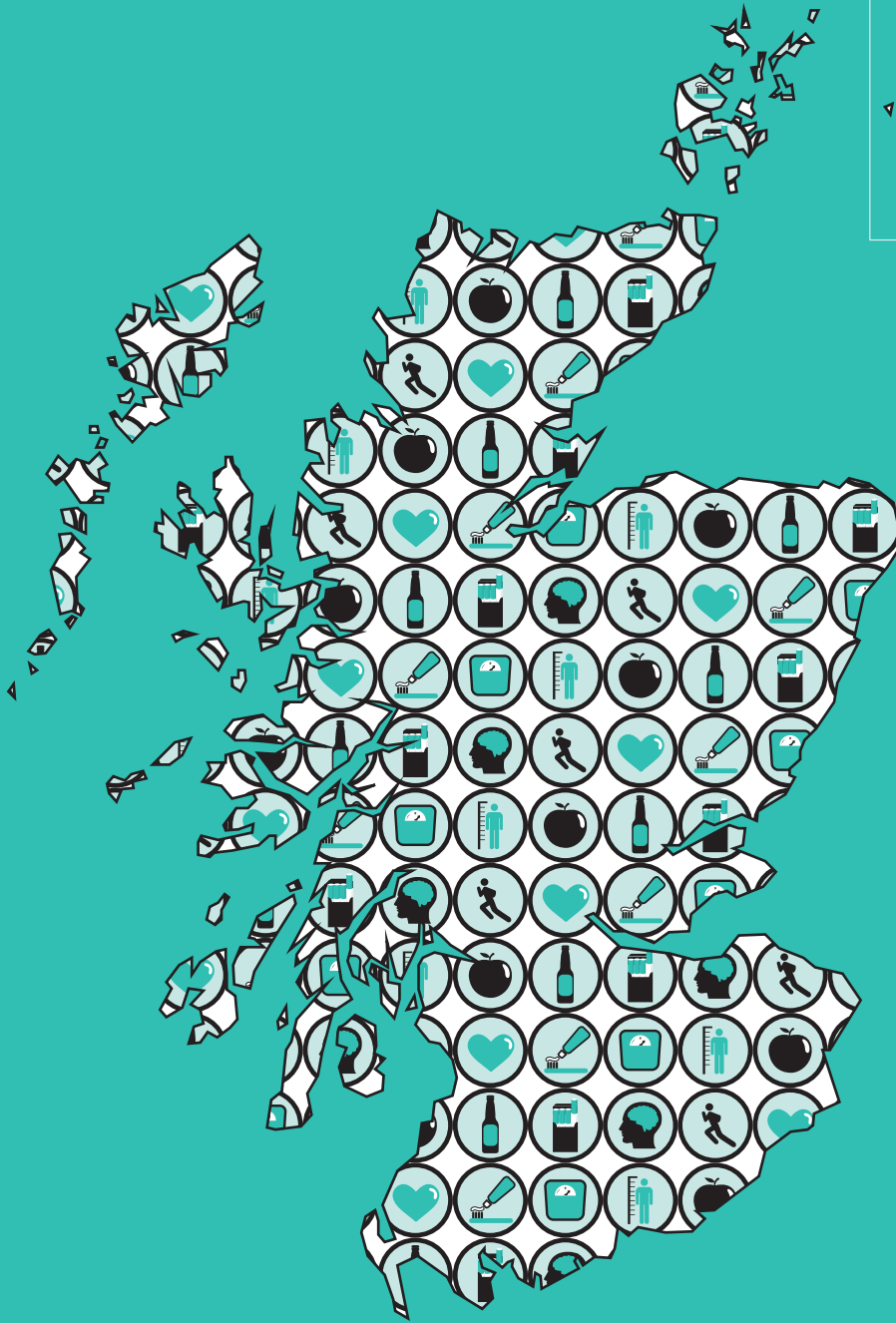




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# The Scottish Health Survey

2015 edition | volume 1 | main report

A National Statistics Publication for Scotland

**Editors:**

Diarmid Campbell-Jack<sup>1</sup>, Stephen Hinchliffe<sup>1</sup> and Lisa Rutherford<sup>1</sup>.

**Principal authors:**

Laura Brown<sup>2</sup>, Diarmid Campbell-Jack<sup>1</sup>, Lindsay Gray<sup>3</sup>, Peter Hovald<sup>2</sup>, Gemma Kirkpatrick<sup>4</sup>, Line Knudsen<sup>1</sup>, Alastair H Leyland<sup>3</sup>, Ian Montagu<sup>1</sup>, Joe Rose<sup>1</sup>.

<sup>1</sup> ScotCen Social Research, Edinburgh.

<sup>2</sup> NatCen Social Research, London.

<sup>3</sup> MRC/CSO Social and Public Health Sciences Unit, Glasgow.

<sup>4</sup> University of Edinburgh.

# CONTENTS

**Editors' Acknowledgements**

**Foreword from the Chief Medical Officer**

**Introduction**

**Notes to Tables**

## **Chapter 1: Mental Health and Wellbeing**

### 1.1 Introduction

1.1.1 Policy background

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

### 1.2 Methods and definitions

1.2.1 Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS)

1.2.2 Depression and anxiety

1.2.3 Suicide attempts

1.2.4 Deliberate self-harm

1.2.5 Strengths and Difficulties Questionnaire (SDQ)

### 1.3 WEMWBS

1.3.1 Trends in adult WEMWBS mean scores since 2008

1.3.2 Adult WEMWBS mean scores in 2015, by age and sex

1.3.3 Child (13-15) WEMWBS mean scores in 2012-2015 (combined), by age and sex, and by area deprivation

### 1.4 Depression and anxiety

1.4.1 Trends in symptoms of depression since 2008/2009 (combined), by sex

1.4.2 Symptoms of depression in 2012-2015 (combined), by age and sex, and by area deprivation

1.4.3 Trends in symptoms of anxiety since 2008/2009 (combined), by sex

1.4.4 Symptoms of anxiety in 2012-2015 (combined), by age and sex, and by area deprivation

### 1.5 Suicide attempts

1.5.1 Trends in suicide attempts since 2008/2009 (combined), by sex

1.5.2 Suicide attempts in 2012-2015 (combined), by age and sex, and by area deprivation

### 1.6 Deliberate self-harm

- 1.6.1 Trends in self-reported self-harm since 2008/2009 (combined), by sex
- 1.6.2 Self-harm in 2012-2015 (combined), by age and sex, and by area deprivation
- 1.7 Strengths and difficulties questionnaire
  - 1.7.1 Trends in children's SDQ scores, 2003 to 2014/2015 (combined), by sex
  - 1.7.2 Children's SDQ scores in 2012-15 (combined), by age and sex, and by area deprivation

## **Chapter 2: General Health and Multiple Conditions**

- 2.1 Introduction
  - 2.1.1 Policy background
  - 2.1.2 Reporting on general health and multiple conditions in the Scottish Health Survey
- 2.2 Methods and definitions
  - 2.2.1 Self-assessed general health
  - 2.2.2 Multiple long-term conditions
  - 2.2.3 Symptoms of Mental Disorder (GHQ-12)
- 2.3 Self-assessed general health
  - 2.3.1 Self-assessed general health among adults in 2015, by age and sex
  - 2.3.2 Self-assessed general health among children in 2014/2015 (combined), by age and sex
- 2.4 Multiple long-term conditions in adults
  - 2.4.1 Prevalence of multiple conditions in 2012-2015 (combined), by age and sex
  - 2.4.2 Prevalence of multiple conditions in 2012-2015 combined, by area deprivation
- 2.5 Symptoms of mental disorder (GHQ12) by prevalence of physical conditions in adults
  - 2.5.1 Symptoms of mental disorder (GHQ12) by prevalence of physical conditions and sex in 2012-2015 combined
  - 2.5.2 Symptoms of mental disorder (GHQ12) by prevalence of physical conditions by area deprivation in 2012-2015 combined

## **Chapter 3: Dental Health**

- 3.1 Introduction
  - 3.1.1 Policy background
  - 3.1.2 Reporting on dental health in the Scottish Health Survey (SHeS)

## 3.2 Methods and definitions

## 3.3 Dental health

### 3.3.1 Trends in prevalence of natural teeth since 2008

### 3.3.2 Number of natural teeth and prevalence of no natural teeth in 2015, by age and sex

### 3.3.3 Daily actions taken to improve dental health, 2013/2015 (combined)

## **Chapter 4: Alcohol**

### 4.1 Introduction

#### 4.1.1 Policy background

#### 4.1.2 Measuring alcohol consumption in surveys

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

#### 4.1.4 Comparability with other UK statistics

### 4.2 Methods and definitions

#### 4.2.1 Methods

#### 4.2.2 Calculating alcohol consumption in SHeS

#### 4.2.3 Age-standardised estimates for weekly alcohol consumption

#### 4.2.4 Definitions

### 4.3 Trends in alcohol consumption since 2003

#### 4.3.1 Trends in usual weekly alcohol consumption

#### 4.3.2 Trends in alcohol consumption on the heaviest drinking day in last week

#### 4.3.3 Number of days alcohol was consumed in the past week

### 4.4 Alcohol consumption in 2015

#### 4.4.1 Weekly alcohol consumption

#### 4.4.2 Weekly alcohol consumption, by household income

#### 4.4.3 Alcohol consumption on the heaviest drinking day in last week

#### 4.4.4 Number of days alcohol was consumed in past week

### 4.5 Problem drinking in 2014/2015 (combined)

## **Chapter 5: Smoking**

### 5.1 Introduction

#### 5.1.1 Policy background

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

#### 5.1.3 Comparability with other UK statistics

## 5.2 Methods and definitions

5.2.1 Methods of collecting data on smoking behaviour

5.2.2 Questions on smoking behaviour

5.2.3 Definitions

## 5.3 Cigarette smoking status

5.3.1 Trends in cigarette smoking status since 1995

5.3.2 Cigarette smoking status in 2015

5.3.3 Cotinine-adjusted cigarette smoking status in 2014/2015  
(combined)

## 5.4 E-cigarette use

## 5.5 Trends in exposure to second-hand smoke

5.5.1 Non-smokers' exposure to second-hand smoke since 1998

5.5.2 Children's exposure to second-hand smoke since 2012

5.5.3 Saliva cotinine levels among self-reported cotinine validated non-smokers since 2003

# **Chapter 6: Diet**

## 6.1 Introduction

6.1.1 Policy background

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

## 6.2 Methods and definitions

6.2.1 Measuring fruit and vegetable consumption

6.2.2 Child fruit and vegetable consumption by parental fruit and vegetable consumption

6.2.3 Measuring urinary sodium, potassium and creatinine

6.2.4 Measuring vitamin and mineral supplement use

## 6.3 Fruit and vegetable consumption

6.3.1 Trends in adult fruit and vegetable consumption since 2003

6.3.2 Adult fruit and vegetable consumption in 2015, by age and sex

6.3.3 Trends in child fruit and vegetable consumption since 2003

6.3.4 Child fruit and vegetable consumption in 2015, by age and sex

6.3.5 Child fruit and vegetable consumption in 2012-2015 (combined),  
by parental fruit and vegetable consumption

## 6.4 Urinary sodium, potassium and creatinine in adults

6.4.1 Trends in urinary sodium, potassium and creatinine in adults,  
since 2010/2011 (combined)

6.4.2 Urinary sodium and potassium in adults in 2014/2015  
(combined), by age and sex

## 6.5 Consumption of vitamin and mineral supplements

6.5.1 Adult consumption of vitamin and mineral supplements in 2015, by age and sex

6.5.2 Child consumption of vitamin and mineral supplements in 2015, by age and sex

## **Chapter 7: Physical Activity**

### 7.1 Introduction

7.1.1 Policy background

7.1.2 Guidelines on physical activity

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

### 7.2 Methods and definitions

7.2.1 Adult physical activity questionnaire

7.2.2 Adherence to adult physical activity guidelines

7.2.3 Child physical activity questionnaire

7.2.4 Adherence to child physical activity guidelines

7.2.5 Sedentary activity

### 7.3 Adult physical activity levels

7.3.1 Summary activity levels since 2012

7.3.2 Adherence to muscle strengthening and MVPA guidelines in 2015

7.3.3 Adults' sedentary time in 2015

### 7.4 Child physical activity levels

7.4.1 Proportion of children meeting physical activity guideline since 1998

7.4.2 Summary of children's physical activity by parental physical activity, 2012-2015 (combined)

7.4.3 Proportion of children participating in sport since 1998

7.4.4 Children's sedentary time in 2015

## **Chapter 8: Obesity**

### 8.1 Introduction

8.1.1 Policy background

8.1.2 Reporting on obesity in the Scottish Health Survey (SHeS)

8.1.3 Comparability with other UK statistics

### 8.2 Methods and definitions

8.2.1 Methods

- 8.2.2 Definitions
- 8.2.3 Children's BMI categories, by parental BMI
- 8.3 Adult overweight and obesity prevalence
  - 8.3.1 Trends in overweight including obesity prevalence since 1995
  - 8.3.2 Trends in obesity and morbid obesity prevalence since 1995
  - 8.3.3 Trends in mean adult BMI since 1995
  - 8.3.4 Adult BMI in 2015, by age and sex
- 8.4 Waist circumference and disease risk (based on BMI and waist circumference)
  - 8.4.1 Trends in mean and raised waist circumference since 1995
  - 8.4.2 Health risk category associated with overweight and obesity based on Body Mass Index (BMI) and waist circumference, 2014/2015 (combined)
- 8.4 Child healthy weight, overweight and obesity
  - 8.5.1 Trends in child healthy weight, overweight and obesity prevalence since 1998
  - 8.5.2 Child BMI categories in 2015, by age and sex
  - 8.5.3 Child BMI categories in 2015, by parental BMI

## **Chapter 9: Cardiovascular Conditions and Diabetes**

- 9.1 Introduction
  - 9.1.1 Policy background
  - 9.1.2 Reporting on CVD conditions and diabetes in the Scottish Health Survey (SHeS)
- 9.2 Methods and definitions
  - 9.2.1 Methods
  - 9.2.2 Definitions
- 9.3 Cardiovascular conditions and diabetes
  - 9.3.1 Trends in any CVD, diabetes, any CVD or diabetes, IHD, stroke, and IHD or stroke prevalence since 1995
  - 9.3.2 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 2015, by age and sex
  - 9.3.3 Blood pressure level, 2014/2015 (combined), by age and sex
  - 9.3.4 Blood pressure level, 1998 to 2014/2015 (combined)
  - 9.3.5 Comparison of doctor-diagnosed with survey-defined hypertension, 2014/2015 (combined), by age and sex
  - 9.3.6 Detection and treatment of hypertension, 2014/2015 (combined), by age and sex



## **Chapter 10: Injuries / Accidents**

### 10.1 Introduction

10.1.1 Policy background

10.1.2 Definition of injury and accidents

10.1.3 Reporting on accidents in the Scottish Health Survey (SHeS)

### 10.2 Methods and definitions of measurement

10.2.1 Accident classification and recall period

10.2.2 Coverage of accidents

10.2.3 Causes of accidents

10.2.4 Data collection years

### 10.3 Trends in accident prevalence

10.3.1 Adult accident prevalence, 1998 to 2013/2015 (combined), by age and sex

10.3.2 Child accident prevalence, 1998, to 2013/2015 (combined), by age and sex

10.3.3 Causes of accidents, 2013/2015 (combined), by age and sex

## **Appendix A: Glossary**

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We would also like to thank those colleagues who contributed to the survey and this report. In particular we would like to thank:

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Ethical approval for the study was granted by the Research Committee for Wales (12/WA/0261). We are grateful to the committee, and its co-ordinator Dr Corrine Scott, for their careful scrutiny and on-going support.

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*Diarmid Campbell-Jack, Stephen Hinchliffe and Lisa Rutherford*

## **Foreword from the Chief Medical Officer**

This report presents the findings of the 2015 Scottish Health Survey. The survey provides data extending back over 20 years and has been running to a continuous design since 2008. The 2012-2015 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 is also included.

The 2015 report includes a chapter focussing specifically on mental health and wellbeing for the first time and presents data on prevalence of multiple long-term conditions. Data showing reported alcohol consumption based on the new alcohol guidelines and responses to new questions on vitamin D supplements are also reported for the first time this year. The report includes some interesting analyses linking risk factors for parents and their children.

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 6,421 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 Catherine Calderwood**  
**Chief Medical Officer for Scotland**  
**Scottish Government Health Directorates**

## INTRODUCTION

*Stephen Hinchliffe and Diarmid Campbell-Jack*

### **POLICY CONTEXT**

Health features prominently in the Scottish Government's National Performance Framework (NPF)<sup>1,2</sup>. The Government's core purpose, to create a more successful Scotland, is underpinned by five strategic objectives, one of which is to create a **healthier** Scotland. The objective is driven, in part, by the recognition of the considerable need to help people to sustain and improve health, particularly in disadvantaged communities. Of the 16 National Outcomes allied to the Government's strategic objectives, those of greatest relevance to health are:

**We live longer, healthier lives**

**We have tackled the significant inequalities in Scottish society.**

Many of the National Indicators that track progress towards the national outcomes have relevance to health<sup>2</sup>. The Scottish Health Survey (SHeS) is used to monitor progress towards the following National Indicators:

**Improve mental wellbeing**

**Increase physical activity**

**Improve self-assessed general health**

**Increase the proportion of healthy weight children**

**Reduce the percentage of adults who smoke.**

In addition, the purpose target to improve healthy life expectancy over the 2007 to 2017 period uses SHeS data for children (aged 0-15) in the calculations used to measure progress.

As a study of public health, the Scottish Health Survey plays an important role in assessing health outcomes and the extent of health inequalities in Scotland and how these have changed over time. Each of the chapters included in this volume addresses an aspect of health that relates either directly or indirectly to the Government's objective of improving the health of the people living in Scotland.

### **THE SCOTTISH HEALTH SURVEY SERIES**

The survey has been carried out annually since 2008 and prior to this was carried out in 1995<sup>3</sup>, 1998<sup>4</sup>, and 2003<sup>5</sup>. The 2015 survey was the eleventh 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 between 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, urine and saliva samples), plus modules of questions on specific health conditions that vary from year to year. Each year the core sample has also 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 2012-2015 surveys were carried out by ScotCen Social Research, 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 2015 SURVEY**

### **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 have been identified as clinical priorities for the NHS in Scotland<sup>6,7,8</sup>. Diseases of the circulatory system are the second most common causes of death in Scotland after cancer, accounting for 27% of deaths in 2015. This includes 12% of deaths which are caused by IHD, with a further 7% caused by cerebrovascular disease (e.g. stroke)<sup>9</sup>. Early mortality from heart disease and stroke have also both improved in recent years (surpassing targets in both cases), but concern remains about continuing inequalities in relation to morbidity and mortality linked to these conditions<sup>6</sup>. The SHeS series now has trend data going back 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 and the NHS. For example, smoking, poor diet, lack of physical activity, obesity and alcohol misuse

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 4-8. Chapter 9 covers CVD and diabetes. The other chapters report on measures of mental health and wellbeing (Chapter 1), general health and multiple conditions (Chapter 2), dental health (Chapter 3) and injuries / accidents (Chapter 10).

## **Sample**

The 2012-2015 surveys were designed to yield a representative sample of the general population living in private households in Scotland every year. Estimates at NHS Health Board level are published at the same time as this report for the four-year period.

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 4,437 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. Each individual 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.

Three further samples were selected for the survey in 2015: a child boost sample (4,146 addresses) in which up to two children in a household were eligible to be interviewed but adults were not, a Health Board boost sample (1,026 addresses) for those Health Boards which opted to boost the number of adults interviewed in their area, and an additional sample designed to address the shortfall of adult interviews in specific Health Boards (916 addresses).

## **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 consent to interview up to two children aged 0-15.

Interviewing was conducted using Computer Assisted Interviewing (CAI). The content of the interview and full documentation are provided in Volume 2 of this report.

Adults (aged 16 and over) and children aged 13-15 were interviewed 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 and urine. Further details of these samples and measurements are available both in the Glossary and in Volume 2.

### Survey response

In 2015, across all sample types, interviews were held in 3,782 households with 5,000 adults (aged 16 and over), and 1,421 children (aged 0-15). 910 adults also completed the biological module. The number of participating households and adults in 2015 is listed in the table below. Further details on survey response in 2015 are presented in Chapter 1, Volume 2.

<b>Main and Health Board boost samples</b>	
Participating households	3,301
Eligible households responding	59%
Adult interviews	5,000
Eligible adults responding	52%
Adults eligible for biological module	1,179
Adults who completed biological module	910
<b>Child boost sample</b>	
Participating households	481
Eligible households responding	65%
Child interviews (child boost sample only)	738
Child interviews (main and child boost sample combined)	1,421

### Ethical Approval

Ethical approval for the 2015 survey was obtained from the REC for Wales committee (reference number 12/WA/0261).

## **DATA ANALYSIS**

### **Weighting**

Since addresses and individuals did not all have equal chances of selection, the data have 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 Volume 2, Chapter 1.

### **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) and equivalised household income.

### **Statistical information**

The SHeS 2015 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 Volume 2, Chapter 1.

### **Presentation of trend data**

Trend data are presented, where possible, for the eleven surveys in the series to-date (1995, 1998, 2003, 2008-2015). In some cases trend data are restricted to those aged 16-64 (the age range common to all eleven surveys in the series to-date) and for some other measures trends are available for the 16-74 age range (common to the 1998 survey onwards). Trends based on the surveys from 2003 onwards are presented for all adults aged 16 and over. 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. Tables showing the results discussed in the text are presented at the end of each chapter.

## **Availability of further data and analysis**

As with surveys from previous years, a copy of the SHeS 2015 data will be deposited at the UK Data Archive along with copies of the combined datasets for 2013/2015, 2014/2015 and 2012/2013/2014/2015. In addition, trend tables showing data for key variables are available on the Scottish Government SHeS website along with a detailed set of web tables for 2015, providing analysis by age, area deprivation, socioeconomic classification, equivalised income and long-term condition for a large range of measures<sup>10</sup>.

## **Comparability with other UK statistics**

The National Statistician commissioned a piece of work to examine comparability and coherency between official statistics published by the four nations of the UK with the aim of ensuring there was clarity on the suitability of comparability across the UK. The review was carried out by a Government Statistical Service (GSS) Task and Finish Group on Comparability (TFG). The findings, published in a Government Statistical Service publication<sup>11</sup>, include guidance on comparing statistics on three of the topics included in this report: alcohol consumption (chapter two), smoking (chapter three) and obesity (chapter six). Further guidance on the comparability of statistics across the UK on these topics is included in the introductory section of each of the relevant chapters.

## **CONTENT OF THIS REPORT**

This volume contains chapters with substantive results from the SHeS 2015, and is one of two volumes based on the survey, published as a set as 'The Scottish Health Survey 2015':

### Volume 1: Main Report

1. Mental health and wellbeing
2. General health and multiple conditions
3. Dental health
4. Alcohol
5. Smoking
6. Diet
7. Physical activity
8. Obesity
9. Cardiovascular conditions and diabetes
10. Injuries / Accidents

### 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 urine and saliva samples.

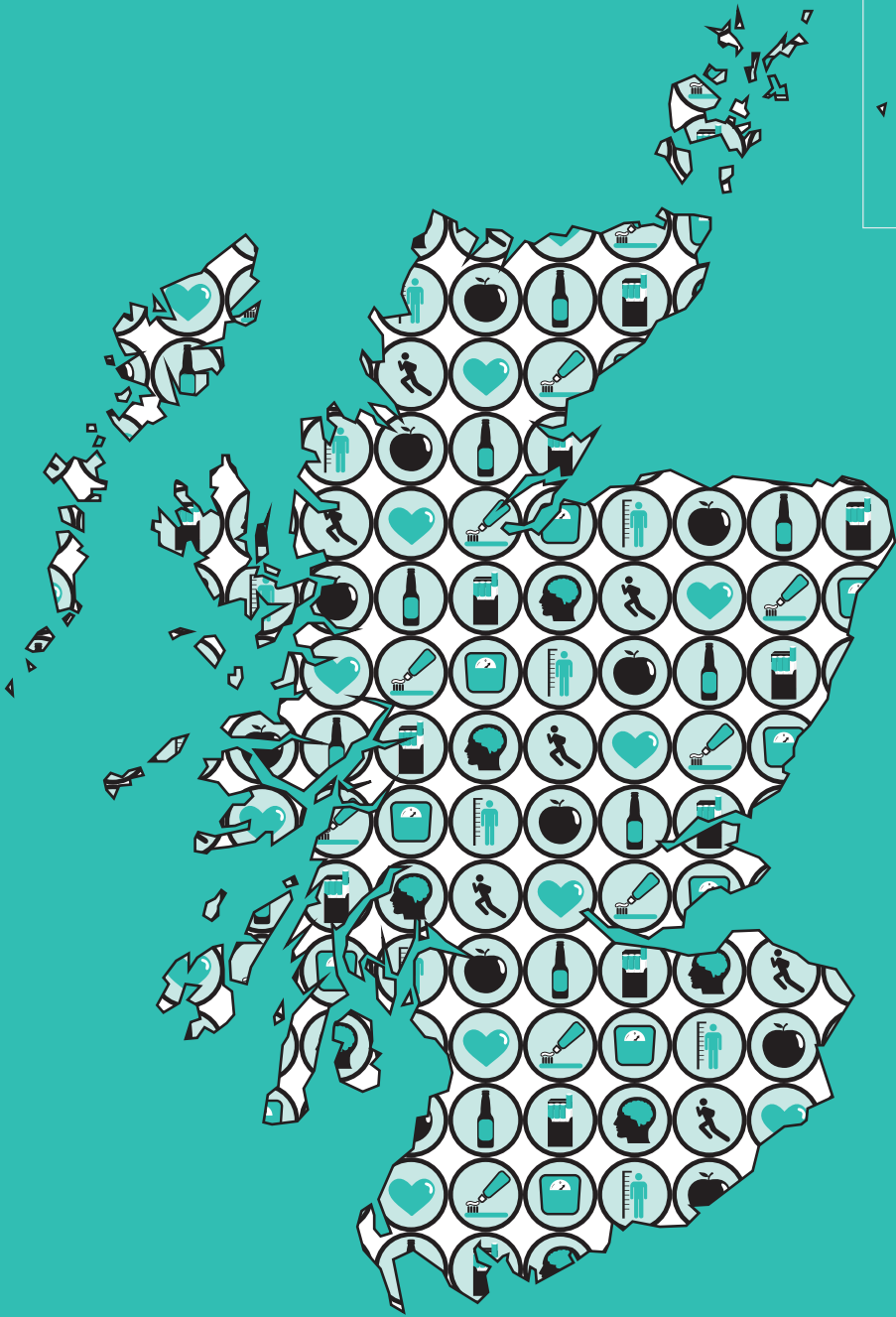
Both volumes are available from the Scottish Government's SHeS website. A summary report of the key findings from the 2015 report and a set of web tables are also available on the survey website: [www.gov.scot/scottishhealthsurvey](http://www.gov.scot/scottishhealthsurvey).

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- <sup>9</sup> See: [www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/births-deaths-and-other-vital-events-preliminary-annual-figures/2015](http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/births-deaths-and-other-vital-events-preliminary-annual-figures/2015)
- <sup>10</sup> See: [www.gov.scot/scottishhealthsurvey](http://www.gov.scot/scottishhealthsurvey)
- <sup>11</sup> Comparing official statistics across the UK. Full report available from: [gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf](http://gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf)

## 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 in order to aid interpretation.



# Chapter 1

## Mental Health and Wellbeing

# 1 MENTAL HEALTH AND WELLBEING

*Line Knudsen*

## SUMMARY

- **Overall, average levels of wellbeing for adults have changed little since 2008, with WEMWBS scores ranging from 49.7 to 50.0 over this period (49.9 in 2015).**
- Levels of wellbeing remained similar for men and women overall but were significantly lower in 2015 for women aged 16-24 (47.9) than for other age groups of men or women.
- Wellbeing among 13 to 15 year olds decreased with age for all children (52.3 for those aged 13 compared with 50.0 for those aged 15).
- The average score for 13 to 15 year old boys (52.0) was significantly higher than for girls of the same age (49.9).
  
- **Prevalence of anxiety increased from 9% of adults having two or more symptoms in 2012/2013 to 12% in 2014/2015.**
- The proportion of women with two or more symptoms of anxiety (15%) was higher than the proportion for men (9%).
- The proportion of adults with two or more symptoms was highest for those aged 16 to 64 in 2012-2015 (10-13%) and lowest for those aged 75 and over (5%).
- The prevalence of those with two or more symptoms of depression in 2014/2015 was 10%, with this being a similar level to those in recent years.
- Those in the most deprived quintile were more likely than those in the least deprived quintile in 2012-2015 to have two or more symptoms of anxiety (15% compared with 7%). A similar pattern was seen for those with two or more symptoms of depression (16% in the most deprived areas compared to 4% in the least deprived).
  
- **Self-reported levels of self-harm increased from 3% in 2008/2009 to 7% in 2014/2015.**
- In 2012-2015, levels were highest among those aged 16-24 in 2012-2015 (18%) and, particularly, women in that age group (23%).
- The proportion of adults who reported to have ever attempted suicide was 6% in 2014/2015.
- Prevalence of having ever attempted suicide was higher in the most deprived areas (10%) than in the three least deprived areas (3-4%) in 2012-2015.
  
- **The proportion of children aged 4-12 who had a borderline or abnormal total difficulties score decreased from 2003 (17%) to 2014/2015 (14%).**
- Children in the most deprived areas were more likely to have a borderline or abnormal total difficulties score (22%) than those in the least deprived (6%) in 2012/2015, with prevalence for boys much higher than for girls (18% compared with 10%).

## 1.1 INTRODUCTION

This chapter looks at the mental health and wellbeing of both adults and children. Mental wellbeing, together with physical and social wellbeing, is one aspect of overall wellbeing. It is important as an indicator of quality of life. Like many of the other topics covered in this report, mental wellbeing is a critical measure of the population's overall health status and a key marker of health inequalities<sup>1</sup>.

The World Health Organisation (WHO) considers mental wellbeing to be fundamental to their definition of health<sup>2</sup>. Mental disorders often co-exist with other diseases, including cancers and cardiovascular disease, and many of the risk factors covered in this report, such as obesity, excessive alcohol consumption, and low levels of physical activity, are common to both mental disorders and other non-communicable diseases, with outcomes being critically interdependent.

Mental disorder represents a significant public health challenge globally. Those with mental disorders have disproportionately higher disability and mortality than the general population, dying on average more than 10 years earlier<sup>3</sup>. Neuropsychiatric disorders are the second largest contributor to the burden of disease in Europe and mental disorders account for around 40% of all years lived with disability<sup>3</sup>. Accounting for 4.3% of the global burden of disease, depression is now the largest single cause of disability worldwide (11% of all years lived with disability globally) and is the leading chronic condition in Europe<sup>2,3</sup>. Inequalities in mental health and wellbeing exist. Globally, depression is more prevalent among women than men<sup>2</sup>, while, throughout Europe, prevalence of most mental disorders is higher among those living in more deprived areas<sup>3</sup>.

Low mental wellbeing and mental ill-health in childhood often lead to problems in adult life<sup>4</sup>. The same is true for more general social and behavioural problems in childhood<sup>5,6</sup>. Hence indicators of social, emotional and behavioural development in children can be used to help predict the likely future burden on society not just in health terms, but more widely in terms of criminal behaviour or unemployment.

### 1.1.1 Policy background

The **Mental Health Strategy for Scotland: 2012-2015**<sup>3</sup>, published in August 2012, has now come to an end. It set out the Scottish Government's key commitments in relation to improving the nation's mental health and wellbeing and for ensuring improved services and outcomes for individuals and communities. The strategy promoted safe, effective and person-centred health and care. In addition to focussing on improved service delivery there was also an emphasis on the actions that individuals and communities could take to maintain and improve their own health.

Examples of this approach include the Living Life Guided Self Help Service operated by NHS 24, the Steps for Stress resources managed by NHS Health Scotland, and Ginsberg - a web-based tool launched by

the Scottish Government to help people manage their wellbeing in relation to other aspects of their lives. Ginsberg allows people to see patterns that are developing, to draw links between what they are doing with their time and how they are feeling, and to see the changes they can make to improve their wellbeing.

