuming no fruit and vegetables on the day prior to interview has also remained relatively stable since 2003, ranging between 9 - 12% (10% in 2019). A trend that continued was that a higher proportion of men than women consumed no fruit or vegetables on that day (12% and 9% respectively).

Mean fruit and vegetable consumption has also varied very little since 2003, remaining between 3.0-3.3 portions on average per day (3.3 in 2019). In contrast to the general trend of women consuming more portions of fruit and vegetables (on average) in most years since 2003, mean fruit and vegetable portion consumption was not significantly different for women and men in 2019 (3.3 and 3.2 mean portions a day respectively).

Figure 6A, Table 6.1



6.3.2 Adult fruit and vegetable consumption, 2019, by age and sex

In 2019, the likelihood of consuming 5 or more portions of fruit or vegetables per day did not differ significantly by age.

There was also no significant difference by age for those who consumed no fruit or vegetables per day.

For all adults, there was no significant variation by age for mean fruit and vegetable portion consumption; among all age groups, mean consumption lay between 2.9 and 3.4 portions a day. Patterns by age did not differ significantly between men and women, however for women, average daily fruit and vegetable consumption was significantly lower in the youngest age group aged 16 to 24 (2.8 portions a day)

compared with women aged 25-74 (between 3.3 and 3.5 portions).

Table 6.2

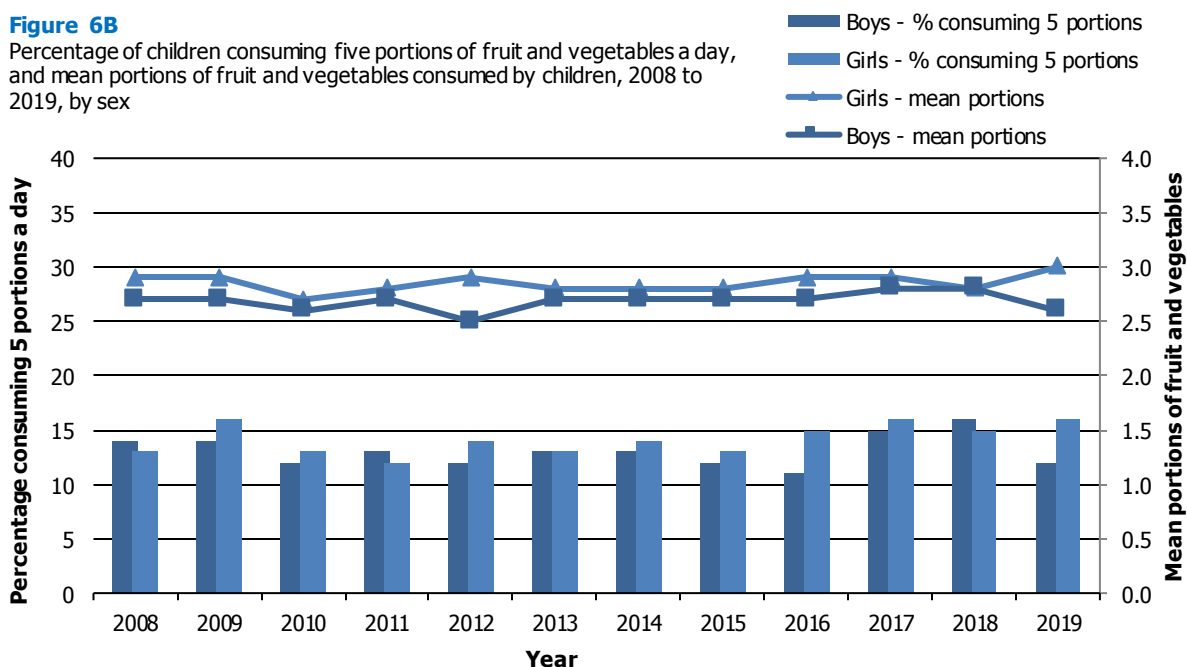
6.3.3 Child fruit and vegetable consumption, 2008 to 2019, by sex

There has been little variation in the proportion of children meeting the five-a-day recommendation for fruit and vegetable consumption since 2008 with figures ranging between 12 - 15% (14% in 2019). Since 2008, the proportions of boys and girls meeting the five-a-day recommendation for consumption of fruit and vegetables has fluctuated within similar levels (11-16% for boys and 12-16% for girls).

The proportion of children consuming no fruit and vegetables on the day prior to interview has remained fairly constant since 2008 (7-11%), and this trend was continued in 2019 (9%). Figures have been similar for boys and girls over the time series.

Since 2008, there has been a relatively stable trend of between 2.6 and 2.9 mean portions of fruit and vegetables per day consumed by children (2.8 in 2019). Girls have consumed higher levels of fruit and vegetables per day than boys in most years since 2008 (between 2.7 and 3.0 portions for girls compared with between 2.5 and 2.8 for boys).

Figure 6B, Table 6.3



6.3.4 Child fruit and vegetable consumption, 2019, by age and sex

In 2019, girls were more likely to meet the five-a-day recommendation for consumption of fruit and vegetables (16% of girls compared with 12% of boys). In 2019, girls consumed more portions of fruit and vegetables, on average, per day than boys (3.0 portions on average for girls compared with 2.6 portions on average for boys).

In 2019, fruit and vegetable consumption levels for children varied by age. Children aged 2-4 were significantly more likely to consume five or more portions of fruit and vegetables on a typical day (20% compared with 11 - 14% among children aged 5-15).

Those in the youngest child age group also consumed significantly more portions of fruit and vegetables than older children (3.2 portions on average, among those aged 2-4 compared with 2.6-2.8 portions on average for children aged 5-15), and were significantly less likely to have consumed no fruit or vegetables on the day prior to the interview (5% of children aged 2-4 compared with 9 - 13% of children aged 5-15).

Table 6.4

6.3.5 Mean adult BMI, prevalence of overweight and obesity, 2003 to 2019, by sex

Although prevalence of overweight including obesity (BMI of 25 kg/m² or over) has remained relatively stable among all adults since 2003 (62 - 66%), gradual increases since 2011 mean that prevalence is now at its highest level in the time series (66% in 2019).

Prevalence of overweight including obesity has remained relatively stable for both men and women since 2003, although men have had consistently higher prevalence compared with women (fluctuating between 65-69% among men, compared with 60-63% among women). Following a rise from 24% to 27% between 2003 and 2008, the proportion of adults classified as obese (BMI of 30 kg/m² or over) has remained relatively unchanged since 2008, fluctuating between 27% and 29% across the time series (29% in 2019).

There has been little difference in the prevalence of obesity among men and women since 2008. Prevalence has remained between 26% and 29% for men (29% in 2019) and between 27% and 30% for women (30% in 2019).

Prevalence of morbid obesity (BMI of 40 kg/m² or over) has remained stable since 2003, fluctuating between 2% and 4% (4% in 2019). Since 2003, higher proportions of women were morbidly obese compared with men (3-6% compared with 1-3% over the time series).

Table 6.5

6.3.6 Adult BMI, 2019, by age and sex

In 2019, 1 in 3 adults (33%) were in the healthy weight category (BMI of 18.5 to less than 25 kg/m²). Women were significantly more likely than men to be within the healthy weight range (36% compared with 29% respectively). As in previous years, in 2019 prevalence of overweight including obesity was significantly higher among men compared with women (69% and 63%, respectively).

Prevalence of overweight including obesity also varied with age; increasing from 40% of those aged 16-24, then linearly among those

aged 25-74, to a high of 79% among adults aged 65-74, before decreasing to 71% among those aged 75 and over. A similar pattern was observed in both men and women.

In 2019, prevalence of obesity (BMI of 30 kg/m² or more) varied with age; increasing from 17% among those aged 16-24 to 37% among those aged 65-74 before decreasing 32% among those aged 75 and over.

Different patterns by age were observed for men and women for the prevalence of obesity. For women, following a rise from 21% among those aged 16-24, prevalence among those aged 25-75 and over was similar (ranging between 29% and 33%). For men, there were steep increases between age groups for those aged 16-44 (14% to 30%) and another steep increase between those aged 55-64 and those aged 65-74 (from 33% to 42%).

In 2019, the mean BMI was 27.9 for all adults with no significant difference by sex. Mean BMI generally increased with age up to the age of 74 among all adults (increasing from 24.9 kg/m² among those aged 16-24 to 29.1 kg/m² among those aged 65-74) before decreasing to 27.9 kg/m² among those aged 75 and over. Patterns of mean BMI by age did not differ significantly between men and women, however, the mean BMI of women aged 16-24 (25.9 kg/m²) was significantly higher than men aged 16-24 (23.9 kg/m²). **Figures 6C & 6D, Table 6.6**

Figure 6C

Percentage of adults overweight including obese (BMI of 25 kg/m² or over), 2019, by age and sex

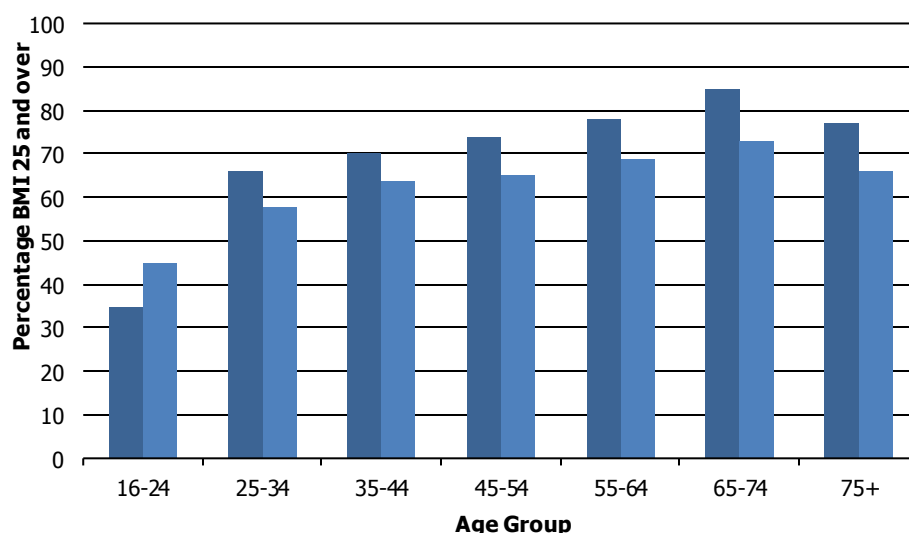
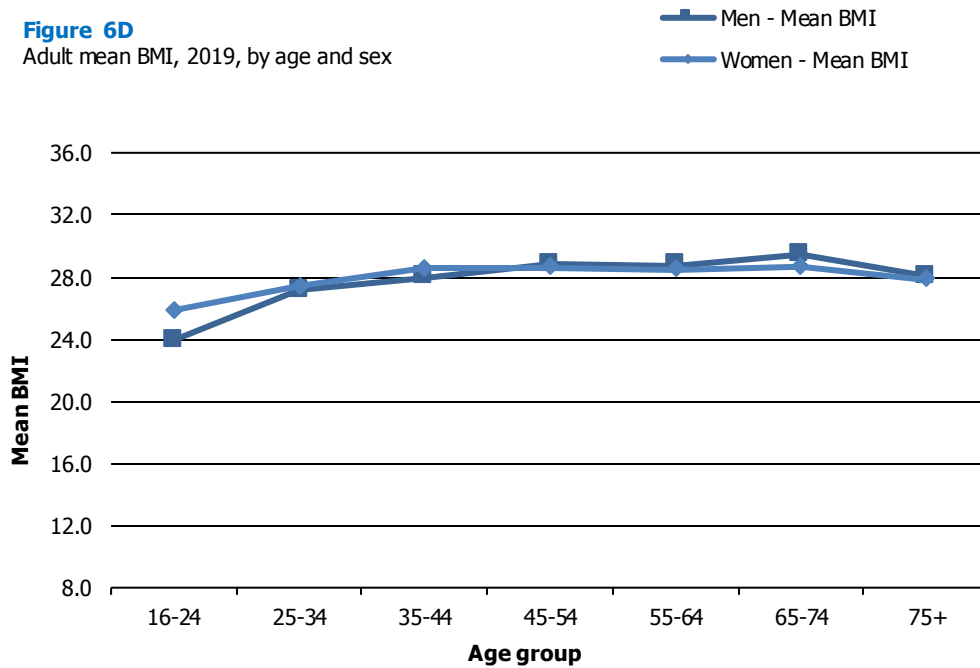


Figure 6D
Adult mean BMI, 2019, by age and sex



6.3.7 Proportion of children with BMI within the healthy range, at risk of overweight and at risk of obesity, 1998 to 2019

The proportion of healthy weight children (BMI above the 2nd percentile or below the 85th percentile) has remained relatively stable since the beginning of the time series in 1998, with the lowest prevalence occurring in 2011 (65%) and a range of 68 - 72% recorded since 2012. The proportion of healthy-weight children was 68% in 2019.

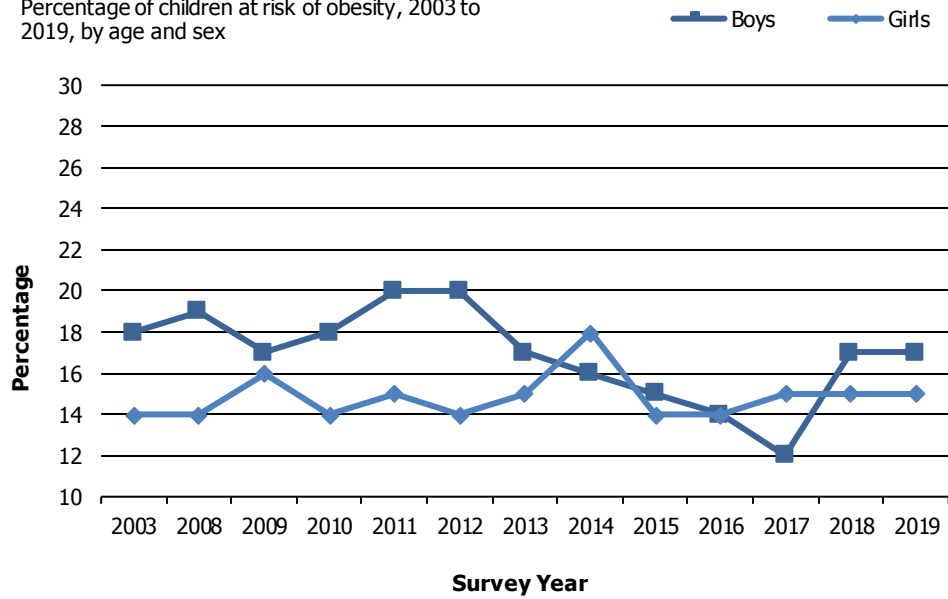
Since 1998, the pattern in healthy weight prevalence over time has differed for boys and girls. Since the beginning of the time series, there have been relatively large fluctuations in the proportion of boys within the healthy weight range (61 - 75%). Conversely, the proportion of girls within the healthy weight range has remained relatively stable since the beginning of the time series (68 - 72%; 2014 was an exception at 65%).

The proportion of children at risk of overweight (including obesity, BMI at or above 85th percentile) has been somewhat more variable over the time series, in the range 26 – 33%, with the 2019 rate of 30% towards the middle of this range.

The prevalence of children at risk of obesity (BMI at or above 95th percentile) was 16% in 2019, continuing the relatively stable proportion observed since 1998 (13 - 17%). Between 2003 and 2012, a significantly higher risk of obesity was recorded for boys (17 - 20%) compared with girls (14 - 16%). However, since 2013, at risk of obesity prevalence for boys and girls has been at similar levels (17% for boys and 15% for girls in 2019).

Figure 6E, Table 6.7

Figure 6E
Percentage of children at risk of obesity, 2003 to 2019, by age and sex



6.3.8 Children’s BMI, 2019, by age and sex

In 2019, there was no significant difference in the proportion of boys and girls in the healthy weight range (66% of boys and 70% of girls). There were significant differences, however, by age. Of those aged 2-6, 68% were in the healthy weight range, a figure which rose to 73% for those aged 7-11 before falling sharply to 62% for those aged 12-15. This pattern was evident for both boys and girls. This is a shift from the pattern seen in previous years (2017⁵⁷ and 2018⁵⁸), when the youngest age group were most likely to be in the healthy weight range, with a lower proportion among those aged 7-11 and a lower proportion again among those aged 12-15.

In 2019, the proportion of children at risk of overweight was the same for children aged 2-6 and aged 12-15 (16%). However, those aged 7-11 were significantly less likely to be at risk of overweight (11%), a pattern that was similar for both boys and girls.

In 2019, children aged 12-15 were more likely than younger children to be at risk of obesity (21% for those aged 12-15 compared with 14% for those aged 2-11). Similar patterns were found for boys and girls, but this was more pronounced among girls (22% among girls aged 12-15 compared with 11-13% for those aged 2-11) than boys (19% among boys aged 12-15 compared with 15-16% for those aged 2-11).

Table 6.8

6.3.9 Health risk category associated with overweight and obesity based on BMI and waist circumference, 2018/2019 combined, by age and sex

To increase the sample size available, the detailed analysis of health risk category associated with overweight and obesity based on BMI and

waist circumference, by age and sex, used data from the 2018 and 2019 surveys combined.

In 2018/2019, women were more likely than men to have at least an increased health risk based on their BMI and waist circumference (68% of women compared to 62% of men) indicating some convergence since 2016/17⁵⁹ (69% of women compared with 58% of men).

In 2018/2019, the prevalence of increased health risk rose with age for both men and women. Those aged 16-24 were least likely to be at increased risk or above (34% of men and 43% of women), whilst for men those aged 65-74 were most likely to be at increased health risk or above (80%) while for women, it was those aged 65 and over (80%).