As part of the process to update the strategy, a paper has recently been published on research and mental health policy, to improve the impact of research, and the evidence base for future policy<sup>7</sup>.

Supporting the Scottish Government's overall purpose, the 2012-2015 strategy built upon the work of a number of key policy documents including **Delivering for Mental Health**<sup>8</sup> (published in 2006), and **Towards a Mentally Flourishing Scotland**<sup>9</sup>, which covered the 2009-2011 period. The previous strategy was aimed at promoting good mental wellbeing; reducing the prevalence of common mental health problems, suicide and self-harm; and improving the quality of life of those experiencing mental health problems and mental illnesses.

Coinciding with the end of the Choose Life<sup>10</sup> ten year national strategy on preventing suicide, the Scottish Government demonstrated its ongoing commitment to reducing suicide in the **Suicide Prevention Strategy 2013-2016**<sup>11</sup> published in December 2013. The strategy is built around five themes: responding to people in distress; talking about suicide; improving the NHS response to suicide; developing the evidence base; and supporting change and improvement<sup>11</sup>. Eleven commitments are included in the strategy, including the commitment that NHS Health Scotland will continue to host the Choose Life National Programme for Suicide Prevention<sup>11</sup>.

There are a number of other mental health strategies, including the **Autism strategy**, the **Learning Disability strategy “the keys to life”**, the **dementia strategy** and the **alcohol framework and road to recovery drug strategy**.

One of the Scottish Government's National Outcomes is the overall strategic objective for health: We live longer, healthier lives<sup>12</sup>. This is supported by a number of National Indicators including **'improve mental wellbeing'**<sup>12</sup> which is monitored using data from the Scottish Health Survey (SHeS). The purpose target to improve healthy life expectancy over the 2007 to 2017 period uses SHeS data for children (aged 0-15) in the calculations used to measure progress. The fact that those with mental disorders die, on average, earlier than the general population impacts on another National Indicator; to 'reduce premature mortality'. 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 outcomes<sup>13</sup>. SHeS is the data source for 28 of the 54 indicators for adults<sup>14</sup> and over 20 of the indicators for children<sup>15</sup>.



There were NHS Scotland HEAT targets for specialist Child and Adolescent Mental Health Services (CAMHS), and for access to Psychological Therapies (across all ages in the population), to achieve 18 week maximum referral to treatment times<sup>16</sup>. In January 2015, the targets become standards in NHS Scotland Local Delivery Plans<sup>17</sup>.

Figures for the quarter ending March 2016 show that the target was met for 84% of referrals of children and young people<sup>18</sup>. Around 83% of patients (across all ages) starting a psychological therapy met the target during the quarter ending March 2016<sup>16,19</sup>. The Scottish Government has announced additional funding to continue to improve mental health across Scotland and ensure that people get timely access to services.

### **1.1.2 Reporting on mental wellbeing in the Scottish Health Survey (SHeS)**

This chapter updates trends in mental wellbeing for adults. Figures are also reported for 2015 by age and sex, and for children aged 13-15 by age and sex and by area deprivation for the combined period 2012-2015.

Prevalence of depression and anxiety symptoms and of self-reported, attempted suicide and deliberate self-harm among adults in 2014/2015 is compared with prevalence in earlier years of the survey. Patterns by age and sex, and by area deprivation, are also reported for 2014/2015.

This chapter finishes by reporting on the social, emotional and behavioural development of children aged 4-12, as measured by Goodman's Strengths and Difficulties Questionnaire (SDQ).

## **1.2 METHODS AND DEFINITIONS**

### **1.2.1 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)<sup>20</sup>. 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 developed<sup>21</sup>. The scale was designed for use in English speaking populations, however in a very small number of cases, the questions were translated to enable the participation of people who did not speak English<sup>22</sup>.

WEMWBS is used to monitor the National Indicator 'improve mental wellbeing'<sup>12</sup>. It is also part of the Scottish Government's adult mental

health indicator set, and the mean score for parents of children aged 15 years and under on WEMWBS is included in the mental health indicator set for children<sup>13</sup>.

### **1.2.2 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 disorders<sup>23</sup>. 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<sup>24</sup>. 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 2014/2015 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.

The following two mental health indicators are based on the depression and anxiety information collected on the survey:

Percentage of adults who have a symptom score of 2 or more on the depression section of the CIS-R.

Percentage of adults who have a symptom score of 2 or more on the anxiety section of the CIS-R.

### **1.2.3 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 the questions have been included in the biological module, with participants completing the questions themselves on the interviewer laptop (CASI). Prior to this they were administered in the

nurse interview, and any changes over time need to be interpreted with caution because of the change in mode.

#### **1.2.4 Deliberate self-harm**

Since 2008, participants have been asked whether they have ever deliberately harmed themselves 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 adults<sup>13</sup>.

Since 2012 the 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.

#### **1.2.5 Strengths and Difficulties Questionnaire (SDQ)**

The social, emotional and behavioural development of children aged 4-12 has been measured via the Strengths and Difficulties Questionnaire (SDQ)<sup>25</sup> since 2003. The SDQ is a brief behavioural screening questionnaire designed for use with the 3-16 age group. The SDQ was completed by a parent on behalf of all children aged 4-12.

The SDQ comprises 25 questions covering themes such as consideration, hyperactivity, malaise, mood, sociability, obedience, anxiety and unhappiness. It is used to measure five aspects of children's development: emotional symptoms; conduct problems; hyperactivity/inattention; peer relationship problems; and pro-social behaviour.

A score was calculated for each of the five aspects, as well as an overall 'total difficulties' score which was generated by summing the scores from all the domains except pro-social behaviour. The total difficulties score ranged from zero to forty with a higher score indicating greater evidence of difficulties. There are established thresholds indicating 'normal' (score of 13 or less), 'borderline' (14-16) or 'abnormal' scores (17 or above).

The total and individual SDQ domain scores all feature in the mental health indicators set for children<sup>15</sup>. The indicators are the percentage of children with normal scores for the pro-social domain, and the percentages with abnormal/borderline scores in the other four domains and overall. All these figures are reported in the tables.

### **1.3 WEMWBS**

#### **1.3.1 Trends in adult WEMWBS mean scores since 2008**

WEMWBS mean scores for adults aged 16 and over have been relatively static since 2008, ranging from 49.7 to 50.0 across the survey

years (49.9 in 2015). Mean scores have not changed significantly for either men or women since 2008, with the mean score for both sexes in 2015 being 49.9.

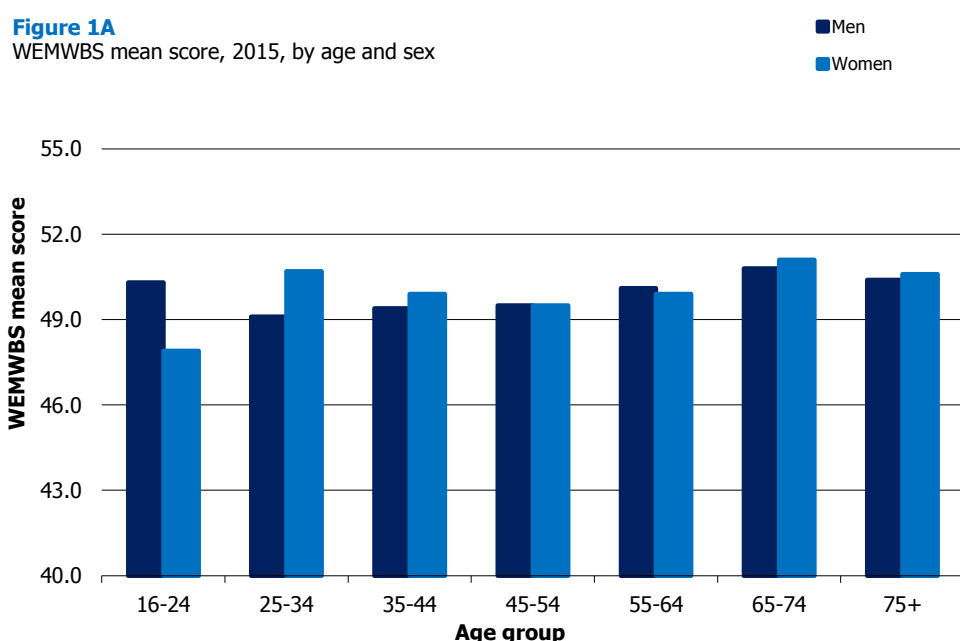
**Table 1.1**

### 1.3.2 Adult WEMWBS mean scores in 2015, by age and sex

The WEMWBS mean score for adults was highest for those aged 65-74 (51.0) and lowest for those aged 16-24 (49.1).

Levels of wellbeing varied across age groups for women (as shown in Figure 1A) with a lower level reported for those aged 16-24 (47.9) than for the oldest age groups (50.6 - 51.1 for those aged 65 and over). For men, the variation across age groups was not significant.

**Figure 1A, Table 1.2**



### 1.3.3 Child (13-15) WEMWBS mean scores in 2012-2015 (combined), by age and sex, and by area deprivation

For the period 2012-2015 combined, the WEMWBS mean score for all children aged 13-15 was 51.0, with the mean score for boys (52.0) being significantly higher than that for girls (49.9). The WEMWBS mean score was higher among children aged 13 (52.3) than among those aged 15 (50.0), with the same pattern being seen for both boys and girls.

**Table 1.3**

Age-standardised mean scores for children aged 13-15 did not differ significantly by area deprivation (varying from 50.1 to 51.5 across the deprivation quintiles). Boys and girls followed a similar pattern, with no significant difference by area deprivation. The mean score for boys ranged between 50.9 and 53.1 across the deprivation quintiles with the score for girls varying between 49.0 and 50.6.

**Table 1.4**

## 1.4 DEPRESSION AND ANXIETY

### 1.4.1 Trends in symptoms of depression since 2008/2009 (combined), by sex

In 2014/2015, one in ten (10%) adults exhibited two or more symptoms of depression, indicating moderate to high severity. This level is similar to that reported in the previous survey periods of 2008/2009 (8%), 2011/2012 (8%) and 2012/2013 (9%). The proportion of adults reporting one or more symptoms of depression in 2014/2015 (20%) was significantly higher than the proportion in both 2012/2013 (17%) and 2008/2009 (14%).

The proportion of those with two or more symptoms of depression rose significantly between 2008/2009 and 2014/2015 for men (7% to 10%) but not women (10% in both survey periods). Significant increases were seen in the proportion of both men and women with one or more symptoms (11% to 19% for men, 16% to 21% for women). **Table 1.5**

### 1.4.2 Symptoms of depression in 2012-2015 (combined), by age and sex, and by area deprivation

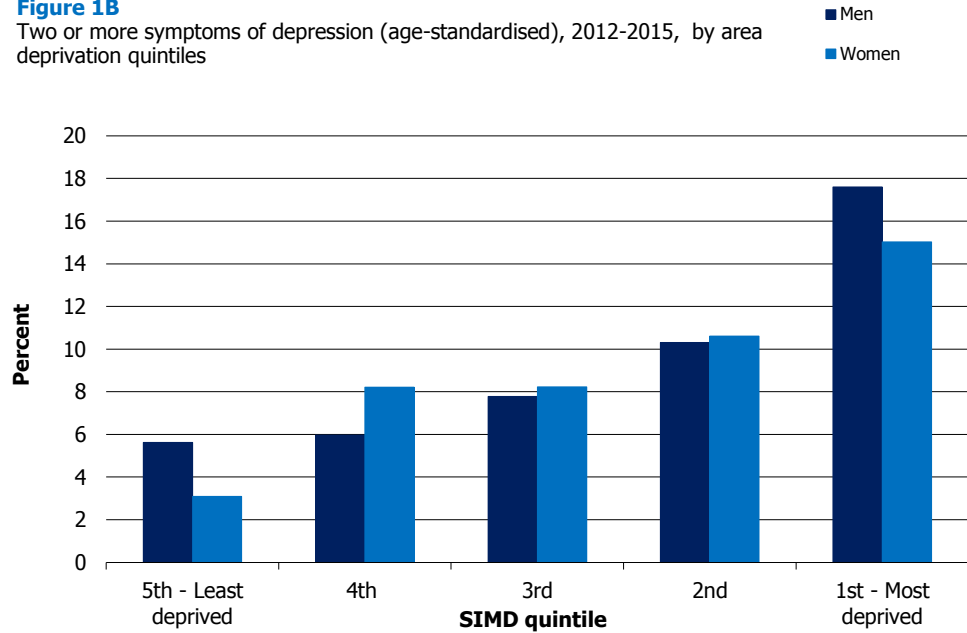
In 2012-2015, younger age groups were more likely than older age groups to report at least one symptom of depression (18% to 23% of those aged 16-64 compared with 10% to 13% of those aged 65 and over). The proportion of adults reporting two or more symptoms was highest for those aged 35-64 (10-11%) and lowest for those aged 65 and over (6-7%). Patterns of overall prevalence by age were similar for both men and women. **Table 1.6**

Those in the most deprived areas were 4 times more likely than those in the least deprived areas to report two symptoms of depression (16% compared with 4%), using age-standardised data. Comparable patterns of prevalence of two or more symptoms of depression increasing with deprivation were seen for both men (18% in the most deprived quintile compared with 6% in the two least deprived quintiles) and women (15% in the most deprived compared with 3% in the least deprived).

**Figure 1B, Table 1.7**

**Figure 1B**

Two or more symptoms of depression (age-standardised), 2012-2015, by area deprivation quintiles



#### 1.4.3 Trends in symptoms of anxiety since 2008/2009 (combined), by sex

The proportion of adults with two or more symptoms of anxiety, indicating moderate to severe levels of anxiety, showed an increase from 9% in 2008/2009 to 2012/2013 to 12% in 2014/2015. Women were significantly more likely than men to exhibit two or more signs of anxiety (15% compared to 9%). No significant change was observed for men from 2008/2009 to 2014/2015 (7% to 9%) but there was a significant increase for women (11% to 15%).

The proportion of adults with at least one symptom of anxiety rose from 21% in 2012/2013 to 24% in 2014/2015. This continues the upward trend since 2008/2009 (17%) noted in previous Scottish Health Survey reports<sup>26</sup>. There was a significant increase from 2008/2009 to 2014/2015 in the proportion of both men (13% to 20%) and women (22% to 29%) reporting at least one symptom of anxiety. **Table 1.5**

#### 1.4.4 Symptoms of anxiety in 2012-2015 (combined), by age and sex, and by area deprivation

Prevalence of two or more symptoms of anxiety was lowest for those aged 75 and over (5% compared to 9-13% for other age groups). A similar pattern of lower prevalence among the older age groups was seen both for men (4-5% for those aged 65 and over) and women (5% for those aged 75 and over). The overall proportion with at least one symptom of anxiety also tended to decline with age, with levels at 28% among those aged 16-24 and 13% among those aged 75 and over.

**Table 1.6**

There were differences in the prevalence of anxiety according to area deprivation, with those in the most deprived areas being about twice as

likely as those in the least deprived to report at least two symptoms (15% compared with 7%, using age-standardised figures). There was a similar pattern for those with one or more symptoms (29% compared with 17%). This pattern was similar for men and women. **Table 1.7**

## **1.5 SUICIDE ATTEMPTS**

### **1.5.1 Trends in suicide attempts since 2008/2009 (combined), by sex**

The proportion of adults who self-reported to have ever attempted suicide was 6% in 2014/2015. Levels of self-reported suicide attempts were similar for men (5%) and women 7% with neither showing a significant change from 2008/2009 (3% and 6% respectively). **Table 1.5**

### **1.5.2 Suicide attempts in 2012-2015 (combined), by age and sex, and by area deprivation**

For all adults, those in the oldest age groups were less likely than younger age groups to say they had ever attempted suicide (1-2% for those aged 65 and over compared with 6-8% for those aged 16-54). A similar pattern was seen for both men and women. **Table 1.6**

Using age-standardised data for 2012-2015 combined, adults living in the most deprived areas were more likely than those in less deprived areas to have attempted to take their own life (10% in the most deprived quintile compared with 3-4% of those in the three least deprived quintiles). The same pattern was seen for both men and women, with those in the most deprived areas being the most likely to have ever attempted to take their own life (9% for men, 12% for women). **Table 1.7**

## **1.6 DELIBERATE SELF-HARM**

### **1.6.1 Trends in self-reported self-harm since 2008/2009 (combined), by sex**

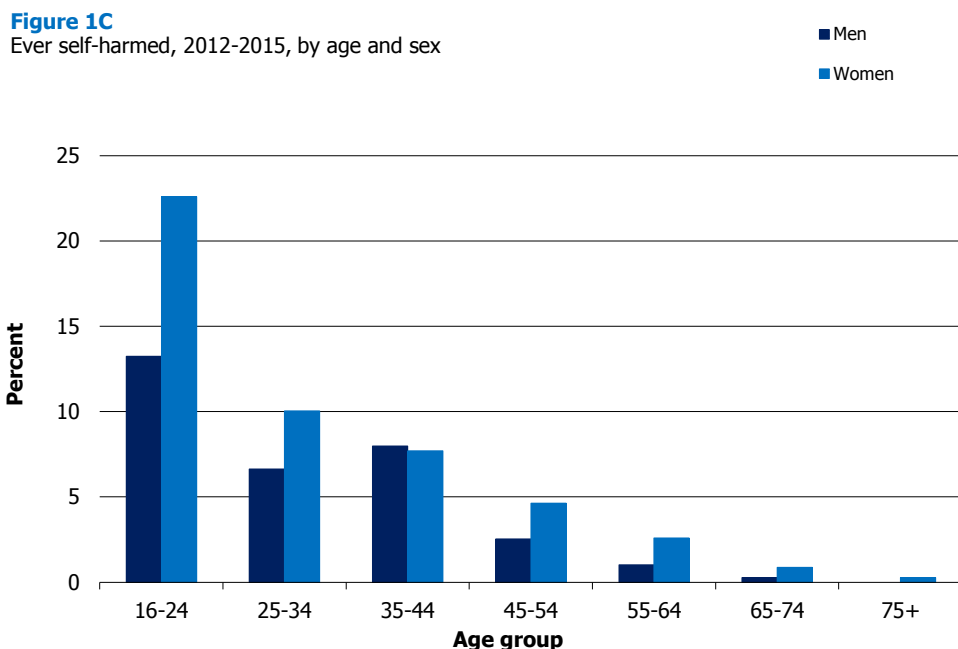
In 2014/2015 combined, 7% of adults said they had ever deliberately self-harmed. This represents a significant increase compared with levels reported in 2012/2013 (5%) and in earlier years of the survey (2% in 2010/2011, 3% in 2008/2009). Significantly more women (9%) than men (6%) reported they had ever self-harmed in 2014/2015, with the figure for women being a significant increase from that seen in 2012/2013 (6%), 2010/2011 (3%) and 2008/2009 (4%). For men, the 2014/2015 figure of 6% was significantly higher than that seen in either 2008/2009 or 2010/2011 (2% in both periods) but not than that in 2012/2013 (4%). As noted earlier, comparisons with prevalence before 2012 should be interpreted with caution. **Table 1.5**

### **1.6.2 Self-harm in 2012-2015 (combined), by age and sex, and by area deprivation**

The proportion of adults who reported to have ever self-harmed was higher for those aged 16-24 (18%), than for older age groups (8% of those aged 25-44, 4% of those aged 45-54, and 0-2% of those aged 55 and over).

Differences between men and women were particularly evident among the youngest age group, with 23% of women in the 16-24 age group reporting they had ever self-harmed, compared with 13% of men in this age group.

**Figure 1C, Table 1.6**



Age-standardised self-reported prevalence of self-harm varied by level of area deprivation, with no clear pattern.

**Table 1.7**

## 1.7 STRENGTHS AND DIFFICULTIES QUESTIONNAIRE

### 1.7.1 Trends in children’s SDQ scores, 2003 to 2014/2015 (combined), by sex

The proportion of children aged 4-12 who had a borderline or abnormal total difficulties score decreased between 2003 (17%) and 2008/2009 (14%), and stayed at an identical level of 14% in 2010/2011, 2012/2013 and 2014/2015. A significantly higher proportion of boys (17%) than girls (10%) in 2014/2015 were reported to have such difficulties, with boys also having a significantly higher total difficulties mean score (8.5 compared with 6.7 for girls). The proportion decreased significantly for girls between 2003 (15%) and 2014/2015 (10%), but there was no significant change for boys (19% in 2003 and 17% in 2014/2015). The total difficulties mean score for all children also decreased, from 8.2 in 2003 to 7.7 in 2012/2013 and 2014/2015. There was a significant decrease from 2003 to 2014/2015 among girls (7.8 to 6.7) but not boys (8.6 to 8.5).

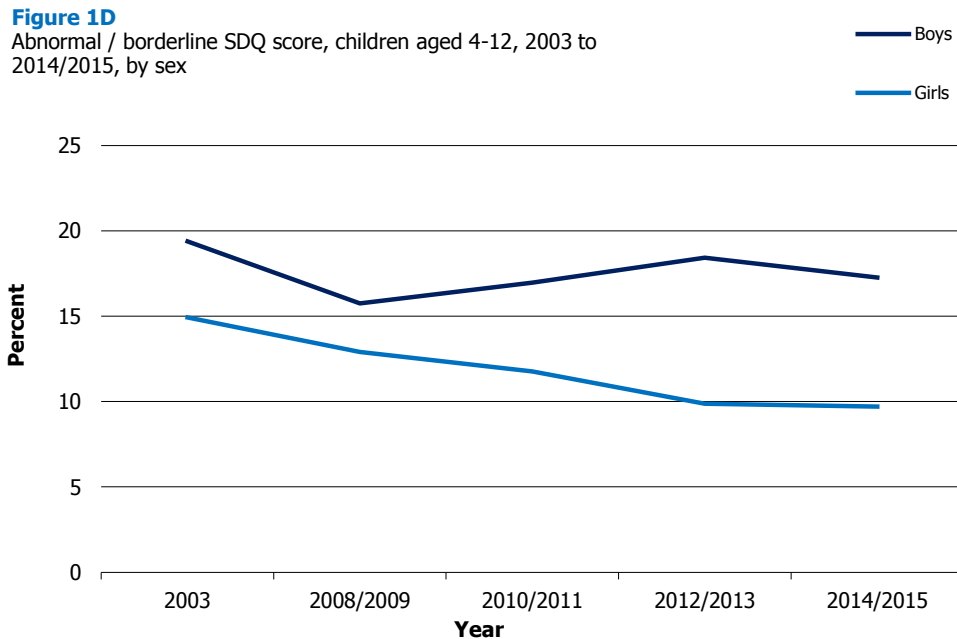
Of the separate domains of the strengths and difficulties questionnaire, significant decreases between 2003 and 2014/2015 were seen in the proportion of children aged 4-12 assessed as borderline or abnormal in the conduct problems score (24% to 19%) and in the peer problems



score (23% to 19%). There was significant change over the same time period in the proportion of children with borderline or abnormal scores for emotional symptoms (16% in 2003 compared with 14% in 2014/2015) and hyperactivity (19% compared with 20% respectively).

The proportion of children with a borderline or abnormal score for prosocial behaviour remained relatively static across the time period at 8-9% (9% in 2014/2015).

**Figure 1D, Table 1.8**



### 1.7.2 Children’s SDQ scores in 2012-15 (combined), by age and sex, and by area deprivation

Of the four constituent elements of the total difficulties score, boys were significantly more likely than girls to have a borderline or abnormal score for conduct problems (23% compared with 16%), peer problems (22% compared with 16%) and hyperactivity (25% compared with 12%), with there being no difference in terms of emotional problems (14% compared with 13%). Boys were also significantly more likely to have a borderline or abnormal score for pro-social behaviour (12% compared with 6%).

No age group was significantly different from any other in terms of the proportion with borderline or abnormal total difficulty scores, with these ranging from 12-15% across the age groups from 4-12. While the proportion with borderline or abnormal scores increased with age for emotional symptoms (10% for those aged 4-5 compared with 17% for those aged 10-12) and peer problems (17% and 22% respectively) the proportion with borderline or abnormal hyperactivity scores decreased (22% and 16% respectively). There was no significant difference by age for borderline or abnormal scores for conduct problems or prosocial behaviour.

Boys and girls had similar age-based patterns, with the exception of peer problems. For boys, the level of borderline or abnormal peer problems increased with age from 19% for those aged 4-5 to 24-25% for those aged 8-12, whereas for girls lower levels were seen for those aged 6-10 (12-14%) than those aged either 4-5 (16%) or 10-12 (19%).

**Table 1.9**

Age-standardised SDQ scores also varied according to level of area deprivation. Borderline or abnormal total difficulties scores were significantly higher for children in the most deprived areas (22%) than their peers in the least deprived areas (6%).

**Table 1.10**

## References and notes

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- <sup>9</sup> Towards a mentally flourishing Scotland: policy and action plan 2009-2011. Scottish Government, 2009. [www.gov.scot/Publications/2006/11/30164829/0](http://www.gov.scot/Publications/2006/11/30164829/0)
- <sup>10</sup> See: [www.chooselife.net/](http://www.chooselife.net/)
- <sup>11</sup> Scottish Government Suicide Prevention Strategy 2013-2016. Scottish Government, 2013. [www.scotland.gov.uk/Publications/2013/12/7616](http://www.scotland.gov.uk/Publications/2013/12/7616)
- <sup>12</sup> The National Performance Framework is described here: [www.gov.scot/About/Performance/purposestratobjs](http://www.gov.scot/About/Performance/purposestratobjs)
- <sup>13</sup> See: [www.healthscotland.com/scotlands-health/population/mental-health-indicators.aspx](http://www.healthscotland.com/scotlands-health/population/mental-health-indicators.aspx)
- <sup>14</sup> Scotland's Mental Health: Adults 2012. Edinburgh: NHS Health Scotland, 2012. See: [www.healthscotland.com/documents/6123.aspx](http://www.healthscotland.com/documents/6123.aspx)
- <sup>15</sup> Scotland's Mental Health: children and young people 2013. NHS Health Scotland / ScotPHO, 2013. [www.scotpho.org.uk/publications/reports-and-papers/1159-Scotlands-mental-health-children-and-young-people-2013](http://www.scotpho.org.uk/publications/reports-and-papers/1159-Scotlands-mental-health-children-and-young-people-2013)
- <sup>16</sup> The CAMHS 18 week treatment HEAT target is described here: [www.gov.scot/About/Performance/scotPerforms/partnerstories/NHSScotlandperformance/CAMHS18weeks](http://www.gov.scot/About/Performance/scotPerforms/partnerstories/NHSScotlandperformance/CAMHS18weeks)
- <sup>17</sup> See: [www.gov.scot/Resource/0046/00468479.pdf](http://www.gov.scot/Resource/0046/00468479.pdf)
- <sup>18</sup> *Child and Adolescent Mental Health Services Waiting Times in Scotland Quarter ending 31 March 2016*. ISD Scotland. See: [isdscotland.scot.nhs.uk/Health-Topics/Waiting-Times/Publications/2016-06-07/2016-06-07-CAMHS-Report.pdf](http://isdscotland.scot.nhs.uk/Health-Topics/Waiting-Times/Publications/2016-06-07/2016-06-07-CAMHS-Report.pdf)
- <sup>19</sup> The access to psychological therapies HEAT target is described here: [www.gov.scot/About/Performance/scotPerforms/partnerstories/NHSScotlandperformance/PsychologicalTherapies](http://www.gov.scot/About/Performance/scotPerforms/partnerstories/NHSScotlandperformance/PsychologicalTherapies)

This information is considered developmental, in that NHS Boards, ISD and the Scottish Government are working together to improve the completeness and consistency of the data.