Women were more likely than men to be categorised as 'high risk or above' in 2018/2019 (55% compared with 44% of men). This difference was most evident among the youngest adults; nearly four in ten (37%) women aged 16-24 were classified as 'high risk or above', compared with just one in ten (10%) men aged 16-24. For women, the proportions of those categorised as 'high risk or above' increased steadily by age group from 37% among those aged 16-24 to 69% of those aged 75 and over. The pattern by age for men was less clear, the proportions of those categorised as 'high risk or above' generally increased with age (from 10% among those aged 16-24 to 57% among those aged 65-74) and then decreased to 52% among those aged 75 and over. **Table 6.9**

6.3.10 Adult food insecurity, 2017 to 2019, by age and sex

Food insecurity levels in 2019 did not differ significantly from those reported in 2017 and 2018. In 2019, 9% of all adults reported that they had been worried they would run out of food at some time during the previous 12 months due to a lack of money or other resources (9% in 2018 and 8% in 2017).

The majority of these individuals, 6% of all adults in 2019, went on to say that they had actually eaten less than they should because of a lack of resources, again not significantly different from 2018 (6%) or 2017 (7%). In 2019, 4% of all adults said that they had run out of food during the previous 12 months due to a lack of resources, again not significantly different from 2018 (3%) or 2017 (4%). Levels of food insecurity did not differ between men and women.

As was seen in 2017 and 2018, food insecurity was more prevalent among younger adults than older adults (13% of those aged 16-44 were worried they would run out of food compared with 8% of those aged 45-64 and 2% of those aged 65 and over). Similar patterns were evident for those who said that they had eaten less than they should in the previous 12 months because of a lack of money or other resources (9% of those aged 16-44, 6% of those aged 45-64 and 1% of those aged 65 and over) and for those who said that they had run out of food during the previous 12 months for the same reason (6% of aged 16-44, 3% of aged 45-64 and 1% of aged 65+). **Table 6.10**

6.3.11 Adult food insecurity, 2018/2019 combined, by household type

To increase the sample size available, the detailed analysis of adult food insecurity by household type used data from the 2018 and 2019 surveys combined.

In 2018/2019 combined, there were some large differences in prevalence of adult food insecurity according to household type.

Nearly one in three (31%) single parents (sample largely single mothers)⁶⁰ reported that they had been worried they would run out of food in the previous 12 months due to a lack of money or other resources. This was a slight but not statistically significant increase from the one in four (25%) reported for 2017/18⁶¹. In 2018/2019, around 7 in 10 of the single parents who had been worried about running out of food (21% of all single parents) went on to say that they had eaten less than they should for the same reason and around half of those (12% of all single parents) said they had run out of food due to a lack of money or other resources.

Likewise, higher levels of food insecurity were seen among those aged under 65 living alone. One in five (20%) of those aged below 65 living alone were worried they would run out of food (23% of men and 17% of women). Eight in 10 of this cohort (or 16% of all adults aged under 65 living alone) had eaten less than they should, and seven in ten of those (or 11% of all single adults under 65) had run out of food for the above reason.

Although not as prevalent as for single adults and single parents, food insecurity was still evident among other household types. In 2019, among adult members of large families (two adults and three or more children, or three or more adults and at least one child) 13% had been worried about running out of food because of a lack of resources in the last 12 months. Similarly, 8% of adults in small adult households (comprising two adults under the age of 65 and no children), and 9% of adults in small family households (comprising two adults and one or two children) had been worried about running out of food.

Prevalence for having been worried about running out of food was a little lower, at 6%, for adults in large adult households (three or more adults and no one under the age of 16), but lowest of all for adults in single older adult households (one adult aged 65 or over) or in households with older smaller families (comprising two adults only, at least one of whom is aged 65 or over), both 2%.

Eating less food and running out of food followed the same pattern by household type as described above, albeit at lower levels. While 11% of single adults and 12% of single parents had run out of food because of a lack of money or other resources, 5% of adults in large families said that this was the case, as did 1-3% of adults in other household types.

Table 6.11

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The tables can be found on the main report page under supporting files:

<https://www.gov.scot/publications/scottish-health-survey-2019-volume-1-main-report/>

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33 These cut-offs differ to those used in the previous surveys. In 1995 and 1998 the normal weight range was defined as 20-25 kg/m², in 2003 it was changed to 18.5-25 kg/m². From 2008 onwards the ranges are defined as set out below. This brings the definition in line with WHO recommendations. The impact of the change of definition is very marginal as very few people have a BMI measurement that is exactly 18.5, 25, 30 or 40 kg/m².

	2003	2008 onwards
Underweight	18.5 or under	Less than 18.5
Normal weight	Over 18.5 – 25	18.5 to less than 25
Overweight	Over 25 – 30	25 to less than 30
Obese	Over 30 – 40	30 to less than 40
Morbidly obese	Over 40	40+

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46 See: <https://nationalperformance.gov.scot/measuring-progress/national-indicator-performance>

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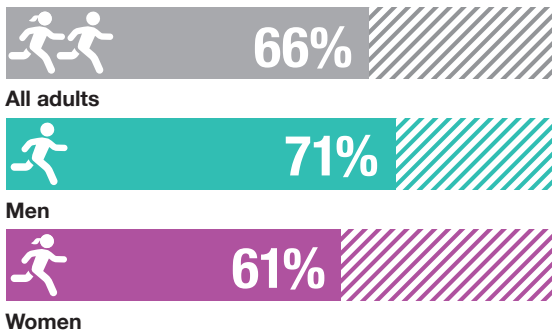
Chapter 7

Physical Activity

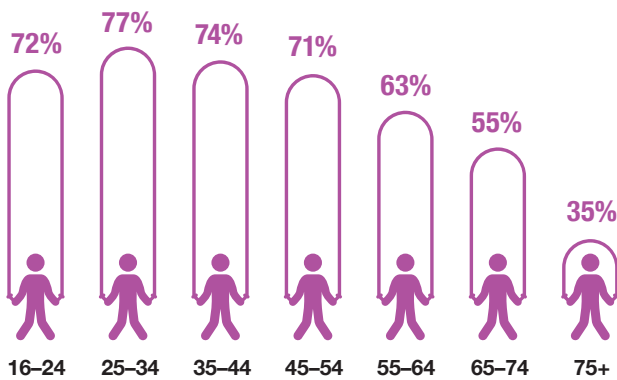
Physical Activity



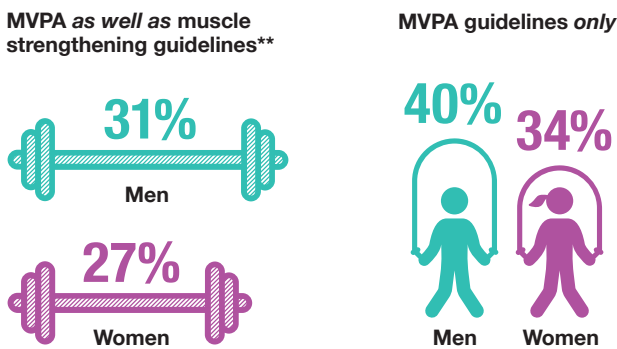
Men were more likely than women to meet the moderate or vigorous physical activity guidelines (MVPA)* in 2019.



In 2019, the proportion of adults meeting the MVPA guidelines declined with age.



Men were more likely than women to have met:

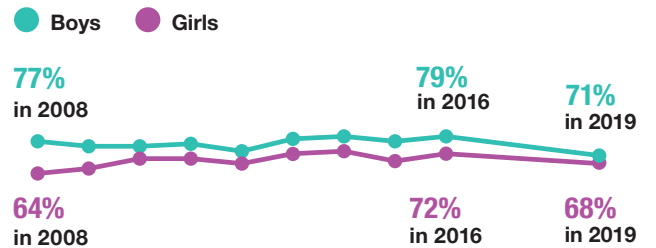


In 2019, the proportion of children (aged 2-15) who met the recommended physical activity level*** over the last seven days, was the lowest in the time series.



This decrease appears to be driven by a drop in activity levels among boys with no significant decrease recorded for girls.

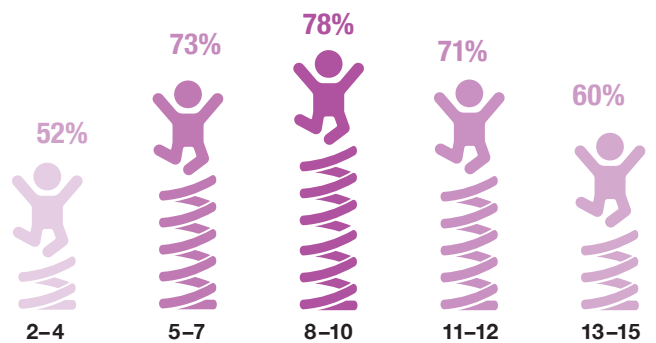
Proportion of children (2-15) meeting the physical activity guidelines



66% of all children participated in any sport in the week prior to the interview in 2019



Participation in sports varied by age.

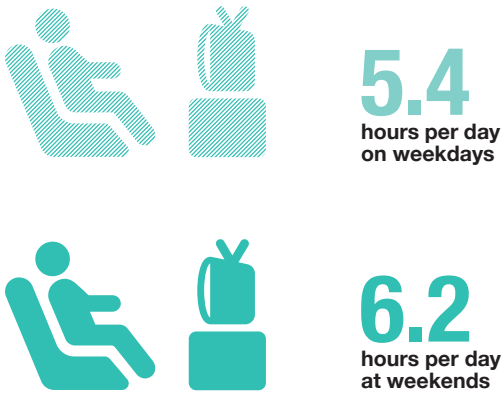


* at least 150 minutes of moderate physical activity, 75 minutes of vigorous physical activity, or an equivalent combination of the two per week.

** muscle strengthening activity on two or more days a week.

*** an average of at least 60 minutes of activity per day in previous week. Although the recommendation applies to children aged five and over, the figures relate to those aged 2-15 for consistency with figures reported in previous years. Data is not presented for 2017 and 2018 due to differences in the way the data was collected for these years.

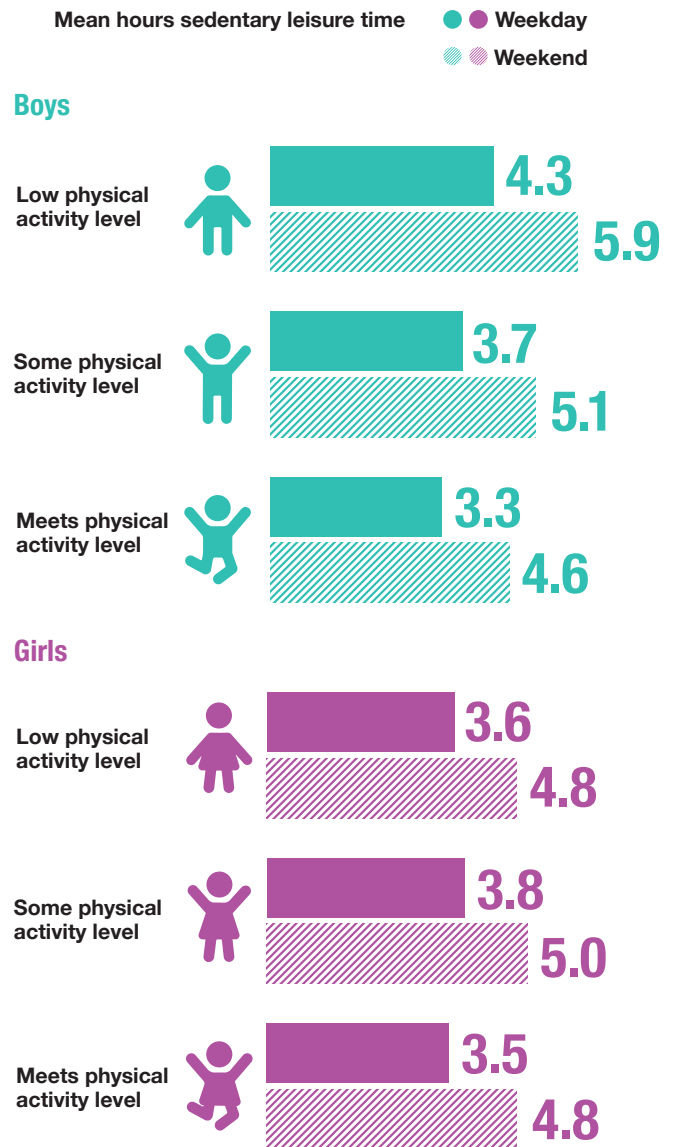
In 2019, adults' sedentary leisure time was significantly higher at weekends than on weekdays.



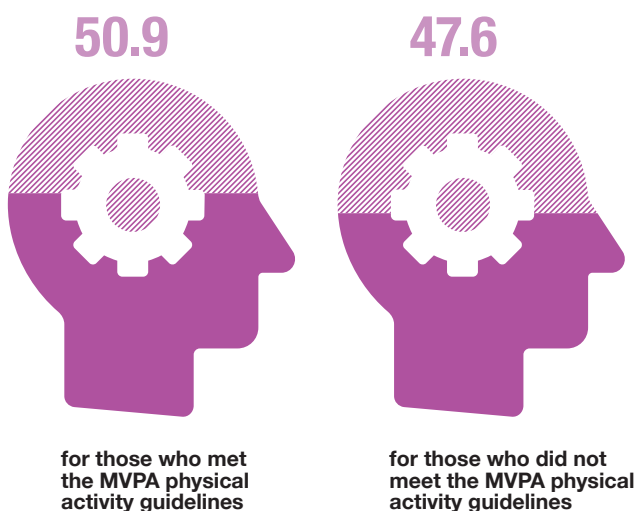
On average, children spent more time on sedentary leisure activities at weekends than they did on weekdays.



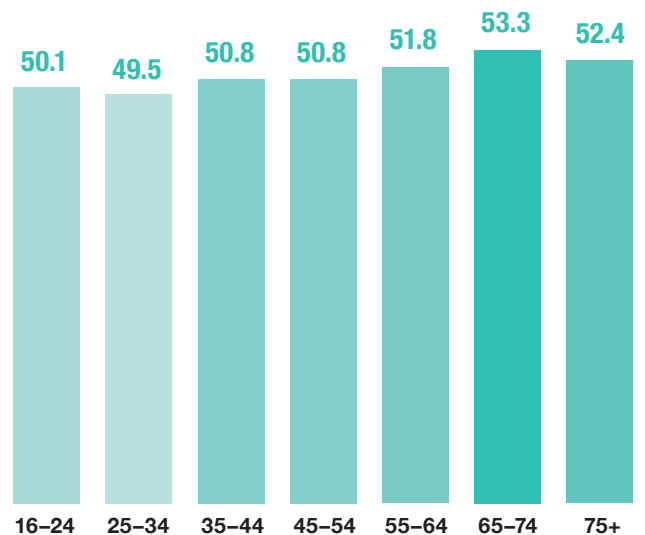
On both weekdays and weekends, the amount of time spent on sedentary activities varied for boys by physical activity levels but not for girls.



In 2019, adults who met the MVPA physical activity guidelines had a higher mental wellbeing (measured by WEMWBS) mean score than those who did not.



Mean WEMWBS scores generally increased with age among adults meeting the MVPA guidelines.



7 PHYSICAL ACTIVITY

Victoria Wilson

7.1 INTRODUCTION

Physical activity and sport are a powerful force in transforming lives. There is clear and growing evidence of the health, economic and social benefits physical activity and sport can bring. Physical activity and sport improve the health of the heart, skeletal muscles, bones and blood, the immune system and nervous system; and enable people to live longer, healthier lives. Being active improves psychological wellbeing, boosts self-esteem, plays an important role in maintaining a healthy weight and improves mood and sleep quality. The early years is a vitally important period to intervene to improve outcomes for children. There is strong evidence that intervention in this period, including through play, improves health and cognitive development¹.

Physical activity and sport can also play a major role in improving outcomes and tackling inequalities across many different aspects of our lives and society. Positive changes being achieved through physical activity and sport initiatives in Scotland include improving mental health, supporting weight management initiatives, overcoming loneliness and isolation; reducing reoffending; promoting sustainable forms of transport; and enabling people to connect with the natural environment².

The latest Physical Activity Guidelines were published on the 7th September 2019³ following approval from the four Chief Medical Officers (CMOs) of England, Scotland, Wales and Northern Ireland. They drew on global evidence for the health benefits people can achieve by taking regular physical activity throughout their lives and are summarised in Table 7A. These guidelines updated those published in 2011 which included recommendations on duration, frequency and type of physical activity required to achieve general health benefits for different age ranges.

Table 7A UK CMO Physical Activity Guidelines (2019)

Age group	Guidelines
Early years – children under 5 years	<p>Infants (less than 1 year): Physical activity is recommended several times a day (the more activity the better) in a variety of ways including interactive floor-based activity, e.g. crawling.</p> <p>Where infants are not yet mobile, at least 30 minutes of tummy time spread across the day and while awake is recommended along with movements such as reaching and grasping, pushing and pulling themselves over independently, or rolling over; more is better.</p> <p>Toddlers (1-2 years): At least 180 minutes (3 hours) of physical activity of any intensity is recommended for toddlers, including active and outdoor play.</p>

	<p>Pre-schoolers (3-4 years): At least 180 minutes (3 hours) of activity is also recommended for pre-school aged children, including a variety of active and outdoor play physical activities spread throughout the day. For this age group, this should include at least 60 minutes of moderate-to-vigorous intensity physical activity.</p>
<p>Children and young people aged 5 to 18</p>	<p>It is recommended that children and young people in this age group engage in moderate-to-vigorous intensity physical activity for an average of at least 60 minutes per day. The activities undertaken include those undertaken in a variety of settings such as school-based physical education, active travel, after school activities, play and sporting activities.</p> <p>Engagement in a range of activities and intensities over the course of a week is recommended in order to develop movement skills, muscular fitness and bone strength,</p> <p>This activity should be accompanied by as minimal an amount of sedentary time as possible, with any long periods of inactivity broken up with some physical activity, even if this is light in nature.</p>
<p>Adults aged 19-64</p>	<p>Daily physical activity is recommended for both physical and mental health benefits - the more the better but any activity is encouraged.</p> <p>This includes activities to develop and strengthen the major muscle groups, which can be achieved through activities such as heavy gardening, carrying heavy shopping, or resistance exercise. It is recommended that muscle strengthening activities are done on at least two days a week, but any strengthening activity is better than none.</p> <p>On a weekly basis, adults should undertake:</p> <ul style="list-style-type: none"> • at least 150 minutes (2 1/2 hours) of <i>moderate</i> intensity activity (such as brisk walking or cycling) • or 75 minutes of <i>vigorous</i> intensity activity (such as running) • or even shorter durations of <i>very vigorous</i> intensity activity (such as sprinting or stair climbing); • or a <i>combination of moderate, vigorous and very vigorous</i> intensity activity. <p>Sedentary time should be minimized as far as possible, breaking this up with at least light physical activity.</p>
<p>Adults aged 65 and over</p>	<p>Daily physical activity is also recommended for older adults for the maintenance of good physical and mental health, wellbeing, and social functioning. Even light activity offers greater health benefits than being sedentary, although the more daily physical activity that is undertaken, the better.</p> <p>Older adults should also undertake activities aimed at improving or maintaining muscle strength, balance and</p>

	<p>flexibility on at least two days a week, either on their own or combined with moderate aerobic activity. This should be accompanied by 150 minutes (two and a half hours) of moderate intensity aerobic activity, building gradually up to this where activity levels are currently lower.</p> <p>Those who are already regularly active can achieve these benefits through:</p> <ul style="list-style-type: none"> • 75 minutes of vigorous intensity activity • or a combination of moderate and vigorous activity <p>Weight-bearing activities offer additional benefit in helping to maintain bone health.</p> <p>Where physically able, long periods of being sedentary should be broken up with light activity, or at least with standing.</p>
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7.1.1 Policy background

Physical activity, in conjunction with eating well and maintaining a healthy weight, is one of the six **Public Health Priorities for Scotland** published jointly by the Scottish Government and COSLA in 2018 with the aim of enabling everyone in Scotland to thrive and be as healthy as they possibly can be⁴.

Scotland was one of the first countries to publish a national action plan following the World Health Organisation's global plan on physical activity. The **Active Scotland Delivery Plan**, also published in 2018, is one of five linked strategies and delivery plans which support these Public Health priorities. Taken together, the priorities and action plan aim to create a healthy environment whilst encouraging individuals to make good choices about their health, their life and their communities. This includes addressing the inequalities that exist in access to opportunities and barriers to participation in physical activity and its associated health benefits⁵.

The Active Scotland Delivery Plan also aims to cut physical inactivity in adults and teenagers by 15% by 2030 using wide-ranging approaches including active travel funding and support for both formal sports and informal physical activity⁶. The **Active Travel Framework** sets out key policy approaches aimed at increasing levels of active travel (walking or cycling for travel) in Scotland, not only for the environmental and economic benefits, as well as access to facilities and amenities, but also with the aim of improving the health of individuals⁷.

The Active Scotland Delivery Plan⁸ also contains 90 actions including development of community sports hubs in the most deprived areas in Scotland, more opportunities for pupils to participate in sport before, during and after school, support and development to help the transition from school sport to clubs, increased funding for cycle and walking paths, the promotion of good practice to ensure children have safe places to play and addressing barriers to participation amongst women and girls. The plan also includes a commitment to partnership working

across the transport, education, health and planning sectors and is supported by **Let's Get Scotland Walking – The National Walking Strategy**⁹ and the **Cycling Action Plan for Scotland 2017/2020**¹⁰.

7.1.2 Reporting on physical activity in the Scottish Health Survey (SHeS)

Physical activity is recognised as a key contributor to the new National Performance Framework outcome that 'we are healthy and active'. SHeS data is used to monitor the percentage of adults meeting physical activity recommendations which is one of the indicators used to gauge progress on the overall outcome¹¹.

In this report, figures are presented on adherence to the adult and child physical activity guidelines that covered the periods between 2011 and 2019. Adult adherence to guidelines on moderate/vigorous physical activity (MVPA) and muscle strengthening are presented. Trend data for child physical activity, including and excluding school-based activities, are also shown with exception of 2017 and 2018 due to an alternative data collection approach which means that the data is not comparable¹². Children's participation in sport is also presented. Levels of adult and child sedentary time and WEMWBS mental wellbeing scores are presented by summary activity levels for adults and children.

Supplementary tables on physical activity are available on the Scottish Government website¹³.

7.2 METHODS AND DEFINITIONS

7.2.1 Adult physical activity questionnaire

The SHeS questionnaire¹⁴ asks about four main types of physical activity:

- home-based activities (housework, gardening, building work and DIY)
- walking
- sports and exercise
- activity at work.

Information is collected on the:

- time spent being active
- intensity of the activities undertaken
- frequency with which activities are performed.

7.2.2 Adherence to adult physical activity guidelines

The activity guidelines at the time of the SHeS 2019 question approval advised adults to accumulate 150 minutes of moderate activity or 75

minutes of vigorous activity per week or an equivalent combination of both, in bouts of 10 minutes or more. These guidelines are referred to throughout this chapter as the MVPA guidelines (Moderate or Vigorous Physical Activity). To help assess adherence to this guideline, the intensity level of activities mentioned by participants was estimated. Activities of low intensity, and activities of less than 10 minutes duration, were not included in the assessment. This allowed the calculation of a measure of whether each SHeS participant adhered to the guideline, referred to in the text and tables as “adult summary activity levels”, see Table 7B. A more detailed discussion of this calculation is provided in the 2012 report¹⁵.

Table 7B Adult summary activity levels^a

Meets MVPA guidelines	Reported 150 mins/week of moderate physical activity, 75 mins vigorous physical activity, or an equivalent combination of these.
Some activity	Reported 60-149 mins/week of moderate physical activity, 30-74 mins/week vigorous physical activity, or an equivalent combination of these.
Low activity	Reported 30-59 mins/week of moderate physical activity, 15-29 mins/week vigorous physical activity or an equivalent combination of these.
Very low activity	Reported less than 30 mins/week of moderate physical activity, less than 15 mins/week vigorous physical activity, or an equivalent combination of these.

^aOnly bouts of 10 minutes or more were included towards the 150 minutes per week guideline

To avoid overcomplicating the text, where descriptions are provided of the summary activity levels, they tend to refer only to moderate physical activity, although the calculations were based on moderate or vigorous activity as described above.

A second summary measure was calculated for adults, in respect of meeting the guidelines to carry out activities that strengthen muscles on at least 2 days a week to increase bone strength and muscular fitness. Nine different sports were classed as always muscle strengthening, and other sports or exercises were classed as muscle strengthening if the participant reported that the effort was enough to make the muscles feel some tension, shake or feel warm. If the participant carried out such activities for at least 10 minutes on 2 or more days a week, on average, they were deemed to meet the muscle strengthening guideline. As this only includes muscle strengthening through sporting activity, reported levels may be an underestimate.

7.2.3 Child physical activity questionnaire

The questions on child physical activity are slightly less detailed than those for adults¹⁶. No information on intensity is collected (with the exception of asking those aged 13-15 about their walking pace). The questions cover:

- sports and exercise
- active play including housework and gardening
- walking

7.2.4 Sedentary activity

Since 2003, all participants aged 2 and over have been asked about time spent in front of a screen (e.g. a TV or tablet) during leisure time on both weekdays and weekend days. For everyone aged 2 and over, questions about time spent sitting during leisure time (apart from in front of a screen) were added in 2012. The examples of time spent sitting that participants were given included eating, reading, studying and (for children) doing homework. For adults in paid work, new questions on time spent sitting during the working day were also added in 2012.

7.2.5 Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

Wellbeing is measured using the WEMWBS questionnaire. It has 14 items designed to assess: positive affect (optimism, cheerfulness, relaxation) and satisfying interpersonal relationships and positive functioning (energy, clear thinking, self-acceptance, personal development, mastery and autonomy) ¹⁷. The scale uses positively worded statements with a five-item scale ranging from '1 - none of the time' to '5 - all of the time'. The lowest score possible is therefore 14 and the highest score possible is 70; the tables present mean scores.

7.3 PHYSICAL ACTIVITY

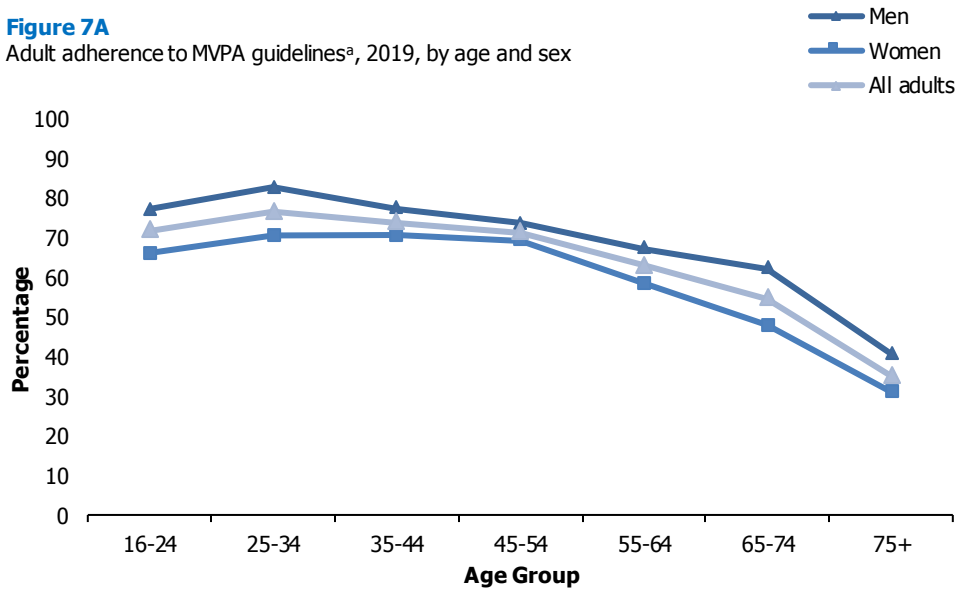
7.3.1 Adult summary activity levels, 2019, by age and sex

In 2019, around two-thirds (66%) of adults met the guidelines for moderate or vigorous physical activity (MVPA) of at least 150 minutes of moderate physical activity, 75 minutes of vigorous physical activity, or an equivalent combination of the two per week. The proportion that met the MVPA guidelines in 2019 remained the same as that reported in SHeS 2018¹⁸ (66%) and was very similar to the proportion reported in SHeS 2017¹⁹ (65%). Smaller proportions of all adults in 2019 reported undertaking some physical activity (11%), low levels (3%) or very low levels (20%) of physical activity.

Younger adults were more likely than older adults to meet the MVPA guidelines (71 - 77% among those aged 16-54, compared with 63% among those aged 55-64, 55% among those aged 65-74 and 35% among those aged 75 and over).

Figure 7A

Adult adherence to MVPA guidelines^a, 2019, by age and sex



^a Meets moderate / vigorous physical activity guidelines of 150 minutes of moderate physical activity, 75 minutes of vigorous physical activity, or an equivalent combination of these each week

As in previous years, in 2019 a significantly higher proportion of men met the MVPA guidelines for physical activity than women (71% compared with 61% respectively).

Figure 7A, Table 7.1

7.3.2 Proportion of adults engaging in muscle strengthening physical activity, 2019, by age and sex

In 2019 just under four in ten adults who participated in any physical activity met the moderate or vigorous physical activity (MVPA) recommendation only (37%) while around three in ten met the MVPA recommendation as well as the muscle strengthening activity recommendation (29%). Just over three in ten met neither of these recommendations (34%) and a very small proportion met the muscle strengthening recommendation only (1%).

Men were more likely to have met the MVPA as well as the muscle strengthening recommendations (31%) compared with women (27%) and were more likely to have met the MVPA recommendation only (40% and 34% respectively). Around four in ten women met neither of these recommendations (39%) compared with just under three in ten men (28%).

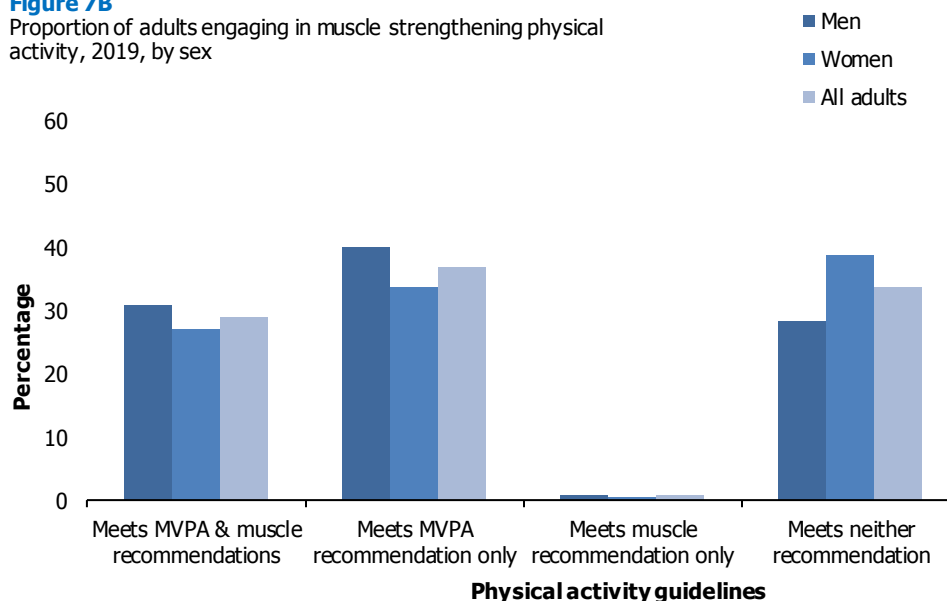
Amongst all adults taking part in any physical activity, those aged 16-24 were most likely to have met both the MVPA and muscle strengthening recommendations (43%) while those aged 75 and over were least likely to have done so (8%).

A different pattern by age was evident for meeting MVPA guidelines only. The highest proportions of all adults meeting this guideline only in 2019 were among those aged 25-74 (37- 41%) with significantly lower

proportions having met this guideline among those aged 16-24 (28%) and those aged 75 and over (27%).

Figure 7B

Proportion of adults engaging in muscle strengthening physical activity, 2019, by sex



In 2019, almost two-thirds of all adults aged 75 and over reported meeting neither the MVPA or muscle strengthening guidelines (64%) compared with 23 - 28% of those aged 16-54. **Figure 7B, Table 7.2**

7.3.3 Proportion of children meeting physical activity guidelines over an average week (including and excluding activity at school), 1998 to 2019

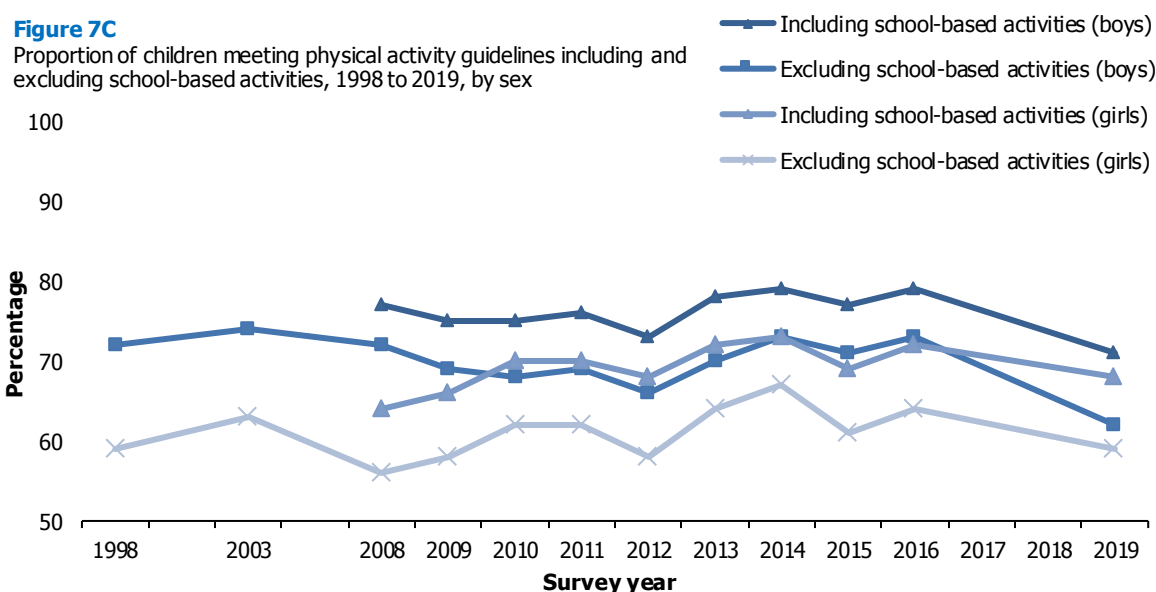
Information on children's physical activity has been collected in SHeS since 1998 and physical activity carried out while at school has been collected since 2008. Although the recommendation to engage in moderate-to-vigorous intensity physical activity for an average of at least 60 minutes per day applies to children aged five and over, the analysis in this section relates to those aged 2-15 for consistency with figures reported in previous years. The proportions of children aged 2-15 meeting the guidelines²⁰, including and excluding activity at school, from 1998 to 2019²¹ are presented in Table 7.3.