- <sup>20</sup> Further information about WEMWBS is available here: [www.healthscotland.com/scotlands-health/population/Measuring-positive-mental-health.aspx](http://www.healthscotland.com/scotlands-health/population/Measuring-positive-mental-health.aspx)
- <sup>21</sup> Stewart-Brown S. and Janmohamed K. (2008). Warwick-Edinburgh Mental Well-being Scale (WEMWBS). User Guide Version 1. Warwick and Edinburgh: University of Warwick and NHS Health Scotland.
- <sup>22</sup> The translation was carried out solely to ensure that speakers of other languages were not excluded from the Scottish Health Survey. There were insufficient numbers of non-English speaking people in the sample to enable comparisons of their health with the rest of the population. As the primary intention was to prevent the exclusion of people due to language barriers, the translated WEMWBS questions were not subject to the full extent of validation that would need to take place if the questionnaire was being used to assess wellbeing in a whole population of non-English speakers. It is therefore possible that the translated WEMWBS scale (and other questions in the survey) is not directly comparable to the English version. However, the number of interviews that used translated materials was judged to be too small to affect the national estimates presented here so all cases have been included in the analysis.
- <sup>23</sup> 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.
- <sup>24</sup> 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 are 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.
- <sup>25</sup> Goodman R (1997). The Strengths and Difficulties Questionnaire: A Research Note. *Journal of Child Psychology and Psychiatry*; 38, 581-586.
- <sup>26</sup> Gray, L. and Leyland, A. H. (2014) Chapter 1: General Health, Mental Wellbeing and Caring. In: Rutherford, L., Hinchliffe, S. and Sharp, C. (eds.). *The 2013 Scottish Health Survey – Volume 1: Main report*. Edinburgh: Scottish Government. Available from: [www.gov.scot/Publications/2014/12/9982](http://www.gov.scot/Publications/2014/12/9982)

## Table list

Table 1.1	Adult WEMWBS mean scores, 2008 to 2015
Table 1.2	Adult WEMWBS mean scores, 2015, by age and sex
Table 1.3	Child (13-15) WEMWBS mean scores, 2012-2015 combined, by age and sex
Table 1.4	Child (13-15) WEMWBS mean scores, 2012-2015 combined, by area deprivation
Table 1.5	CIS-R anxiety and depression scores, attempted suicide and deliberate self-harm, 2008/2009 combined to 2014/2015 combined
Table 1.6	CIS-R anxiety and depression symptom scores, attempted suicide and deliberate self-harm, 2012-2015 combined, by age and sex
Table 1.7	CIS-R anxiety and depression symptom scores, attempted suicide and deliberate self-harm, age-standardised, 2014/2015 combined, by area deprivation
Table 1.8	Children's strengths and difficulties scores, 2003 to 2014/2015 combined
Table 1.9	Children's strengths and difficulties scores, 2012-2015 combined, by age and sex
Table 1.10	Children's total difficulties scores, 2012-2015 combined, by area deprivation

**Table 1.1 Adult WEMWBS mean scores, 2008 to 2015**

<i>Aged 16 and over</i>		<i>2008 to 2015</i>						
<b>WEMWBS scores<sup>a</sup></b>	2008	2009	2010	2011	2012	2013	2014	2015
<b>Men</b>								
Mean	50.2	49.9	50.2	50.2	50.4	50.3	50.1	49.9
SE of the mean	0.20	0.16	0.19	0.19	0.24	0.25	0.25	0.25
Standard deviation	8.55	8.02	8.37	8.35	8.34	8.56	8.49	8.40
<b>Women</b>								
Mean	49.7	49.7	49.6	49.7	49.4	49.7	49.9	49.9
SE of the mean	0.16	0.16	0.17	0.17	0.22	0.21	0.22	0.22
Standard deviation	8.48	8.51	8.67	8.37	8.63	8.72	8.47	8.69
<b>All adults</b>								
Mean	50.0	49.7	49.9	49.9	49.9	50.0	50.0	49.9
SE of the mean	0.14	0.12	0.14	0.14	0.18	0.17	0.18	0.19
Standard deviation	8.52	8.28	8.54	8.36	8.50	8.65	8.48	8.55
<i>Bases (weighted):</i>								
<i>Men</i>	2785	3282	3171	3191	2063	2110	2001	2117
<i>Women</i>	3026	3586	3478	3540	2256	2351	2204	2326
<i>All adults</i>	5812	6868	6649	6731	4319	4461	4205	4443
<i>Bases (unweighted):</i>								
<i>Men</i>	2539	2994	2842	2900	1909	1938	1851	1961
<i>Women</i>	3248	3886	3805	3845	2431	2561	2369	2452
<i>All adults</i>	5787	6880	6647	6745	4340	4499	4220	4413

a WEMWBS scores range from 14 to 70. Higher scores indicate greater wellbeing. Mean WEMWBS score is part of the national mental health indicator set for adults

**Table 1.2 Adult WEMWBS mean scores, 2015, by age and sex**

<i>Aged 16 and over</i>								<i>2015</i>
WEMWBS scores <sup>a</sup>	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
<b>Men</b>								
Mean	50.3	49.1	49.4	49.5	50.1	50.8	50.4	49.9
SE of the mean	0.61	0.85	0.64	0.53	0.56	0.50	0.56	0.25
Standard deviation	7.68	7.97	8.58	8.43	9.43	8.48	7.58	8.40
<b>Women</b>								
Mean	47.9	50.7	49.9	49.5	49.9	51.1	50.6	49.9
SE of the mean	0.74	0.57	0.47	0.42	0.50	0.49	0.53	0.22
Standard deviation	8.42	8.66	8.48	8.58	9.84	8.24	7.70	8.69
<b>All Adults</b>								
Mean	49.1	49.9	49.7	49.5	50.0	51.0	50.5	49.9
SE of the mean	0.51	0.54	0.41	0.37	0.41	0.37	0.39	0.19
Standard deviation	8.13	8.37	8.53	8.50	9.64	8.35	7.65	8.55
<i>Bases (weighted):</i>								
<i>Men</i>	<i>310</i>	<i>340</i>	<i>340</i>	<i>387</i>	<i>336</i>	<i>253</i>	<i>150</i>	<i>2117</i>
<i>Women</i>	<i>302</i>	<i>367</i>	<i>354</i>	<i>440</i>	<i>362</i>	<i>287</i>	<i>213</i>	<i>2326</i>
<i>All adults</i>	<i>612</i>	<i>707</i>	<i>693</i>	<i>827</i>	<i>698</i>	<i>540</i>	<i>364</i>	<i>4443</i>
<i>Bases (unweighted):</i>								
<i>Men</i>	<i>181</i>	<i>212</i>	<i>288</i>	<i>345</i>	<i>364</i>	<i>351</i>	<i>220</i>	<i>1961</i>
<i>Women</i>	<i>192</i>	<i>318</i>	<i>353</i>	<i>453</i>	<i>446</i>	<i>408</i>	<i>282</i>	<i>2452</i>
<i>All adults</i>	<i>373</i>	<i>530</i>	<i>641</i>	<i>798</i>	<i>810</i>	<i>759</i>	<i>502</i>	<i>4413</i>

a WEMWBS scores range from 14 to 70. Higher scores indicate greater wellbeing. Mean WEMWBS score is part of the national mental health indicator set for adults

**Table 1.3 Child (13-15) WEMWBS mean scores, 2012-2015 combined, by age and sex**

<i>Aged 13-15</i>		<i>2012-2015 combined</i>		
<b>WEMWBS scores<sup>a</sup></b>	<b>Age</b>			<b>Total</b>
	13	14	15	
	%	%	%	%
<b>Boys</b>				
Mean	53.6	51.3	51.3	52.0
SE of the mean	0.63	0.66	0.57	0.37
Standard deviation	8.03	8.06	6.77	7.74
<b>Girls</b>				
Mean	50.8	50.1	48.8	49.9
SE of the mean	0.73	0.66	0.61	0.38
Standard deviation	8.62	7.39	7.58	7.91
<b>All children</b>				
Mean	52.3	50.8	50.0	51.0
SE of the mean	0.49	0.46	0.43	0.27
Standard deviation	8.42	7.79	7.29	7.89
<i>Bases (weighted)</i>				
<i>Boys</i>	172	196	163	531
<i>Girls</i>	157	148	173	478
<i>All children</i>	329	344	336	1009
<i>Bases (unweighted)</i>				
<i>Boys</i>	167	190	154	511
<i>Girls</i>	149	146	172	467
<i>All children</i>	316	336	326	978

a WEMWBS scores range from 14 to 70. Higher scores indicate greater wellbeing



**Table 1.4 Child (13-15) WEMWBS mean scores, 2012-2015 combined, by area deprivation**

<i>Aged 13-15</i>	<i>2012-2015 combined</i>				
<b>WEMWBS scores<sup>a</sup></b>	<b>Scottish Index of Multiple Deprivation</b>				
	5th (Least deprived)	4th	3rd	2nd	1st (Most deprived)
<b>Boys</b>					
Mean	52.4	53.1	50.9	51.9	51.8
SE of the mean	0.73	0.61	0.72	1.15	0.94
Standard deviation	6.99	6.50	7.22	9.84	7.98
<b>Girls</b>					
Mean	50.5	49.5	49.0	49.7	50.6
SE of the mean	0.89	0.74	0.77	1.02	0.87
Standard deviation	8.31	7.07	7.71	8.64	7.94
<b>All children</b>					
Mean	51.5	51.4	50.1	50.9	51.2
SE of the mean	0.56	0.54	0.55	0.79	0.65
Standard deviation	7.70	7.00	7.49	9.34	7.97
<i>Bases (weighted):</i>					
<i>Boys</i>	<i>100</i>	<i>114</i>	<i>115</i>	<i>97</i>	<i>105</i>
<i>Girls</i>	<i>94</i>	<i>102</i>	<i>98</i>	<i>83</i>	<i>101</i>
<i>All children</i>	<i>194</i>	<i>216</i>	<i>214</i>	<i>180</i>	<i>206</i>
<i>Bases (unweighted):</i>					
<i>Boys</i>	<i>98</i>	<i>116</i>	<i>112</i>	<i>93</i>	<i>92</i>
<i>Girls</i>	<i>89</i>	<i>109</i>	<i>98</i>	<i>78</i>	<i>93</i>
<i>All children</i>	<i>187</i>	<i>225</i>	<i>210</i>	<i>171</i>	<i>185</i>

a WEMWBS scores range from 14 to 70. Higher scores indicate greater wellbeing

**Table 1.5 CIS-R anxiety and depression scores, attempted suicide and deliberate self-harm, 2008/2009 combined to 2014/2015 combined**

<b>Mental health problem</b>	<i>Aged 16 and over and participated in nurse visit (2008-2011) or biological module (2012-2015)</i>		<i>2008/2009 combined to 2014/2015 combined</i>	
	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%
<b>Men</b>				
<b>Depression symptom score</b>				
0	89	89	84	81
1	4	4	7	9
2 or more symptoms <sup>a</sup>	7	7	9	10
<b>Anxiety symptom score</b>				
0	87	87	85	80
1	6	5	8	10
2 or more symptoms <sup>b</sup>	7	8	7	9
<b>Suicide attempts</b>				
No	97	96	97	95
Yes	3	4	3	5
<b>Deliberate self-harm</b>				
No	98	98	96	94
Yes	2	2	4	6
<b>Women</b>				
<b>Depression symptom score</b>				
0	84	85	82	79
1	6	6	10	11
2 or more symptoms <sup>a</sup>	10	9	8	10
<b>Anxiety symptom score</b>				
0	78	81	74	71
1	11	9	14	14
2 or more symptoms <sup>b</sup>	11	10	12	15
<b>Suicide attempts</b>				
No	94	94	94	93
Yes	6	6	6	7
<b>Deliberate self-harm</b>				
No	96	97	94	91
Yes	4	3	6	9

*Continued...*

**Table 1.5 - Continued**

<i>Aged 16 and over and participated in nurse visit (2008-2011) or biological module (2012-2015)</i>	<i>2008/2009 combined to 2014/2015 combined</i>			
<b>Mental health problem</b>	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%
<b>All adults</b>				
<b>Depression symptom score<sup>c</sup></b>				
0	86	87	83	80
1	5	5	8	10
2 or more symptoms <sup>a</sup>	8	8	9	10
<b>Anxiety symptom score<sup>d</sup></b>				
0	83	84	79	76
1	9	7	11	12
2 or more symptoms <sup>b</sup>	9	9	9	12
<b>Suicide attempts</b>				
No	96	95	95	94
Yes	4	5	5	6
<b>Deliberate self-harm</b>				
No	97	98	95	93
Yes	3	2	5	7
<i>Bases (weighted):</i>				
<i>Men</i>	<i>1066</i>	<i>972</i>	<i>1050</i>	<i>992</i>
<i>Women</i>	<i>1154</i>	<i>1059</i>	<i>1129</i>	<i>1069</i>
<i>All adults</i>	<i>2220</i>	<i>2031</i>	<i>2179</i>	<i>2061</i>
<i>Bases (unweighted):</i>				
<i>Men</i>	<i>974</i>	<i>875</i>	<i>971</i>	<i>900</i>
<i>Women</i>	<i>1246</i>	<i>1155</i>	<i>1214</i>	<i>1177</i>
<i>All adults</i>	<i>2220</i>	<i>2030</i>	<i>2185</i>	<i>2077</i>

a Two or more symptoms indicate depression of moderate to high severity

b Two or more symptoms indicate anxiety of moderate to high severity

c Percentage of adults with a score of 2+ on depression section of CIS-R is part of the national mental health indicator set for adults

d Percentage of adults with a score of 2+ on anxiety section of CIS-R is part of the national mental health indicator set for adults

**Table 1.6 CIS-R anxiety and depression symptom scores, attempted suicide and deliberate self-harm, 2012-2015 combined, by age and sex**

*Aged 16 and over with a biological module*

*2012-2015 combined*

Mental health problem	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
<b>Depression symptom score</b>								
0	81	80	82	79	83	88	93	83
1	11	12	4	9	8	6	3	8
2 or more symptoms <sup>a</sup>	8	8	14	12	9	6	4	9
<b>Anxiety symptom score</b>								
0	79	79	82	83	83	91	90	83
1	13	12	11	8	8	5	5	9
2 or more symptoms <sup>b</sup>	8	9	7	10	10	4	5	8
<b>Suicide attempts</b>								
No	96	95	94	94	98	99	99	96
Yes	4	5	6	6	2	1	1	4
<b>Deliberate self-harm</b>								
No	87	93	92	97	99	100	100	95
Yes	13	7	8	3	1	0	-	5
<b>Women</b>								
<b>Depression symptom score</b>								
0	74	80	81	81	77	86	88	81
1	18	11	10	8	12	7	4	10
2 or more symptoms <sup>a</sup>	8	9	9	11	11	7	7	9
<b>Anxiety symptom score</b>								
0	66	71	70	74	71	78	85	73
1	19	16	18	13	12	9	11	14
2 or more symptoms <sup>b</sup>	15	13	12	13	16	13	5	13
<b>Suicide attempts</b>								
No	92	93	93	91	94	96	98	94
Yes	8	7	7	9	6	4	2	6
<b>Deliberate self-harm</b>								
No	77	90	92	95	97	99	100	93
Yes	23	10	8	5	3	1	0	7

*Continued...*

**Table 1.6 - Continued**

*Aged 16 and over with a biological module*

*2012-2015 combined*

Mental health problem	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>All adults</b>								
<b>Depression symptom score<sup>c</sup></b>								
0	77	80	82	80	80	87	90	82
1	14	11	7	9	10	6	4	9
2 or more symptoms <sup>a</sup>	8	8	11	11	10	7	6	9
<b>Anxiety symptom score<sup>d</sup></b>								
0	72	75	76	78	77	84	87	78
1	16	14	14	10	10	7	8	12
2 or more symptoms <sup>b</sup>	12	11	10	12	13	9	5	11
<b>Suicide attempts</b>								
No	94	94	93	92	96	98	99	95
Yes	6	6	7	8	4	2	1	5
<b>Deliberate self-harm</b>								
No	82	92	92	96	98	99	100	94
Yes	18	8	8	4	2	1	0	6
<i>Bases (weighted):</i>								
<i>Men</i>	289	331	330	384	325	255	161	2075
<i>Women</i>	284	347	341	411	338	281	222	2225
<i>All adults</i>	573	679	671	795	663	535	384	4300
<i>Bases (unweighted):</i>								
<i>Men</i>	203	239	286	331	314	331	187	1891
<i>Women</i>	200	340	409	433	427	355	255	2419
<i>All adults</i>	403	579	695	764	741	686	442	4310

a Two or more symptoms indicate depression of moderate to high severity

b Two or more symptoms indicate anxiety of moderate to high severity

c Percentage of adults with a score of 2+ on depression section of CIS-R is part of the national mental health indicator set for adults

d Percentage of adults with a score of 2+ on anxiety section of CIS-R is part of the national mental health indicator set for adults

**Table 1.7 CIS-R anxiety and depression scores, attempted suicide and deliberate self-harm, age-standardised, 2014/2015 combined, by area deprivation**

*Aged 16 and over with a biological module*

*2014/2015 combined*

Mental health problem	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4 <sup>th</sup>	3 <sup>rd</sup>	2 <sup>nd</sup>	1st (Most deprived)
	%	%	%	%	%
<b>Men</b>					
<b>Depression symptom score</b>					
0	88	88	81	82	73
1	6	6	11	8	9
2 or more symptoms <sup>a</sup>	6	6	8	10	18
<b>Anxiety symptom score</b>					
0	86	88	83	81	75
1	8	7	10	10	11
2 or more symptoms <sup>b</sup>	5	5	7	9	14
<b>Suicide attempts</b>					
No	96	99	96	96	91
Yes	4	1	4	4	9
<b>Deliberate self-harm</b>					
No	95	97	96	94	94
Yes	5	3	4	6	6
<b>Women</b>					
<b>Depression symptom score</b>					
0	89	81	82	80	72
1	8	10	10	9	13
2 or more symptoms <sup>a</sup>	3	8	8	11	15
<b>Anxiety symptom score</b>					
0	79	72	72	74	68
1	13	14	15	12	16
2 or more symptoms <sup>b</sup>	8	13	13	14	17
<b>Suicide attempts</b>					
No	98	94	96	92	88
Yes	2	6	4	8	12
<b>Deliberate self-harm</b>					
No	92	94	96	93	90
Yes	8	6	4	7	10

*Continued...*

**Table 1.7 - Continued**

*Aged 16 and over with a biological module*

*2014/2015 combined*

Mental health problem	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4 <sup>th</sup>	3 <sup>rd</sup>	2 <sup>nd</sup>	1st (Most deprived)
	%	%	%	%	%
<b>All adults</b>					
<b>Depression symptom score<sup>c</sup></b>					
0	88	85	82	81	73
1	7	8	10	9	11
2 or more symptoms <sup>a</sup>	4	7	8	10	16
<b>Anxiety symptom score<sup>d</sup></b>					
0	83	80	77	77	71
1	11	10	12	11	14
2 or more symptoms <sup>b</sup>	7	9	10	12	15
<b>Suicide attempts</b>					
No	97	97	96	94	90
Yes	3	3	4	6	10
<b>Deliberate self-harm</b>					
No	94	95	96	93	92
Yes	6	5	4	7	8
<i>Bases (weighted):</i>					
<i>Men</i>	<i>407</i>	<i>466</i>	<i>411</i>	<i>403</i>	<i>389</i>
<i>Women</i>	<i>424</i>	<i>488</i>	<i>424</i>	<i>452</i>	<i>436</i>
<i>All adults</i>	<i>831</i>	<i>954</i>	<i>835</i>	<i>854</i>	<i>825</i>
<i>Bases (unweighted):</i>					
<i>Men</i>	<i>344</i>	<i>443</i>	<i>434</i>	<i>341</i>	<i>329</i>
<i>Women</i>	<i>436</i>	<i>561</i>	<i>509</i>	<i>466</i>	<i>447</i>
<i>All adults</i>	<i>780</i>	<i>1004</i>	<i>943</i>	<i>807</i>	<i>776</i>

a Two or more symptoms indicate depression of moderate to high severity

b Two or more symptoms indicate anxiety of moderate to high severity

c Percentage of adults with a score of 2+ on depression section of CIS-R is part of the national mental health indicator set for adults

d Percentage of adults with a score of 2+ on anxiety section of CIS-R is part of the national mental health indicator set for adults

**Table 1.8 Children's strengths and difficulties scores, 2003 to 2014/2015 combined**

<i>Aged 4-12</i>	<i>2003 to 2014/2015 combined</i>				
<b>Strengths and difficulties scores<sup>a</sup></b>	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%	%
<b>Boys</b>					
<b>Conduct problems score</b>					
Normal (0-2)	73	76	76	77	78
Borderline (3)	13	11	14	13	11
Abnormal (4-10)	14	13	10	11	11
<b>Emotional symptoms score</b>					
Normal (0-3)	84	86	85	86	85
Borderline (4)	7	6	6	5	6
Abnormal (5-10)	9	8	9	9	9
<b>Peer problems score</b>					
Normal (0-2)	76	79	78	77	78
Borderline (3)	10	9	10	8	9
Abnormal (4-10)	14	12	13	14	13
<b>Hyperactivity score</b>					
Normal (0-5)	77	75	77	76	74
Borderline (6)	8	8	8	8	9
Abnormal (7-10)	14	17	15	16	17
<b>Prosocial behaviour score</b>					
Normal (6-10)	89	91	90	89	88
Borderline (5)	8	6	7	7	8
Abnormal (0-4)	4	4	3	4	5
<b>Total difficulties score<sup>b</sup></b>					
Normal (0-13)	81	84	83	82	83
Borderline (14-16)	9	6	7	7	6
Abnormal (17-40)	10	10	10	11	11
Mean	8.6	8.5	8.6	8.5	8.5
SE Mean	0.23	0.21	0.21	0.23	0.26
Median	8	8	7	7	7

*Continued...*



**Table 1.8 - Continued**

<i>Aged 4-12</i>	<i>2003 to 2014/2015 combined</i>				
<b>Strengths and difficulties scores<sup>a</sup></b>	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%	%
<b>Girls</b>					
<b>Conduct problems score</b>					
Normal (0-2)	78	79	81	82	85
Borderline (3)	11	11	10	11	9
Abnormal (4-10)	11	10	9	6	6
<b>Emotional symptoms score</b>					
Normal (0-3)	83	84	85	87	87
Borderline (4)	7	7	7	6	6
Abnormal (5-10)	10	9	8	7	8
<b>Peer problems score</b>					
Normal (0-2)	77	81	83	84	84
Borderline (3)	11	9	9	8	9
Abnormal (4-10)	12	11	8	8	7
<b>Hyperactivity score</b>					
Normal (0-5)	86	87	84	88	87
Borderline (6)	7	6	7	6	6
Abnormal (7-10)	7	8	9	6	7
<b>Prosocial behaviour score</b>					
Normal (6-10)	93	94	95	94	94
Borderline (5)	5	5	4	4	5
Abnormal (0-4)	2	2	1	2	1
<b>Total difficulties score<sup>b</sup></b>					
Normal (0-13)	85	87	88	90	90
Borderline (14-16)	8	7	6	5	4
Abnormal (17-40)	7	6	5	5	5
Mean	7.8	7.5	7.3	6.9	6.7
SE Mean	0.21	0.18	0.19	0.19	0.19
Median	7	7	7	6	6

*Continued...*

**Table 1.8 - Continued**

<b>Strengths and difficulties scores<sup>a</sup></b>	<i>2003 to 2014/2015 combined</i>				
	<i>Aged 4-12</i>	<i>2003</i>	<i>2008/2009 combined</i>	<i>2010/2011 combined</i>	<i>2012/2013 combined</i>
	%	%	%	%	%
<b>All children</b>					
<b>Conduct problems score</b>					
Normal (0-2)	76	78	79	80	81
Borderline (3)	12	11	12	12	10
Abnormal (4-10)	12	11	10	8	9
<b>Emotional symptoms score</b>					
Normal (0-3)	84	85	85	86	86
Borderline (4)	7	7	7	6	6
Abnormal (5-10)	10	8	8	8	8
<b>Peer problems score</b>					
Normal (0-2)	77	80	80	81	81
Borderline (3)	10	9	9	8	9
Abnormal (4-10)	13	12	10	11	10
<b>Hyperactivity score</b>					
Normal (0-5)	81	81	80	82	80
Borderline (6)	8	7	8	7	7
Abnormal (7-10)	11	13	12	11	12
<b>Prosocial behaviour score</b>					
Normal (6-10)	91	92	92	91	91
Borderline (5)	7	5	5	6	6
Abnormal (0-4)	3	3	2	3	3
<b>Total difficulties score<sup>b</sup></b>					
Normal (0-13)	83	86	86	86	86
Borderline (14-16)	8	6	7	6	5
Abnormal (17-40)	9	8	8	8	8
Mean	8.2	8.0	8.0	7.7	7.7
SE Mean	0.17	0.14	0.15	0.16	0.17
Median	7	7	7	7	6

*Continued...*

**Table 1.8 - Continued**

<b>Strengths and difficulties scores<sup>a</sup></b>	<i>2003 to 2014/2015 combined</i>				
	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%	%
<i>Base (weighted):</i>					
<i>Boys</i>	939	1161	995	972	864
<i>Girls</i>	878	1130	966	948	799
<i>All children</i>	1817	2291	1961	1920	1662
<i>Base (unweighted):</i>					
<i>Boys</i>	896	1163	991	944	864
<i>Girls</i>	893	1111	909	933	810
<i>All children</i>	1789	2274	1900	1877	1674

a Children's individual Strengths and Difficulties scores are part of the national mental health indicator set for children

b The total difficulties score is the sum of the scores for the first four domains (conduct problems, emotional symptoms, peer problems and hyperactivity)

**Table 1.9 Children's strengths and difficulties scores, 2012-2015 combined, by age and sex**

Strengths and difficulties scores <sup>a</sup>	Age				Total
	4-5	6-7	8-9	10-12	
	%	%	%	%	%
<b>Boys</b>					
<b>Conduct problems score</b>					
Normal (0-2)	75	77	80	77	77
Borderline (3)	13	13	10	11	12
Abnormal (4-10)	11	10	10	12	11
<b>Emotional symptoms score</b>					
Normal (0-3)	90	88	82	83	86
Borderline (4)	5	5	8	5	6
Abnormal (5-10)	5	7	10	12	9
<b>Peer problems score</b>					
Normal (0-2)	81	79	75	76	78
Borderline (3)	8	11	7	9	9
Abnormal (4-10)	10	10	18	15	14
<b>Hyperactivity score</b>					
Normal (0-5)	73	74	74	78	75
Borderline (6)	10	8	8	8	8
Abnormal (7-10)	18	18	18	14	17
<b>Prosocial behaviour score</b>					
Normal (6-10)	86	88	88	90	88
Borderline (5)	10	9	8	4	7
Abnormal (0-4)	4	4	4	6	4
<b>Total difficulties score<sup>b</sup></b>					
Normal (0-13)	85	83	79	82	82
Borderline (14-16)	8	7	8	5	7
Abnormal (17-40)	7	10	13	13	11
Mean	8.5	8.4	8.9	8.4	8.5
SE Mean	0.27	0.32	0.35	0.34	0.17
Median	8	7	7	7	7

*Continued...*

**Table 1.9 - Continued**

*Aged 4-12*

*2012-2015 combined*

<b>Strengths and difficulties scores<sup>a</sup></b>	<b>Age</b>				<b>Total</b>
	4-5	6-7	8-9	10-12	
	%	%	%	%	%
<b>Girls</b>					
<b>Conduct problems score</b>					
Normal (0-2)	83	83	84	84	84
Borderline (3)	11	10	9	10	10
Abnormal (4-10)	6	7	7	6	6
<b>Emotional symptoms score</b>					
Normal (0-3)	90	88	88	83	87
Borderline (4)	6	6	5	7	6
Abnormal (5-10)	4	7	7	10	7
<b>Peer problems score</b>					
Normal (0-2)	84	88	86	81	84
Borderline (3)	9	7	9	8	8
Abnormal (4-10)	7	5	5	10	7
<b>Hyperactivity score</b>					
Normal (0-5)	83	86	90	91	88
Borderline (6)	8	7	5	4	6
Abnormal (7-10)	9	7	5	5	6
<b>Prosocial behaviour score</b>					
Normal (6-10)	91	96	94	94	94
Borderline (5)	6	3	5	4	4
Abnormal (0-4)	3	1	1	2	2
<b>Total difficulties score<sup>b</sup></b>					
Normal (0-13)	91	91	91	89	90
Borderline (14-16)	6	4	6	4	5
Abnormal (17-40)	3	5	4	7	5
Mean	7.3	7.0	6.4	6.5	6.8
SE Mean	0.22	0.24	0.28	0.25	0.14
Median	7	6	6	5	6

*Continued...*

**Table 1.9 - Continued**

*Aged 4-12*

*2012-2015 combined*

<b>Strengths and difficulties scores<sup>a</sup></b>	<b>Age</b>				<b>Total</b>
	4-5	6-7	8-9	10-12	
	%	%	%	%	%
<b>All children</b>					
<b>Conduct problems score</b>					
Normal (0-2)	79	80	82	80	80
Borderline (3)	12	11	9	11	11
Abnormal (4-10)	9	8	9	9	9
<b>Emotional symptoms score</b>					
Normal (0-3)	90	88	85	83	86
Borderline (4)	6	6	7	6	6
Abnormal (5-10)	4	7	9	11	8
<b>Peer problems score</b>					
Normal (0-2)	83	83	80	78	81
Borderline (3)	9	9	8	9	9
Abnormal (4-10)	9	8	12	13	11
<b>Hyperactivity score</b>					
Normal (0-5)	78	80	81	84	81
Borderline (6)	9	7	7	6	7
Abnormal (7-10)	13	12	12	10	12
<b>Prosocial behaviour score</b>					
Normal (6-10)	88	92	91	92	91
Borderline (5)	8	6	6	4	6
Abnormal (0-4)	3	2	3	4	3
<b>Total difficulties score<sup>b</sup></b>					
Normal (0-13)	88	87	85	85	86
Borderline (14-16)	7	6	7	5	6
Abnormal (17-40)	5	7	9	10	8
Mean	7.9	7.7	7.8	7.5	7.7
SE Mean	0.17	0.21	0.23	0.22	0.12
Median	7	7	6	6	6

*Continued...*

**Table 1.9 - Continued**

*Aged 4-12*

*2012-2015 combined*

<b>Strengths and difficulties scores<sup>a</sup></b>	<b>Age</b>				<b>Total</b>
	4-5	6-7	8-9	10-12	
	%	%	%	%	%
<i>Base (weighted):</i>					
<i>Boys</i>	420	404	422	604	1850
<i>Girls</i>	429	393	355	581	1758
<i>All children</i>	850	797	776	1185	3608
<i>Base (unweighted):</i>					
<i>Boys</i>	433	395	426	554	1808
<i>Girls</i>	446	400	360	537	1743
<i>All children</i>	879	795	786	1091	3551

a Children's individual Strengths and Difficulties scores are part of the national mental health indicator set for children

b The total difficulties score is the sum of the scores for the first four domains (conduct problems, emotional symptoms, peer problems and hyperactivity)

**Table 1.10 Children's total difficulties scores, 2012-2015 combined, by area deprivation**

*Aged 4-12*

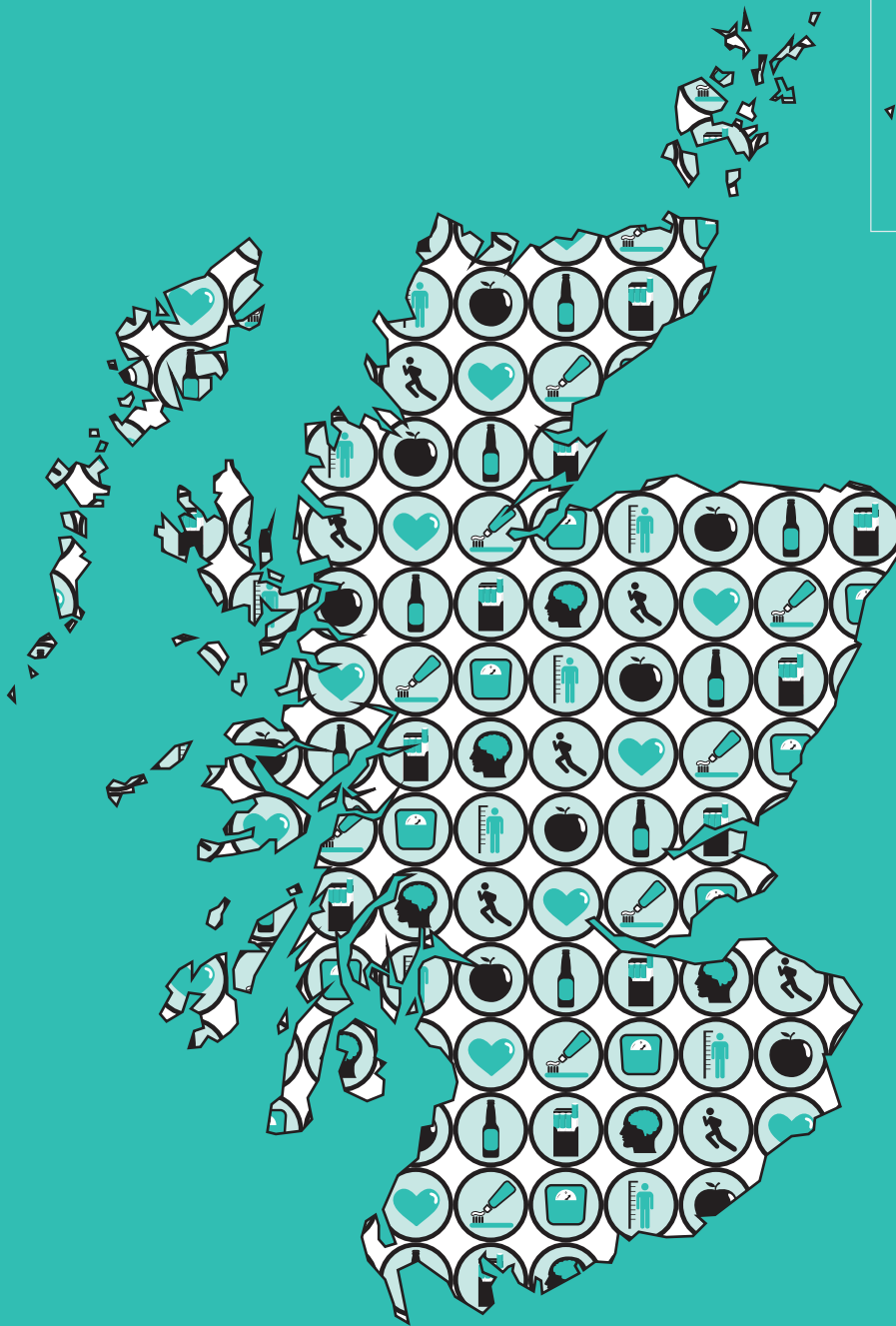
*2012-2015 combined*

Total difficulties score	Scottish Index of Multiple Deprivation				
	5th (Least deprived)	4 <sup>th</sup>	3 <sup>rd</sup>	2 <sup>nd</sup>	1st (Most deprived)
	%	%	%	%	%
<b>Boys</b>					
Normal (0-13)	92	86	77	81	74
Borderline (14-16)	4	5	7	7	11
Abnormal (17-40)	4	8	15	12	15
Mean	6.4	7.9	9.3	8.5	10.4
SE Mean	0.31	0.31	0.53	0.36	0.39
Median	5	7	7	7	9
<b>Girls</b>					
Normal (0-13)	96	93	93	86	83
Borderline (14-16)	2	3	4	7	9
Abnormal (17-40)	2	5	3	7	8
Mean	5.4	6.1	6.5	7.7	8.4
SE Mean	0.25	0.27	0.29	0.32	0.31
Median	5	5	6	7	8
<b>All children</b>					
Normal (0-13)	94	89	85	83	78
Borderline (14-16)	3	4	6	7	10
Abnormal (17-40)	3	7	9	10	12
Mean	6.0	7.0	7.8	8.1	9.5
SE Mean	0.22	0.21	0.31	0.25	0.28
Median	5	6	6	7	8
<i>Base (weighted):</i>					
<i>Boys</i>	<i>378</i>	<i>397</i>	<i>328</i>	<i>339</i>	<i>407</i>
<i>Girls</i>	<i>345</i>	<i>364</i>	<i>355</i>	<i>351</i>	<i>342</i>
<i>All children</i>	<i>724</i>	<i>761</i>	<i>683</i>	<i>689</i>	<i>750</i>
<i>Base (unweighted):</i>					
<i>Boys</i>	<i>359</i>	<i>408</i>	<i>329</i>	<i>328</i>	<i>384</i>
<i>Girls</i>	<i>341</i>	<i>382</i>	<i>348</i>	<i>348</i>	<i>324</i>
<i>All children</i>	<i>700</i>	<i>790</i>	<i>677</i>	<i>676</i>	<i>708</i>

a Children's individual Strengths and Difficulties scores are part of the national mental health indicator set for children

b The total difficulties score is the sum of the scores for the first four domains (conduct problems, emotional symptoms, peer problems and hyperactivity)





# Chapter 2

## General Health and Multiple Conditions

## 2 GENERAL HEALTH AND MULTIPLE CONDITIONS

*Lindsay Gray and Alastair H Leyland*

### SUMMARY

- **In 2015, around three-quarters (74%) of men and women aged 16 and over described their health as 'very good' or 'good'. There has been little change in this level since 2008.**
- The proportion of adults reporting to be in 'very good' or 'good' health declined with age from 88% of those aged 16-24 to 55% of those aged 75 and over.
- Nearly all (95%) of children were reported to be in 'very good' or 'good' health.
- General health was broadly similar for boys and girls, with 65% of boys and 67% of girls having 'very good' reported general health.
- Levels of 'very good' health ranged between 65% and 73% for those aged 0-11 but declined from 63% for those aged 12-13 to 52% for those aged 14-15.
- **Half (50%) of adults had at least one long-term condition in 2012-2015. These were split equally between 25% with only one condition and 25% with more than one condition.**
- Older adults were more likely than younger adults to have multiple long-term conditions, with 59% of those aged 75 and over having at least two conditions compared with 6% of those aged 16-24.
- Age-specific patterns of long-term conditions prevalence were similar for men and women, although, among those aged 16-24, men (81%) were more likely than women (72%) to have no long-term conditions. Just under a fifth (18%) of those in the least deprived areas had multiple conditions compared to around a third (34%) of those living in the most deprived areas.
- **In 2012-2015, 9% of adults had both a physical health condition and symptoms of mental disorder.**
- Adults with one or more physical condition were twice as likely to exhibit symptoms of a mental disorder compared with those with no physical conditions (22% and 11%, respectively).
- In the most deprived areas, 29% of those with a physical condition also had a possible mental disorder, compared with 14% in the least deprived areas.

### 2.1 INTRODUCTION

This chapter covers two interrelated topics: self-assessed general health, and co-morbidity of multiple long-term conditions.

Population measures of self-reported health can be a general indicator of the burden of disease on society. They can reflect subjective experiences of both diagnosed and undiagnosed illnesses, and their severity, which more objective measures for the whole population can sometimes overlook.

Self-assessed general health is often a reflection on the presence or absence of long-term conditions, both physical and mental. Such conditions account for

80% of all GP consultations and for 60% of all deaths in Scotland<sup>1</sup>. People with a long-term condition are twice as likely as those without to be admitted to hospital and stay in hospital disproportionately longer<sup>2</sup>. Older people are more likely to have multiple long-term conditions. Given Scotland's ageing population (in 2014, 8% of the population were 75 and over; this is predicted to rise to 14% by 2039<sup>3</sup>), this has become an increasingly important public health issue<sup>1</sup>.

Mental health problems can often impact on the ability of individuals to manage their own physical health. The co-morbidity of mental health and physical health problems is now recognised as being a particularly important public health issue, whereas historically the two were treated separately<sup>4</sup>. There is a critical interdependence on outcomes. The associations with deprivation, lifestyle factors and wider health determinants are also of importance in Scotland given its persistent health inequalities<sup>1</sup>. Long-term conditions therefore represent personal, social and economic costs both to individuals and their families as well as to health and care services and Scottish society more widely.

### 2.1.1 Policy background

In recognition of the challenges posed by long-term conditions, the Scottish Government's **National Action Plan** for long-term conditions<sup>1</sup> was published in 2009. This defined long-term conditions as 'health conditions that last a year or longer, impact on a person's life, and may require ongoing care and support'. Conditions include mental health problems and a wide range of physical conditions such as chronic pain, arthritis and inflammatory bowel disease. Delivering on a commitment made in the earlier **Better Health, Better Care: Action Plan**, the National Action Plan recognised the need for system-wide action in response to the challenge presented by the increasing prevalence of long-term conditions within the context of an ageing population, the links to health inequalities, and the particular challenges of multi-morbidity.

One of the Scottish Government's **National Outcomes** is the overall strategic objective for health: We live longer, healthier lives<sup>5</sup>. This is supported by a number of National Indicators including '**improve self-assessed general health**'<sup>5</sup>. Data from the Scottish Health Survey (SHeS) is used to monitor progress towards this indicator. In addition, the purpose target to improve healthy life expectancy over the 2007 to 2017 period uses Scottish Health Survey (SHeS) data for children (aged 0-15) in the calculations used to measure progress.

### 2.1.2 Reporting on general health and multiple conditions in the Scottish Health Survey

This chapter reports on self-assessed general health by age and sex of adults in 2015 and children in 2014/2015. Analysis is presented for the prevalence of multiple long-term conditions, by age and sex, and by area deprivation for the years 2012-2015 combined. The combination of the presence of common mental disorders as measured by the GHQ12 scale, and physical long-term conditions is also reported for the same time periods and demographics.

## 2.2 METHODS AND DEFINITIONS

### 2.2.1 Self-assessed general health

Each year, participants 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. This question is used to monitor the National Indicator ‘**improve self-assessed health**’, while the data for children (aged 0-15) is used in the calculation of healthy life expectancy used to monitor the related purpose target.

### 2.2.2 Multiple long-term conditions

All participants were asked if they had any physical or mental health condition or illness lasting - or likely to last - for twelve months or more. Those who reported having such a condition were asked to provide details of the type(s) of conditions or illnesses reported. Answers were recorded verbatim and then coded by an analyst. These questions did not specify that conditions had to be doctor-diagnosed; responses were thus based on individuals’ perceptions.

At a later stage of the interview, participants were asked about a number of specific health conditions, including diabetes and hypertension. If the participant mentioned that they had doctor-diagnosed diabetes or that they had doctor-diagnosed hypertension in response to these questions, but they had not mentioned them as a long-term condition, they were each counted as such a condition.

The number of long-term conditions a person had was thus calculated based on the sum of different conditions reported in response to the long-term conditions questions, and any additional diabetes and / or hypertension doctor diagnoses. This definition differs from those used in previous years; as a result comparisons should not be made with previously published long-term condition figures.

Conditions were considered different if they came under mutually exclusive chapters in the International Classification of Diseases (ICD-10)<sup>6</sup> (15 in total, using chapters I to XIV, plus an “other”). The exceptions to this were with respect to chapter IV, in which diabetes and other endocrine and metabolic illnesses were counted separately, and chapter IX, in which stroke, angina, hypertension, other heart problems, and other circulatory system problems were all counted separately. Thus, up to 20 different conditions were counted:

- Certain infectious and parasitic diseases
- Neoplasms
- Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
- Endocrine, nutritional and metabolic

- Diabetes
  - Other endocrine and metabolic illnesses
- Mental and behavioural disorders
- Diseases of the nervous system
- Diseases of the eye and adnexa
- Diseases of the ear and mastoid process
- Diseases of the circulatory system
  - Stroke
  - Angina
  - Hypertension
  - Other heart problems
  - Other circulatory system problems
- Diseases of the respiratory system
- Diseases of the digestive system
- Diseases of the skin and subcutaneous tissue
- Diseases of the musculoskeletal system and connective tissue
- Diseases of the genitourinary system
- Other long-term conditions

The number of conditions a person had that were specifically physical were counted in the same way, but with conditions coded under chapter V of the ICD (mental and behavioural disorders) excluded.

This definition of multiple conditions was created following a comprehensive review of co-morbidity using SHeS data<sup>7</sup> and will be re-examined on an on-going basis.

### **2.2.3 Symptoms of Mental Disorder (GHQ-12)**

GHQ-12 is a widely used screening tool for common mental disorders. It consists 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 mental 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.

## **2.3 SELF-ASSESSED GENERAL HEALTH**

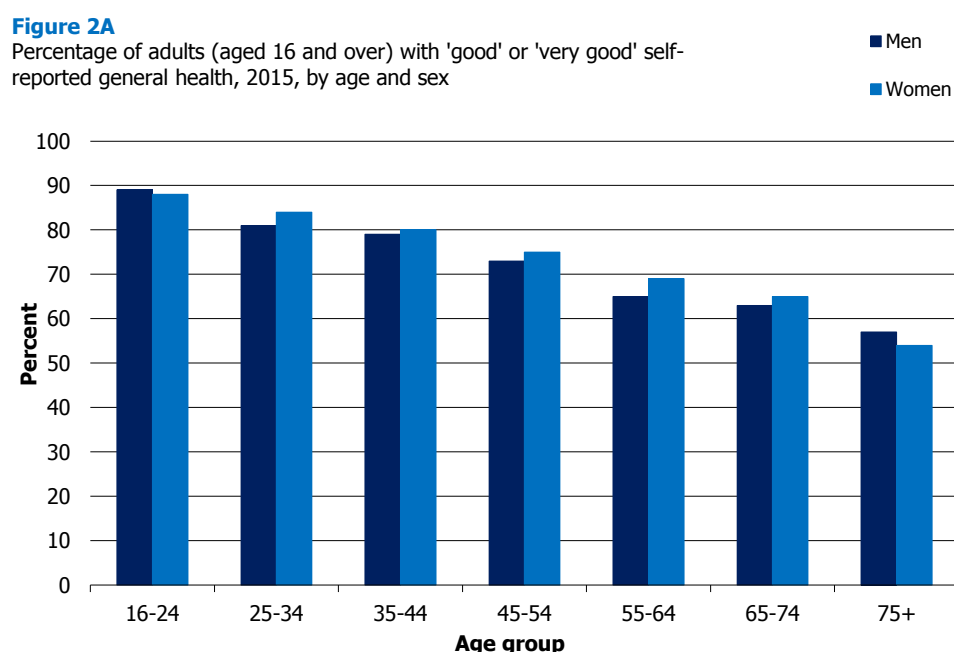
### **2.3.1 Self-assessed general health among adults in 2015, by age and sex**

In 2015, around one third (34%) of those aged 16 and over reported their general health as 'very good', with 40% saying it was 'good' and 18% as 'fair'. A further 6% assessed their health as 'bad' and 2% as

'very bad'. The proportion (74%) of adults who stated their health was either 'very good' or 'good' was similar to figures reported in each survey year since 2008 (74-77%)<sup>8</sup>. Men and women's assessments of their own health were almost identical.

The significant variations in self-assessed health by age were similar to those reported for previous years of the survey<sup>8</sup>. Figure 2A and Table 2.1 show that the proportion of adults reporting to be generally in 'good' or 'very good' health declined as age increased (from 88% of those aged 16-24, to 55% of those aged 75 and over). Correspondingly, self-reported 'bad' or 'very bad' health was more prevalent among older age groups (ranging from 1% of adults aged 16-24 to 13% of those aged 65 and over). A similar age-related variation in self-assessed general health was seen for both sexes.

**Figure 2A, Table 2.1**



### 2.3.2 Self-assessed general health among children in 2014/2015 (combined), by age and sex

In 2014/2015, nearly all (95%) children aged 15 and under in Scotland were reported to be in 'good' or 'very good' health. Two thirds (66%) had general health which was considered to be 'very good', 29% 'good' and 4% 'fair'. General health was 'bad' or 'very bad' for just 1% of children. Figures on general health for boys and girls were largely similar, with 65% of boys and 67% of girls stated to have 'very good' general health and a further 29% of both sexes having 'good' general health.

Levels of 'very good' health were generally similar from age 0-1 to 10-11 (between 65% and 73%) but had a significant drop between the ages of 12-13 and 14-15 (from 63% to 52%). This may in part reflect differences in the way parents report their child's health (for those aged 0-12), and the way children (aged 13-15) report their own health.

The decline in 'very good' health as children aged was steeper for girls than boys. Around three quarters (76%) of girls aged 0-1 were described as being in 'very good' health in general with this declining to 47% of those aged 14-15. A shallower decline was seen for boys, from 70% of those aged 0-1 to 56% of those aged 14-15. **Table 2.2**

## 2.4 MULTIPLE LONG-TERM CONDITIONS IN ADULTS

### 2.4.1 Prevalence of multiple conditions in 2012-2015 (combined), by age and sex

In 2012-2015, half (50%) of adults aged 16 and over in Scotland had at least one long-term condition, as shown in Table 2.3, with a quarter (25%) having one condition and the remaining quarter (25%) reporting multiple (two or more) conditions. Five percent of adults had four or more long-term conditions. The mean number of long-term conditions did not differ significantly according to sex.

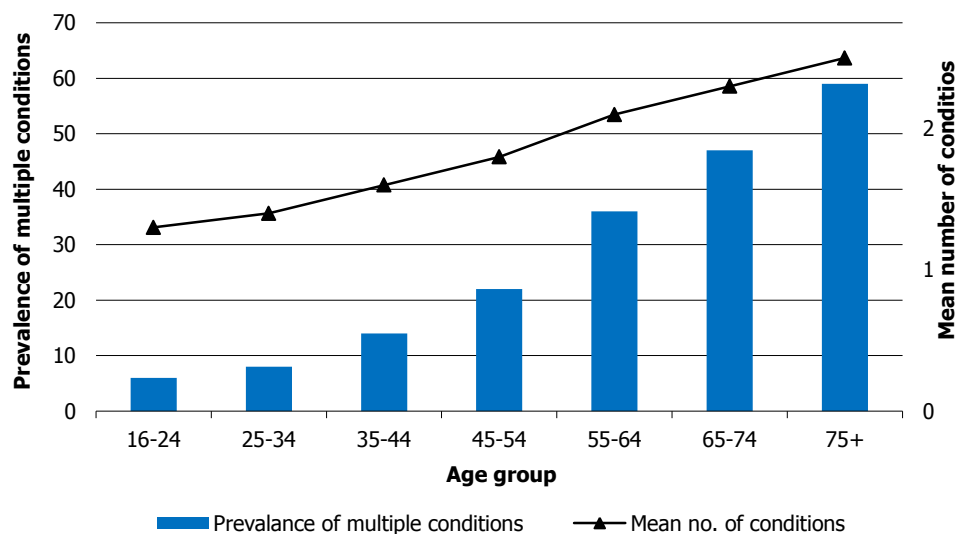
Being free of long-term conditions in 2012-2015 was markedly less common among older age groups than younger ones, with 14% of adults aged 75 and over reporting having no conditions compared with 77% of those aged 16-24. A higher proportion of those aged 55 and over (28-30%) had one condition than those aged 16-24 (18%), with older age groups also being significantly more likely than others to have multiple conditions. Those aged 75 and over were around ten times more likely than those aged 16-24 to report having two or more conditions (59% compared with 6%).

Age-specific patterns of long-term conditions prevalence were similar for men and women, with the exception of those aged 16-24, where men (81%) were more likely than women (72%) to have no long-term conditions.

The mean number of long-term conditions in 2012-2015 was similar for men (1.9) and women (2.0). The mean number of conditions for those aged 75 and over (2.5 conditions for both men and women) was around double that for those aged 16-34 (means of 1.2-1.3 conditions for men and 1.4 conditions for women). **Figure 2B, Table 2.3**

**Figure 2B**

Prevalence of multiple conditions and mean number of conditions among adults (aged 16 and over), 2012-2015 combined, by age



#### 2.4.2 Prevalence of multiple conditions in 2012-2015 combined, by area deprivation

Just under a fifth (18%) of those in the least deprived quintile had multiple (two or more) conditions compared to around a third (34%) of those living in the most deprived quintile, using age-standardised data. Patterns by deprivation were largely similar for men and women.

There was a significant association between the age-standardised mean number of long-term conditions and area deprivation. Adults living in the least deprived areas of Scotland had a mean of 1.7 long-term conditions compared with 2.2 conditions for those living in the most deprived areas. There was little difference by sex, with both men (1.7) and women (1.8) in the least deprived areas having a lower mean number of conditions than those in the most deprived areas (2.1 and 2.2, respectively).

**Table 2.4**

### 2.5 SYMPTOMS OF MENTAL DISORDER (GHQ12) BY PREVALENCE OF PHYSICAL CONDITIONS IN ADULTS

#### 2.5.1 Symptoms of mental disorder (GHQ12) by prevalence of physical conditions and sex in 2012-2015 combined

Two in five adults (42%) in 2012-2015 had at least one long-term physical condition, while one in six (15%) showed symptoms of a mental disorder (scoring 4 or more on the GHQ12 scale). Just under one in ten adults (9%) had both a long-term physical condition and showed symptoms of a mental disorder.

**Table 2A**



**Table 2A Symptoms of distress (using GHQ12) and presence of physical conditions, 2012-2015 combined**

	Number of physical conditions		Total
	None	One or more	
<b>GHQ12 score</b>	%	%	%
<b>0</b>	38	23	61
<b>1-3</b>	13	11	24
<b>4 or more</b>	7	9	15
<b>Total</b>	58	42	100

Table 2.5 shows age-standardised GHQ12 scores by presence of physical conditions for adults aged 16 and over in 2012-2015. Just over a fifth (22%) of adults with one or more physical condition had a GHQ12 score of 4 or more compared with 11% for those with no physical conditions. Conversely, 68% of adults with no physical conditions had a GHQ12 score of zero, compared with 52% of those with one or more conditions. Patterns for men and women were largely similar. **Table 2.5**

### **2.5.2 Symptoms of mental disorder (GHQ12) by prevalence of physical conditions by area deprivation in 2012-2015 combined**

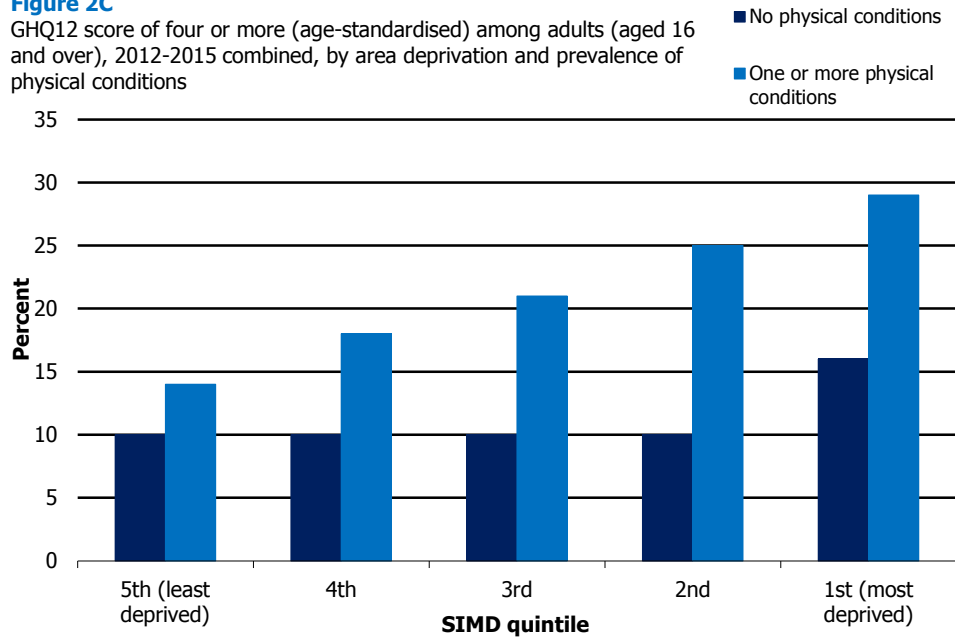
Symptoms of mental disorder (indicated by age-standardised GHQ12 scores) by number of physical conditions are shown by area deprivation for those aged 16 and over in 2012-2015 in Figure 2C and Table 2.6.

The association between symptoms of mental disorder and area deprivation differed significantly according to physical symptom status. Among those with no physical conditions, presence of symptoms of a mental disorder did not vary greatly across the deprivation quintiles. In contrast, among those with one or more physical conditions, the proportion with symptoms of a mental disorder increased with deprivation, with those in the most deprived areas in Scotland being around twice as likely as those in the least deprived areas to have a GHQ12 score of 4 or more (29% and 14%, respectively).

**Figure 2C, Table 2.6**

**Figure 2C**

GHQ12 score of four or more (age-standardised) among adults (aged 16 and over), 2012-2015 combined, by area deprivation and prevalence of physical conditions



## References and notes

- <sup>1</sup> Improving the Health and Wellbeing of People with Long Term Conditions in Scotland: A National Action Plan. Edinburgh: Scottish Government, 2009.  
[www.gov.scot/Publications/2009/12/03112054/11](http://www.gov.scot/Publications/2009/12/03112054/11)
- <sup>2</sup> See: [www.gov.scot/Topics/Health/Services/Long-Term-Conditions](http://www.gov.scot/Topics/Health/Services/Long-Term-Conditions)
- <sup>3</sup> See: [www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/population-projections-scotland/2014-based/list-of-tables](http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-projections/population-projections-scotland/2014-based/list-of-tables)
- <sup>4</sup> Naylor C, Galea A, Parsonage M, McDaid D, Knapp M, and Fossey M. Long-term conditions and mental health. The cost of co-morbidities. The King's Fund. 2012.  
[www.kingsfund.org.uk/publications/long-term-conditions-and-mental-health](http://www.kingsfund.org.uk/publications/long-term-conditions-and-mental-health)
- <sup>5</sup> The National Performance Framework is described here:  
[www.gov.scot/About/Performance/purposestratobj](http://www.gov.scot/About/Performance/purposestratobj)
- <sup>6</sup> See: [www.who.int/classifications/icd/en/](http://www.who.int/classifications/icd/en/)
- <sup>7</sup> Bromley C. Beyond a Boundary – Conceptualising and Measuring Multiple Health Conditions in the Scottish Population. PhD thesis. University of Edinburgh. 2016.
- <sup>8</sup> Brown L. General Health and Mental Wellbeing. In: Campbell-Jack D, Hinchliffe S and Bromley C (eds). Scottish Health Survey 2014 - Volume 1 Main Report. Edinburgh: Scottish Government. 2015. See: [www.gov.scot/Publications/2015/09/6648/318742](http://www.gov.scot/Publications/2015/09/6648/318742)

## Table list

Table 2.1	Adult self-assessed general health, 2015, by age and sex
Table 2.2	Child self-assessed general health, 2014/2015 combined, by age and sex
Table 2.3	Prevalence of multiple conditions in adults, 2012-2015 combined, by age and sex
Table 2.4	Prevalence of multiple conditions in adults, age-standardised, 2012-2015 combined, by area deprivation and sex
Table 2.5	Symptoms of distress (using GHQ12), age-standardised, 2012-2015 combined, by presence of physical conditions and sex
Table 2.6	Symptoms of distress (using GHQ12), age-standardised, 2012-2015 combined, by presence of physical conditions and area deprivation

**Table 2.1 Adult self-assessed general health, 2015, by age and sex**

*Aged 16 and over*

2015

Self-assessed general health	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Very good	54	40	36	35	25	21	21	34
Good	34	41	44	39	40	42	36	40
Fair	10	16	16	16	24	23	29	18
Bad	2	2	4	7	8	10	12	6
Very bad	-	1	1	3	3	3	2	2
<i>Good / Very good</i>	89	81	79	73	65	63	57	74
<i>Bad / Very bad</i>	2	3	5	10	11	14	14	8
<b>Women</b>								
Very good	47	37	41	35	34	26	18	35
Good	41	46	39	39	35	39	36	40
Fair	11	11	14	17	18	23	34	18
Bad	1	4	6	7	10	10	7	6
Very bad	-	1	1	2	3	2	4	2
<i>Good / Very good</i>	88	84	80	75	69	65	54	74
<i>Bad / Very bad</i>	1	5	6	8	13	12	12	8
<b>All adults</b>								
Very good	50	39	38	35	30	24	19	34
Good	38	44	41	39	37	40	36	40
Fair	10	13	15	17	21	23	32	18
Bad	1	3	5	7	9	10	9	6
Very bad	-	1	1	2	3	3	3	2
<i>Good / Very good</i>	88	83	80	74	67	64	55	74
<i>Bad / Very bad</i>	1	4	6	9	12	13	13	8
<i>Bases (weighted):</i>								
<i>Men</i>	339	385	372	445	375	288	190	2395
<i>Women</i>	333	405	397	473	394	321	273	2596
<i>All adults</i>	672	790	769	918	770	610	464	4992
<i>Bases (unweighted):</i>								
<i>Men</i>	194	241	313	406	410	400	280	2244
<i>Women</i>	211	348	392	487	489	461	361	2749
<i>All adults</i>	405	589	705	893	899	861	641	4993

**Table 2.2 Child self-assessed general health, 2014/2015 combined, by age and sex**

*Aged 0 - 15*

*2014/2015 combined*

Self-assessed general health	Age								Total
	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	
	%	%	%	%	%	%	%	%	%
<b>Boys</b>									
Very good	70	65	70	67	65	67	59	56	65
Good	26	28	27	26	28	26	34	37	29
Fair	3	5	2	6	6	6	7	6	5
Bad	0	0	0	1	1	0	1	1	1
Very Bad	-	1	-	-	-	-	-	-	0
<i>Good / Very good</i>	<i>96</i>	<i>93</i>	<i>97</i>	<i>93</i>	<i>93</i>	<i>93</i>	<i>93</i>	<i>93</i>	<i>94</i>
<i>Bad / Very bad</i>	<i>0</i>	<i>1</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>1</i>
<b>Girls</b>									
Very good	76	67	72	72	71	64	68	47	67
Good	23	30	26	26	23	31	31	44	29
Fair	1	3	3	1	4	4	1	8	3
Bad	1	0	-	1	1	1	-	1	1
Very Bad	-	-	-	-	-	-	-	-	-
<i>Good / Very good</i>	<i>98</i>	<i>96</i>	<i>97</i>	<i>98</i>	<i>94</i>	<i>95</i>	<i>99</i>	<i>92</i>	<i>96</i>
<i>Bad / Very bad</i>	<i>1</i>	<i>0</i>	<i>-</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>-</i>	<i>1</i>	<i>1</i>
<b>All children</b>									
Very good	73	66	71	69	68	65	63	52	66
Good	25	29	26	26	25	29	32	41	29
Fair	2	4	2	4	5	5	4	7	4
Bad	1	0	0	1	1	1	0	1	1
Very Bad	-	0	-	-	-	-	-	-	0
<i>Good / Very good</i>	<i>97</i>	<i>95</i>	<i>97</i>	<i>95</i>	<i>94</i>	<i>94</i>	<i>96</i>	<i>92</i>	<i>95</i>
<i>Bad / Very bad</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>1</i>	<i>1</i>
<i>Bases (weighted):</i>									
<i>Boys</i>	<i>206</i>	<i>203</i>	<i>199</i>	<i>195</i>	<i>202</i>	<i>219</i>	<i>175</i>	<i>178</i>	<i>1578</i>
<i>Girls</i>	<i>163</i>	<i>213</i>	<i>213</i>	<i>189</i>	<i>186</i>	<i>199</i>	<i>178</i>	<i>168</i>	<i>1510</i>
<i>All children</i>	<i>369</i>	<i>416</i>	<i>412</i>	<i>383</i>	<i>388</i>	<i>419</i>	<i>353</i>	<i>347</i>	<i>3087</i>
<i>Bases (unweighted):</i>									
<i>Boys</i>	<i>212</i>	<i>209</i>	<i>207</i>	<i>197</i>	<i>213</i>	<i>203</i>	<i>166</i>	<i>170</i>	<i>1577</i>
<i>Girls</i>	<i>168</i>	<i>211</i>	<i>220</i>	<i>199</i>	<i>197</i>	<i>185</i>	<i>164</i>	<i>166</i>	<i>1510</i>
<i>All children</i>	<i>380</i>	<i>420</i>	<i>427</i>	<i>396</i>	<i>410</i>	<i>388</i>	<i>330</i>	<i>336</i>	<i>3087</i>

**Table 2.3 Prevalence of multiple conditions in adults, 2012-2015 combined, by age and sex**

*Aged 16 and over*

*2012-2015 combined*

Number of conditions <sup>a</sup>	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
0	81	73	64	52	34	23	14	52
1	16	20	24	27	30	30	29	25
2	2	5	8	13	19	23	24	13
3	1	1	3	6	9	14	18	6
4 or more	-	0	1	3	7	11	15	4
<i>2 or more</i>	3	7	12	22	35	47	57	23
Mean <sup>b</sup>	1.2	1.3	1.5	1.8	2.1	2.2	2.5	1.9
Standard error of the mean	0.04	0.04	0.05	0.04	0.05	0.04	0.05	0.02
Median <sup>b</sup>	1	1	1	1	2	2	2	2
<b>Women</b>								
0	72	70	60	52	36	22	13	48
1	20	21	24	25	27	31	27	25
2	7	7	9	13	18	22	28	14
3	1	2	4	6	11	14	18	8
4 or more	0	0	2	4	8	10	14	5
<i>2 or more</i>	8	9	15	22	37	47	60	27
Mean <sup>b</sup>	1.4	1.4	1.6	1.8	2.2	2.3	2.5	2.0
Standard error of the mean	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.02
Median <sup>b</sup>	1	1	1	1	2	2	2	2
<b>All adults</b>								
0	77	72	62	52	35	23	14	50
1	18	20	24	26	29	30	28	25
2	4	6	9	13	19	23	26	13
3	1	2	4	6	10	14	18	7
4 or more	0	0	1	4	8	11	14	5
<i>2 or more</i>	6	8	14	22	36	47	59	25
Mean <sup>b</sup>	1.3	1.4	1.6	1.8	2.1	2.3	2.5	2.0
Standard error of the mean	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02
Median <sup>b</sup>	1	1	1	1	2	2	2	2

*Continued...*

**Table 2.3 - Continued***Aged 16 and over**2012-2015 combined*

Number of conditions <sup>a</sup>	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
<i>Bases (weighted):</i>								
<i>Men</i>	1313	1495	1451	1726	1451	1122	737	9295
<i>Men with conditions</i>	244	382	494	759	836	766	556	4038
<i>Women</i>	1289	1568	1537	1832	1526	1244	1060	10056
<i>Women with conditions</i>	348	462	591	828	894	845	806	4773
<i>All adults</i>	2602	3063	2988	3558	2978	2366	1797	19351
<i>All adults with conditions</i>	592	844	1085	1587	1730	1611	1362	8811
<i>Bases (unweighted):</i>								
<i>Men</i>	773	1030	1304	1571	1486	1465	948	8577
<i>Men with conditions</i>	157	267	419	696	861	990	715	4105
<i>Women</i>	913	1432	1717	1957	1810	1640	1306	10775
<i>Women with conditions</i>	252	425	654	895	1065	1103	997	5391
<i>All adults</i>	1686	2462	3021	3528	3296	3105	2254	19352
<i>All adults with conditions</i>	409	692	1073	1591	1926	2093	1712	9496

a The number of different conditions (see section 2.2.2)

b Of those with at least one long-term condition



**Table 2.4 Prevalence of multiple conditions in adults, age-standardised, 2012-2015 combined, by area deprivation and sex**