In 2019, just over two-thirds (69%) of children aged 2-15 were physically active at the recommended level (including activity at school), a significant decrease compared with SHeS 2016 (76%) and the lowest in the time series with figures previously fluctuating between 70% and 76%. The decrease recorded in 2019 appears to be driven by activity levels among boys, for whom the proportion meeting the physical activity guidelines, including school-based activity, was 71% (79% in 2016). The decrease recorded for girls between 2016 and 2019 (72% and 68% respectively) was not significant. The proportion of boys meeting this guideline has been higher than for girls across the time series (71 - 79% for boys, 64 - 73% for girls).

When school-based physical activities were excluded, a similar decrease was recorded from 2016; the 2019 figure for all children (61%) was seven percentage points lower than that recorded in 2016 (68%) and the lowest recorded since 1998. Again, a significant difference between 2016 and 2019 was recorded for boys, with an eleven percentage point decrease (73% in 2016 compared with 62% in 2019). The decrease in the proportion of girls that met the physical activity guidelines between 2016 (64%) and 2019 (59%) was not statistically significant.

The proportion of girls meeting this guideline has been lower than for boys across the time series (56 - 67% for girls, 62 - 74% for boys).

Figure 7C, Table 7.3



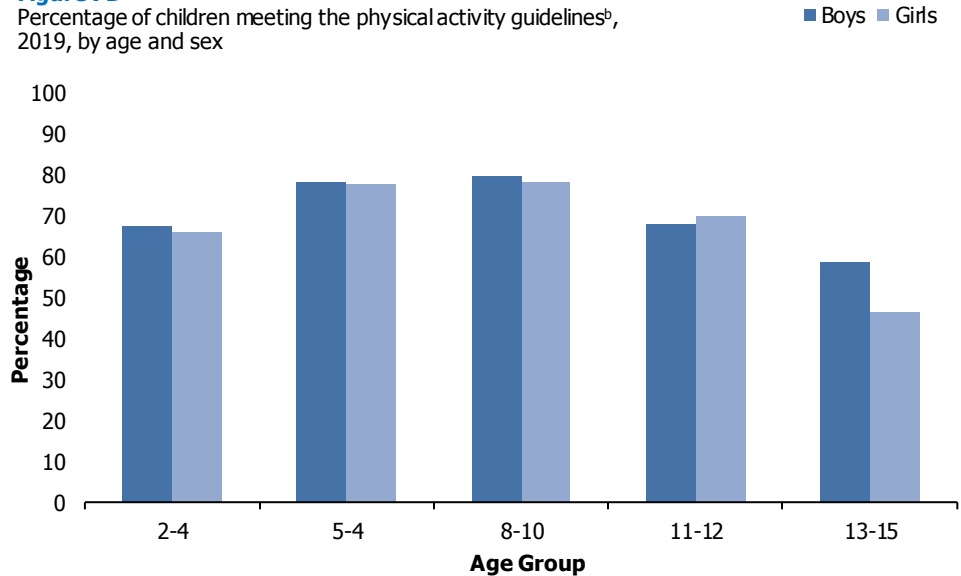
7.3.4 Child summary activity levels, 2019, by age and sex

In 2019, just over two-thirds (69%) of children met the recommended physical activity level of an average of 60 minutes each day over the last seven days (including activity at school), with similar levels recorded for girls (68%) and boys (71%).

Physical activity levels amongst children varied significantly by age in 2019, with the highest proportions that met the physical activity guidelines recorded among children aged 8-10 (79%) and 5-7 (78%). Amongst all children, the largest increase in proportions meeting the physical activity guidelines was recorded between the 2-4 and 5-7 age groups (67% up to 78%), while the largest decrease was recorded between those aged 11-12 and those aged 13-15 (69% down to 53%).

Figure 7D

Percentage of children meeting the physical activity guidelines^b, 2019, by age and sex



^b an average of at least 60 minutes every day of the week (including school-based activity)

Amongst all children, 13% had taken part in low levels of physical activity in the previous seven days with older children more likely to do so than younger (21% amongst those aged 13-15 compared to 8-9% amongst children aged 5-10).

Figure 7D, Table 7.4

7.3.5 Proportion of children participating in sport, 2019, by age and sex

In 2019, two-thirds of all children aged 2-15 had participated in any sport in the week prior to interview (66%). There were no significant variations by sex with similar proportions reported for boys (67%) and girls (66%). Levels of participation in sport remained very similar to those last reported in 2017²² where 67% of all children, 67% of boys and 66% of girls had participated in any sport in the last week.

Participation in sport varied by age in 2019 increasing from 52% of those aged 2-4 to 71 - 78% of those aged 5-12 before decreasing to 60% among those aged 13-15. Similar patterns were recorded for both boys and girls.

Table 7.5

7.3.6 Adult sedentary time, 2019, by age and sex

In 2019, all adults recorded an average of 5.4 hours of sedentary leisure time per day on weekdays, with a significant increase to an average of 6.2 hours per day at weekends. Similar patterns were recorded for men and women.

The average time spent on sedentary leisure activities per week day varied significantly by age in 2019 with the lowest levels amongst those aged 25-54. Adults aged 25-54 reported an average of 4.4 - 4.8 hours of sedentary leisure time per weekday compared with 5.7 hours for those aged 16-24 and 5.5 - 7.3 hours among those aged 55 and over.

A similar pattern was recorded for weekends where the average amount of time spent on sedentary leisure activities was lowest among those aged 25-54 at between 5.4 - 5.8 hours compared with 6.7 hours among all adults aged 16-24 and 6.2 - 7.5 hours among those aged 55 and over.

Most age groups recorded an increase of between 0.7 and 1.0 hours in the average amount of time spent on sedentary activities per day at weekends compared with weekdays in 2019, with the exception of those aged 65 and over where the differences were minimal (0.0 - 0.2 hours). Similar patterns were recorded for men and women.

Figures 7E & 7F, Table 7.6

Figure 7E

Adults' sedentary time on weekdays, 2019, by age and sex

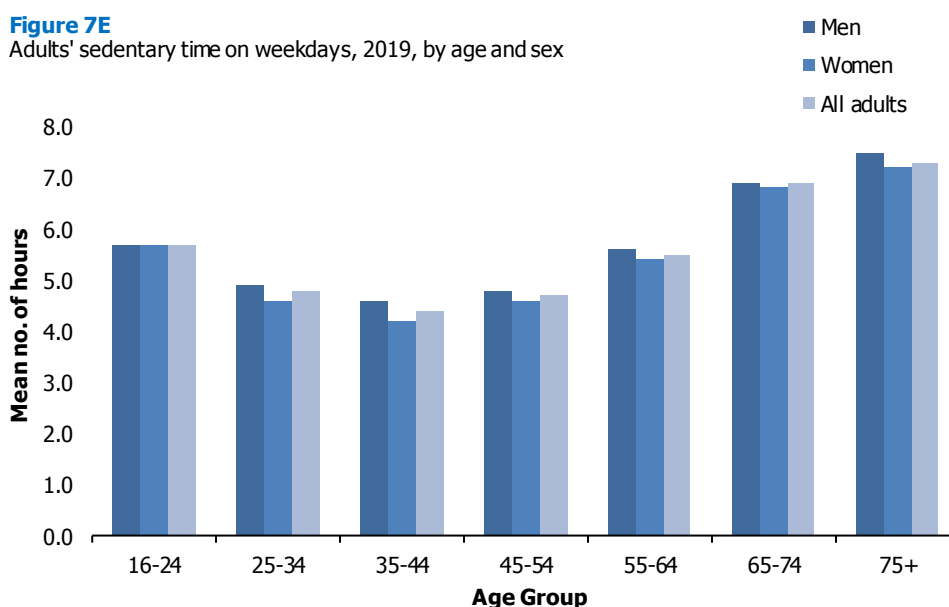
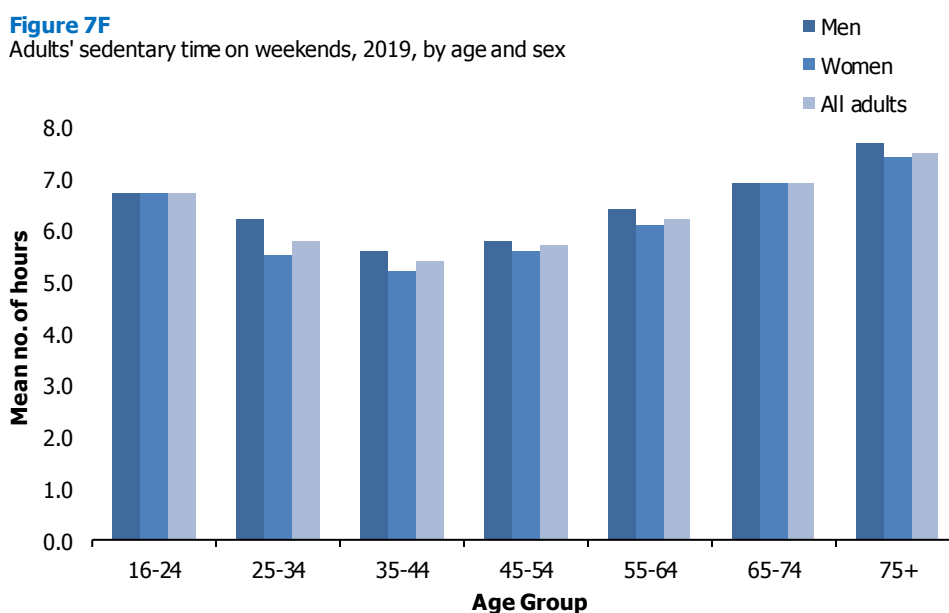


Figure 7F

Adults' sedentary time on weekends, 2019, by age and sex



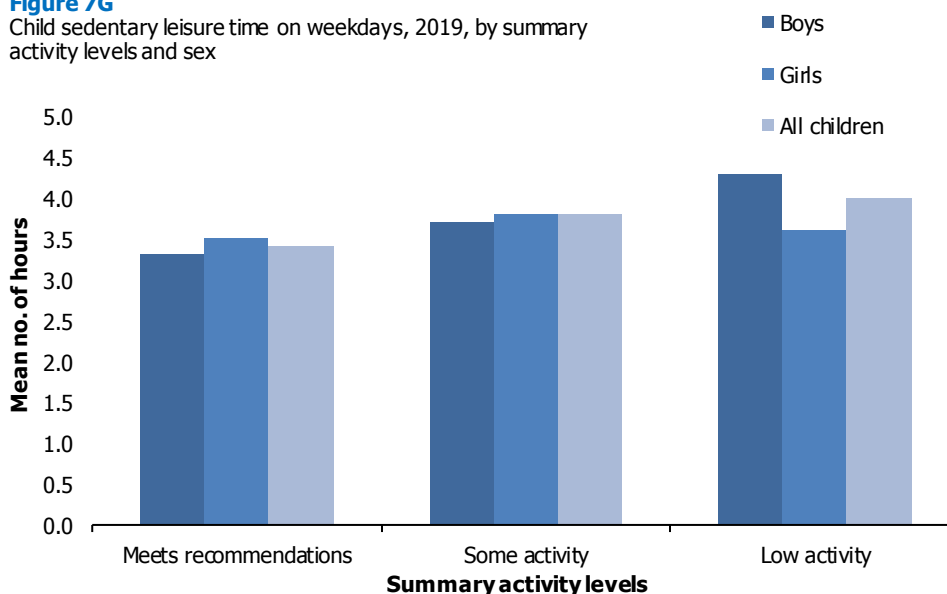
7.3.7 Children’s sedentary time, 2019, by summary activity levels and sex

The average amount of time spent on sedentary leisure activities among all children in 2019 was significantly higher at weekends than on weekdays with an average of 4.9 hours of sedentary leisure activity per weekend day compared with an average of 3.6 hours on weekdays. Similar levels of average sedentary time were observed for boys and girls at the weekend and on weekdays, however patterns for sedentary time by physical activity level were different for boys and girls.

Children who met the physical activity recommendations spent less time on sedentary leisure activities on weekdays compared to children engaging in low levels of physical activity over the previous week (3.4 mean hours per day compared with 4.0 mean hours per day). This pattern was driven by boys. The average amount of time spent on sedentary leisure activities on weekdays was 3.3 hours among boys who met the physical activity recommendations compared with 4.3 hours among boys who undertook low levels of physical activity. For girls, the average amount of sedentary leisure time per weekday did not differ significantly by physical activity level.

Figure 7G

Child sedentary leisure time on weekdays, 2019, by summary activity levels and sex



The average amount of time spent on sedentary leisure activities at weekends was also significantly associated with levels of physical activity. Children who met the physical activity recommendations recorded lower average hours of sedentary leisure activities per day at weekends than those who had engaged in low levels of activity (4.7 mean hours compared with 5.4 mean hours respectively).

A difference in the amount of time spent on sedentary leisure activities at weekends was also evident for boys by level of physical activity. In 2019, boys who met the physical activity recommendations spent an average of 4.6 hours undertaking sedentary leisure activities per day on

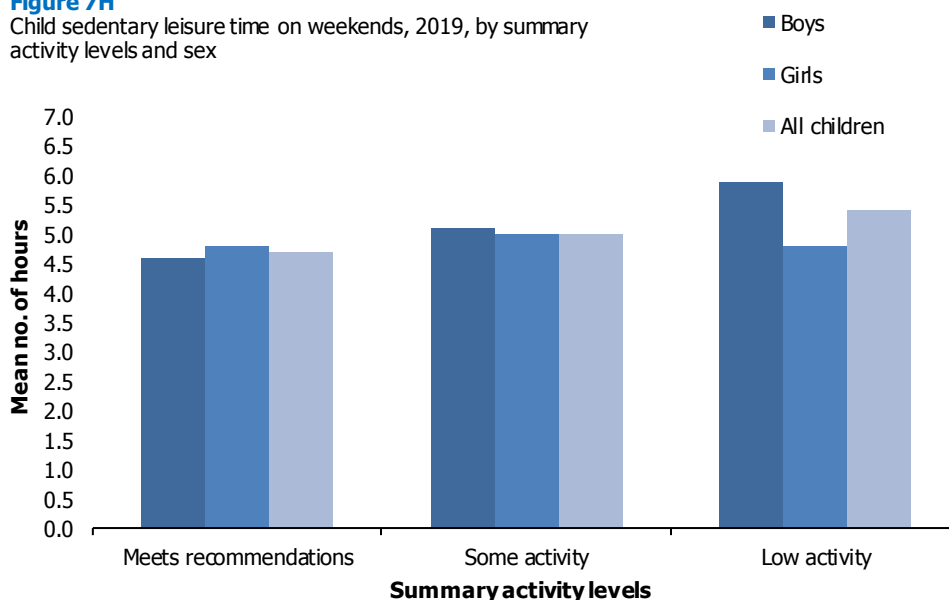
weekends compared with 5.9 hours among those who undertook low levels of activity.

As with weekdays, this difference by physical activity level was not evident for girls where the average amount of sedentary leisure time per day was in the range 4.8 - 5.0 hours for all physical activity levels.

Figures 7G & 7H, Table 7.7

Figure 7H

Child sedentary leisure time on weekends, 2019, by summary activity levels and sex



7.3.8 Adult WEMWBS mean score, 2018/2019, by summary activity levels, age and sex

To increase the sample size available, the detailed analysis of adult WEMWBS mean scores, by age and sex, used data from the 2018 and 2019 surveys combined.

In 2018/2019, mental wellbeing (measured by WEMWBS mean score) was higher among adults who met the MVPA physical activity guidelines than those who did not (50.8 compared with 47.4 respectively).

Mean WEMWBS scores did not vary significantly between men and women in relation to physical activity levels in 2018/2019. However, significant differences were evident by age. Among adults meeting the MVPA guidelines, WEMWBS mean scores generally increased with age from 49.5 - 50.2 among those aged 16-44 to 52.8 - 53.2 among those aged 65 and over.

Among adults who did not meet the MVPA guidelines, WEMWBS scores varied with age but with no clear pattern; the highest mean WEMWBS score was still among those aged 65 and over but the lowest scores were among middle-aged adults (45.1 among those aged 45-54).

Table 7.8

Table List

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The tables can be found on the main report page under supporting files:

<https://www.gov.scot/publications/scottish-health-survey-2019-volume-1-main-report/>

References and notes

- 1 See: <https://www.who.int/news-room/detail/24-04-2019-to-grow-up-healthy-children-need-to-sit-less-and-play-more>
- 2 See: <https://www.gov.scot/publications/active-scotland-delivery-plan/>
- 3 *UK Chief Medical Officer' Physical Activity Guidelines (2019)*. Department of Health & Social Care, Welsh Government, Scottish Government & Northern Ireland Department of Health. [online]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/832868/uk-chief-medical-officers-physical-activity-guidelines.pdf
- 4 *Public Health Priorities for Scotland (2018)*. COLSA and the Scottish Government. [online]. Available from: <https://www.gov.scot/publications/scotlands-public-health-priorities/>
- 5 See: <https://www.gov.scot/publications/active-scotland-delivery-plan/>
- 6 *Active Travel Framework (2019)*. Glasgow: Transport Scotland. [online]. Available from: <https://www.transport.gov.scot/media/47158/sct09190900361.pdf>
- 7 See: <https://www.gov.scot/publications/active-scotland-delivery-plan/>
- 8 *Active Travel Framework (2019)*. Glasgow: Transport Scotland. [online]. Available from: <https://www.transport.gov.scot/media/47158/sct09190900361.pdf>
- 9 *Let's get Scotland Walking (2014)*. COSLA and the Scottish Government [online]. Available from: <https://www.gov.scot/publications/lets-scotland-walking-national-walking-strategy/>
- 10 *Cycling Action Plan for Scotland 2017-2020 (2017)*. Glasgow: Transport Scotland [online]. Available from: <https://www.transport.gov.scot/publication/cycling-action-plan-for-scotland-2017-2020/>
- 11 See: <http://nationalperformance.gov.scot/>
- 12 The questions in the 2017 and 2018 surveys were changed to ask children which days (Monday to Sunday) in the previous week they had participated in each different type of physical activity. Prior to 2017 and again in 2019, children were asked to provide information on the *average* duration of sports and exercise activities for a *typical* weekday and *typical* weekend day. Due to these changes, it is not possible to compare the data for 2017 and 2018 with other survey years due to the impact on estimates of the changes in the way the data was collected.
- 13 See: <https://www.gov.scot/collections/scottish-health-survey>
- 14 The questions used in the survey since 1998 are based on the Allied Dunbar National Fitness Survey, a major study of physical activity among the adult population in England carried out in 1990. For further details see: Health Education Authority. Allied Dunbar National Fitness Survey. Health Education Authority and Sports Council, London. 1992
- 15 Bromley C. (2013) Chapter 6: Physical Activity. In Rutherford L, Hinchliffe S and Sharp C (eds.) Scottish Health Survey 2012 – Volume 1: Main Report. Edinburgh: Scottish Government. Available from: <https://www.gov.scot/publications/scottish-health-survey-2012-volume-1-main-report/pages/10/>
- 16 The questions on child physical activity included in SHeS since 1998 are based on the 1997 Health Survey for England (HSE) children's physical activity module.
- 17 Further information about WEMWBS is available from: <http://www.healthscotland.scot/health-topics/mental-health-and-wellbeing/wemwbs>

- ¹⁸ Mirani, K. (2018). Chapter 6: Physical Activity. McLean, J. Dean, L. (eds). *The Scottish Health Survey – 2017 edition: volume 1: main report*. Edinburgh: Scottish Government. Available from: <https://www.gov.scot/publications/scottish-health-survey-2018-volume-1-main-report/>
- ¹⁹ Dean, L. (2017). Chapter 7: Physical Activity. McLean, J., Christie, S., Hinchliffe, S.(eds). *The Scottish Health Survey – 2017 edition: volume 1: main report*. Edinburgh: Scottish Government. Available from: <https://www.gov.scot/publications/scottish-health-survey-2017-volume-1-main-report/pages/86/>
- ²⁰ Up to and including 2016 and in 2019, children were asked to provide information on the average duration of sports and exercise activities for a *typical* day, and were not asked to differentiate between different weekday or weekend days or to provide a specific duration for each separate day. In this report, adherence to the physical activity guidelines is calculated using an average of at least 60 minutes per day.
- ²¹ Data is not presented here for 2017 and 2018 due to differences in the way the data was collected for these years which means that the estimates for these years are not comparable with previous SHeS surveys or the data collected in 2019. In addition, the UK Chief Medical Officer's Physical Activity Guidelines were in review at the time of the 2018 report.
- ²² Dean, L. (2017). Chapter 7: Physical Activity. McLean, J., Christie, S., Hinchliffe, S.(eds). *The Scottish Health Survey – 2017 edition: volume 1: main report*. Edinburgh: Scottish Government. Available from: <https://www.gov.scot/publications/scottish-health-survey-2017-volume-1-main-report/pages/86/>

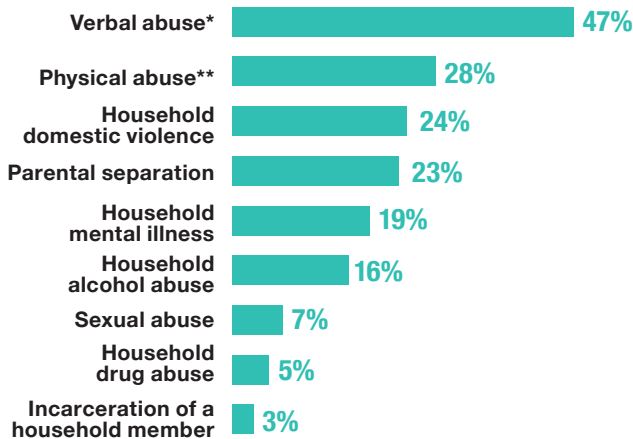
Adverse childhood experiences (ACEs)



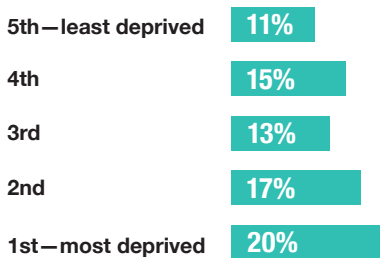
In 2019, just over one in seven adults reported four or more ACEs.



Verbal abuse was the most common ACE reported, experienced by just under half of all adults.



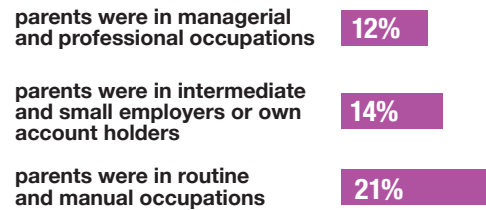
Those in the most deprived areas were almost twice as likely than those in the least deprived areas to experience four or more ACEs.



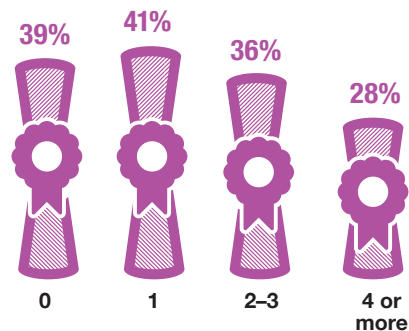
* On SHeS, verbal abuse was scored as an ACE if it was reported as happening once or more, in the Welsh and English studies verbal abuse was scored as an ACE if it was reported as happening twice or more.

** On SHeS, the physical abuse ACE did not exclude 'gentle smacking for punishment' as most other ACE surveys do.

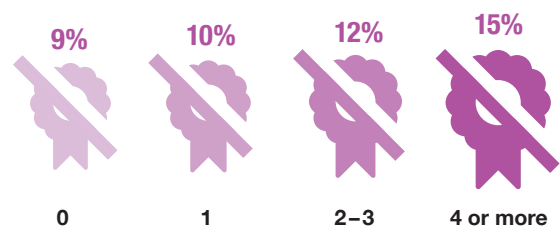
The proportion of adults reporting four or more ACEs in 2019 was higher among those whose parents were in routine and manual occupations***.



Adults who had four or more ACEs were less likely to have a degree level qualification or higher.



As the number of ACEs reported increased, so did the proportion of adults with no formal qualifications.

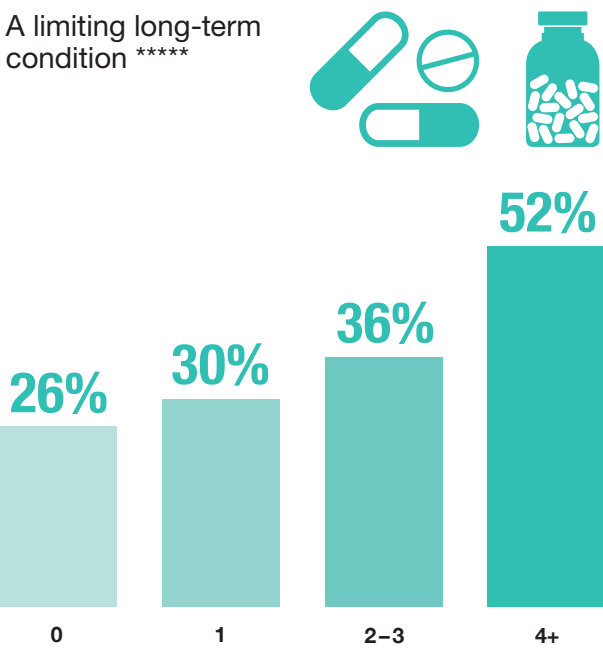
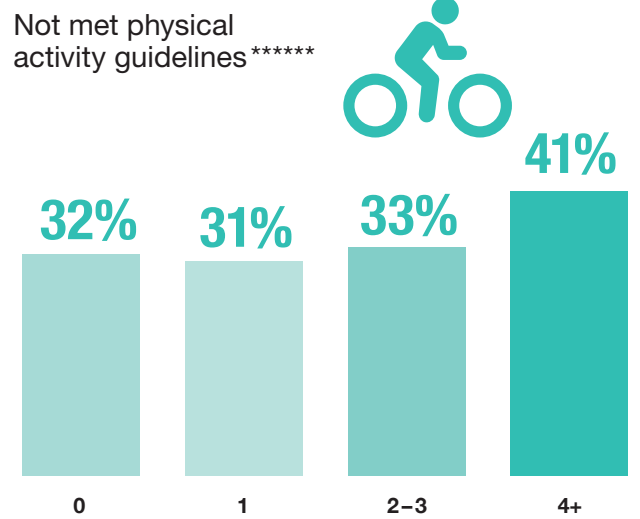
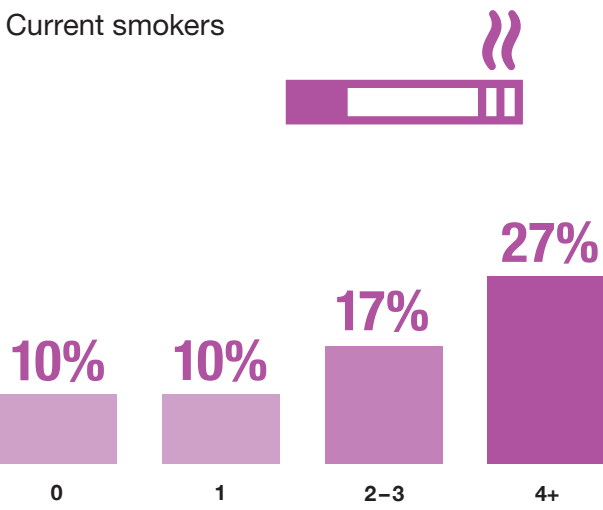
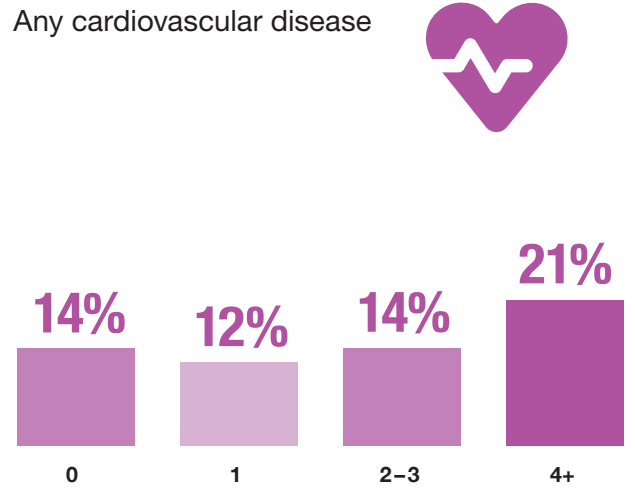
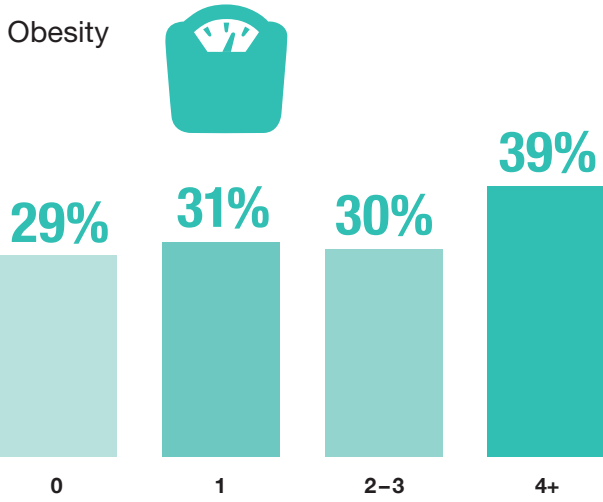


The prevalence of hazardous, harmful or possibly dependent drinking behaviour **** was higher among those who reported one or more ACE's (17–19%) than those who reported no ACE's (11%).

*** When the adult respondent was a child of about 14 years of age.

**** AUDIT scores of 8 or more.

Those who reported four or more ACEs were significantly more likely to be/have/suffer from...



***** A physical or mental health condition or illness lasting, or expected to last 12 months or more where the respondent has reported that it limited their activities in any way.

***** At least 150 minutes of moderate physical activity, 75 minutes of vigorous physical activity, or an equivalent combination of the two per week.

8 ADVERSE CHILDHOOD EXPERIENCES

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8.1 INTRODUCTION

Increasing evidence and awareness about adverse childhood experiences and the association with poor health and social outcomes has led to calls for Scottish population data in order to increase understanding of childhood adversity in Scotland to inform policy and practice.

Adverse Childhood Experiences (ACEs) can be defined as stressful or traumatic experiences that occur during childhood (between 0 and 18 years of age). The term 'ACEs' was developed in an original study conducted in the United States in 1995-97¹ to assess the association between childhood maltreatment and health and wellbeing later in life. The ten most widely recognised ACEs are based on findings from that study and include:

- being the victim of abuse (physical, sexual and/or emotional) or neglect (physical and emotional)
- growing-up in a household in which there are adults experiencing harmful alcohol and drug use or mental health problems, adults who have spent time in prison, or where there is domestic violence
- parental separation

ACEs can cause harmful stress that can negatively impact on children's healthy development² and without the right support, can have a lasting influence on their health and wellbeing and life chances into adulthood³. Evidence from ACE studies has found that the health and social risks associated with having ACEs increase with the number of ACEs people report.

Studies on ACEs have been carried out in England⁴ and Wales⁵ adapted from the ten ACEs questionnaire developed in the United States. Evidence from the 2015 Welsh ACE survey^{6,7} found that compared to people with no ACEs, those with four ACEs or more are statistically:

- 3 times increased risk of heart disease, respiratory disease and type 2 diabetes
- 4 times more likely to be a high-risk drinker
- 5 times more likely to have low mental wellbeing
- 14 times more likely to have been victim of violence in the last 12 months
- 15 times more likely to have committed violence
- 16 times more likely to have used crack cocaine or heroin
- 20 times more likely to have been in prison at any point in their life.

The 2017 Welsh ACE survey⁸ found that compared to people with no ACEs, those with four or more ACEs were statistically:

- 3.7 times more likely to currently be receiving treatment for mental illness
- 6.1 times more likely to have ever received treatment for mental illness
- 9.5 times more likely to have ever felt suicidal or self-harmed.

The 2017 ACE survey in Wales also included new questions on resilience and found that having resilience resources, such as a trusted adult relationship during childhood or regular sports participation as a child, more than halved the risk of a current mental illness in adults with four or more ACEs⁹.

Whilst the association between ACEs and poor outcomes is identified in population surveys and wider evidence, individuals' experience of adversity and how they respond will depend on a range of factors, including the existence of supportive relationships and access to financial and other resources. Therefore, it is not possible to determine an individual's longer-term health or other life outcomes based on the number of ACEs they have experienced. However, increasing our understanding of ACEs at a population level, through surveys, is important for gauging the societal prevalence of ACEs and understanding how this is impacting on health, wellbeing and other outcomes.

A recent study¹⁰ explored experiences of adversity in children in Scotland using secondary analysis of data collected in the Growing Up In Scotland cohort study (GUS)¹¹. Whilst different questions to those in the above ACE studies are used in GUS, the data available enabled some aspects of ACEs to be assessed by using a range of proxy measures across seven types of ACEs: physical abuse, domestic violence, substance abuse, mental illness, parental separation, parental incarceration and emotional neglect. The study suggests that by 8 years of age, two-thirds of Scottish children will have experienced one or more ACE-related factors and one in ten will have experienced three or more ACE-related factors. It also found an association between the experiences of adversity captured in the survey and poverty, with children living in disadvantaged circumstances more likely to experience ACE-related factors than their more affluent peers. A systematic review of evidence¹² on the relationship between childhood socio-economic position (SEP) and ACEs concluded that overall, there is a clear relationship between SEP in childhood and the risk of experiencing ACEs.

8.1.1 Policy background

Preventing childhood adversity and reducing the negative impacts of ACEs is a broad agenda which is progressed across many Ministerial portfolios. It contributes to a wide range of the national outcomes set out in the National Performance Framework and is particularly aligned to the national outcome that 'we grow up loved, safe and respected so that we realise our full potential'.

Tackling the impact of ACEs is a priority for the Scottish Government which made a commitment in its 2017 to 2018 Programme for Government to prevent and mitigate ACEs and to support those affected. This commitment was anchored in the long-standing national approach of Getting It Right For Every Child and was also about better supporting adults affected by childhood adversity.

In addition to the adversities commonly measured in ACE surveys, the Scottish Government recognises that there are a wide range of other adverse experiences that can also negatively impact on children's healthy development; for example, bereavement, bullying, coercive control, homelessness, and community violence. Therefore, the Scottish Government is taking a broad approach to addressing the wide-range of adversities which can impact on children's healthy development, and the related socio-economic factors which impact on levels of adversity experienced, including poverty and gender inequality. The SHeS and other ACE surveys include a question about domestic violence, but it is important to highlight that policy and legislation in Scotland and actions related to ACEs are focused on a broader range of abusive behaviours as reflected in the Domestic Abuse (Scotland) Act 2018.