*Aged 16 and over*

*2012-2015 combined*

Number of conditions <sup>a</sup>	Scottish Index of Multiple Deprivation				
	5 <sup>th</sup> (least deprived)	4 <sup>th</sup>	3 <sup>rd</sup>	2 <sup>nd</sup>	1 <sup>st</sup> (most deprived)
	%	%	%	%	%
<b>Men</b>					
0	58	54	53	51	43
1	25	26	23	24	25
2	10	12	13	13	15
3	4	5	6	7	9
4 or more	2	2	5	6	8
<i>2 or more</i>	<i>17</i>	<i>20</i>	<i>24</i>	<i>26</i>	<i>32</i>
Mean <sup>b</sup>	1.7	1.7	2.0	2.0	2.1
Standard error of the mean	0.04	0.04	0.05	0.05	0.05
Median <sup>b</sup>	1	1	2	2	2
<b>Women</b>					
0	55	53	50	44	39
1	25	26	23	25	25
2	12	12	15	16	16
3	5	5	8	9	11
4 or more	3	3	5	7	9
<i>2 or more</i>	<i>20</i>	<i>20</i>	<i>27</i>	<i>32</i>	<i>36</i>
Mean <sup>b</sup>	1.8	1.8	2.0	2.1	2.2
Standard error of the mean	0.04	0.04	0.04	0.04	0.04
Median <sup>b</sup>	1	1	2	2	2
<b>All adults</b>					
0	56	54	51	47	41
1	25	26	23	24	25
2	11	12	14	14	16
3	5	5	7	8	10
4 or more	3	3	5	6	9
<i>2 or more</i>	<i>18</i>	<i>20</i>	<i>26</i>	<i>29</i>	<i>34</i>
Mean <sup>b</sup>	1.7	1.8	2.0	2.1	2.2
Standard error of the mean	0.03	0.03	0.03	0.03	0.03
Median <sup>b</sup>	1	1	2	2	2

*Continued...*

**Table 2.4 - Continued***Aged 16 and over**2012-2015 combined*

Number of conditions <sup>a</sup>	Scottish Index of Multiple Deprivation				
	5 (least deprived)	4	3	2	1 (most deprived)
<i>Bases (weighted):</i>					
<i>Men</i>	1975	1986	1859	1869	1607
<i>Men with conditions</i>	748	814	787	838	862
<i>Women</i>	1991	2129	2027	2025	1882
<i>Women with conditions</i>	814	899	934	1050	1081
<i>All adults</i>	3966	4115	3887	3894	3489
<i>All adults with conditions</i>	1562	1714	1721	1888	1943
<i>Bases (weighted):</i>					
<i>Men</i>	1637	1942	1971	1676	1351
<i>Men with conditions</i>	703	884	939	822	757
<i>Women</i>	1968	2431	2433	2127	1816
<i>Women with conditions</i>	877	1115	1203	1144	1052
<i>All adults</i>	3605	4373	4404	3803	3167
<i>All adults with conditions</i>	1580	1999	2142	1966	1809

a The number of different conditions (see section 2.2.2)

b Of those with at least one long-term condition

**Table 2.5 Symptoms of distress (using GHQ12), age-standardised, 2012-2015 combined, by presence of physical conditions and sex**

<i>Aged 16 and over</i>	<i>2012-2015 combined</i>	
<b>GHQ12 score</b>	<b>Number of physical conditions</b>	
	None	One or more
	%	%
<b>Men</b>		
0	72	56
1-3	18	25
4 or more	9	19
<b>Women</b>		
0	64	49
1-3	23	27
4 or more	12	23
<b>All adults</b>		
0	68	52
1-3	21	26
4 or more	11	22
<i>Bases (weighted):</i>		
<i>Men</i>	4969	3415
<i>Women</i>	5139	4035
<i>All adults</i>	10109	7450
<i>Bases (unweighted):</i>		
<i>Men</i>	4238	3471
<i>Women</i>	5279	4570
<i>All adults</i>	9517	8041

a The number of different conditions (see section 2.2.2)

**Table 2.6 Symptoms of distress (using GHQ12), age-standardised, 2012-2015 combined, by presence of physical conditions and area deprivation**

*Aged 16 and over*

*2012-2015 combined*

GHQ12 score	Scottish Index of Multiple Deprivation				
	5 <sup>th</sup> (least deprived)	4 <sup>th</sup>	3 <sup>rd</sup>	2 <sup>nd</sup>	1 <sup>st</sup> (most deprived)
	%	%	%	%	%
<b>No physical conditions<sup>a</sup></b>					
0	68	68	69	70	65
1-3	22	22	20	20	20
4 or more	10	10	10	10	16
<b>One or more physical conditions<sup>a</sup></b>					
0	60	56	50	49	46
1-3	26	26	29	26	25
4 or more	14	18	21	25	29
<i>Bases (weighted):</i>					
<i>No physical conditions</i>	2247	2310	1996	1964	1600
<i>One or more physical conditions</i>	1404	1508	1480	1574	1484
<i>Bases (unweighted):</i>					
<i>No physical conditions</i>	1936	2318	2118	1777	1368
<i>One or more physical conditions</i>	1383	1741	1832	1645	1440

a The number of different conditions (see section 2.2.2)



## 3 DENTAL HEALTH

Gemma Kirkpatrick

### SUMMARY

- **In 2015, 92% of adults had at least some natural teeth, an increase from 88% in 2008.**
- The proportion of men and women with some natural teeth increased between 2008 and 2015 (from 91% to 94% for men and from 86% to 91% for women).
- Around six in ten (61%) adults aged 75 and over had some natural teeth compared with almost all (97-100%) of those aged 16 to 54.
- Women were significantly less likely than men to have some natural teeth in the 65-74 age group (77% compared with 85%) and the 75 and over age group (56% compared with 68%).
- **Women were more likely than men to use dental floss every day (35% compared with 19%) and restrict their sugar intake to help improve their dental health (27% compared with 21%).**
- Almost all (97%) adults with some natural teeth say they brush them daily with fluoride toothpaste, while 40% reported using a mouth rinse.

### 3.1 INTRODUCTION

In the **Annual Report of the Chief Dental Officer (CDO) 2012**, the CDO flagged oral health as an important component of wider general health which can influence a person's quality of life<sup>1</sup>. Oral disease can detrimentally impact on a person's health and wellbeing and has potentially wider socio-economic consequences. The most common types of oral disease, dental caries and gum disease, are largely preventable. Of greatest concern is oral cancer. Major risk factors for oral cancer include tobacco use and excessive alcohol consumption<sup>1</sup>.

Child and adult registration rates have increased in recent years, with 94% of children and 90% of adults registered with an NHS dentist at the end of September 2015.<sup>2</sup> All NHS boards in Scotland have also now met the 2010 national target for 60% of P1 and P7 pupils to have no obvious decay experience<sup>3</sup>. In recent years there has also been a reduction in general anaesthetics for dental extractions among children<sup>1</sup>.

Despite these improvements, inequalities in oral health persist<sup>1</sup> and the latest figures indicate that there has been a long term increase in the incidence of oral cancer<sup>4</sup>.

#### 3.1.1 Policy background

In September 2015, when the First Minister launched **A Stronger Scotland: The Government's Programme for Scotland 2015-16**<sup>5</sup>, the need to address 'significant and persistent inequalities' was highlighted. The evidence from the National Dental Inspection Programme<sup>3</sup> (NDIP) shows that although oral health has improved significantly across all

communities, children living in the most deprived communities still have more decay experience compared with those in the least deprived. The Scottish Government has made an undertaking to improve the oral health of people in Scotland with a clear focus on reducing inequalities<sup>6</sup>.

The Programme for Government also recognised deficiencies in the current system, which was set up when levels of dental health were poorer and people of all ages required multiple fillings and extractions. There is now a need to transform the system to meet the needs of younger people who require a preventive focus whilst ensuring that the system continues to allow for the treatment needs of the older population.

Ministers agreed that a consultation should take place on a new oral health plan. The consultation will run from 15 September until 8 December 2016.

The ageing of the Scottish population means that by 2039 the number of people over 75 is projected to increase by 85%<sup>7</sup>. The improvements that have been made in oral health in Scotland have also presented new challenges. 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.

There has been a long term increase in the incidence of oral cancer, while incidence of a number of other cancers is decreasing<sup>4</sup>. Increasing numbers of patients are presenting at an earlier age, and while oral cancer primarily affects those over 50 years of age it can also affect younger people<sup>8</sup>.

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

The focus of this chapter is on dental health and actions taken by individuals to improve dental health. The section on dental health presents the findings on the prevalence of natural teeth in the Scottish population and allows for further analysis by age and sex. The remainder of the chapter looks at a number of daily actions that adults could take to improve oral health, by age and sex.

## 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. Two changes made to the questions on dental health have implications for the time series data presented here. Since 2008 participants have been asked how many natural teeth they have. Prior to 2008, participants were asked if they had their own teeth but were not asked how many of their own teeth they had. Consequently, it is only possible to compare people in the period 1995 to 2003 who said they had **all false teeth** with people from 2008 onwards who said they had **no natural teeth**. In addition, the definition of false teeth used in 1995 differed from that used in 1998 and 2003. In 1998 and 2003 participants were

asked to count caps and crowns as natural teeth but there was no such instruction in 1995. In addition, since 2003 measurements have been collected for all adults aged 16 years and older, whereas in the 1995 survey data were obtained for adults aged 16-64 only, and in 1998 for adults aged 16-74.

While the question on natural teeth prevalence used since 2008 is very different to that used in earlier years, it attempts to measure the same underlying concept - having no natural teeth - and might therefore be considered as functionally equivalent. As there is no way of verifying this, however, comparisons over time (1995-2003 and from 2008 onwards) in the text or tables should be made with caution. As a result, trends in natural teeth prevalence within this chapter focus primarily on the figures from 2008 onwards.

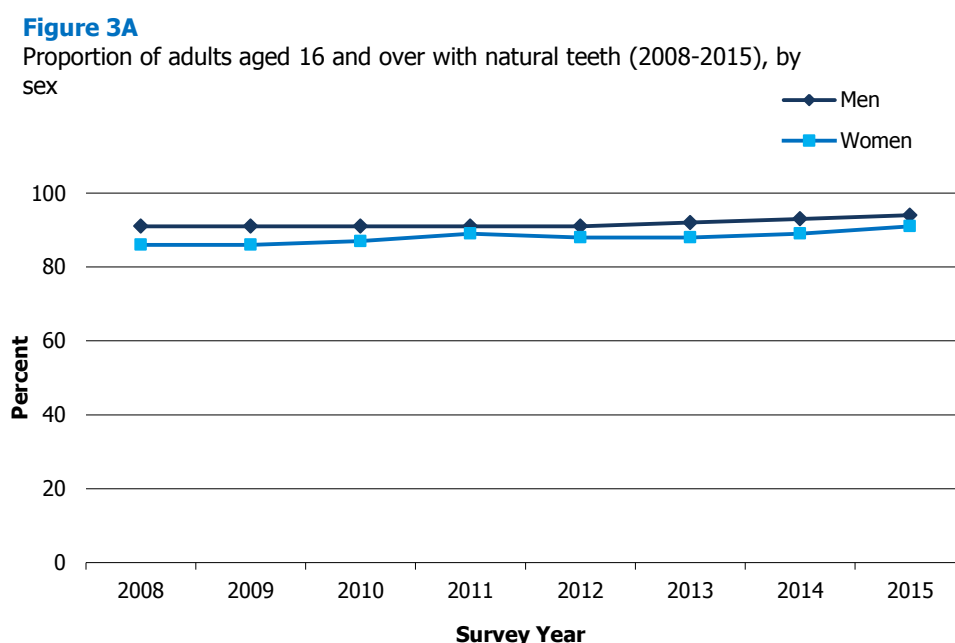
### 3.3 DENTAL HEALTH

#### 3.3.1 Trends in prevalence of natural teeth since 2008

In 2008, 88% of all adults aged 16 and over had some natural teeth, rising gradually to 92% in 2015. The proportion of men aged 16 and over with some natural teeth was 91% in 2008 and was at a similar level in 2013 (92%) before rising significantly to 94% in 2015. The percentage of women with some natural teeth rose significantly from 86% in 2008 to 91% in 2015.

Since 2008 there has been a significant increase in the proportion of all adults aged 16 and over with 20 or more teeth (71% in 2008, 76% in 2015). In 2015, around three-quarters (76%) of both men and women had at least 20 teeth, a significant increase from the 2008 figure for both groups (72% for men, 70% for women).

**Figure 3A, Table 3.1**





### **3.3.2 Number of natural teeth and prevalence of no natural teeth in 2015, by age and sex**

As noted in previous years, natural teeth prevalence was strongly associated with age, with the presence of at least some natural teeth tending to decrease in line with increased age. Almost all (99-100%) adults aged 16 to 44 had at least some natural teeth, decreasing significantly to 97% of those aged 45-54, 92% of those aged 55-64, 81% of those aged 65-74 and 61% of those aged 75 and over.

Natural teeth prevalence did not vary significantly for men and women under the age of 65 (91-100% for men compared with 93-100% for women) but did for those in the older age groups. Men aged 65 to 74 were more likely than women to report having at least some natural teeth (85% compared with 77% of women) with a similar pattern for those aged 75 and over (68% and 56% respectively). **Table 3.2**

### **3.3.3 Daily actions taken to improve dental health, 2013/2015 (combined)**

Almost all (97%) adults aged 16 and over in 2013/2015 with some natural teeth brushed their teeth daily with fluoride toothpaste to improve their dental health, and 40% used a mouth rinse each day. Around a quarter reported using dental floss (27%) daily with a similar proportion (24%) saying they restricted their daily intake of sugary foods and drinks.

The average number of daily actions taken to improve dental health was significantly higher for women with some natural teeth (mean of 2.2 actions) than for men (1.9). Women were significantly more likely than men to report using dental floss daily (35% compared with 19%) and to restrict their daily intake of sugary and soft drinks (27% compared with 21%).

The mean number of daily actions undertaken increased with age from 1.7 for those aged 16-24 with some natural teeth to 2.2-2.3 for those aged 55 and over. Those aged 75 and over were the least likely to brush their teeth with fluoride toothpaste (93%), use a mouth rinse (29%) and, along with the youngest age group, least likely to restrict their intake of sugary food and drink (17% for those aged 75 and over, 18% for those aged 16-24). Actions to care for dentures were higher among older adults, as would be expected given the higher prevalence of denture usage for this age group. Around a third (32-35%) of all those aged 65 and over cleaned their dentures daily and 18-25% left their dentures out at night. Daily dental floss use increased significantly with age from 19% of those aged 16-24 to 34% of adults aged 55 to 64, before decreasing to 25% of adults aged 75 and over. **Table 3.3**

## References and Notes

- <sup>1</sup> Annual Report of the Chief Dental Officer 2012 – A picture of Scotland's Oral Health. Edinburgh: Scottish Government, 2013. Available from: [www.scotland.gov.uk/Publications/2013/12/1101](http://www.scotland.gov.uk/Publications/2013/12/1101)
- <sup>2</sup> See: [www.isdscotland.scot.nhs.uk/Health-Topics/Dental-Care/Publications/2016-06-21/2016-06-21-Dental-Summary.pdf](http://www.isdscotland.scot.nhs.uk/Health-Topics/Dental-Care/Publications/2016-06-21/2016-06-21-Dental-Summary.pdf)
- <sup>3</sup> See: [www.isdscotland.org/Health-Topics/Dental-Care/National-Dental-Inspection-Programme/](http://www.isdscotland.org/Health-Topics/Dental-Care/National-Dental-Inspection-Programme/)
- <sup>4</sup> See: [www.isdscotland.org/Health-Topics/Cancer/Cancer-Statistics/](http://www.isdscotland.org/Health-Topics/Cancer/Cancer-Statistics/)
- <sup>5</sup> See: [www.gov.scot/Resource/0048/00484439.pdf](http://www.gov.scot/Resource/0048/00484439.pdf)
- <sup>6</sup> See: [www.gov.scot/resource/doc/226607/0061266.pdf](http://www.gov.scot/resource/doc/226607/0061266.pdf)
- <sup>7</sup> See: [www.nrscotland.gov.uk/files//statistics/population-projections/2014-based/pp14-corrected.pdf](http://www.nrscotland.gov.uk/files//statistics/population-projections/2014-based/pp14-corrected.pdf)
- <sup>8</sup> See: [www.isdscotland.org/Health-Topics/Cancer/Publications/2016-05-17/i\\_cancer\\_head\\_neck.xls](http://www.isdscotland.org/Health-Topics/Cancer/Publications/2016-05-17/i_cancer_head_neck.xls)

**Table list**

- Table 3.1 Number of natural teeth and percentage with no natural teeth, 1995 to 2015, by age and sex
- Table 3.2 Number of natural teeth and percentage with no natural teeth, 2015, by age and sex
- Table 3.3 Daily actions taken by people with some natural teeth to improve dental health, 2013/2015 combined, by age and sex

**Table 3.1 Number of natural teeth and percentage with no natural teeth, 1995 to 2015, by age and sex**

*Aged 16 and over*

*1995 to 2015*

<b>False teeth / number of natural teeth</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>Men</b>											
<b>All own teeth</b>											
16-64	69	73	76	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16+	n/a	n/a	67	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>All false teeth</b>											
16-64	9	8	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16+	n/a	n/a	12	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>No natural teeth</b>											
16-64	n/a	n/a	n/a	4	4	4	3	4	4	3	3
16+	n/a	n/a	n/a	9	9	9	9	9	8	7	6
<b>Fewer than 10</b>											
16-64	n/a	n/a	n/a	4	3	3	3	3	3	3	3
16+	n/a	n/a	n/a	6	6	5	5	5	6	6	5
<b>10 to 19</b>											
16-64	n/a	n/a	n/a	11	11	11	11	12	9	9	10
16+	n/a	n/a	n/a	13	12	13	13	13	11	12	13
<b>20 or more</b>											
16-64	n/a	n/a	n/a	82	82	82	83	82	85	85	85
16+	n/a	n/a	n/a	72	72	73	73	72	75	76	76
<b>All with teeth</b>											
16-64	n/a	n/a	n/a	96	96	96	97	96	96	97	97
16+	n/a	n/a	n/a	91	91	91	91	91	92	93	94

*Continued...*

**Table 3.1 - Continued**

*Aged 16 and over*

*1995 to 2015*

<b>False teeth / number of natural teeth</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>Women</b>											
<b>All own teeth</b>											
16-64	66	70	75	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16+	n/a	n/a	62	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>All false teeth</b>											
16-64	13	11	7	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16+	n/a	n/a	18	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>No natural teeth</b>											
16-64	n/a	n/a	n/a	5	5	5	4	4	4	3	2
16+	n/a	n/a	n/a	14	14	13	11	12	12	11	9
<b>Fewer than 10</b>											
16-64	n/a	n/a	n/a	3	3	3	3	4	2	2	2
16+	n/a	n/a	n/a	5	4	5	6	6	5	4	4
<b>10 to 19</b>											
16-64	n/a	n/a	n/a	9	10	8	8	7	9	8	7
16+	n/a	n/a	n/a	11	12	11	11	10	11	11	10
<b>20 or more</b>											
16-64	n/a	n/a	n/a	83	82	84	85	85	85	87	88
16+	n/a	n/a	n/a	70	70	72	72	73	72	74	76
<b>All with teeth</b>											
16-64	n/a	n/a	n/a	95	95	95	96	96	96	97	98
16+	n/a	n/a	n/a	86	86	87	89	88	88	89	91

*Continued...*

**Table 3.1 - Continued**

*Aged 16 and over*

*1995 to 2015*

<b>False teeth / number of natural teeth</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>All adults</b>											
<b>All own teeth</b>											
16-64	68	72	75	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16+	n/a	n/a	64	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>All false teeth</b>											
16-64	11	9	6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16+	n/a	n/a	15	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
<b>No natural teeth</b>											
16-64	n/a	n/a	n/a	4	5	4	3	4	4	3	2
16+	n/a	n/a	n/a	12	12	11	10	10	10	9	8
<b>Fewer than 10</b>											
16-64	n/a	n/a	n/a	3	3	3	3	3	3	3	2
16+	n/a	n/a	n/a	5	5	5	5	6	5	5	4
<b>10 to 19</b>											
16-64	n/a	n/a	n/a	10	10	10	10	9	9	8	8
16+	n/a	n/a	n/a	12	12	12	12	11	11	11	11
<b>20 or more</b>											
16-64	n/a	n/a	n/a	82	82	83	84	83	85	86	87
16+	n/a	n/a	n/a	71	71	72	73	73	74	75	76
<b>All with teeth</b>											
16-64	n/a	n/a	n/a	96	95	96	97	96	96	97	98
16+	n/a	n/a	n/a	88	88	89	90	90	90	91	92

*Continued...*

**Table 3.1 - Continued**

<i>Aged 16 and over</i>										<i>1995 to 2015</i>	
<b>False teeth / number of natural teeth</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
<i>Bases (weighted):</i>											
<i>Men 16-64</i>	3902	3950	3169	2537	2940	2824	2944	1885	1890	1794	1908
<i>Men 16+</i>	<i>n/a</i>	<i>n/a</i>	3833	3083	3585	3450	3598	2309	2337	2231	2386
<i>Women 16-64</i>	3998	3989	3318	2632	3060	2938	3063	1950	1966	1873	1998
<i>Women 16+</i>	<i>n/a</i>	<i>n/a</i>	4276	3362	3917	3762	3924	2500	2545	2420	2592
<i>All adults 16-64</i>	7900	7939	6487	5169	6001	5762	6007	3836	3856	3667	3906
<i>All 16+</i>	<i>n/a</i>	<i>n/a</i>	8109	6445	7502	7212	7522	4809	4883	4651	4978
<i>Bases (unweighted):</i>											
<i>Men 16-64</i>	3524	3364	2756	2078	2398	2287	2416	1517	1600	1476	1557
<i>Men 16+</i>	<i>n/a</i>	<i>n/a</i>	3589	2835	3276	3104	3270	2126	2134	2064	2235
<i>Women 16-64</i>	4408	4212	3451	2687	3206	3073	3172	1970	2075	1857	1922
<i>Women 16+</i>	<i>n/a</i>	<i>n/a</i>	4522	3608	4234	4114	4252	2684	2752	2588	2744
<i>All adults 16-64</i>	7932	7576	6207	4765	5604	5360	5588	3487	3675	3333	3479
<i>All 16+</i>	<i>n/a</i>	<i>n/a</i>	8111	6443	7510	7218	7522	4810	4886	4652	4978

**Table 3.2 Number of natural teeth and percentage with no natural teeth, 2015, by age and sex**

<i>Aged 16 and over</i>								<i>2015</i>
Number of natural teeth	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
No natural teeth	-	1	1	2	9	15	32	6
Fewer than 10	-	0	2	4	6	14	14	5
10 to 19	-	3	7	14	22	25	24	13
20 or more	100	96	90	79	63	46	30	76
<i>All with teeth</i>	<i>100</i>	<i>99</i>	<i>99</i>	<i>98</i>	<i>91</i>	<i>85</i>	<i>68</i>	<i>94</i>
<b>Women</b>								
No natural teeth	0	0	1	3	7	23	44	9
Fewer than 10	-	0	1	2	6	10	12	4
10 to 19	1	3	5	9	18	21	19	10
20 or more	99	97	93	85	68	47	25	76
<i>All with teeth</i>	<i>100</i>	<i>100</i>	<i>99</i>	<i>97</i>	<i>93</i>	<i>77</i>	<i>56</i>	<i>91</i>
<b>All adults</b>								
No natural teeth	0	0	1	3	8	19	39	8
Fewer than 10	-	0	1	3	6	12	13	4
10 to 19	0	3	6	11	20	23	21	11
20 or more	100	97	91	82	66	47	27	76
<i>All with teeth</i>	<i>100</i>	<i>100</i>	<i>99</i>	<i>97</i>	<i>92</i>	<i>81</i>	<i>61</i>	<i>92</i>
<i>Bases (weighted):</i>								
<i>Men</i>	<i>338</i>	<i>381</i>	<i>370</i>	<i>445</i>	<i>374</i>	<i>288</i>	<i>190</i>	<i>2386</i>
<i>Women</i>	<i>333</i>	<i>405</i>	<i>396</i>	<i>470</i>	<i>394</i>	<i>321</i>	<i>273</i>	<i>2592</i>
<i>All adults</i>	<i>671</i>	<i>786</i>	<i>767</i>	<i>915</i>	<i>768</i>	<i>609</i>	<i>463</i>	<i>4978</i>
<i>Bases (unweighted):</i>								
<i>Men</i>	<i>193</i>	<i>239</i>	<i>312</i>	<i>404</i>	<i>409</i>	<i>398</i>	<i>280</i>	<i>2235</i>
<i>Women</i>	<i>210</i>	<i>348</i>	<i>391</i>	<i>485</i>	<i>488</i>	<i>461</i>	<i>361</i>	<i>2744</i>
<i>All adults</i>	<i>403</i>	<i>587</i>	<i>703</i>	<i>889</i>	<i>897</i>	<i>859</i>	<i>641</i>	<i>4979</i>



**Table 3.3 Daily actions taken by people with some natural teeth to improve dental health, 2013/2015 combined, by age and sex**

Daily actions taken	Aged 16 and over with some natural teeth							2013/2015 combined
	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men with natural teeth<sup>a</sup></b>								
Brush my teeth with fluoride toothpaste	96	98	97	95	95	96	92	96
Use dental floss	12	16	16	23	24	20	23	19
Use a mouth rinse	32	45	41	38	41	27	31	38
Restrict my intake of sugary foods and drinks	17	24	26	22	21	19	16	21
Clean my dentures (including soaking with a sterilising tablet)	-	1	4	7	15	27	31	9
Leave my dentures out at night	-	0	3	3	7	17	21	5
None of these	2	1	2	2	3	1	2	2
Mean number of actions	1.6	1.8	1.9	1.9	2.0	2.1	2.1	1.9
SE of the mean	0.07	0.06	0.06	0.05	0.07	0.06	0.10	0.03
<b>Women with natural teeth<sup>a</sup></b>								
Brush my teeth with fluoride toothpaste	99	99	100	99	98	96	94	98
Use dental floss	27	32	37	39	44	37	26	35
Use a mouth rinse	44	51	39	40	40	36	27	41
Restrict my intake of sugary foods and drinks	20	33	27	28	27	26	19	27
Clean my dentures (including soaking with a sterilising tablet)	0	1	2	10	22	37	38	12
Leave my dentures out at night	0	0	2	7	8	18	29	7
None of these	0	0	0	1	1	1	3	1
Mean number of actions	1.9	2.2	2.1	2.2	2.4	2.5	2.3	2.2
SE of the mean	0.06	0.05	0.05	0.05	0.06	0.07	0.11	0.02

*Continued...*

**Table 3.3 - Continued**

*Aged 16 and over with some natural teeth*

*2013/2015 combined*

Daily actions taken	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Adults with natural teeth<sup>a</sup></b>								
Brush my teeth with fluoride toothpaste	98	99	98	97	97	96	93	97
Use dental floss	19	24	27	31	34	28	25	27
Use a mouth rinse	38	48	40	39	41	32	29	40
Restrict my intake of sugary foods and drinks	18	28	26	25	24	22	17	24
Clean my dentures (including soaking with a sterilising tablet)	0	1	3	8	18	32	35	11
Leave my dentures out at night	0	0	3	5	8	18	25	6
None of these	1	1	1	1	2	1	3	1
Mean number of actions	1.7	2.0	2.0	2.1	2.2	2.3	2.2	2.0
SE of the mean	0.05	0.04	0.04	0.04	0.05	0.05	0.08	0.02
<i>Bases (weighted):</i>								
<i>Men</i>	304	352	341	395	313	220	113	2037
<i>Women</i>	305	372	357	421	324	233	132	2143
<i>All adults</i>	609	724	697	816	636	453	245	4180
<i>Bases (unweighted):</i>								
<i>Men</i>	173	263	298	370	315	283	160	1862
<i>Women</i>	204	366	371	442	372	306	170	2231
<i>All adults</i>	377	629	669	812	687	589	330	4093

a This category includes some people who have both dentures and natural teeth



## 4 ALCOHOL

*Lindsay Gray and Alastair H Leyland*

### SUMMARY

- **Reported hazardous or harmful drinking for adults (based on revised guidelines of over 14 units per week for both men and women) declined significantly from 2003 (34%) to 2013 (25%) but has stayed at similar levels since (26% in 2015).**
- Similar patterns were seen for the proportion of adults drinking above three units (women) or four units (men) on their heaviest drinking day (41% in 2003, 36% in 2015) and drinking above six units (men) or eight units (women) (24% in 2003, 20% in 2015).
- Non-drinking among adults has increased significantly from 11% in 2003 to 16% in 2013 and has remained at that level since.
- The mean number of units per week among drinkers has declined from 16.1 units in 2003 to 12.2 units in 2013 and remained at a similar level in 2015 (12.9 units).
- **Mean unit consumption per week was around twice as high for male drinkers (17.2 units) than for female drinkers (8.7 units).**
- Hazardous or harmful levels of drinking were reported for 36% of men and 17% of women.
- Drinking above the recommended maximum amount declined with age-standardised income for both men (46% in the highest income quintile to 25%-26% in the bottom two quintiles) and women (equivalent figures as 24% and 11%).
- Those aged 16-64 were more likely than those aged 65 and over both to drink above three units (women) or four units (men) on a single day (39-42% compared with 10-27%) and to drink above six units (women) or eight units (men) (18-28% compared with 2-10%).
- **Using AUDIT scores, in 2014/2015, 82% of adults drank at low risk levels or were abstinent, 15% drank at hazardous levels, 2% at harmful levels and 1% had possible alcohol dependency.**
- Prevalence of drinking at hazardous or harmful levels, or having a possible alcohol dependency, decreased with age from 35% of those aged 16-24 to 2% of those aged 75 and over.

### 4.1 INTRODUCTION

The misuse of alcohol is recognised as a major issue in Scotland, carrying a risk of physical and mental health problems, as well as potential negative social consequences. People who consume large quantities of alcohol have increased risks of high blood pressure, chronic liver disease and cirrhosis, pancreatitis, some cancers, mental ill-health and accidents. The World Health Organization (WHO) cites alcohol as one of the largest risk factors for ill-health in wealthy countries, along with tobacco use, obesity and high blood pressure<sup>1</sup>. It also identifies higher levels of alcohol dependence and alcohol use disorders in the UK than across Europe as a whole<sup>2</sup>.

A report published in 2009 attributed 5% of deaths in Scotland to alcohol<sup>3</sup>. Alcohol-related mortality increased between 2012 and 2015, with 1,152 alcohol-related deaths in 2015. Whilst this remains lower than in any of the years from 1999 to 2011<sup>4</sup>, it is nearly double the figures in the early 1980s. There are more than 94,500 GP consultations and around 35,000 hospital stays each year are for alcohol-related problems. Although the rate for alcohol-related hospital stays has declined in recent years<sup>4,5</sup>, it is still four times higher than in the early 1980s. 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<sup>6,7</sup>.

The harms associated with alcohol misuse are not restricted to those consuming alcohol, with potential impacts on others of injury, neglect, abuse, crime, and from concern for or fear of family members. A report published by Alcohol Focus Scotland in 2015 estimated that 1 in 2 people in Scotland are harmed as a result of someone else's drinking<sup>8</sup>. The relationship between alcohol and crime is also well documented. In the 2015 Scottish Prisoner Survey, 41% of prisoners reported being drunk at the time of their offence, although this represents a fall from 45% in 2013<sup>9</sup>. It is also thought that alcohol is involved in 70% of assaults requiring treatment at A&E<sup>10</sup>.

Misuse of alcohol also has a negative impact on children with an estimated 36,000 to 51,000 children living with a parent (or guardian) whose alcohol use is potentially problematic<sup>11</sup>. There are also economic impacts, with an estimated 1.5 million working days lost to reduced efficiency in the workplace due to the effects of alcohol, and a similar number lost due to alcohol-related absence<sup>12</sup>. In 2007, the total annual cost of excessive alcohol consumption was estimated to stand at around £3.6 billion<sup>12</sup>. Findings from the 2014 Scottish Social Attitudes survey showed that public awareness of the harmfulness of alcohol has increased, with 60% citing it as the drug causing most problems in Scotland<sup>13</sup>.

#### 4.1.1 Policy background

One of the **National Outcomes** underpinning the Scottish Government's core purpose is for people living in Scotland to 'live longer, healthier lives'<sup>14</sup>. Tackling alcohol misuse is integral to ensuring that people in Scotland live longer and to reducing the significant inequalities that exist in society. The government's commitment to addressing alcohol misuse is evidenced by the inclusion of a **National Performance Framework National Indicator** to 'reduce alcohol related hospital admissions'<sup>14</sup>. Other related indicators include the reduction of premature mortality, reducing reconviction rates and crime victimisation, and reducing deaths on roads<sup>14</sup>.