The 2018 to 2019 Programme for Government built on this commitment, and set out four areas for action on ACEs:

- **Provide inter-generational support for parents, families and children** to prevent ACEs such as through the tackling child poverty programme and Family Nurse Partnership Programme;
- **Reduce the negative impact of ACEs for children and young people** such as investment in school counselling services and the development of Barnahus concept for child victims;
- **Develop adversity and trauma-informed workforce and services** including the National Trauma Training Programme and Education Scotland's work to support nurture and relationship-based approaches in schools;
- **Increase societal awareness and supporting action across communities** such as working with Public Health Scotland and the Scottish ACEs Hub to raise awareness and understanding about ACEs, linking to local ACE hubs across Scotland.

The 2019 to 2020 Programme for Government reiterated the commitment to these four areas of action and to addressing the wide range of childhood adversities that can have a detrimental effect on children's healthy development. The most recent Programme for Government for 2020 to 2021¹³ outlined a range of commitments related to this agenda, including commitments to progressing children's rights and the incorporation of United Nations Convention on the Rights of the Child (UNCRC) Bill, tackling child poverty, fulfilling the Independent Care Review (The Promise), supporting families, and expansion of the National Trauma Training Programme

8.1.2 Reporting on adverse childhood experiences in the Scottish Health Survey (SHeS)

This chapter provides information on ACEs for adults aged 18 and over. Prevalence of ACEs is reported by individual types of ACEs as well as

by number of ACEs up to four or more by age and sex. Prevalence of four or more ACEs is reported by deprivation, educational qualification, parental socio-economic classification, health risk behaviours, mental wellbeing, long term conditions and cardiovascular disease and diabetes.

The area deprivation data are presented in Scottish Index of Multiple Deprivation (SIMD) quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised. Data on ACE prevalence is also explored in relation to parental socio-economic classification (SEC), physical activity levels and mental wellbeing (WEMWBS).

Readers should refer to the Glossary at the end of this Volume for a detailed description of SIMD, parental SEC, WEMWBS and age-standardisation.

Supplementary tables on mental wellbeing are also published on the Scottish Health Survey website¹⁴.

8.2 METHODS AND DEFINITIONS

8.2.1 Adverse Childhood Experiences Questionnaire

ACE questions were included in the 2019 SHeS survey following recommendations made during the 2017 consultation¹⁵ on the Scottish Health Survey content by NHS Health Scotland and the Glasgow Centre for Population Health, with input from Glasgow Health and Social Care Partnership and supported by the GPs at the Deep End steering group and the Health and Social Care Alliance Scotland (the ALLIANCE). The proposed questions were based on the ACEs questionnaire developed for the US-based Centers for Disease Control-Kaiser ACE¹⁶ study with minor adaptations made to suit a Scottish context.

Due to interview time constraints it was not possible to include all the recommended questions in the SHeS 2019, therefore questions on bullying and neglect were not included. A further adaptation for the Scottish context was the removal of the words 'This does not include gentle smacking for punishment' from the physical abuse question to reflect the introduction of legislation related to smacking in Scotland (the Children (Equal Protection from Assault) (Scotland) Act).

The full list of questions used in the SHeS 2019 questionnaire are detailed below.

Question	Answer options
How often did a parent or adult in your home ever swear at you, insult you, or put you down?	
How often did your parents or adults in your home ever slap, hit, kick, punch or beat each other up?	<ul style="list-style-type: none"> • Never • Once or twice • Sometimes • Often • Very often
How often did a parent or adult in your home ever hit, beat, kick or physically hurt you in any way?	<ul style="list-style-type: none"> • Never • Once or twice • Sometimes • Often • Very often
How often did anyone at least 5 years older than you (including adults) ever touch you – or try to make you touch them – sexually?	<ul style="list-style-type: none"> • Never • Once or twice • Sometimes • Often • Very often
How often did anyone at least 5 years older than you (including adults) force you to have any type of sexual intercourse (oral, anal or vaginal)?	
Did you live with anyone who was depressed, mentally ill or suicidal?	
Did you live with anyone who was a problem drinker or alcoholic?	
Did you live with anyone who used illegal street drugs or who abused prescription medications?	<ul style="list-style-type: none"> • Yes • No
Did you live with anyone who served time or was sentenced to serve time in a prison or a young offenders' institution?	
Were your parents ever separated or divorced?	

For questions with a yes/no answer option, the answer 'yes' constitutes an ACE. For questions with never, once or twice, sometimes, often or very often, the answer 'once or twice' or more constitutes an ACE. This differs from the Welsh¹⁷ and English¹⁸ surveys in one respect. In the Welsh and English surveys for the verbal abuse question 'How often did a parent or adult in your home ever swear at you, insult you, or put you down?', more than once constituted an ACE.

It should also be noted that only those who provided answers to all the above questions were included in the analysis. An accurate calculation of the number of ACEs for individuals with data missing for any of the questions was not possible.

The age range of SHeS participants (adults aged 18 and over) is wider than that for the Welsh and English ACE studies (adults aged 18-69). Also, the ACE questions in SHeS were asked as part of the paper self-completion questionnaire (returned in a sealed envelope by interviewers) whereas the other UK surveys utilised a computer assisted self-completion (CASI) approach where participants (limited to

one per household) completed the questions (one question per screen) themselves on a laptop.

Caution should therefore be used in making direct comparisons between the ACE data reported in SHeS and the ACE data reported in the English 2014 and Welsh 2015 ACE studies.

The Welsh ACE survey in 2017 included questions to capture experiences of emotional and physical neglect (not included in the 2015 Welsh ACE survey or this SHeS). The absence of questions on neglect is unlikely to have impacted on the overall prevalence of 4 or more ACEs in this year's SHeS, as neglect tended to be reported in the Welsh survey as co-occurring with another ACE rather than on its own¹⁹.

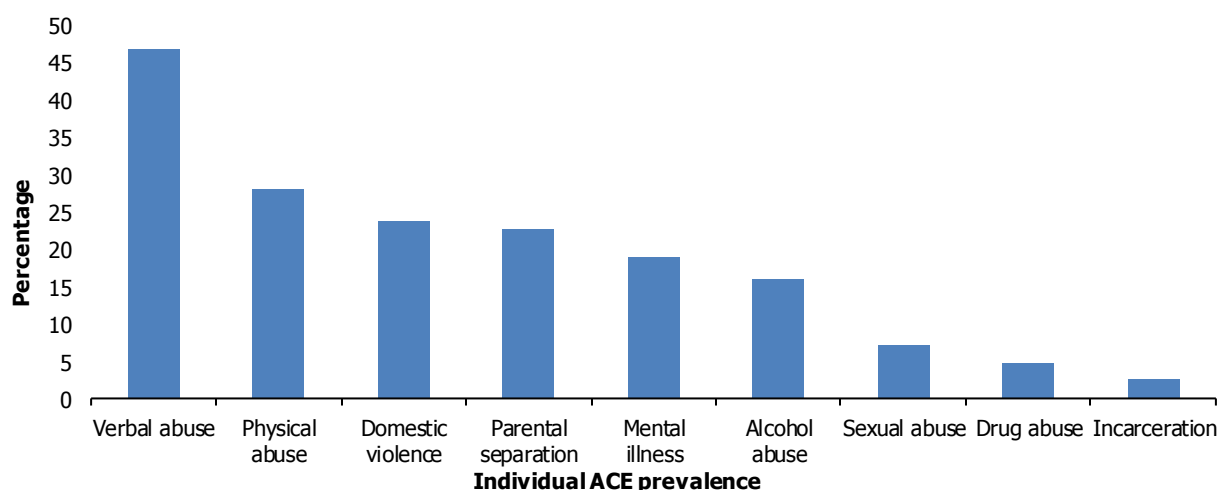
This was the first time ACE questions have been included in the SHeS or any population survey in Scotland; learning from this survey exercise will inform development of ACE questions for the next SHeS and any future rounds.

8.3 ADVERSE CHILDHOOD EXPERIENCES (ACES)

8.3.1 Prevalence of individual ACEs in adults, 2019, by age and sex

In 2019, the most prevalent individual ACE reported among adults aged 18 and over was verbal abuse (47%)²⁰. The next most commonly reported ACEs were physical abuse²¹ (28%), household domestic violence (24%) and/or parental separation (23%). Household mental illness and household alcohol abuse ACEs were a little less prevalent, reported by 19% and 16% of adults respectively. The remaining ACEs were reported by fewer than one in ten adults: 7% reported sexual abuse, 5% reported household drug abuse and 3% reported incarceration of a household member.

Figure 8A
Prevalence of individual ACEs in adults, 2019



Experience of verbal abuse, physical abuse and household domestic violence ACEs was higher among men than women; 50% and 44%

respectively for verbal abuse, 32% and 24% respectively for physical abuse and 27% and 21% respectively for household domestic violence.

The prevalence of the childhood sexual abuse ACE was higher among women than among men (10% and 4% respectively), as was the proportion of women experiencing the household mental illness ACE (22% compared with 16% among men).

Among all adults, prevalence of the individual ACEs varied by age apart from the incarceration of a household member ACE. The proportion who had experienced parental separation decreased with age, with those aged 18-24 (39%) seven times more likely to report this ACE than those aged 75 and over (6%). A similar pattern was found for men and women.

Similarly, adults aged 18-34 were around six times more likely to have reported a household mental illness ACE than those aged 75 and over (29 - 30% and 5% respectively) with similar patterns for women and men.

The prevalence of those reporting a household domestic violence ACE and those reporting a physical abuse ACE in 2019 initially increased with age, from 12% and 15% respectively among those aged 18-24 to the highest prevalence among those aged 45-54 (32% and 35% respectively) then decreased to 15% and 17% respectively among those aged 75 and over. These patterns by age were similar for women and men.

Reporting of a household alcohol abuse ACE was relatively consistent up to age 44 (15 - 16% among those aged 18-44) with an increase to 21% among those aged 45-54 before decreasing to 9% among those aged 75 and over. This pattern by age was found for both men and women.

The prevalence of the verbal abuse ACE was highest among those aged 18-54 (51 - 56%) with prevalence then decreasing with age to 26% among those aged 75 and over. A similar pattern was found for men and women.

Experience of the sexual abuse or incarceration of a household member ACEs did not differ significantly by age. **Figure 8A, Table 8.1**

ACE count in adults, 2019, by age and sex

8.3.2

In 2019, just over seven in ten adults (71%) reported having experienced at least one ACE, while 15% reported four or more ACEs. Prevalence of four or more ACEs was similar for men and women (14% and 16% respectively).

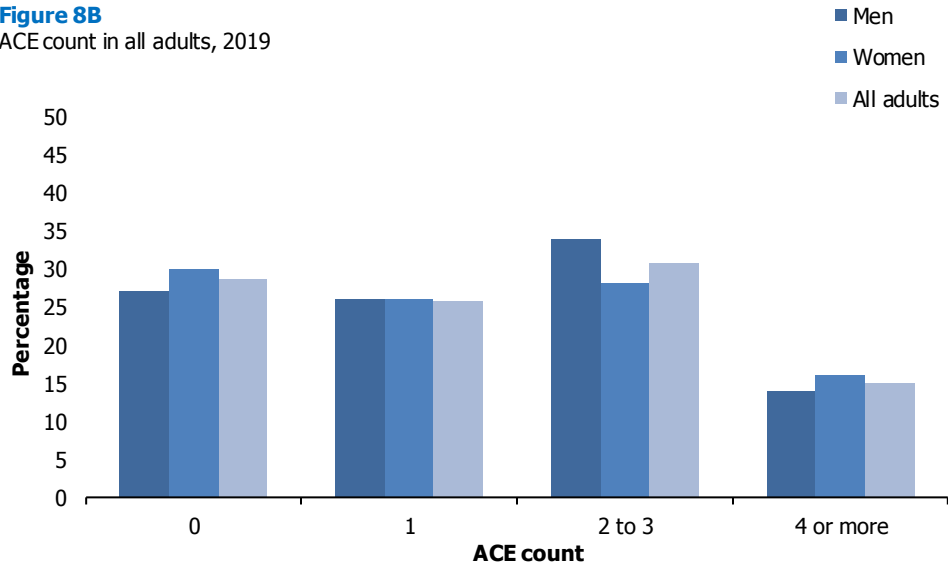
However, differences were evident by age, with higher prevalence of four or more ACEs reported by those aged 18-64 (15 - 19%) compared with those aged 65-74 (8%) and those aged 75 and over (5%).

Around three in ten adults (29%) reported no ACEs. This proportion was relatively consistent among all adults aged 54 and under (22 - 24%) before increasing with age to the highest prevalence of 49% among those aged 75 and over.

Figure 8.B, Table 8.2

Figure 8B

ACE count in all adults, 2019



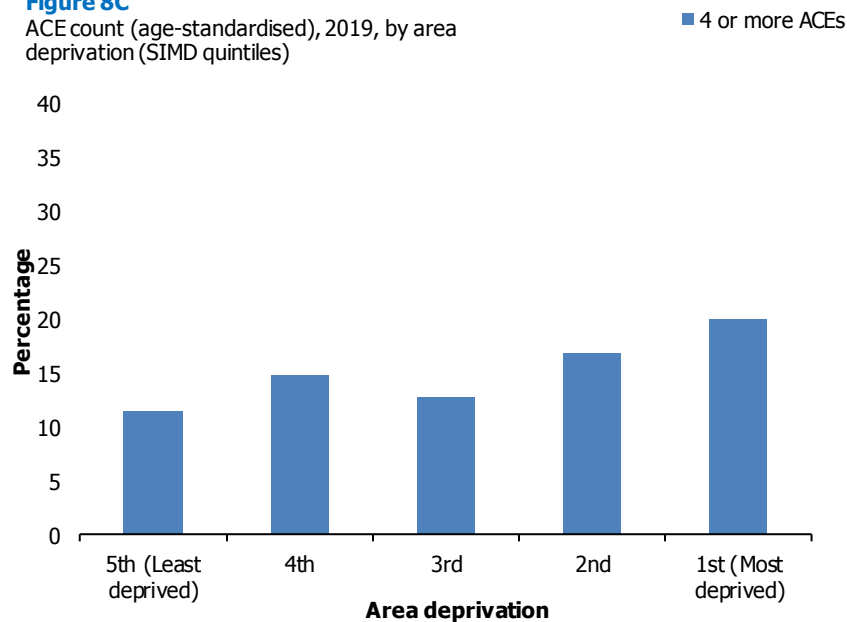
8.3.3 ACE count in adults (age-standardised), 2019, by area deprivation and sex

Those in the most deprived areas were almost twice as likely than those in the least deprived areas to experience four or more ACEs (20% compared to 11% respectively). This difference was evident for men and women.

Figure 8.C, Table 8.3

Figure 8C

ACE count (age-standardised), 2019, by area deprivation (SIMD quintiles)



8.3.4 ACE count (age-standardised), 2019, by parental socio-economic classification (SEC) in adults and sex

The proportion of adults reporting four or more ACEs in 2019 rose from 12% among those whose parents were in managerial and professional occupations²² and 14% among those in intermediate and small employers or own account holders to 21% among those whose parents were in routine and manual occupations. This association was evident among both men and women.

Table 8.4

8.3.5 Highest qualification in adults (age-standardised), 2019, by ACE count and sex

Adults who had four or more ACEs were less likely to have a degree level qualification or higher (28%) than those of those who had fewer or no ACEs (36 - 41%). This pattern was evident for both men and women.

As the number of ACEs reported increased, so did the proportion of adults with no formal qualifications (from 9% among those with no ACEs to 15% among those with four or more ACEs). This linear relationship was evident among men (from 7% among those with no ACEs to 18% among those with four or more ACEs) however there was no equivalent relationship among women.

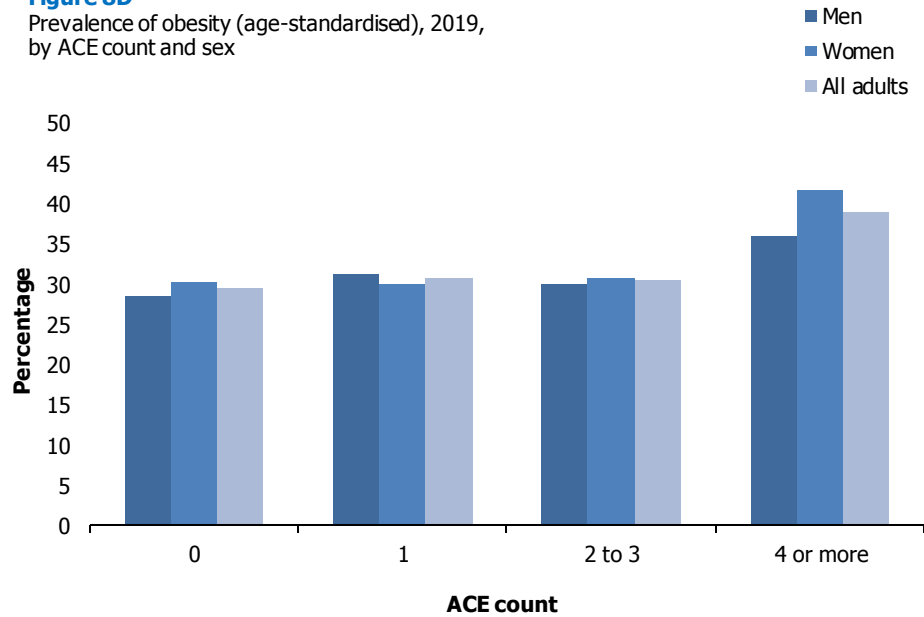
There was no clear pattern by ACE count for the other qualification levels.

Table 8.5

8.3.6 Risk behaviours in adults (age-standardised), 2019, by ACE count and sex

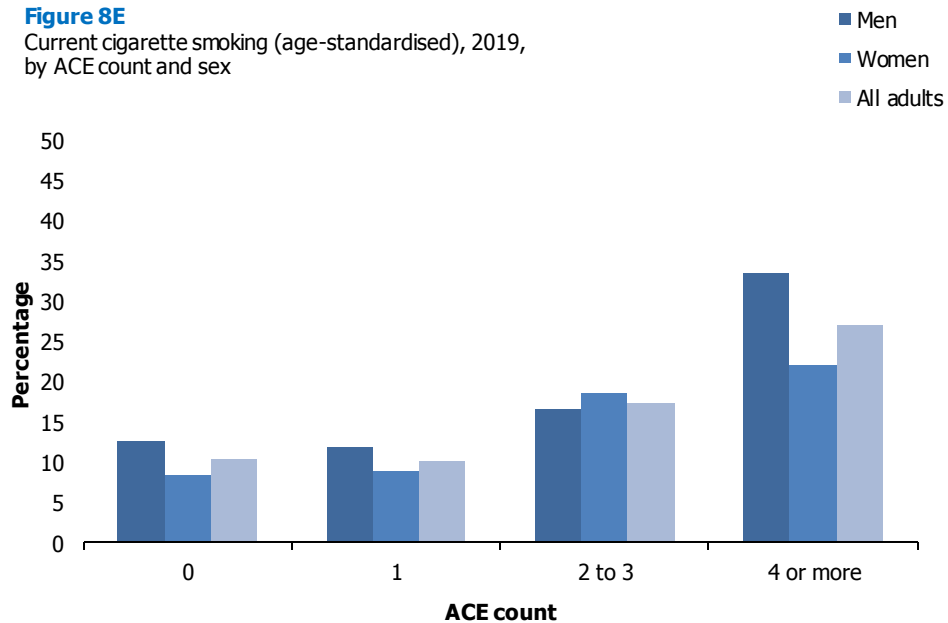
Adults who reported four or more ACEs were more likely to be obese (39%) than those with fewer or no ACEs (29 - 31%). A similar pattern was evident for men (36% among those with four or more ACEs compared to 28 - 31% among those with fewer or no ACEs) and women (42% among those with four or more ACEs compared to 30 - 31% among those with fewer or no ACEs).

Figure 8D
Prevalence of obesity (age-standardised), 2019,
by ACE count and sex



The prevalence of current smoking among all adults increased in line with ACE count from 10% among those with no ACEs or one ACE to 17% among those with two or three ACEs and 27% among those with four or more ACEs. Similar patterns were found for men and women.

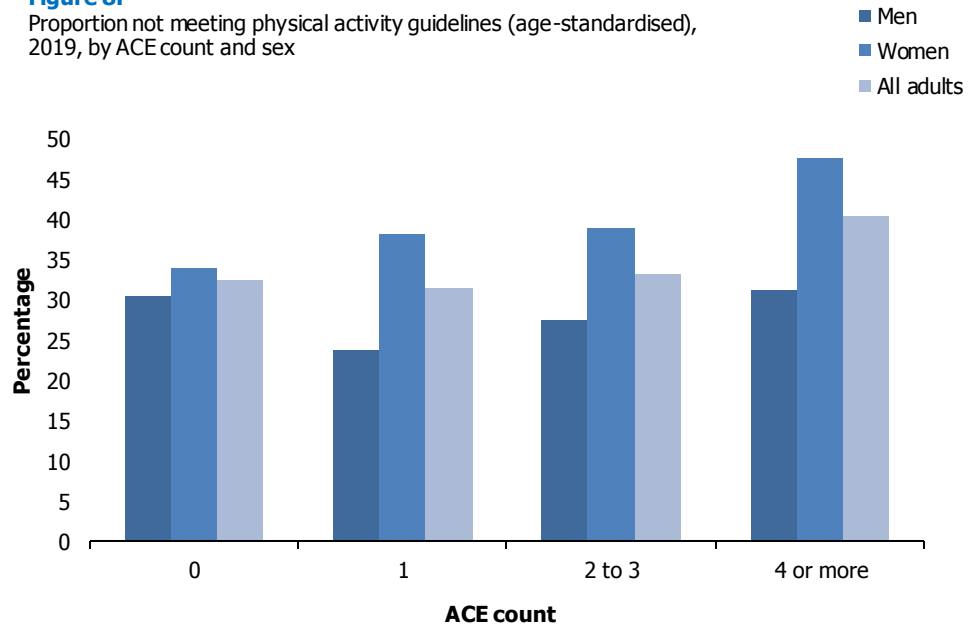
Figure 8E
Current cigarette smoking (age-standardised), 2019,
by ACE count and sex



The proportion of those who did not meet physical activity guidelines was highest among those who reported four or more ACEs (41%) compared with a range of 31 - 33% among those with fewer or no ACEs, a marginally significant relationship. Similar patterns were found for men and women.

Figure 8F

Proportion not meeting physical activity guidelines (age-standardised), 2019, by ACE count and sex



Drinking more than the recommended maximum number of units of alcohol per week did not differ significantly by ACE count (further analysis of ACE count by alcohol consumption is provided in section 8.3.8).

Figures 8.D, 8.E & 8.F, Table 8.6

8.3.7 Number of health-related risk behaviours in adults (age-standardised), 2019, by ACE count and sex

The number of health-related risk behaviours²³ reported by adults in 2019 varied by ACE count.

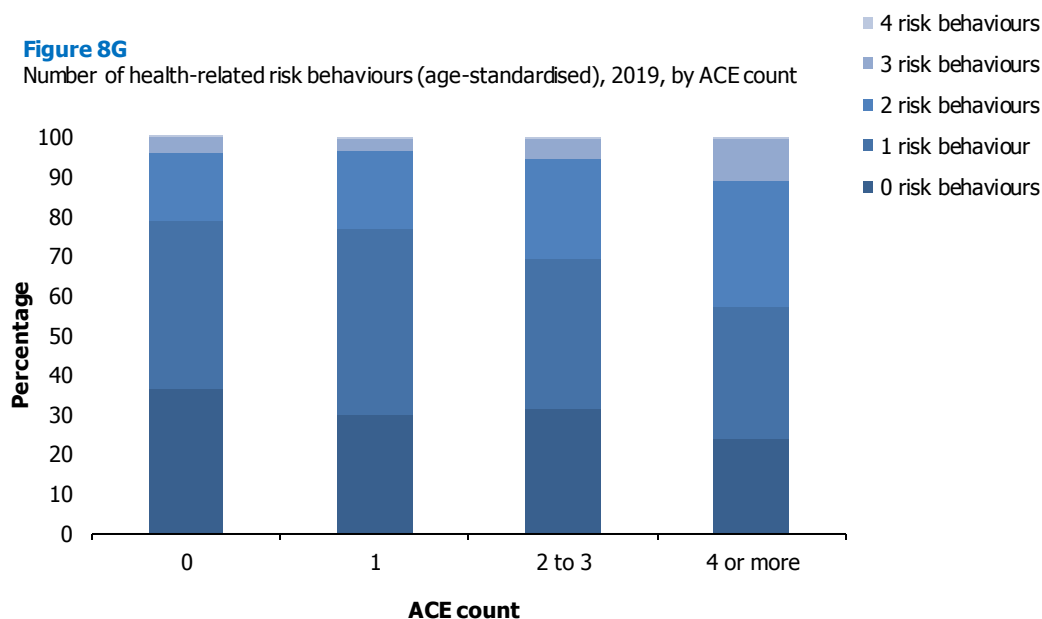
Among those who reported *any* ACEs, step-increases in the proportion recording two or more risk behaviours were evident, rising from 23% of those reporting one ACE to 31% among those reporting two or three ACEs and then again to 43% among those with four or more ACEs.

Conversely, a lower proportion of those with four or more ACEs reported no risk behaviours (24%) than those with fewer or no ACEs (30 - 36%). Similar patterns were found for men and women.

Figure 8.G, Table 8.7

Figure 8G

Number of health-related risk behaviours (age-standardised), 2019, by ACE count



8.3.8 AUDIT scores (age-standardised), 2019, by ACE count and sex

The prevalence of hazardous, harmful or possibly dependent drinking behaviour varied by whether any ACEs were reported or not. The proportion of adults with an AUDIT score of 8 or more²⁴ was higher among those who reported one or more ACE than those with no ACEs (17 - 19% compared with 11% respectively).

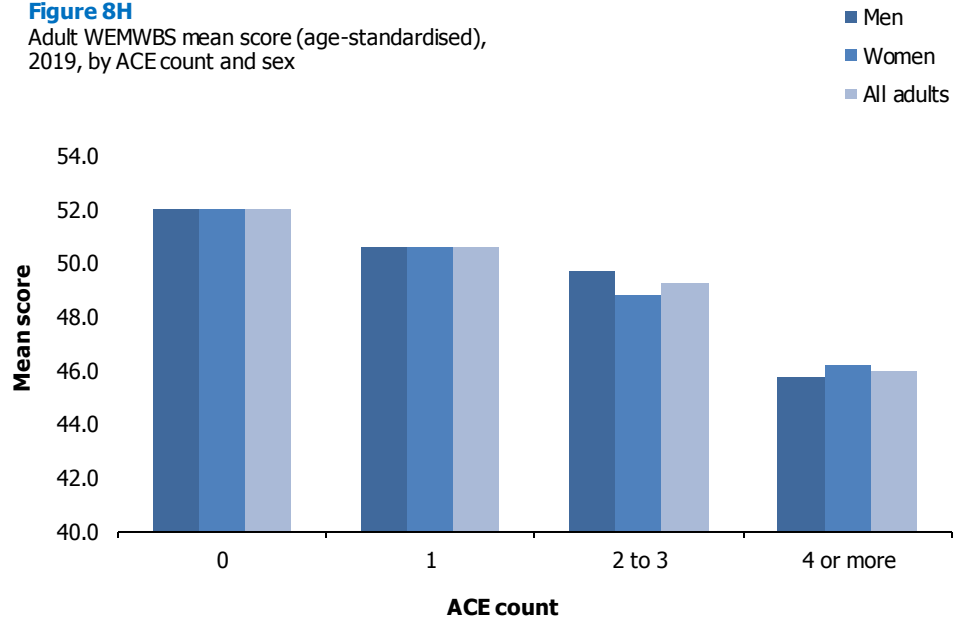
Table 8.8

8.3.9 Adult WEMWBS mean score (age-standardised), 2019, by ACE count and sex

Those with four or more ACEs had lower mental wellbeing (as measured by mean WEMWBS scores) than those with fewer or no ACEs. Mean WEMWBS scores decreased from an average of 52.0 among those with no ACEs to 50.6 among those with one ACE, 49.3 among those with two or three ACEs and to the lowest score of 46.0 among those with four or more ACEs²⁵. This relationship was evident for both men and women.

Figure 8.H, Table 8.9

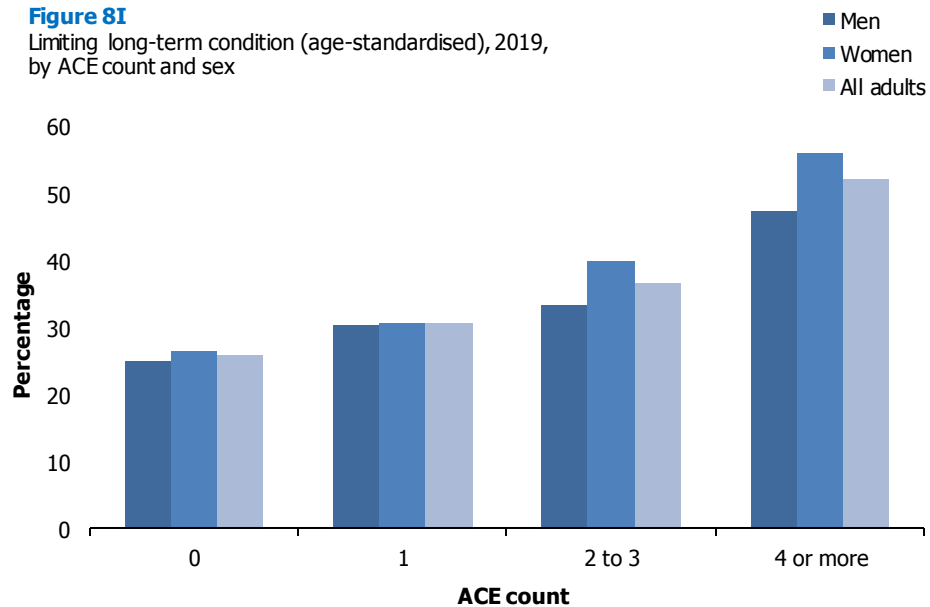
Figure 8H
Adult WEMWBS mean score (age-standardised),
2019, by ACE count and sex



8.3.10 Prevalence of long-term conditions in adults (age-standardised), 2019, by ACE count and sex

As ACE count increased, so did the proportion of adults living with at least one limiting long-term condition²⁶; from around a quarter of adults with no ACEs (26%) to around half of those with four or more ACEs (52%). The increase in prevalence between those who reported two or three ACEs (36%) and those who reported four or more (52%) was particularly marked (sixteen percentage points). This pattern was evident for both men and women.

Figure 8I
Limiting long-term condition (age-standardised), 2019,
by ACE count and sex



There was no clear relationship between ACE count and age-standardised prevalence of non-limiting long-term health conditions²⁷ in 2019. However, the number of ACEs reported was inversely associated with the likelihood of no long-term conditions being reported, a proportion that decreased from 61% among those with no ACEs to 37% among those with four or more ACEs. Again, this pattern was evident among both men and women.

A higher proportion of adults with four or more ACEs reported having any cardiovascular disease (CVD)²⁸ (21%) compared with those with fewer or no ACEs (12 - 14%). This pattern was evident for both men and women.

The proportion of adults who had had a stroke was significantly associated with the number of ACEs reported; those with no ACEs reported were more likely to have reported having had a stroke than those who reported one ACE or more (4% compared with 2% respectively). A similar pattern was found for men, however for women there was no clear pattern.

Those with no ACEs reported were also more likely to have ischaemic heart disease (IHD) than those who reported one ACE or more (6% compared with 3 - 4% respectively). A similar pattern was evident for men and women.

The number of ACEs reported was not significantly associated with the prevalence of diabetes.

Figure 8.I, Table 8.10

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Table 8.5	Highest qualification in adults (age-standardised), 2019, by ACE count and sex
Table 8.6	Risk behaviours in adults (age-standardised), 2019, by ACE count and by sex
Table 8.7	Number of risk health-related behaviours in adults (age-standardised), 2019, by ACE count and sex
Table 8.8	AUDIT scores (age-standardised), 2019, by ACE count and by sex
Table 8.9	Adult WEMWBS mean score (age-standardised), 2019, by ACE count and sex
Table 8.10	Prevalence of long-term conditions in adults (age-standardised), 2019, by ACE count and sex

The tables can be found on the main report page under supporting files:

<https://www.gov.scot/publications/scottish-health-survey-2019-volume-1-main-report/>

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- 20 On SHeS, verbal abuse was scored as an ACE if it was reported as happening once or more, in the Welsh and English studies verbal abuse was scored as an ACE if it was reported as happening twice or more.
- 21 On SHeS, the physical abuse ACE did not exclude 'gentle smacking for punishment' as most other ACE surveys do.
- 22 When the adult respondent was a child of about 14 years of age.
- 23 In table 8.7 risk behaviours include drinking above recommended maximum, being obese, being a current cigarette smoker and undertaking low or very low levels of physical activity (see details in Table 8.7 and chapters 1 (General Health, CVD and Diabetes), 5 (Smoking) and 7 (Physical Activity) for more on these definitions).
- 24 Based on the Alcohol Use Disorders Identification Test (AUDIT) scale primarily used to screen for levels of alcohol dependency or high-risk alcohol use, see Chapter 4 Alcohol for details.
- 25 The mean WEMWBS score for adults in 2019 was 49.8.
- 26 Defined as a physical or mental health condition or illness lasting or expected to last 12 months or more where the respondent has reported that it limited their activities in any way. See Glossary for further details.
- 27 Defined as a physical or mental health condition or illness lasting, or expected to last 12 months or more where the respondent has *not* reported that it limited their activities in any way).
- 28 See chapter 1 (General Health, CVD and Diabetes) for definitions of these conditions used in SHeS.



Appendix A:

Glossary

APPENDIX A: GLOSSARY

This glossary explains terms used in the report, other than those fully described in particular chapters.

Adverse Childhood Experiences (ACEs) ACEs can be defined as stressful or traumatic experiences and events that occur during childhood (between 0 and 18 years of age). The questions used on SHeS are similar to those used in the original English 2014 and Welsh 2015 ACE surveys but without the questions on physical and emotional neglect. Additionally, to reflect the introduction of legislation related to smacking in Scotland, the words 'This does not include gentle smacking for punishment' used in the Welsh and English studies were removed from the question 'How often did a parent or adult in your home ever hit, beat, kick or physically hurt you in any way?'.

For questions with a yes/no answer option, the answer 'yes' constitutes an ACE. For questions with never, once or twice, sometimes, often or very often, the answer 'once or twice' or more constitutes an ACE. This differs slightly from the Welsh and English surveys in one respect. In the Welsh and English surveys for the question 'How often did a parent or adult in your home ever swear at you, insult you, or put you down?', twice or more constituted an ACE. For sexual abuse, the two questions asked have been combined into a single ACE where a response of 'once or twice' to either or both of the questions constitutes an ACE. Only those who provided answers to all of the questions were included in the analysis.