The Scottish Government published its alcohol strategy **Changing Scotland's Relationship with Alcohol: a Framework for Action** in 2009<sup>15</sup>. The strategy, which was accompanied by significant new investment in prevention and treatment services, builds on the **Licensing (Scotland) Act 2005**, which was implemented in September 2009. Further legislation includes the **Alcohol etc. (Scotland) Act**, which was implemented in October 2011 and, among other measures,

included the banning of quantity discounts in off-sales, the introduction of restrictions on alcohol displays and promotions, and the introduction of the mandatory Challenge 25 age verification policy. The recently passed **Air Weapons and Licensing (Scotland) Act 2015** creates offences of an adult supplying alcohol to someone underage in a public place, which will assist the Police to better address underage drinking in drinking dens.

The **Alcohol (Minimum Pricing) (Scotland) Act 2012** allows for a price to be set for a unit of alcohol, below which it cannot be sold. Its implementation date is currently uncertain due to an ongoing legal challenge led by the Scotch Whisky Association, in conjunction with some other European alcohol producers<sup>16</sup>. Informed by modelling carried out by the University of Sheffield<sup>17</sup>, Scottish Ministers have indicated their preference for a minimum unit price of 50p for at least the first two years. 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 annum<sup>18</sup>.

Evaluation of Scotland's alcohol strategy lies with NHS Health Scotland, through the Monitoring and Evaluating Scotland's Alcohol Strategy (MESAS) work programme. The final annual MESAS report, published in March 2016, concluded that '[t]he declines in both mortality rates [since 2003] and hospitalisation rates [since 2007/08] were much steeper in Scotland than in England / England & Wales'<sup>7</sup>. However, 'Scotland continues to experience substantially higher levels of alcohol-related mortality and morbidity compared to the 1980s and compared to England & Wales. Inequalities in alcohol-related harm persist. Those living in the most deprived areas, especially men, continue to experience the highest levels of alcohol-related morbidity and mortality'<sup>7</sup>.

In January 2016, the UK Chief Medical Officers published new guidelines on alcohol consumption. This included advice that for both men and women, it is safest not to regularly consume more than 14 units of alcohol a week. This represents a reduction in the recommended safe amount for men. Advice was also included to spread the amount drunk over a number of days and limit the amount consumed in a single session<sup>19</sup>.

#### **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 usually obtain lower consumption estimates than those implied by alcohol sales data. This disjuncture can largely be explained by participants' under-reporting of consumption, due in part to not accounting for atypical / special occasion drinking<sup>20</sup>, but there is also some evidence that survey non-responders are more likely than responders to engage in risky health behaviours, including hazardous alcohol use<sup>21,22,23,24</sup>. The most recently

available annual estimates of alcohol sales in Scotland show that 10.8 litres (20.8 units per adult per week) of pure alcohol per person aged 16 and over were sold in 2015 (the equivalent figure for England and Wales was 9.1 litres (17.4 units per adult per week))<sup>25</sup>.

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 have been used in the evaluation of the implementation of minimum unit pricing to help assess the impact on consumption patterns across different groups in society.

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

The key trends for weekly and daily alcohol consumption are updated and presented in this chapter. For weekly consumption, these are based on the revised guidelines; hence all weekly consumption figures for men, going back to 2003, have been revised. Figures for mean consumption are presented for drinkers only, a change from previous reports; hence all mean consumption figures, both weekly and on the highest drinking day, for both men and women, going back to 2003, have also been revised. Figures are also presented broken down by age and sex, and for the revised weekly guidance, by equivalised household income. Levels of alcohol dependency and high risk alcohol use, as measured by the Alcohol Use Disorders Identification Test (AUDIT), by age and sex, are presented for the years 2014/2015 combined.

#### **4.1.4 Comparability with other UK statistics**

The Health Surveys for England, Wales and Northern Ireland all provide estimates for alcohol consumption. A report published by the Government Statistical Service advises that estimates from these surveys and / or those from SHeS are “not comparable”<sup>26</sup>. Mean weekly alcohol consumption statistics are not available for Wales, and estimates of consumption on the heaviest drinking day are not available for Northern Ireland. While questions are similar in each of the surveys, questions on alcohol consumption are delivered through self-completion in the Welsh Health Survey, complicating comparisons. Categorisation of drinkers and non-drinkers is inconsistent across the surveys. Differences also exist in the way some alcoholic drinks are categorised.

## **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. All 16-17 year olds

are asked about their consumption via the self-completion, as are some 18-19 year olds, at 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 report<sup>27</sup>.

In 2015, the SHeS questionnaire covered the following aspects of alcohol consumption:

- usual weekly consumption,
- daily consumption on the heaviest drinking day in the previous week, and
- indicators of potential problem drinking (including physical dependence).

### **Weekly consumption**

Participants (aged 16 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 beer, lager, stout, cider and shandy
- strong beer, lager, stout and cider
- sherry and martini
- spirits and liqueurs
- 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 and multiplied by the amount they said they usually drank on any one day<sup>28</sup>.

### **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 detail<sup>29</sup>. Details on the amounts consumed for each of the six types of drink listed in the weekly consumption section above were collected, rather than direct estimates of units 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 sensible 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)<sup>27</sup>. 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**

Equivalised annual household income is a measure of household income that takes account of the number of persons in the household. The income data presented for weekly alcohol consumption are presented in quintiles. To ensure that the comparisons presented are not confounded by the different age profiles of the quintiles, the data have been age-standardised (see the Glossary at the end of this Volume for a detailed description of both age-standardisation and equivalised household income).

**Table 2A 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	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 new UK 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, you are safest not to regularly drink more than 14 units per week, to keep health risks from drinking alcohol to a low level. This applies to both men and women. 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 all<sup>19</sup>.

Those who drink within the revised weekly guidelines of 14 units a week are described within this report as 'moderate' drinkers, while drinking above this level is described as 'hazardous or harmful'<sup>30</sup>.

'Hazardous' / 'harmful' drinking can also be defined according to scores on the AUDIT questionnaire. Guidance on the tool, which is primarily

intended to screen respondents for levels of alcohol dependency or high-risk use, has been published by the World Health Organization (WHO). Section 4.2.5 includes a fuller description of the tool<sup>31</sup>.

4.2.5 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 volumes 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 4<sup>32</sup>. Scores for the ten questions were summed to form a scale, from 0 to 40, of alcohol use.

The WHO guidelines<sup>31</sup> for interpreting AUDIT scale scores are as follows:

<b>Score</b>	<b>Category description</b>
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 TRENDS IN ALCOHOL CONSUMPTION SINCE 2003

### 4.3.1 Trends in usual weekly alcohol consumption

Trends from 2003 to 2015 in self-reported usual weekly alcohol consumption are presented in Table 4.1 by sex for adults aged 16 and over. These take into account the revised guidelines for all years. As outlined in Section 4.2.4, moderate weekly alcohol consumption is now defined as no more than 14 units for both men and women, with those exceeding this amount classified as hazardous or harmful drinkers.

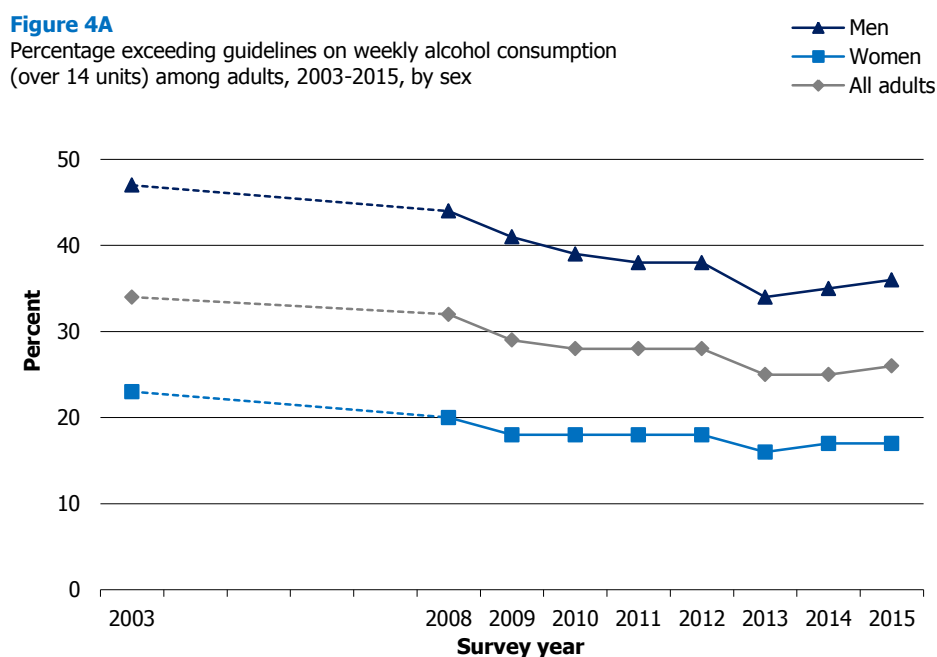
As shown in Figure 4A and Table 4.1, reported hazardous or harmful drinking declined significantly for adults aged 16 and over from 2003 (34%) to 2013 (25%) but has stayed at similar levels since (26% in 2015). Hazardous or harmful drinking levels were more than twice as high for men (36%) as for women (17%) in 2015, with this having been the case in each survey year from 2003 onwards. The trend for men showed a significant decline from 47% in 2003 to 34% in 2013 and then remained at a similar level in 2014 and 2015 (35% and 36%

respectively), with the trend for women following a similar pattern (23% in 2003, 16% in 2013, 17% in 2015).

Prevalence of non-drinking for adults aged 16 and over increased significantly from 11% in 2003 to 16% in 2013, remaining at this level since. Significant increases over this period were seen for both men and women. For men, the proportion saying they did not drink alcohol rose from 8% in 2003 to 14% in 2014 and 2015. In total, 13% of women reported being non-drinkers in both 2003 and 2008, rising to 18-20% from 2013 to 2015 (18% in 2015).

The estimated mean number of units of alcohol consumed per week for adult drinkers aged 16 and over fell from 16.1 units in 2003 to 12.2 in 2013 and has subsequently stayed at similar levels (12.9 in 2015). Comparable trends were seen for both men and women. The mean number of units declined for male drinkers from 21.8 units in 2003 to 15.7 in 2013 and was at a similar level (17.2) in 2015. Women’s consumption decreased from 10.6 units per week in 2003 to 8.6 in 2013 and has remained relatively static since (8.7 in 2015).

**Figure 4A, Table 4.1**



### 4.3.2 Trends in alcohol consumption on the heaviest drinking day in last week

The estimates for the mean units consumed on the heaviest drinking day, the proportions of the population drinking more than three units (women) or four units (men), and the proportions drinking more than six units (women) or eight units men on a single day in the week prior to interview are presented separately for men, women and all adults aged 16 and over in the years 2003 to 2015 in Table 4.2.

The proportion of all adults aged 16 and over drinking more than three units (women) or four units (men) on their heaviest drinking day

declined from 41% in 2003 to 35% in 2013 and has maintained approximately this level in 2015 (36%). Similar patterns were seen by sex. For men, the proportion drinking more than four units on their heaviest drinking day declined from 45% in 2003 to 40% in 2013 and is currently at 41% in 2015. For women, the proportion drinking more than three units on their heaviest drinking day decreased from 37% in 2003 to 30% in 2012 before stabilising (32% in 2015).

Drinking more than eight units for men and six units for women on the heaviest drinking day fell from 24% in 2003 to 19% in 2013 and has been at 20% in the two subsequent survey years of 2014 and 2015. Again, figures for men and women showed similar patterns of long-term decline although with relatively stable figures in the most recent years. For men, prevalence was 29% in 2003 before declining to 24% in 2014 (26% in 2015). For women, there was a decline from 19% in 2003 to 15% in both 2012 and 2013 and was at 14% in 2015.

The mean unit alcohol consumption on the heaviest drinking day of those who had consumed alcohol in the previous week declined from 7.7 units in 2003 to 6.9 in 2013. The 2015 figure of 7.2 units was not significantly different from either the 2003 or 2013 figures. Similar patterns were seen for both men and women. There was a significant decline for men who had consumed alcohol during the previous week from a mean of 9.0 units on the heaviest drinking day in 2003 to 8.0 in 2013, with a figure of 8.6 units in 2015 that was not significantly different from either of these. For women, the mean number of units of alcohol consumed on the heaviest drinking day fell from 6.2 units in 2003 to 5.6 in 2012 and 2013, with a figure of 5.7 units in 2015.

**Table 4.2**

#### **4.3.3 Number of days alcohol was consumed in the past week**

Table 4.3 presents the reported number of days on which adult drinkers (men and women aged 16 and over) consumed alcohol during the week prior to interview for the period 2003 through to 2015. The mean number of drinking days in the past week dropped steadily over time for all adult drinkers from 3.0 days in 2003 to 2.6 in 2013, 2014 and 2015. Numbers fell overall for both men and women but there were distinct patterns: among male drinkers there was a steady decline from 3.3 days in 2003 to 2.8 in 2011, after which time the number generally plateaued (2.8 in 2015). For female drinkers, on the other hand, there was a steadier decline over time from 2.7 days in 2003 to 2.3 in 2015.

The prevalence of drinking alcohol on more than five days in the past week among adult drinkers fell from 17% in 2003 to 11% in 2009 and was also 11% in 2015. This pattern was similar for both sexes, with a fall for men from 20% in 2003 to 14% in both 2009 and 2015. For women, the proportion fell from 13% in 2003 to 9% in 2009 and was at a similar level (8%) in 2015.

**Table 4.3**

## 4.4 ALCOHOL CONSUMPTION IN 2015

### 4.4.1 Weekly alcohol consumption

Self-reported usual weekly alcohol consumption in 2015 is shown by age and sex for adults aged 16 and over in Table 4.4. Figures are shown for mean weekly consumption in units, as well as percentage breakdowns of moderate and hazardous or harmful consumption levels (revised guidelines as defined in Section 4.2.4) and non-drinkers.

Alcohol consumption differed significantly by age in 2015. Among all adult drinkers, the mean units per week was highest for those aged 16-24 and those aged 55-64 (14.7 and 14.9 units respectively) and lowest for those aged 75 and over (8.3). The lowest consumption for both male and female drinkers was among those aged 75 and over (11.6 units for men, 5.4 for women), with the highest levels for men being among those aged 55-64 (20.6 units) and for women among those aged 16-24 (10.8).

The hazardous or harmful drinking prevalence in men was more than twice that of women (36% compared with 17%), with levels for men compared to women within each age group also around twice as high. The prevalence of moderate drinking (i.e. within the recommended weekly limit of 14 units) was between 13 and 24 percentage points lower for men than for women in each age group, with the exception of those aged 75 and older where there was only a 1 percentage point gap (54% for men compared with 55% for women).

Overall, women were significantly more likely than men to report being non-drinkers (18% compared with 14%) in 2015. Prevalence of non-drinkers was higher among those aged 65 and over than those aged 16-64, both for men (17-24% compared with 10-13%) and women (25-38% compared with 7-17%).

**Table 4.4**

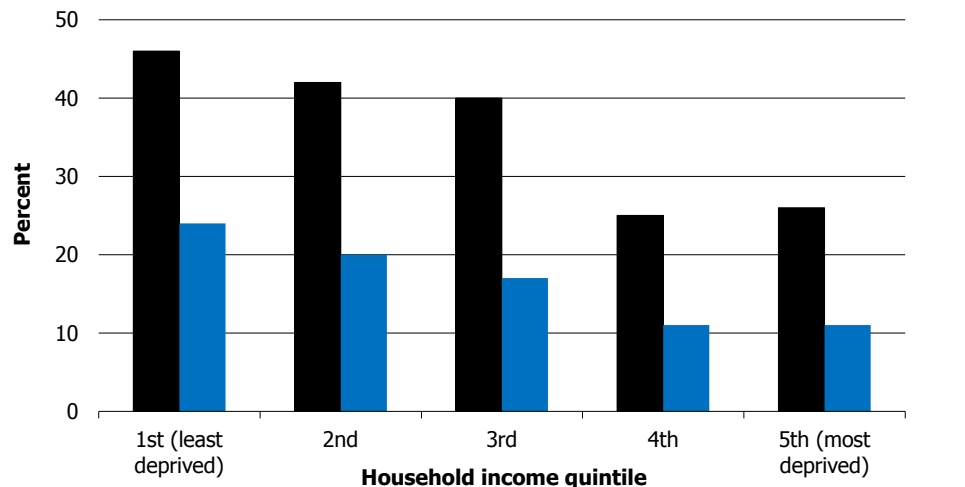
### 4.4.2 Weekly alcohol consumption, by household income

The age-standardised estimates for usual weekly alcohol consumption levels (according to the revised guidelines) are given by household income for 2015 in Figures 4B, 4C, and 4D and Table 4.5 (see section 4.2.3 for more information on age-standardisation).

For both men and women, there was a clear association between household income and the propensity to exceed the recommended limit of 14 units per week and thus be classified as a hazardous / harmful drinker (revised guidelines). Among women the age-standardised prevalence of hazardous / harmful drinking declined gradually from 24% of those in the highest income quintile drinking at hazardous / harmful levels to 11% of those in the two lowest income quintiles. For men, levels of hazardous / harmful drinking were similar among the three quintiles with the highest income (40-46%) with a significantly lower level among the two lowest income quintiles (25% and 26%).

**Figure 4B, Table 4.5**

**Figure 4B** Prevalence of hazardous / harmful alcohol consumption (age-standardised) (revised guidelines), 2015, by household income



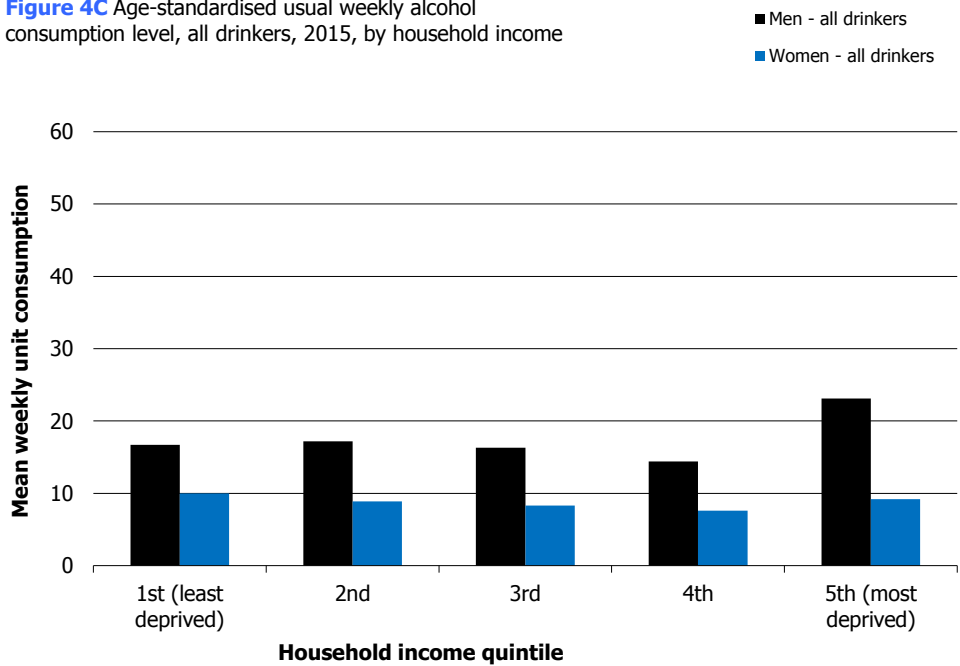
Age-standardised non-drinking prevalence had a clear association with household income in 2015. The age-standardised prevalence of non-drinking was consistently lower with higher household income, for both men (ranging from 3% non-drinkers in the highest income quintile to 28% in the lowest income quintile) and women (10% and 27% respectively).

Age-standardised mean self-reported levels of weekly alcohol consumption among male drinkers in 2015 were significantly higher in the lowest income quintile (a mean of 23.1 units per week) than in the other four income quintiles (mean levels between 14.4 and 17.2 units per week). Among female drinkers, there was no clear association between consumption and household income, with consumption at between 7.6 and 10.0 units per week across all five income quintiles.

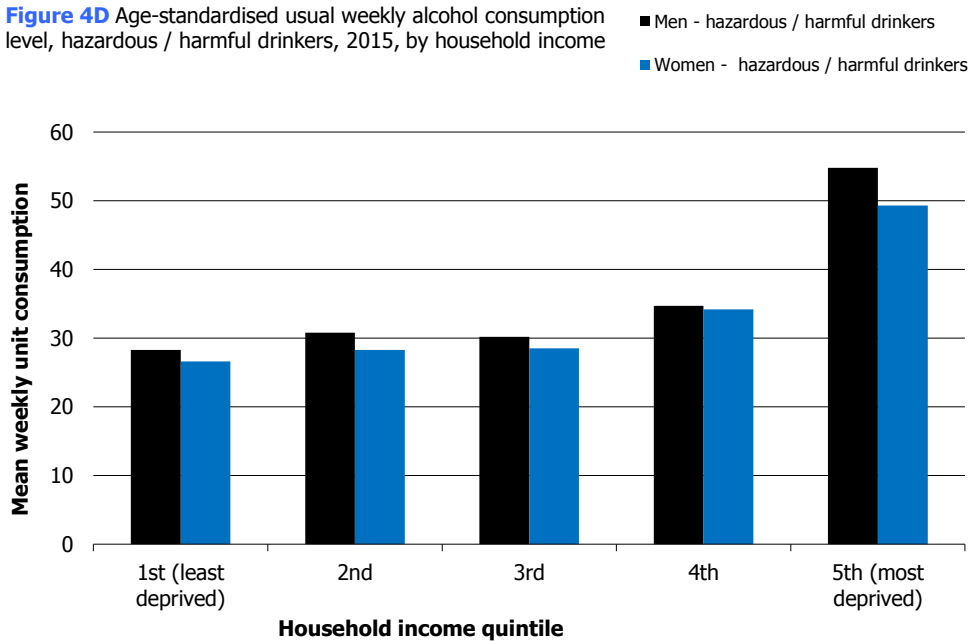
The equivalent figures for hazardous and harmful drinkers only show a much clearer pattern of high consumption among some drinkers in the lower income bands. Among male hazardous or harmful drinkers (those who consumed more than 14 units per week), mean levels of consumption were 54.8 units per week in the lowest income quintile, compared with 28.3 to 34.7 units per week in the other income quintiles. Female hazardous or harmful drinkers in the lowest two income quintiles consumed a mean of 33.3 to 39.1 units, compared with 22.9 to 24.4 in the top three quintiles. While these differences were statistically significant, the figures on prevalence of hazardous and harmful drinking in the lower income quintiles demonstrate that such levels of consumption, particularly among women in the lower income bands, are not common.

**Figure 4C, Figure 4D, Table 4.5**

**Figure 4C** Age-standardised usual weekly alcohol consumption level, all drinkers, 2015, by household income



**Figure 4D** Age-standardised usual weekly alcohol consumption level, hazardous / harmful drinkers, 2015, by household income



#### 4.4.3 Alcohol consumption on the heaviest drinking day in last week

Table 4.6 shows reported alcohol consumption on the heaviest drinking day during the week prior to interview in 2015, by age and sex. Figures are shown for mean units consumed, as well as the percentage consuming more than three units (women) or four units (men) and the percentage consuming over six units (women) or eight units (men) on the heaviest drinking day.

As in previous survey years,<sup>33</sup> the proportion of men drinking more than four units (41%) was higher than the proportion of women drinking more than three units (32%). The proportion having at least double this



number of units was also higher among men (26%) than women (14%) both at a total level and among all age groups.

Generally, both exceeding three / four units and exceeding six / eight units were less common for the older age groups. More than three units (women) or four units (men) were consumed on the heaviest drinking day by 39-42% of those aged 16-64, with this being less prevalent for those aged 65-74 (27%) and 75 and over (10%). A similar pattern was seen for those drinking in excess of six (women) and eight (men) units, declining from 18-28% for those aged 16-64 to 10% for those aged 65-74 and 2% for those aged 75 and older. Similar patterns were seen for both men and women.

Male drinkers drank significantly more units of alcohol on their heaviest drinking day than female drinkers (8.6 and 5.7 units on average respectively) in 2015, with higher levels seen for men than women among each individual age group. Average units consumed tended to decline with age for both sexes. The mean number of units consumed on the heaviest drinking day was 12.6 units for male drinkers aged 16-24 compared with 3.5 units for male drinkers aged 75 and over, with the corresponding figures for female drinkers being 8.8 and 2.6 units, respectively.

**Table 4.6**

#### **4.4.4 Number of days alcohol was consumed in past week**

Data on the reported number of days on which drinkers consumed alcohol in the week prior to interview in 2015 are presented by age and sex in Table 4.7. As reported for previous surveys<sup>33</sup>, in 2015 male drinkers consumed alcohol on more days per week than female drinkers (2.8 days compared with 2.3 days). The mean number of drinking days in the past week was higher with older age: from 2.2 days for male drinkers aged 16-24 to 3.9 for those aged 75 and over, with the figures for women being 1.7 and 3.4 days respectively. The average number of days that alcohol was consumed was between 0.4 and 0.7 days higher for men than women for each age group.

Male drinkers had a significantly higher prevalence of drinking alcohol on more than five days in the past week than female drinkers (14% and 8% respectively) in 2015. Drinking on five days or more increased from 3% for drinkers aged 16-24 to 32% for those aged 75 and over, with similar patterns seen both for men (3% to 37% respectively) and women (2% to 26% respectively).

As in previous years<sup>33</sup>, in 2015, those aged 75 and over had the highest number of days on which alcohol was consumed in the past week and the lowest weekly consumption levels. In combination, the data suggest that younger drinkers tend to consume a greater volume of alcohol in fewer drinking sessions, while older drinkers consume less at one time but with greater frequency.

**Table 4.7**

**4.5 PROBLEM DRINKING IN 2014/2015 (COMBINED)**

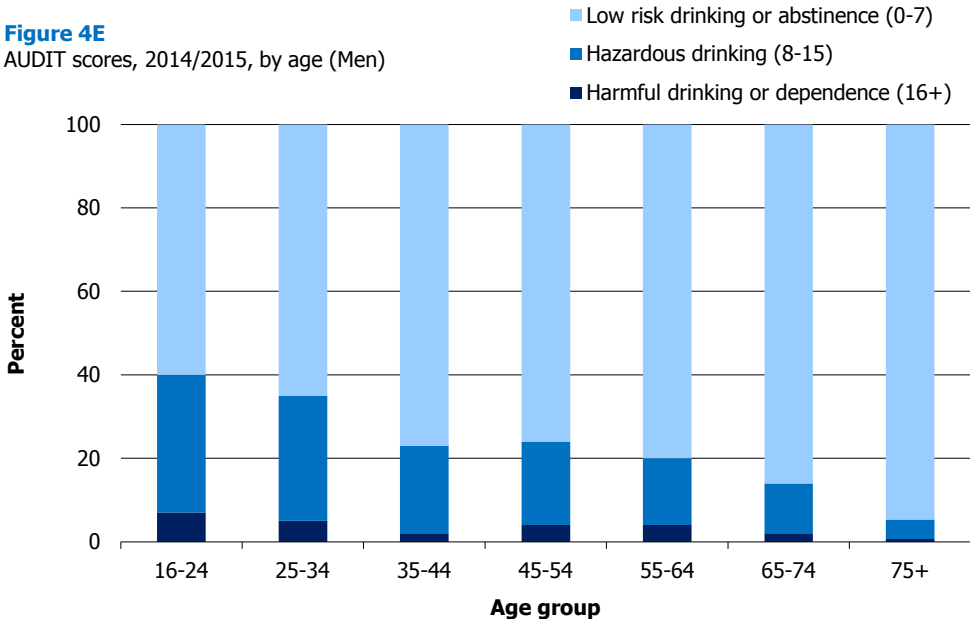
Table 4.8 presents AUDIT scores by age (16 and over) and sex based on data from the 2014 and 2015 surveys combined. As well as volume of alcohol consumption-based categorisation, scores calculated from responses to the AUDIT questionnaire can also be used to determine hazardous and harmful drinking behaviour (see Section 4.2.4 for further details).

Among all adults, 82% drank at a low risk level or were abstinent (AUDIT score of 0-7), 15% drank at hazardous levels (AUDIT score of 8-15), 2% at harmful levels (AUDIT score of 16-19) and 1% had possible alcohol dependence (AUDIT score of 20 or more). Women were significantly more likely to drink at a low risk level or be abstinent than men (88% compared with 75%) and less likely to drink at hazardous levels (10% compared with 21%), harmful levels (1% compared with 2%) or to have possible alcohol dependency (also 1% compared with 2%) according to their AUDIT scores.

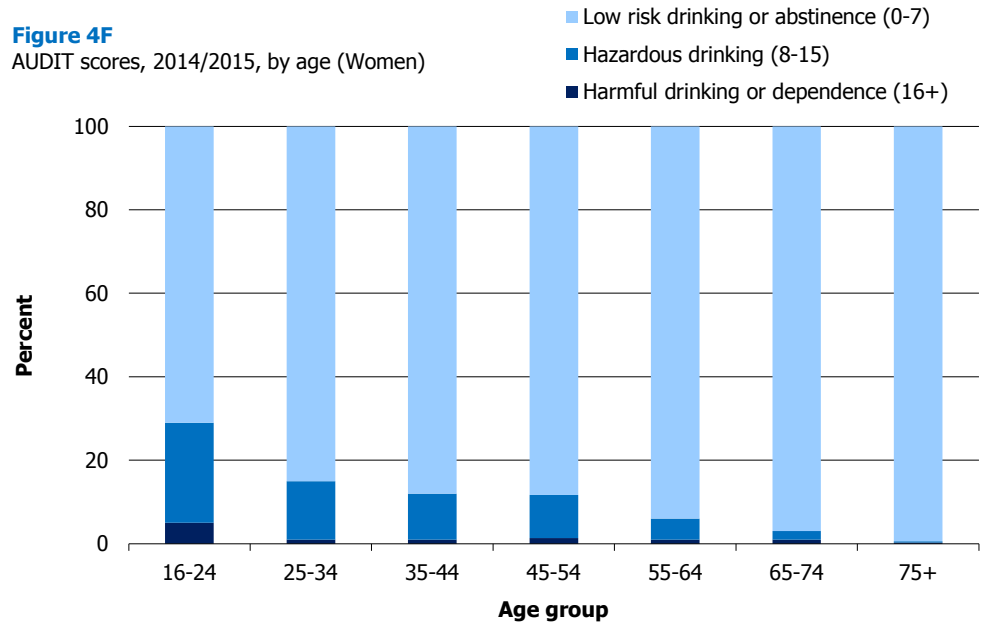
Drinking at low risk levels or abstinence increased with age from 65% for those aged 16-24 to 98% for those aged 75 and over, with levels of hazardous drinking decreasing from (28% to 2% across the same age groups). Harmful drinking and possible alcohol dependence prevalence also decreased with age from those aged 16-24 (4% and 2% respectively) to those aged 75 and over (0% for both).

AUDIT scores varied significantly by age for both men and women (Figures 4D and 4E) in 2014/2015. For men, the proportion classified as either abstinent or low-risk drinkers was 60% of those aged 16-24 compared with 95% of those aged 75 and over. The equivalent figures for women were 71% and 99% respectively. Prevalence of harmful or possibly dependent drinking behaviour (an AUDIT score of 16 or above) was highest for men aged 16-24 (7%) and was lower for those who were oldest (1% for those aged 75 and over). A similar pattern was seen for women, with equivalent figures of 5% and 0% respectively.

**Figure 4ED, Figure 4EF, Table 4.8**



**Figure 4F**  
AUDIT scores, 2014/2015, by age (Women)



## References and notes

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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.

29 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.

30 These are commonly used definitions across the UK – see, for example, the MESAS final annual report: [www.healthscotland.com/uploads/documents/26884-MESAS\\_Final%20annual%20report.pdf](http://www.healthscotland.com/uploads/documents/26884-MESAS_Final%20annual%20report.pdf)

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32 **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

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## Table list

Table 4.1	Estimated usual weekly alcohol consumption level (revised guidelines), 2003 to 2015
Table 4.2	Estimated units consumed on heaviest drinking day, 2003 to 2015
Table 4.3	Number of days on which drank alcohol in the past week, 2003 to 2015
Table 4.4	Estimated usual weekly alcohol consumption level (revised guidelines), 2015, by age and sex
Table 4.5	Estimated usual weekly alcohol consumption level (revised guidelines), age-standardised, 2015, by household income
Table 4.6	Units consumed on heaviest drinking day, 2015, by age and sex
Table 4.7	Number of days on which drank alcohol in the past week, 2015, by age and sex
Table 4.8	AUDIT scores, 2014/2015 combined, by age and sex

**Table 4.1 Estimated usual weekly alcohol consumption level (revised guidelines), 2003 to 2015**

*Aged 16 and over*

*2003 to 2015*

<b>Alcohol units per week<sup>a</sup></b>	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%
<b>Men</b>									
<b>Estimated usual weekly alcohol consumption level<sup>b</sup></b>									
Non-drinker	8	10	10	12	11	12	12	14	14
Moderate	45	45	49	48	51	50	53	51	51
Hazardous / Harmful	47	44	41	39	38	38	34	35	36
Mean units per week <sup>c</sup>	21.8	20.3	19.7	18.4	17.0	17.5	15.7	15.9	17.2
SE of the mean	0.66	0.61	0.84	0.55	0.45	0.67	0.52	0.48	0.69
<b>Women</b>									
<b>Estimated usual weekly alcohol consumption level<sup>b</sup></b>									
Non-drinker	13	13	16	17	17	17	20	18	18
Moderate	64	67	66	65	65	65	64	65	66
Hazardous / Harmful	23	20	18	18	18	18	16	17	17
Mean units per week <sup>c</sup>	10.6	10.1	9.4	9.2	9.1	9.3	8.6	9.0	8.7
SE of the mean	0.35	0.38	0.28	0.27	0.27	0.39	0.30	0.39	0.30
<b>All adults</b>									
<b>Estimated usual weekly alcohol consumption level<sup>b</sup></b>									
Non-drinker	11	12	13	15	14	15	16	16	16
Moderate	55	57	58	57	58	57	59	59	58
Hazardous / Harmful	34	32	29	28	28	28	25	25	26
Mean units per week <sup>c</sup>	16.1	15.0	14.5	13.7	13.1	13.3	12.2	12.4	12.9
SE of the mean	0.39	0.38	0.47	0.33	0.30	0.40	0.33	0.35	0.39
<i>Bases (weighted):</i>									
<i>Men</i>	3791	3011	3572	3388	3551	2253	2303	2171	2350
<i>Male drinkers</i>	3437	2673	3168	2953	3131	1963	2005	1844	2003
<i>Women</i>	4215	3317	3906	3711	3874	2464	2501	2389	2564
<i>Female drinkers</i>	3578	2831	3241	3047	3164	2022	1963	1951	2077
<i>All adults</i>	8006	6329	7478	7098	7425	4717	4805	4560	4914
<i>All drinkers</i>	7015	5504	6409	6000	6294	3985	3968	3795	4080
<i>Bases (unweighted):</i>									
<i>Men</i>	3558	2796	3272	3064	3239	2095	2108	2028	2212
<i>Male drinkers</i>	3218	2463	2876	2654	2842	1794	1815	1737	1856
<i>Women</i>	4482	3578	4227	4076	4220	2657	2724	2564	2723
<i>Female drinkers</i>	3791	3033	3481	3297	3415	2153	2144	2063	2156
<i>All adults</i>	8040	6374	7499	7140	7459	4752	4832	4592	4935
<i>All drinkers</i>	7009	5496	6357	5951	6257	3947	3959	3800	4012

a Figures for the years 2003 to 2014 have been revised due to a minor error in the way in which sherry consumed by 16-19 year olds was included. Most figures remain unchanged

b Non-drinker: no units per week; Moderate: >0 units and up to 14 units; Hazardous / harmful: more than 14 units. Figures for men for the years 2003 to 2014 have been revised in line with this definition

c Those who had consumed alcohol in the past year



**Table 4.2 Estimated units consumed on heaviest drinking day, 2003 to 2015**

<i>Aged 16 and over</i>		<i>2003 to 2015</i>							
<b>Alcohol units per day</b>	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%
<b>Men</b>									
<b>Units consumed on heaviest drinking day (HDD)</b>									
Consumed over 4 units on HDD	45	44	44	43	41	42	40	41	41
Consumed over 8 units on HDD	29	27	26	26	25	25	25	24	26
Mean units on HDD <sup>a</sup>	9.0	8.9	8.5	9.0	8.3	8.3	8.0	8.5	8.6
SE of the mean	0.21	0.25	0.21	0.27	0.20	0.27	0.26	0.27	0.29
<b>Women</b>									
<b>Units consumed on heaviest drinking day (HDD)</b>									
Consumed over 3 units on HDD	37	36	34	33	34	30	31	33	32
Consumed over 6 units on HDD	19	18	17	16	17	15	15	16	14
Mean units on HDD <sup>a</sup>	6.2	6.0	5.7	5.7	5.8	5.6	5.6	5.8	5.7
SE of the mean	0.14	0.21	0.14	0.14	0.12	0.16	0.15	0.23	0.26
<b>All adults</b>									
<b>Units consumed on heaviest drinking day (HDD)</b>									
Consumed over 3 / 4 units on HDD	41	40	39	38	37	36	35	37	36
Consumed over 6 / 8 units on HDD	24	22	21	21	20	20	19	20	20
Mean units on HDD <sup>a</sup>	7.7	7.6	7.2	7.4	7.1	7.1	6.9	7.2	7.2
SE of the mean	0.14	0.17	0.15	0.17	0.13	0.18	0.17	0.19	0.22
<i>Bases (weighted):</i>									
<i>Men</i>	3819	3015	3521	3386	3549	2264	2270	2137	2299
<i>Male drinkers</i>	2742	2093	2453	2259	2362	1522	1474	1366	1462
<i>Women</i>	4254	3320	3865	3710	3860	2460	2498	2379	2541
<i>Female drinkers</i>	2453	1915	2152	2022	2096	1251	1248	1265	1329
<i>All adults</i>	8073	6335	7385	7096	7409	4724	4768	4517	4841
<i>All drinkers</i>	5194	4008	4605	4281	4459	2773	2722	2630	2791
<i>Bases (unweighted):</i>									
<i>Men</i>	3580	2801	3244	3066	3242	2104	2082	2001	2170
<i>Male drinkers</i>	2576	1922	2242	2025	2150	1389	1342	1290	1362
<i>Women</i>	4507	3579	4202	4083	4217	2659	2721	2552	2706
<i>Female drinkers</i>	2596	2021	2317	2168	2222	1339	1329	1327	1376
<i>All adults</i>	8087	6380	7446	7149	7459	4763	4803	4553	4876
<i>All drinkers</i>	5172	3943	4559	4193	4372	2728	2671	2617	2738

a Those who had consumed alcohol in the past week

**Table 4.3 Number of days on which drank alcohol in the past week, 2003 to 2015**

*Aged 16 and over and drank alcohol in past week*

*2003 to 2015*

<b>% who drank on &gt;5 days / mean number of days drank alcohol in last week<sup>a</sup></b>	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%
<b>Men</b>									
<b>Number of days on which drank alcohol in the past week<sup>a</sup></b>									
Drank on >5 days	20	17	14	15	13	13	12	11	14
Mean number of days	3.3	3.1	2.9	2.9	2.8	2.8	2.8	2.7	2.8
SE of the mean	0.05	0.05	0.04	0.05	0.05	0.06	0.06	0.06	0.06
<b>Women</b>									
<b>Number of days on which drank alcohol in the past week<sup>a</sup></b>									
Drank on >5 days	13	10	9	10	10	10	9	8	8
Mean number of days	2.7	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.3
SE of the mean	0.05	0.05	0.04	0.04	0.05	0.06	0.05	0.05	0.05
<b>All adults</b>									
<b>Number of days on which drank alcohol in the past week<sup>a</sup></b>									
Drank on >5 days	17	14	11	13	12	12	11	10	11
Mean number of days	3.0	2.8	2.7	2.7	2.7	2.7	2.6	2.6	2.6
SE of the mean	0.04	0.04	0.03	0.04	0.04	0.05	0.04	0.05	0.05
<i>Bases (weighted):</i>									
<i>Men</i>	2762	2160	2497	2307	2406	1551	1538	1437	1537
<i>Women</i>	2472	1953	2199	2070	2152	1283	1285	1301	1370
<i>All adults</i>	5234	4113	4696	4377	4557	2834	2823	2738	2907
<i>Bases (unweighted):</i>									
<i>Men</i>	2590	1967	2266	2057	2174	1405	1392	1346	1421
<i>Women</i>	2609	2053	2346	2200	2256	1361	1354	1360	1410
<i>All adults</i>	5199	4020	4612	4257	4430	2766	2746	2706	2831

<sup>a</sup> Of those who drank alcohol in the last week

**Table 4.4 Estimated usual weekly alcohol consumption level (revised guidelines), 2015, by age and sex**

*Aged 16 and over*

2015

Alcohol units per week	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
<b>Estimated usual weekly alcohol consumption level<sup>a</sup></b>								
Non-drinker	13	10	12	11	13	17	24	14
Moderate	49	55	55	50	45	46	54	51
Hazardous / Harmful	38	35	33	39	41	37	22	36
Mean units per week <sup>b</sup>	18.9	17.9	14.6	16.3	20.6	17.8	11.6	17.2
SE of the mean	3.13	1.94	1.10	1.31	1.48	1.31	0.97	0.69
<b>Women</b>								
<b>Estimated usual weekly alcohol consumption level<sup>a</sup></b>								
Non-drinker	7	17	15	13	16	25	38	18
Moderate	73	68	70	67	64	59	55	66
Hazardous / Harmful	20	15	15	20	20	17	7	17
Mean units per week <sup>b</sup>	10.8	8.1	8.0	9.5	9.3	8.6	5.4	8.7
SE of the mean	1.45	0.67	0.58	0.60	0.71	0.70	0.57	0.30
<b>All adults</b>								
<b>Estimated usual weekly alcohol consumption level<sup>a</sup></b>								
Non-drinker	10	14	14	12	15	21	32	16
Moderate	61	62	63	59	55	53	55	58
Hazardous / Harmful	29	24	23	29	30	26	13	26
Mean units per week <sup>b</sup>	14.7	13.1	11.2	12.8	14.9	13.1	8.3	12.9
SE of the mean	1.67	1.14	0.67	0.72	0.87	0.81	0.61	0.39

*Continued...*

**Table 4.4 - Continued**

*Aged 16 and over*

2015

Alcohol units per week	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
<i>Bases (weighted):</i>								
<i>Men</i>	311	379	367	442	375	286	190	2350
<i>Male drinkers</i>	268	331	317	388	322	233	145	2003
<i>Women</i>	308	403	396	471	392	321	272	2564
<i>Female drinkers</i>	285	327	329	406	324	238	167	2077
<i>All adults</i>	620	782	762	913	767	607	463	4914
<i>All drinkers</i>	552	658	646	794	647	471	312	4080
<i>Bases (unweighted):</i>								
<i>Men</i>	179	237	309	401	409	397	280	2212
<i>Male drinkers</i>	156	206	265	351	345	323	210	1856
<i>Women</i>	195	345	390	486	487	461	359	2723
<i>Female drinkers</i>	177	279	322	418	400	342	218	2156
<i>All adults</i>	374	582	699	887	896	858	639	4935
<i>All drinkers</i>	333	485	587	769	745	665	428	4012

a Non-drinker: no units per week; Moderate: >0 units and up to 14 units; Hazardous / harmful: more than 14 units

b Those who had consumed alcohol in the past year

**Table 4.5 Estimated usual weekly alcohol consumption level (revised guidelines), age-standardised, 2015, by household income**

<i>Aged 16 and over</i>		<i>2015</i>				
<b>Alcohol units per week</b>	1st (highest income)	2nd	3rd	4th	5th (lowest income)	
	%	%	%	%	%	
<b>Men</b>						
<b>Estimated usual weekly alcohol consumption level<sup>a</sup></b>						
Non-drinker	3	6	10	20	28	
Moderate	50	52	50	55	46	
Hazardous / Harmful	46	42	40	25	26	
Mean units per week (drinkers) <sup>b</sup>	16.7	17.2	16.3	14.4	23.1	
SE of the mean	0.85	1.04	1.19	1.81	2.91	
Mean units per week (hazardous / harmful drinkers) <sup>c</sup>	28.3	30.8	30.2	34.7	54.8	
SE of the mean	1.13	1.43	1.74	5.02	5.97	
<b>Women</b>						
<b>Estimated usual weekly alcohol consumption level<sup>a</sup></b>						
Non-drinker	10	11	16	22	27	
Moderate	66	69	67	67	61	
Hazardous / Harmful	24	20	17	11	11	
Mean units per week (drinkers) <sup>b</sup>	10.0	8.9	8.3	7.6	9.2	
SE of the mean	0.60	0.64	0.53	1.03	1.17	
Mean units per week (hazardous / harmful drinkers) <sup>c</sup>	23.3	22.9	24.4	[33.3]	[39.1]	
SE of the mean	1.16	1.54	1.32	[2.79]	[4.68]	

*Continued...*

**Table 4.5 - Continued**

*Aged 16 and over*

2015

<b>Alcohol units per week</b>	1st (highest income)	2nd	3rd	4th	5th (lowest income)
	%	%	%	%	%
<b>All adults</b>					
<b>Estimated usual weekly alcohol consumption level<sup>a</sup></b>					
Non-drinker	7	8	13	21	27
Moderate	58	60	59	62	54
Hazardous / Harmful	35	31	28	18	18
Mean units per week (drinkers) <sup>b</sup>	13.4	13.2	12.4	10.9	15.3
SE of the mean	0.61	0.66	0.70	1.06	1.51
Mean units per week (hazardous / harmful drinkers) <sup>c</sup>	26.6	28.3	28.5	34.2	49.3
SE of the mean	0.94	1.08	1.34	3.42	4.24
<i>Bases (weighted):</i>					
<i>Men</i>	446	435	427	327	325
<i>Male drinkers</i>	425	407	377	261	227
<i>Male hazardous / harmful drinkers</i>	206	185	171	81	85
<i>Women</i>	448	428	447	372	398
<i>Female drinkers</i>	398	376	364	286	289
<i>Female hazardous / harmful drinkers</i>	105	86	74	42	45
<i>All adults</i>	894	863	874	698	723
<i>All drinkers</i>	824	783	742	548	516
<i>All hazardous / harmful drinkers</i>	311	272	245	123	131
<i>Bases (unweighted):</i>					
<i>Men</i>	404	397	410	321	322
<i>Male drinkers</i>	382	367	351	256	226
<i>Male hazardous / harmful drinkers</i>	182	168	154	87	86
<i>Women</i>	452	453	476	408	448
<i>Female drinkers</i>	410	400	380	303	311
<i>Female hazardous / harmful drinkers</i>	108	87	83	49	47
<i>All adults</i>	856	850	886	729	770
<i>All drinkers</i>	792	767	731	559	537
<i>All hazardous / harmful drinkers</i>	290	255	237	136	133

a Non-drinker: no units per week; Moderate: >0 units and up to 14 units; Hazardous / harmful: more than 14 units

b Those who had consumed alcohol in the past year

c Those who drank an average of more than 14 units per week over the past year

**Table 4.6 Units consumed on heaviest drinking day, 2015, by age and sex**

*Aged 16 and over*

2015

Alcohol units per day	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
<b>Units consumed on heaviest drinking day (HDD)</b>								
Consumed over 4 units on HDD	45	45	44	43	46	34	14	41
Consumed over 8 units on HDD	34	34	29	26	26	15	3	26
Mean units on HDD <sup>a</sup>	12.6	10.0	8.6	9.0	8.3	5.8	3.5	8.6
SE of the mean	1.29	0.64	0.55	0.62	0.43	0.30	0.21	0.29
<b>Women</b>								
<b>Units consumed on heaviest drinking day (HDD)</b>								
Consumed over 3 units on HDD	32	37	37	41	33	22	8	32
Consumed over 6 units on HDD	19	23	15	20	11	5	1	14
Mean units on HDD <sup>a</sup>	8.8	7.3	5.8	5.9	4.3	3.7	2.6	5.7
SE of the mean	1.76	0.51	0.32	0.27	0.19	0.19	0.16	0.26
<b>All adults</b>								
<b>Units consumed on heaviest drinking day (HDD)</b>								
Consumed over 3 / 4 units on HDD	39	41	41	42	39	27	10	36
Consumed over 6 / 8 units on HDD	27	28	22	23	18	10	2	20
Mean units on HDD <sup>a</sup>	10.8	8.7	7.3	7.5	6.4	4.9	3.0	7.2
SE of the mean	1.02	0.46	0.34	0.38	0.27	0.20	0.14	0.22

*Continued...*

**Table 4.6 - Continued***Aged 16 and over*

2015

Alcohol units per day	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
<i>Bases (weighted):</i>								
<i>Men</i>	314	354	360	431	365	285	190	2299
<i>Male drinkers</i>	178	229	241	285	243	186	100	1462
<i>Women</i>	303	397	389	468	389	321	273	2541
<i>Female drinkers</i>	151	208	211	288	229	154	89	1329
<i>All adults</i>	617	751	749	900	754	606	463	4841
<i>All drinkers</i>	329	437	452	573	471	340	189	2791
<i>Bases (unweighted):</i>								
<i>Men</i>	179	224	303	391	399	394	280	2170
<i>Male drinkers</i>	100	141	199	256	262	256	148	1362
<i>Women</i>	193	341	384	483	483	461	361	2706
<i>Female drinkers</i>	91	170	204	292	284	218	117	1376
<i>All adults</i>	372	565	687	874	882	855	641	4876
<i>All drinkers</i>	191	311	403	548	546	474	265	2738

a Those who had consumed alcohol in the past week



**Table 4.7 Number of days on which drank alcohol in the past week, 2015, by age and sex**

*Aged 16 and over and drank alcohol in past week*

2015

% who drank on >5 days / mean number of days drank alcohol in last week <sup>a</sup>	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
<b>Number of days on which drank alcohol in the past week<sup>a</sup></b>								
Drank on >5 days	3	9	10	13	15	25	37	14
Mean number of days	2.2	2.5	2.5	2.7	3.1	3.5	3.9	2.8
SE of the mean	0.16	0.18	0.14	0.14	0.13	0.16	0.20	0.06
<b>Women</b>								
<b>Number of days on which drank alcohol in the past week<sup>a</sup></b>								
Drank on >5 days	2	1	5	7	11	17	26	8
Mean number of days	1.7	1.8	2.1	2.3	2.6	3.0	3.4	2.3
SE of the mean	0.12	0.10	0.11	0.10	0.12	0.17	0.22	0.05
<b>All adults</b>								
<b>Number of days on which drank alcohol in the past week<sup>a</sup></b>								
Drank on >5 days	3	5	7	10	13	22	32	11
Mean number of days	2.0	2.2	2.3	2.5	2.9	3.3	3.7	2.6
SE of the mean	0.10	0.11	0.10	0.09	0.10	0.14	0.16	0.05
<i>Bases (weighted):</i>								
<i>Men</i>	190	255	250	299	253	189	100	1537
<i>Women</i>	169	216	219	290	233	154	89	1370
<i>All adults</i>	359	471	469	589	486	343	189	2907
<i>Bases (unweighted):</i>								
<i>Men</i>	107	156	207	269	273	261	148	1421
<i>Women</i>	102	177	212	295	289	218	117	1410
<i>All adults</i>	209	333	419	564	562	479	265	2831

a Of those who drank alcohol in the last week

**Table 4.8 AUDIT scores, 2014/2015 combined, by age and sex**

<i>Aged 16 and over</i>		<i>2014/2015 combined</i>						
AUDIT Score	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Low risk drinking or abstinence (0-7)	60	65	77	76	80	86	95	75
Hazardous drinking (8-15)	33	30	21	20	16	12	5	21
Harmful drinking (16-19)	4	4	1	2	2	1	0	2
Possible alcohol dependence (20+)	3	1	1	2	2	1	0	2
<i>Score of 8 or more</i>	40	35	23	24	20	14	5	25
<i>Score of 16 or more</i>	7	5	2	4	4	2	1	4
<b>Women</b>								
Low risk drinking or abstinence (0-7)	71	85	88	88	94	97	99	88
Hazardous drinking (8-15)	24	14	11	10	5	2	0	10
Harmful drinking (16-19)	4	1	0	1	0	0	0	1
Possible alcohol dependence (20+)	1	1	1	0	0	0	-	1
<i>Score of 8 or more</i>	29	15	12	12	6	3	1	12
<i>Score of 16 or more</i>	5	1	1	1	1	1	0	1
<b>All adults</b>								
Low risk drinking or abstinence (0-7)	65	75	82	82	87	92	98	82
Hazardous drinking (8-15)	28	22	16	15	10	7	2	15
Harmful drinking (16-19)	4	2	1	1	1	1	0	2
Possible alcohol dependence (20+)	2	1	1	1	1	1	0	1
<i>Score of 8 or more</i>	35	25	18	18	13	8	2	18
<i>Score of 16 or more</i>	6	3	2	2	2	1	0	3
<i>Bases (weighted):</i>								
<i>Men</i>	578	667	663	778	647	491	298	4122
<i>Women</i>	586	709	700	843	702	554	434	4529
<i>All adults</i>	1164	1376	1363	1622	1349	1045	732	8651
<i>Bases (unweighted):</i>								
<i>Men</i>	361	436	567	681	688	672	407	3812
<i>Women</i>	405	626	750	854	856	787	549	4827
<i>All adults</i>	766	1062	1317	1535	1544	1459	956	8639



## 5 SMOKING

*Lindsay Gray and Alastair H Leyland*

### SUMMARY

- **Self-reported smoking levels for adults in 2015 have decreased significantly from 28% in 2003 to 21% in 2015.**
- When adjusted for cotinine levels, prevalence among all adults for 2014/2015 was 25%.
- The mean number of cigarettes smoked per day by adults smokers decreased from 15.3 in 2003 to 12.6 in 2015.
- A significantly higher mean number of cigarettes were smoked by male smokers (13.9 per day) than female smokers (11.3).
- **Levels of current e-cigarette usage among adults increased significantly from 5% in 2014 to 7% in 2015.**
- Current e-cigarette usage was at comparable levels in 2015 for men (6%) and women (7%), but higher for those aged 25-64 (7-9%) than other age groups.
- Younger adults were much more likely to have ever tried e-cigarettes than older ones (22-26% of those aged 16-34, compared with 4-10% of those aged 65 and over).
- **There was a significant decrease from 2014 to 2015 in the proportion of children who were exposed to second-hand smoke in the home (11% to 6%).**
- There was also a significant decrease from 2014 to 2015 in the proportion of children who lived in accommodation where someone smoked inside (16% to 12%).
- The proportion of non-smokers aged 16 and over who said they'd been exposed to second-hand smoke in their own or other people's homes declined from 25% in 2003 to 12% in 2015 and was significantly higher in 2015 for women (14%) than men (11%).

### 5.1 INTRODUCTION

Nationally<sup>1</sup> and globally<sup>2</sup>, tobacco use is the leading cause of preventable poor health and premature mortality, each year killing around 6 million people and costing over half a trillion dollars worldwide<sup>3</sup>. In Scotland alone, tobacco use is associated with around 10,000 deaths (around a fifth of all deaths)<sup>4</sup>.

#### 5.1.1 Policy background

Several of the Scottish Government's National Indicators are relevant to smoking<sup>5</sup>. In addition to the specific indicator to reduce the proportion of adults who are current smokers (measured using SHeS data), there are more general related indicators on, for example, reducing premature mortality and reducing emergency admissions to hospital<sup>6</sup>.

The **Tobacco Control Strategy**<sup>7</sup> lays out the Scottish Government's vision to create a 'tobacco-free generation' (defined as 'a smoking

prevalence among the adult population of 5% or lower') by the year 2034. Actions arising from the strategy are structured around the themes of prevention, protection and cessation. Smoking cessation interventions, including pharmacotherapy, are among the most cost-effective health care interventions available<sup>8</sup>.

The Health (Tobacco, Nicotine etc. and Care) (Scotland) Bill was passed at Stage 3 in March 2016. The Bill introduces the following provisions:

- the introduction of a minimum age of 18 for the sale of Nicotine Vapour Products (NVPs).
- a prohibition on the sale of NVPs from vending machines.
- 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 ban on unauthorised sales of tobacco and NVPs by under 18s.
- the introduction of statutory smoke-free perimeters around buildings on NHS hospital sites.

The NHS Local Delivery Plan (LDP) Standards require NHS Boards to sustain and embed successful smoking quits at twelve weeks post quit, in the 40% most deprived SIMD areas (60% in the Island Boards)<sup>9</sup>.

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

Reliable data on smoking behaviour, cessation, 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 figures for prevalence of cigarette smoking (including adjustment for saliva cotinine), e-cigarette use and exposure to second-hand smoke.

From 2014, SHeS has gathered information on the use of e-cigarettes among the Scottish adult population, in response to their increased availability and high profile.

### **5.1.3 Comparability with other UK statistics**

The Health Survey for England, Health Survey for Northern Ireland and Welsh Health Survey 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 comparable<sup>10</sup>. Smoking prevalence estimates from the UK-wide Integrated Household Survey for Scotland, Wales, England and Northern Ireland have been deemed to be fully comparable.

## **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. At the interviewer's discretion those aged 18 and 19 could answer the questions either face to face or via the self-completion booklet.

### **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<sup>11,12</sup>.

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
- ex-smokers' previous smoking history
- exposure to second-hand smoke
- past smoking behaviour
- quit attempts and desire to give up smoking
- medical advice on giving up smoking
- NRT use
- e-cigarette use (including as part of a quit attempt)

While the self-completion questions were largely similar to those asked in the face to face interview, the self-completion questionnaire did exclude questions on: past smoking behaviour, desire to give up smoking and medical advice to stop smoking.

### **5.2.3 Definitions**

#### **Cigarette smoking status**

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. Smoking status categories reported here are:

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

### **Cotinine adjusted smoking status**

The saliva cotinine adjustment adjusts the original self-reported cigarette smoking levels by including those with cotinine levels in their saliva above 12ng/ml in saliva, with this indicating that the individual is using nicotine either from tobacco, e-cigarettes or NRT. For self-reported non-smokers this therefore indicates exposure beyond what would be expected from contact with second-hand cigarette smoke and hence suggests misreporting of smoking behaviour in the main interview. Those who stated that they used either e-cigarettes or NRT products but did not currently smoke were excluded from the calculation of smoking prevalence estimates in Table 5.3 (showing figures both adjusted for saliva cotinine and unadjusted). This is as it was not possible to tell whether any raised cotinine levels among this group were due to the e-cigarettes and NRT products alone, or additionally to unreported smoking.

### **Children's exposure to second-hand smoke**

Children's (age 0-15) exposure to second-hand smoke 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.

## **5.3 CIGARETTE SMOKING STATUS**

### **5.3.1 Trends in cigarette smoking status since 1995**

Table 5.1 presents, for 1995 to 2015, the breakdown by sex for each of the self-reported cigarette smoking status groups for all adults aged 16 and over and the mean number of cigarettes smoked daily by adult smokers. Due to changes to the age range of the sample, data are presented for all adults aged 16 and over since 2003 along with data for individuals aged 16-64 from 1995.

The current smoking level for all adults aged 16 and over dropped significantly from 28% in 2003 to 21% in 2015. There was no significant change in the most recent time periods, with current smoking prevalence at levels ranging from 21-22% from 2013 to 2015. Figures for adults aged 16-64 showed a significant decline in current smoking levels from 35% in 1995 to 31% in 2003, with there then being a further significant decline to 23% in 2015.

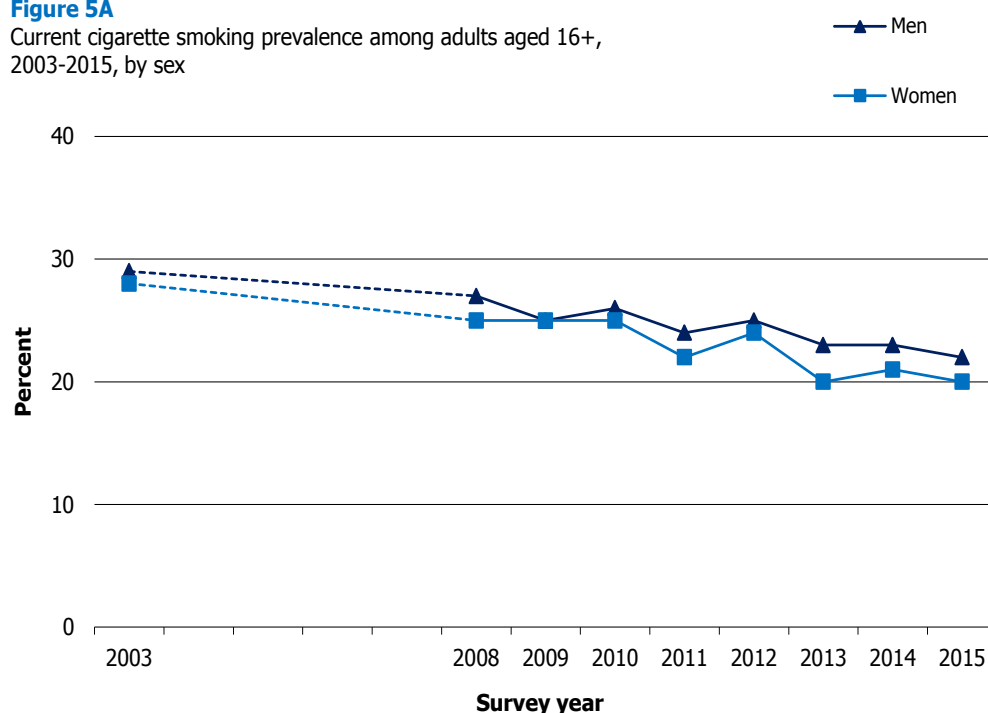
The proportion of adults aged 16 and over who had never smoked, or had never smoked regularly increased from 50% in 2003 to 55% in 2011; since then, the figures have remained almost static at 54-55% (54% in 2015). The proportion of all adults identifying as ex-regular smokers increased significantly between 2003 (22%) and 2015 (25%). The trends in adult smoking status were similar for men and women.

There was a significant decrease over time in the mean number of cigarettes smoked per day for current adult smokers aged 16 and over, from 15.3 cigarettes in 2003 to 12.6 cigarettes in 2015. Mean figures for adults aged 16-64 suggest that this trend began earlier, with a decrease from 16.7 cigarettes in 1995 to 15.3 in 2003, with a subsequent significant decrease taking this to 12.3 in 2015. The decrease for adults aged 16 and over was seen for both male smokers (15.9 cigarettes per day in 2003 to 13.9 in 2015) and female smokers (14.7 cigarettes and 11.3 respectively).

**Figure 5A, Table 5.1**

**Figure 5A**

Current cigarette smoking prevalence among adults aged 16+, 2003-2015, by sex



### 5.3.2 Cigarette smoking status in 2015

Figure 5B, Figure 5C and Table 5.2 show the data on self-reported cigarette smoking status for all adults aged 16 and over in 2015 by age and sex. Just over one in five (21%) adults reported that they were current smokers in 2015, with no significant difference between men (22%) and women (20%). The rest comprised of 25% adults who used to smoke regularly and 54% who reported that they had either never smoked at all, or used to smoke, but not regularly. Men were significantly more likely than women to be ex-regular smokers (27% compared with 23%) and less likely to be never/never regular smokers (51% compared with 57%).