Age standardisation

Age standardisation has been used in order to enable groups to be compared 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.

Age standardisation was carried out, using the direct standardisation method. The standard population to which the age distribution of sub-groups was adjusted was the mid-2018 population estimates for Scotland. All age standardisation has been undertaken separately within each sex.

The age-standardised proportion p' was calculated as follows, where p_i is the age specific proportion in age group i and N_i is the standard population size in age group i :

$$p' = \frac{\sum_i N_i p_i}{\sum_i N_i}$$

Therefore p' can be viewed as a weighted mean of p_i using the weights N_i . Age standardisation was carried out using the age groups: 16-24, 25-34, 35-44, 45-54, 55-64, 65-74 and 75 and over. The variance of the standardised proportion can be estimated by:

$$\text{var}(p') = \frac{\sum_i (N_i^2 p_i q_i / n_i)}{(\sum_i N_i)^2}$$

where $q_i = 1 - p_i$.

Anthropometric measurement

See **Body mass index**.

Arithmetic mean

See **Mean**.

Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT questionnaire was primarily designed to screen for levels of alcohol dependency or high-risk use. In line with the World Health Organisation guidelines on using the tool, responses to each of the ten AUDIT questions were assigned values of between 0 and 4. Scores for the ten questions were summed to form a scale, from 0 to 40, of alcohol use.

Bases

See **Unweighted bases, Weighted bases**.

Blood pressure

Systolic (SBP) and diastolic (DBP) blood pressure were measured using a standard method. In adults, high blood pressure is defined as SBP ≥ 140 mmHg or DBP ≥ 90 mmHg or on antihypertensive drugs.

Body mass index (BMI)

Weight in kg divided by the square of height in metres. Adults (aged 16 and over) can be classified into the following BMI groups:

<i>BMI (kg/m²)</i>	<i>Description</i>
Less than 18.5	Underweight
18.5 to less than 25	Normal
25 to less than 30	Overweight
30 to less than 40	Obese
40 and above	Morbidly obese

Although the BMI calculation method is the same, there are no fixed BMI cut-off points defining overweight and obesity in children. Instead, overweight and obesity are defined using several other methods including age and sex specific BMI cut-off points or BMI percentile cut-offs based on reference populations. Children can be classified into the following groups:

<i>Percentile cut-off</i>	<i>Description</i>
At or below 2nd percentile	At risk of underweight
Above 2nd percentile and below 85th percentile	Healthy weight
At or above 85th percentile and below 95th percentile	At risk of overweight
At or above 95th percentile	At risk of obesity

Cardiovascular Disease (CVD)

Participants were classified as having CVD if they reported ever having any of the following conditions diagnosed by a doctor: angina, heart attack, stroke, heart murmur, irregular heart rhythm, 'other heart trouble'. For the purpose of this report, participants were classified as having a particular condition only if they reported that the diagnosis was confirmed by a doctor. No attempt was made to assess these self-reported diagnoses objectively. There is therefore the possibility that some misclassification may have occurred, because some participants may not have remembered (or not remembered correctly) the diagnosis made by their doctor.

Chronic Obstructive Pulmonary Disease (COPD)

COPD is defined by the World Health Organisation as 'a pulmonary disease characterised by chronic obstruction lung airflow that interferes with normal breathing and is not fully reversible.' It is associated with symptoms and clinical signs that in the past have been called 'chronic bronchitis' and 'emphysema,' including regular cough (at least three consecutive months of the year) and production of phlegm.

Clinical Interview Schedule-Revised (CIS-R)

See **Revised Clinical Interview Schedule**.

Cotinine

Cotinine is a metabolite of nicotine. It is one of several biological markers that are indicators of smoking. In this survey, it was measured in saliva. It has a half-life in the body of between 16 and 20 hours, which means that it will detect regular smoking (or other tobacco use such as chewing) but may not detect occasional use if the last occasion was several days ago. Anyone with a salivary cotinine level of 12 nanograms per millilitre or more was judged highly likely to be a tobacco user. Saliva samples were collected as part of the biological module.

Mean cotinine levels among non-smokers were calculated using the Tobit regression analysis method (see later).

Cardiopulmonary Resuscitation (CPR)	CPR is an emergency procedure that combines chest compressions with artificial ventilation in an effort to manually preserve brain function in a person who is in cardiac arrest.
Diastolic blood	When measuring blood pressure the diastolic arterial pressure is the lowest pressure at the resting phase of the cardiac cycle. See also Blood pressure, Systolic blood pressure .
Electronic cigarettes	Electronic cigarettes or e-cigarettes are battery-powered handheld devices which heat a liquid that delivers a vapour. The vapour is then inhaled by the user, which is known as 'vaping'. E-cigarettes typically consist of a battery, an atomiser and a cartridge containing the liquid. Earlier models, often referred to as 'cigalikes', were designed to closely resemble cigarettes but there is now a wide variety of product types on the market. The liquid is usually flavoured and may not contain nicotine, although in most cases e-cigarettes are used with nicotine. Unlike conventional or traditional cigarettes, they do not contain tobacco and do not involve combustion (i.e. they are not lit). The questions about e-cigarettes were amended in 2016 to include the term 'vaping devices'.
Food insecurity	Food insecurity is 'the inability to acquire or consume an adequate quality or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so'. Respondents answered three routed questions on food insecurity asking whether they had <i>worried about</i> running out of food, had <i>eaten less</i> than they should have or had <i>actually run out of food</i> in the last 12 months.
Frankfort plane	The Frankfort Plane is an imaginary line passing through the external ear canal and across the top of the lower bone of the eye socket, immediately under the eye. Informants' heads are positioned with the Frankfort Plane in a horizontal position when height is measured using a stadiometer as a means of ensuring that, as far as possible, the measurements taken are standardised.
General Health Questionnaire-12 (GHQ-12)	The GHQ-12 is a scale designed to detect possible psychiatric morbidity in the general population. It was administered to informants aged 13 and above. The questionnaire contains 12 questions about the informant's general level of happiness, depression, anxiety and sleep disturbance over the past four weeks. Responses to these items are scored, with one point given each time a particular feeling or type of behaviour was reported to have been experienced 'more than usual' or 'much more than usual' over the past few weeks. These scores are combined to create an overall score of between zero and twelve. A score of four or more (referred to as a 'high' GHQ-12 score) has been used in this report to indicate the presence of a possible psychiatric disorder.

Reference: Goldberg D, Williams PA. *User's Guide to the General Health Questionnaire*. NFER-NELSON, 1988.

Geometric mean

The geometric mean is a measure of central tendency. It is sometimes preferable to the arithmetic mean, since it takes account of positive skewness in a distribution. An arithmetic mean is calculated by summing the values for all cases and dividing by the number of cases in the set. The geometric mean is instead calculated by multiplying the values for all cases and taking the *n*th root, where *n* is the number of cases in the set. For example, a dataset with two cases would use the square root, for three cases the cube root would be used, and so on. The geometric mean of 2 and 10 is 4.5 ($2 \times 10 = 20$, $\sqrt{20} = 4.5$). Geometric means can only be calculated for positive numbers so zero values need to be handled before geometric means are calculated. See also **Mean**.

Health risk category

Health risk category is derived from BMI and waist circumference. BMI is derived from height and weight data collected in the main interview and waist circumference measurements are collected in the biological module. These measures are used in combination to estimate the proportion of adults who fall into each of the risk categories listed in the table below.

BMI Classification	'High' WC Men WC 94-102cm Women WC 80-88cm	'Very high' WC Men WC >102cm Women WC >88cm
Normal weight (BMI 18.5 - <25(kg/m ²))	-	-
Overweight (BMI 25 - <30(kg/m ²))	Increased	High
Obese		
I - Mild (BMI 30 - <35(kg/m ²))	High	Very high
II - Moderate (BMI 35 - <40(kg/m ²))	Very high	Very high
III - Extreme (BMI 40+(kg/m ²))	Extremely high	Extremely high

Reference: Scottish Intercollegiate Guidelines Network Management of Obesity – A National Clinical Guideline. SIGN guideline no. 115. Edinburgh: SIGN, 2010.

High blood pressure

See **Blood pressure**.

Household	A household was defined as one person or a group of people who have the accommodation as their only or main residence and who either share at least one meal a day or share the living accommodation.
Household Reference Person (HRP)	The HRP is defined as the householder (a person in whose name the property is owned or rented) with the highest income. If there is more than one householder and they have equal income, then the household reference person is the oldest.
Hypertension	See Blood pressure.
Ischaemic heart disease (IHD)	IHD is also known as coronary heart disease. Participants were classified as having IHD if they reported ever having angina, a heart attack or heart failure diagnosed by a doctor.
Loneliness	A question was included in the adult and young adult self-completion questionnaires to measure levels of loneliness experienced in the two weeks prior to being interviewed, with five answer options ranging from 'all of the time' to 'never'.
Long-term conditions & limiting long-term conditions	<p>Long-term conditions were defined as a physical or mental health condition or illness lasting, or expected to last 12 months or more. The wording of this question changed in 2012 and is now aligned with the harmonised questions for all large Scottish Government surveys.</p> <p>Long-term conditions were coded into categories defined in the International Classification of Diseases (ICD), but it should be noted that the ICD is used mostly to classify conditions according to the cause, whereas SHeS classifies according to the reported symptoms. A long-term condition was defined as limiting if the respondent reported that it limited their activities in any way.</p>
Mean	Most means in this report are Arithmetic means (the sum of the values for cases divided by the number of cases).
Median	The value of a distribution which divides it into two equal parts such that half the cases have values below the median and half the cases have values above the median.
Morbid obesity	See Body mass index .
NHS Health Board	The National Health Service (NHS) in Scotland is divided up into 14 geographically-based local NHS Boards and a number of National Special Health Boards. Health Boards in this report refers to the 14 local NHS Boards (See Volume 2: Appendix B).
Nicotine Replacement	The remedial administration of nicotine to the body by means other than tobacco, usually as part of smoking cessation.

Therapy (NRT)	Common forms of nicotine replacement therapy are nicotine patches and nicotine gum.
Obesity	See Body mass index .
Overweight	See Body mass index .
Percentile	The value of a distribution which partitions the cases into groups of a specified size. For example, the 20th percentile is the value of the distribution where 20 percent of the cases have values below the 20th percentile and 80 percent have values above it. The 50th percentile is the median.
p value	A p value is the probability of the observed result occurring due to chance alone. A p value of less than 5% is conventionally taken to indicate a statistically significant result ($p < 0.05$). It should be noted that the p value is dependent on the sample size, so that with large samples differences or associations which are very small may still be statistically significant. Results should therefore be assessed on the magnitude of the differences or associations as well as on the p value itself. The p values given in this report take into account the clustered sampling design of the survey. See also Significance testing .
Quintile	Quintiles are percentiles which divide a distribution into fifths, i.e., the 20th, 40th, 60th and 80th percentiles.
Raised waist circumference	See Waist circumference .
Revised Clinical Interview Schedule (CIS-R)	<p>Details on symptoms of depression and anxiety are collected via a standardised instrument, the CIS-R. The CIS-R is a well-established tool for measuring the prevalence of mental disorders. The complete CIS-R comprises 14 sections, each covering a type of mental health symptom and asks about presence of symptoms in the week preceding the interview. Prevalence of two of these mental illnesses - depression and anxiety - were introduced to the survey in 2008. Given the potentially sensitive nature of these topics, they were included in the nurse interview part of the survey prior to 2012, and in the computer-assisted self-completion part of the biological module from 2012 to 2019.</p> <p>Questions on depression cover a range of symptoms, including feelings of being sad, miserable or depressed, and taking less of an interest and getting less enjoyment out of things than usual. Questions on anxiety cover feelings of anxiety, nervousness and tension, as well as phobias, and the symptoms associated with these.</p>

References:

Lewis, G. & Pelosi, A. J. (1990). Manual of the Revised Clinical Interview Schedule CIS–R. London: Institute of Psychiatry;
Lewis G, Pelosi AJ, Araya R, Dunn G. (1992) Measuring psychiatric disorder in the community; a standardised assessment for use by lay interviewers. *Psychological Medicine*; 22, 465-486.

Scottish Index of Multiple Deprivation (SIMD)

The SIMD is the Scottish Government’s official measure of area based multiple deprivation. It is based on 37 indicators across 7 individual domains of current income, employment, housing, health, education, skills and training and geographic access to services and telecommunications. SIMD is calculated at data zone level, enabling small pockets of deprivation to be identified. The data zones are ranked from most deprived (1) to least deprived (6505) on the overall SIMD index. The result is a comprehensive picture of relative area deprivation across Scotland.

This report uses the SIMD 2020 for the 2019 data (see <https://www.gov.scot/publications/?term=SIMD&cat=filter&publicationTypes=statistics&page=1>) and the SIMD 2016 for the 2016, 2017 and 2018 data.

Significance testing

Where differences in relation to a particular outcome between two subgroups, such as men and women, are highlighted in volume 1 of this report, the differences can be considered statistically significant, unless otherwise stated.

Statistical significance is calculated using logistic regression to provide a **p-value** based on a two-tailed significance test. One tailed-tests are used when the difference can only be in one direction. Two-tailed tests should always be used when the difference can theoretically be in either direction. For example, even though previous research has shown a higher prevalence of hazardous levels of alcohol consumption among men than among women, and we may expect this to be true in the most recent survey, a two-tailed test is used to confirm the difference.

Social capital

Social capital encompasses aspects of social connectedness via friend and kinship networks, trust in others, the ability to draw on support from others, as well as a sense of connectedness to places through involvement in the local community and the ability to influence local decisions.

Standard deviation

The standard deviation is a measure of the extent to which the values within a set of data are dispersed from, or close to, the mean value. In a normally distributed set of data 68% of the cases will lie within one standard deviation of the mean, 95% within two standard deviations and 99% will be within 3 standard

deviations. For example, for a mean value of 50 with a standard deviation of 5, 95% of values will lie within the range 40-60.

Standard error	The standard error is a variance estimate that measures the amount of uncertainty (as a result of sampling error) associated with a survey statistic. All data presented in this report in the form of means are presented with their associated standard errors (with the exception of the WEMWBS scores which are also presented with their standard deviations). Confidence intervals are calculated from the standard error; therefore the larger the standard error, the wider the confidence interval will be.
Standard error of the mean	See Standard error .
Standardisation	In this report, standardisation refers to standardisation (or 'adjustment') by age (see Age standardisation).
Systolic blood pressure	When measuring blood pressure, the systolic arterial pressure is pressure defined as the peak pressure in the arteries, which occurs near the beginning of the cardiac cycle. See also Blood pressure, Diastolic blood pressure .
Tobit regression	This method assumes that the distribution of cotinine values below the level of detection follows the same pattern as those above the method of detection. Thus, as the mean levels of cotinine among those with a cotinine level of between 0.1 ng/mL and 12 ng/mL (the level at which someone is deemed to be a cotinine-validated smoker) fall, so too do the assumed mean levels of those with a cotinine level of below 0.1 mg/mL ²⁸ . Because of this change in method, figures presented in the 2019 report differ from those presented in the 2017 report.
Unit of alcohol	Alcohol consumption is reported in terms of units of alcohol. A unit of alcohol is 8 gms or 10ml of ethanol (pure alcohol). See Chapter 4 of volume 1 of this Report for a full explanation of how reported volumes of different alcoholic drinks were converted into units.
Unweighted bases	The unweighted bases presented in the report tables provide the number of individuals upon which the data in the table is based. This is the number of people that were interviewed as part of the SHeS and provided a valid answer to the particular question or set of questions. The unweighted bases show the number of people interviewed in various subgroups including gender, age and SIMD.

Waist circumference

Waist circumference is a measure of deposition of abdominal fat. It was measured during the biological module. A raised waist circumference has been defined as more than 102cm in men and more than 88cm in women.

Weighted bases

See also **Unweighted bases**. The weighted bases are adjusted versions of the unweighted bases which involves calculating a weight for each individual so that their representation in the sample reflects their representation in the general population of Scotland living in private households. Categories within the table can be combined by using the weighted bases to calculate weighted averages of the relevant categories.

Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

The WEMWBS was developed by researchers at the Universities of Warwick and Edinburgh, with funding provided by NHS Health Scotland, to enable the measurement of mental well-being of adults in the UK. It was adapted from a 40 item scale originally developed in New Zealand, the Affectometer 2. The WEMWBS scale comprises 14 positively worded statements with a five item scale ranging from '1 - None of the time' to '5 - All of the time'. The lowest score possible is therefore 14 and the highest is 70. The 14 items are designed to assess positive affect (optimism, cheerfulness, relaxation); and satisfying interpersonal relationships and positive functioning (energy, clear thinking, self-acceptance, personal development, mastery and autonomy).

References:

Kammann, R. and Flett, R. (1983). *Sourcebook for measuring well-being with Affectometer 2*. Dunedin, New Zealand: Why Not? Foundation.

Information on measuring mental wellbeing using WEMWBS is available online from:

<https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs>

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The United Kingdom Statistics Authority has designated the Scottish Health Survey as National Statistics in January 2010, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics.

Designation can be interpreted to mean that the statistics: meet identified user needs; are produced, managed and disseminated to high standards; and are explained well.

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How to access background or source data

The data collected for the Scottish Health Survey:

are made available via the UK Data Service

may be made available on request, subject to consideration of legal and ethical factors. Please contact scottishealthsurvey@gov.scot for further information.

Further breakdowns of the data:

are available via the Scottish Health Survey website

<https://www.gov.scot/collections/scottish-health-survey>

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