There were clear differences in cigarette smoking status by age in 2015, as noted in previous Scottish Health Survey reports<sup>13</sup>. Self-reported current smoking prevalence in 2015 was highest among those aged 25-54 (24-26%), lower among those aged 16-24 (21%) and those aged 55-74 (15-21%) and lowest among those aged 75 and over (8%). Similar patterns were seen for both sexes, with both having lowest



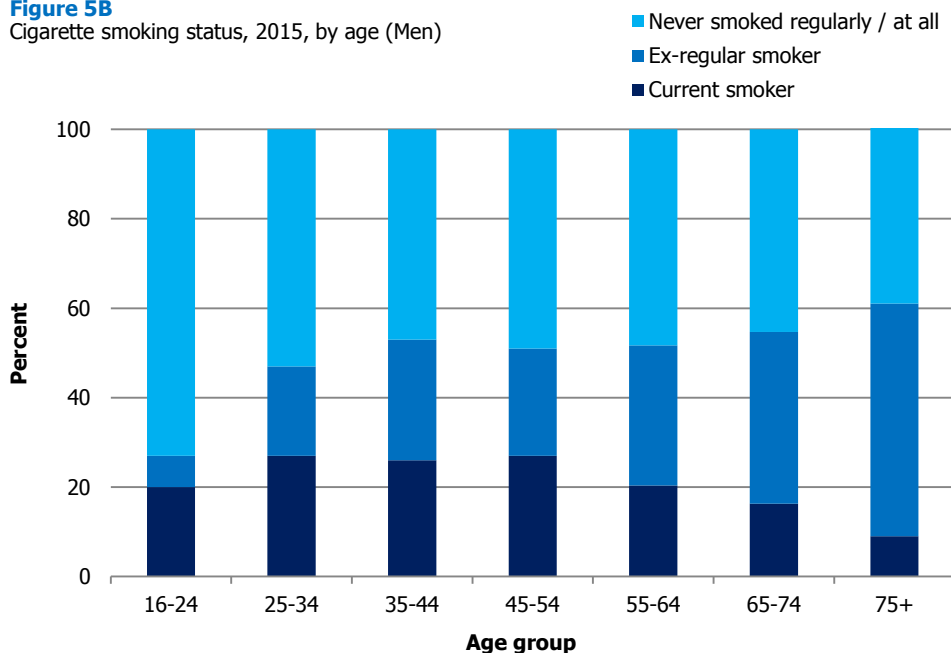
current smoking prevalence among those aged 75 and over (9% for men, 8% for women).

The proportion of people identifying as ex-regular smokers in 2015 was lowest for the youngest age group (6% for those aged 16-24) and highest for the older adults (37-40% for those aged 65 and over). The youngest age group were most likely to have never smoked or have never smoked regularly (73% for those aged 16-24 compared with 48-54% of those aged 25 and over). These patterns generally held for both men and women, although a significantly higher proportion of women aged 75 and over than men in the same age group had never smoked or never smoked regularly (59% compared with 40%) and a lower proportion were ex-regular smokers (33% compared with 52% respectively).

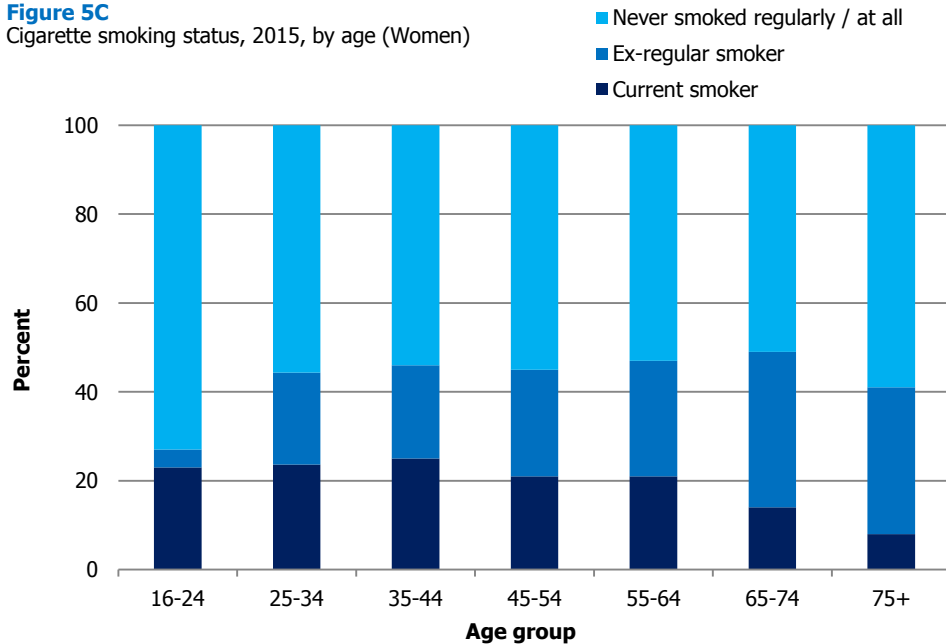
The mean number of cigarettes smoked per day per adult smoker in 2015 is also shown in Table 5.2. The overall mean for all adults in 2015 was 12.6 cigarettes, but levels were significantly higher for male (13.9 cigarettes) than female smokers (11.3 cigarettes). Younger smokers smoked the fewest cigarettes on average per day (10.5-11.4 cigarettes for smokers aged 16-44) with higher average numbers for those aged 45-74 (between 13.8 and 15.5 cigarettes). The pattern of numbers of cigarettes consumed across age groups was similar for male and female smokers.

**Figure 5B, Figure 5C, Table 5.2**

**Figure 5B**  
Cigarette smoking status, 2015, by age (Men)



**Figure 5C**  
Cigarette smoking status, 2015, by age (Women)



### 5.3.3 Cotinine-adjusted cigarette smoking status in 2014/2015 (combined)

The calculation of cotinine-adjusted cigarette smoking status is discussed in Section 5.2.3. As the sample for this section (the sub-sample of participants who participated in the biological module and provided a valid saliva sample) is reduced relative to the entire survey sample, the figures presented here are based on data from both the 2014 and 2015 surveys combined and, as a result, differ to those presented in Table 5.2.

For both men and women aged 16 and over in 2014/2015, just over a fifth (22%) self-reported as current cigarette smokers. When adjusted for cotinine levels, prevalence rose to 25% for all adults (26% for men and 24% for women). The gap of three percentage points at a total level (four percentage points for men and two percentage points for women) between self-reported smoking status and the cotinine-adjusted smoking prevalence is consistent with previously reported SHeS findings (gaps of four, five and three percentage points respectively in 2012/2013)<sup>14</sup>.

**Table 5.3**

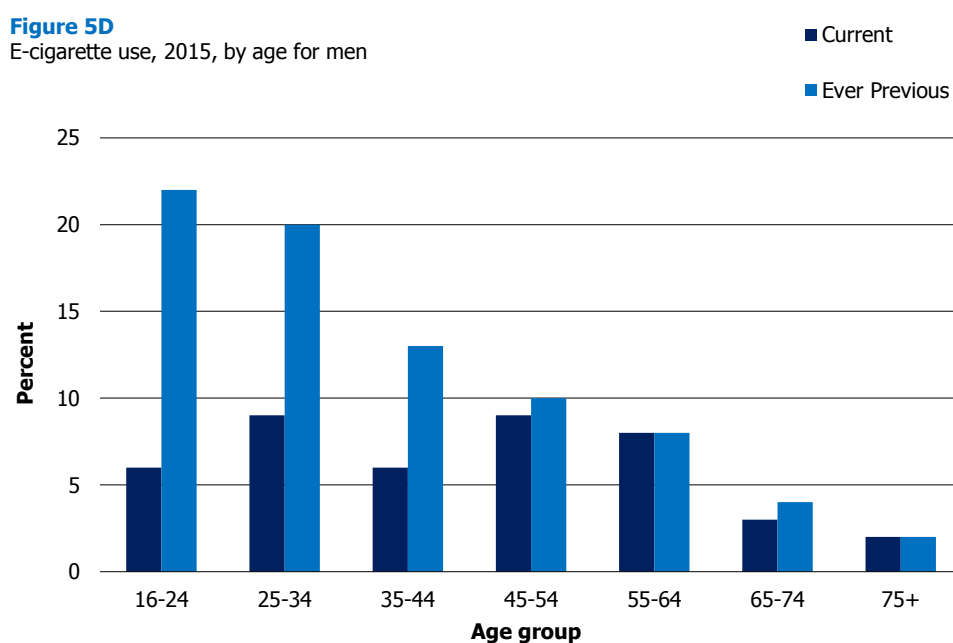
## 5.4 E-CIGARETTE USE

Figure 5D, Figure 5E and Table 5.4 show data on use of e-cigarettes among adults aged 16 and over separately for 2014 and 2015, by age and sex. In 2015, 7% of adults aged 16 and over were currently using e-cigarettes with a further 11% having previously used them and 83% never having used them. There was a significant increase from 2014 in the proportion of current users (7% in 2015 compared with 5% in 2014), no significant difference in the proportion having previously used e-cigarettes (11% compared with 10%), and a significant decrease in those having never used them (83% compared with 85%).

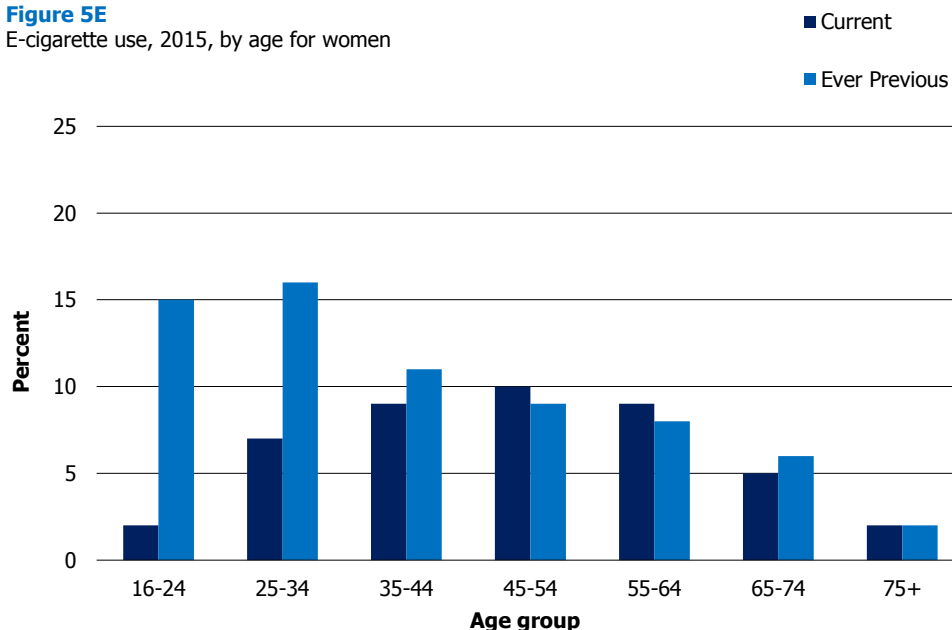
Usage patterns did not vary by sex in 2015, with there being no significant difference in the proportions that currently use (6% for men compared with 7% for women), previously used (12% compared with 10%) or never used e-cigarettes (82% compared with 83%). E-cigarette use in 2015 did vary with age. The prevalence of current use of e-cigarettes in 2015 was highest among the middle age groups (7-9% among those aged 25-64) and lower for the youngest (4% among individuals aged 16-24) and older adults (2-4% for those aged 65 and over). Similar patterns were seen for both men and women.

Past/current usage showed a strong association with age. Around a quarter of those aged 16-34 had ever tried or were currently using e-cigarettes (22-26%) compared with one in ten of those aged 65-74 (10%) and less than one in twenty of those aged 75 and over (4%). For those aged 45 and over, roughly half of those who had ever used e-cigarettes (4-18%) were still using them (2-9%). Of those aged 16-24 around a fifth of those who had ever used e-cigarettes (22%) were currently using them (4%).

**Figure 5D, Figure 5E, Table 5.4**



**Figure 5E**  
E-cigarette use, 2015, by age for women



## 5.5 TRENDS IN EXPOSURE TO SECOND-HAND SMOKE

### 5.5.1 Non-smokers' exposure to second-hand smoke since 1998

Adult participants who self-reported as non-smoking have been asked since 1998 about their exposure to second-hand smoke in a range of public and private settings. As previously reported in SHeS<sup>13</sup>, exposure to second-hand smoke had fallen markedly since the introduction of the ban on smoking in public places in 2006. Questionnaire changes introduced in 2012 mean that some trends can no longer be reported across the series (see footnotes to Table 5.5; trend figures for the period up to 2011 are available in Table 5.6 of the 2011 report)<sup>15</sup>.

Table 5.5 gives non-smokers' self-reported exposure to smoke in a range of locations, since 1998 by sex. The 1998 survey includes adults aged 16-74 only, with the following discussion of trends concentrating primarily on the trend for all adults aged 16 and over from 2003.

The proportion of non-smokers aged 16 and over reporting being exposed to second-hand smoke in their own or other people's homes has dropped from 25% in 2003 to 12% in 2015, with data for those aged 16-74 suggesting this trend began earlier (declining from 33% in 1998 to 27% in 2003, and then to 13% in 2015). Non-smoking women were significantly more likely to have been exposed to second-hand smoke in their own or other people's home than non-smoking men in 2015 (14% compared with 11%).

Data on second-hand smoke exposure in any public place in 2015 is only comparable with data collected since 2012 due to changes in definitions (see footnotes to Table 5.5). Under the definition used in recent years, the percentage of adult non-smokers aged 16 and over exposed in any public place was 16% in 2015, with little change since

2012 (between 16% and 18%). Figures for men and women in 2015 were identical (both 16%).

Non-smokers' were asked to state their exposure to second-hand smoke in their or other people's homes, at work, outside buildings, in cars/vans and in other public places, with this data being collected from 2012 onwards. Whereas in each of 2012, 2013 and 2014 70% of non-smokers said they had not been exposed to smoke at any of these places, this rose significantly to 74% in 2015, with identical figures for both men and women (74% each).

**Table 5.5**

### **5.5.2 Children's exposure to second-hand smoke since 2012**

The two measures of children's exposure to smoke at home – 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 aged 0-15 are exposed to smoke at home – are presented for 2012 to 2015 in Figure 5F and Table 5.6.

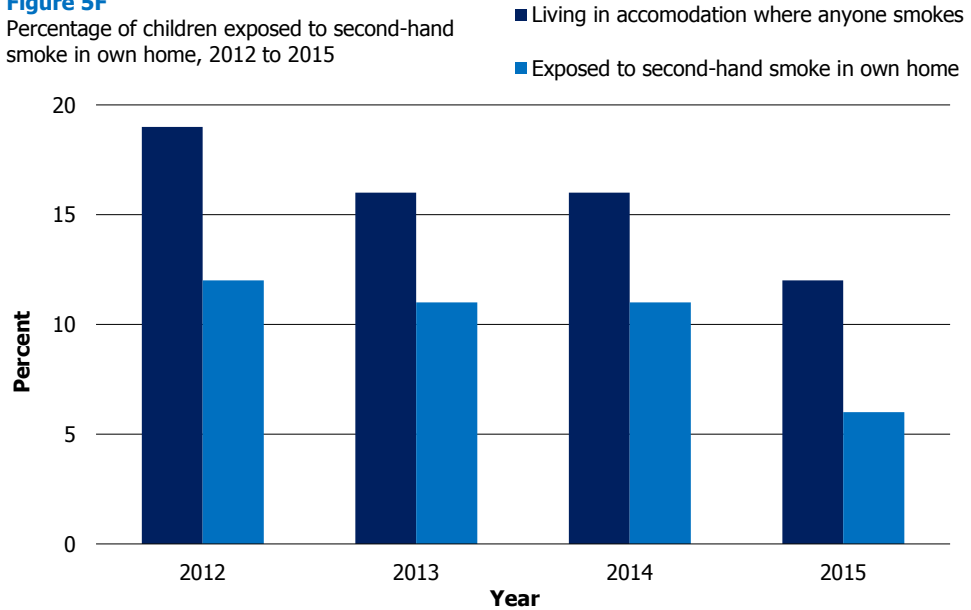
In 2015, 12% of children lived in accommodation in which someone smoked inside, with no statistically significant difference by sex (12% of boys and 11% of girls). The 2015 figure for all children represented a significant decrease on all previous survey years (19% in 2012, 16% in 2013 and 2014). The same pattern of statistically significant decreases was seen for both boys and girls.

A lower proportion of children (6%) was reported to be exposed to second-hand smoke in their home in 2015 than in 2012 (12%), and 2013 and 2014 (11% in both years). Again, there was a comparable pattern of a statistically significant decrease for both boys and girls. The data show that the target to reduce the percentage of children exposed to smoke at home to 6% by 2020 has been met by 2015. This figure (and the others in this section) will be examined in future years to assess whether this result is an outlier.

**Figure 5F, Table 5.6**

**Figure 5F**

Percentage of children exposed to second-hand smoke in own home, 2012 to 2015



### 5.5.3 Saliva cotinine levels among self-reported cotinine validated non-smokers since 2003

The geometric mean<sup>16</sup> cotinine levels of non-smokers aged 16 and over since 2003 are presented by sex in Table 5.7. To be included here, self-reported non-smokers had to have a cotinine level below 12ng/ml (higher levels would suggest that these were smokers who misreported their behaviour in the interview). Geometric means have been used rather than arithmetic means as they take into account extreme values arising from the skewed distribution of data for non-smokers (the glossary at the end of this volume contains more details of these terms).

Adult non-smokers' geometric mean cotinine levels reduced significantly from 0.40 ng/ml in 2003 to 0.11 ng/ml in 2008/2009. A further small, but significant decrease has occurred since, with non-smokers' mean cotinine levels reaching 0.09 ng/ml in 2014/2015. There were no significant differences between men and women, with both having a similar geometric mean cotinine level in 2015 (0.09 ng/ml for men compared with 0.08 ng/ml for women).

**Table 5.7**

## References and notes

- <sup>1</sup> ASH Scotland. Up in smoke: The economic cost of tobacco in Scotland. November 2010. [www.ashscotland.org.uk/media/4634/Up\\_in\\_smoke\\_Nov2010\\_web.pdf](http://www.ashscotland.org.uk/media/4634/Up_in_smoke_Nov2010_web.pdf)
- <sup>2</sup> Koplan JP and Mackay J. Curtailing tobacco use: first we need to know the numbers. *The Lancet* 380 (9842):629-30. 2012.
- <sup>3</sup> World Health Organization. WHO Tobacco Fact Sheet No. 339. July 2015. <http://www.who.int/mediacentre/factsheets/fs339/en/>
- <sup>4</sup> See: [www.scotpho.org.uk/publications/reports-and-papers/1922-smoking-attributable-deaths-in-scotland-trend-analysis-and-breakdown-by-disease-type-and-age-groups-2003-2014](http://www.scotpho.org.uk/publications/reports-and-papers/1922-smoking-attributable-deaths-in-scotland-trend-analysis-and-breakdown-by-disease-type-and-age-groups-2003-2014)
- <sup>5</sup> See: [www.gov.scot/About/Performance/scotPerforms/indicator](http://www.gov.scot/About/Performance/scotPerforms/indicator)
- <sup>6</sup> *National Performance Framework: Changes to the National Indicator Set*. Edinburgh: Scottish Government, 2012. [www.gov.scot/About/Performance/scotPerforms/Nlchanges](http://www.gov.scot/About/Performance/scotPerforms/Nlchanges) See also: [www.scotlandperforms.com](http://www.scotlandperforms.com)
- <sup>7</sup> *Creating a Tobacco-free Generation: A Tobacco Control Strategy for Scotland*. Edinburgh: Scottish Government, 2013. [www.scotland.gov.uk/Resource/0041/00417331.pdf](http://www.scotland.gov.uk/Resource/0041/00417331.pdf)
- <sup>8</sup> See [www.healthscotland.com/uploads/documents/19844-PlanningAndProvidingSpecialistSmokingCessationServices.pdf](http://www.healthscotland.com/uploads/documents/19844-PlanningAndProvidingSpecialistSmokingCessationServices.pdf)
- <sup>9</sup> See: [www.nhsinform.co.uk/~media/nhs24/aboutus/nhs%2024%20board/local%20delivery%20plan/2015-16/nhs%2024%20local%20delivery%20plan%2015-16%20pdf.ashx](http://www.nhsinform.co.uk/~media/nhs24/aboutus/nhs%2024%20board/local%20delivery%20plan/2015-16/nhs%2024%20local%20delivery%20plan%2015-16%20pdf.ashx)
- <sup>10</sup> See: [gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf](http://gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf)
- <sup>11</sup> Gray L & Leyland AH. 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](http://www.gov.scot/Publications/2009/09/28102003/0)
- <sup>12</sup> Gray L & Leyland AH. Chapter 4: Smoking. In Rutherford, L., Hinchliffe, S. and Sharp, C. [eds.] *The Scottish Health Survey 2012 – Volume 1: Main Report*. Edinburgh: Scottish Government. 2013. [www.gov.scot/Publications/2013/09/3684](http://www.gov.scot/Publications/2013/09/3684)
- <sup>13</sup> Gray L & Leyland AH. Volume 1, Chapter 4: Smoking. In: Campbell-Jack D, Hinchliffe S, Bromley C, eds. *The Scottish Health Survey 2014*. Edinburgh: The Scottish Government Health Directorate; 2015.
- <sup>14</sup> Gray L & Leyland AH. Volume 1, Chapter 4: Smoking. In: Rutherford L, Hinchliffe S, Sharp C, eds. *The Scottish Health Survey 2013*. Edinburgh: The Scottish Government Health Directorate; 2014.
- <sup>15</sup> Dowling, S (2012). Chapter 4: Smoking. In Rutherford, L, Sharp, C. and Bromley, C. (eds.) *The Scottish Health Survey 2011 - Volume 1: Main Report*. Edinburgh: Scottish Government.
- <sup>16</sup> Geometric means can only be calculated for positive numbers. The cases in the dataset with values of zero were therefore converted to 0.05 prior to the calculation. 0.05ng/ml is the lowest value for cotinine detectable by the tests used in the survey.

## Table list

Table 5.1	Cigarette smoking status, 1995 to 2015
Table 5.2	Cigarette smoking status, 2015, by age and sex
Table 5.3	Smoking prevalence estimates without and with saliva cotinine adjustment, 2014/2015 combined, by age and sex
Table 5.4	E-cigarette use, 2014 and 2015, by age and sex
Table 5.5	Non-smokers' exposure to second-hand smoke, 1998 to 2015
Table 5.6	Children's exposure to second-hand smoke, 2012 to 2015
Table 5.7	Saliva cotinine levels among self-reported cotinine validated non-smokers, 2003 to 2014/2015 combined



**Table 5.1 Cigarette smoking status, 1995 to 2015**

*Aged 16 and over*

*1995 to 2015*

<b>Cigarette smoking status</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>Men</b>											
<b>Current cigarette smoker<sup>a</sup></b>											
16-64	34	36	32	29	28	29	27	28	25	25	24
16+	n/a	n/a	29	27	25	26	24	25	23	23	22
<b>Ex-regular cigarette smoker</b>											
16-64	18	18	19	19	19	18	18	17	20	18	22
16+	n/a	n/a	24	24	24	24	23	23	25	23	27
<b>Never regular cigarette smoker / never smoked at all</b>											
16-64	49	46	49	51	53	53	55	55	55	57	54
16+	n/a	n/a	47	49	51	50	52	52	51	54	51
<b>Mean per current smoker per day</b>											
16-64	18.1	17.6	15.9	15.6	15.2	14.6	14.2	14.7	13.1	13.1	13.6
16+	n/a	n/a	15.9	15.7	15.4	14.8	14.3	14.7	13.4	13.5	13.9
<b>Standard error of the mean</b>											
16-64	0.31	0.29	0.35	0.49	0.44	0.46	0.38	0.52	0.51	0.52	0.46
16+	n/a	n/a	0.33	0.46	0.41	0.43	0.35	0.48	0.49	0.49	0.45

*Continued...*

**Table 5.1 - Continued**

*Aged 16 and over*

*1995 to 2015*

<b>Cigarette smoking status</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>Women</b>											
<b>Current cigarette smoker<sup>a</sup></b>											
16-64	36	33	31	28	27	28	26	26	22	23	23
16+	n/a	n/a	28	25	25	25	22	24	20	21	20
<b>Ex-regular cigarette smoker</b>											
16-64	16	16	17	19	17	19	17	18	21	19	20
16+	n/a	n/a	20	22	20	21	20	21	23	23	23
<b>Never regular cigarette smoker / never smoked at all</b>											
16-64	49	51	52	53	56	54	58	56	57	57	57
16+	n/a	n/a	53	53	55	54	57	55	57	56	57
<b>Mean per current smoker per day</b>											
16-64	15.4	15.2	14.8	13.6	13.5	13.3	13.2	12.3	12.2	13.1	11.1
16+	n/a	n/a	14.7	13.7	13.4	13.1	13.3	12.4	12.4	13.0	11.3
<b>Standard error of the mean</b>											
16-64	0.21	0.24	0.29	0.33	0.30	0.29	0.33	0.43	0.43	0.43	0.40
16+	n/a	n/a	0.27	0.31	0.27	0.27	0.30	0.40	0.40	0.40	0.37

*Continued...*

**Table 5.1 - Continued**

*Aged 16 and over*

*1995 to 2015*

<b>Cigarette smoking status</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>All adults</b>											
<b>Current cigarette smoker<sup>a</sup></b>											
16-64	35	35	31	29	28	28	26	27	24	24	23
16+	n/a	n/a	28	26	25	25	23	25	21	22	21
<b>Ex-regular cigarette smoker</b>											
16-64	17	17	18	19	18	18	17	17	20	19	21
16+	n/a	n/a	22	23	22	23	22	22	24	23	25
<b>Never regular cigarette smoker / never smoked at all</b>											
16-64	49	48	51	52	54	54	57	55	56	57	55
16+	n/a	n/a	50	51	53	52	55	54	54	55	54
<b>Mean per current smoker per day</b>											
16-64	16.7	16.4	15.3	14.6	14.3	13.9	13.7	13.5	12.7	13.1	12.3
16+	n/a	n/a	15.3	14.7	14.4	13.9	13.8	13.5	13.0	13.2	12.6
<b>Standard error of the mean</b>											
16-64	0.19	0.19	0.26	0.31	0.29	0.28	0.28	0.36	0.35	0.37	0.32
16+	n/a	n/a	0.24	0.28	0.26	0.26	0.26	0.34	0.34	0.34	0.31

*Continued...*

**Table 5.1 - Continued**

<i>Aged 16 and over</i>										<i>1995 to 2015</i>	
<b>Cigarette smoking status</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
<i>Bases (weighted):</i>											
<i>Men 16-64</i>	3901	3937	3156	2520	2916	2795	2926	1868	1882	1769	1895
<i>Men 16+</i>	n/a	n/a	3819	3066	3560	3422	3581	2292	2330	2207	2374
<i>Women 16-64</i>	3994	3966	3307	2618	3047	2925	3045	1939	1968	1869	1986
<i>Women 16+</i>	n/a	n/a	4267	3348	3905	3750	3906	2489	2534	2416	2580
<i>All adults 16-64</i>	7895	7903	6463	5138	5962	5720	5971	3807	3850	3639	3881
<i>All adults 16+</i>	n/a	n/a	8086	6413	7465	7173	7487	4780	4864	4623	4954
<i>Bases (unweighted):</i>											
<i>Men 16-64</i>	3523	3356	2749	2072	2387	2273	2409	1510	1596	1469	1549
<i>Men 16+</i>	n/a	n/a	3582	2829	3265	3092	3263	2119	2131	2057	2228
<i>Women 16-64</i>	4406	4194	3442	2679	3198	3067	3162	1963	2068	1853	1918
<i>Women 16+</i>	n/a	n/a	4514	3600	4227	4109	4243	2677	2746	2585	2740
<i>All adults 16-64</i>	7929	7550	6191	4751	5585	5340	5571	3473	3664	3322	3467
<i>All adults 16+</i>	n/a	n/a	8096	6429	7492	7201	7506	4796	4877	4642	4968

a Current cigarette smoker excludes those who reported only smoking cigars or pipes

**Table 5.2 Cigarette smoking status, 2015, by age and sex**

<i>Aged 16 and over</i>								<i>2015</i>
<b>Cigarette smoking status</b>	<b>Age</b>							<b>Total</b>
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Current cigarette smoker <sup>a</sup>	20	27	26	27	20	16	9	22
Ex-regular cigarette smoker	7	20	27	24	31	38	52	27
Never regular cigarette smoker / never smoked at all	73	53	47	49	48	45	40	51
Mean per current smoker per day	[11.7]	11.9	12.3	14.9	17.2	18.3	*	13.9
Standard error of the mean	[1.10]	0.90	0.98	0.78	1.41	1.61	*	0.45
<b>Women</b>								
Current cigarette smoker <sup>a</sup>	23	24	25	21	21	14	8	20
Ex-regular cigarette smoker	4	21	21	24	26	35	33	23
Never regular cigarette smoker / never smoked at all	73	56	54	55	53	51	59	57
Mean per current smoker per day	9.5	9.7	10.6	12.5	13.2	12.7	*	11.3
Standard error of the mean	1.29	0.72	0.79	0.87	0.90	0.84	*	0.37
<b>All adults</b>								
Current cigarette smoker <sup>a</sup>	21	26	25	24	21	15	8	21
Ex-regular cigarette smoker	6	20	24	24	29	37	40	25
Never regular cigarette smoker / never smoked at all	73	54	50	52	51	48	51	54
Mean per current smoker per day	10.5	10.9	11.4	13.8	15.2	15.5	[11.7]	12.6
Standard error of the mean	0.93	0.64	0.62	0.60	0.84	0.91	[1.60]	0.31

*Continued...*

**Table 5.2 - Continued**

<i>Aged 16 and over</i>								2015
<b>Cigarette smoking status</b>	<b>Age</b>							<b>Total</b>
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
<i>Bases (weighted):</i>								
<i>Men</i>	325	381	369	445	375	288	190	2374
<i>Male smokers</i>	62	101	92	110	73	44	17	499
<i>Women</i>	318	405	397	471	394	321	273	2580
<i>Female smokers</i>	72	97	96	97	77	44	22	505
<i>All adults</i>	643	786	767	916	770	609	463	4954
<i>All smokers</i>	134	198	189	206	150	89	39	1004
<i>Bases (unweighted):</i>								
<i>Men</i>	185	239	311	404	410	399	280	2228
<i>Male smokers</i>	44	64	79	99	78	59	21	444
<i>Women</i>	203	348	392	486	489	461	361	2740
<i>Female smokers</i>	50	86	91	108	90	58	25	508
<i>All adults</i>	388	587	703	890	899	860	641	4968
<i>All smokers</i>	94	150	170	207	168	117	46	952

a Current cigarette smoker excludes those who reported only smoking cigars or pipes

**Table 5.3 Smoking prevalence estimates without and with saliva cotinine adjustment, 2014/2015 combined, by age and sex**

<i>Aged 16 and over with valid saliva cotinine measurement</i>								<i>2014/2015 combined</i>
Smoking prevalence	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Unadjusted self report: smoke cigarettes	23	24	20	27	26	18	7	22
Adjusted estimate, adding self reported non-smokers with saliva cotinine of 12ng/ml or over <sup>a</sup>	27	33	25	29	30	23	8	26
Difference <sup>b</sup>	5	9	4	2	4	5	1	4
<b>Women</b>								
Unadjusted self report: smoke cigarettes	25	25	26	24	25	14	12	22
Adjusted estimate, adding self reported non-smokers with saliva cotinine of 12ng/ml or over <sup>a</sup>	27	29	30	25	26	16	13	24
Difference <sup>b</sup>	1	3	4	1	2	2	1	2
<b>All adults</b>								
Unadjusted self report: smoke cigarettes	24	25	23	25	25	16	10	22
Adjusted estimate, adding self reported non-smokers with saliva cotinine of 12ng/ml or over <sup>a</sup>	27	31	27	27	28	19	11	25
Difference <sup>b</sup>	3	6	4	1	3	4	1	3
<i>Bases (weighted):</i>								
<i>Men</i>	125	147	148	168	137	120	73	919
<i>Women</i>	119	152	149	181	144	127	97	969
<i>All adults</i>	244	299	297	349	281	247	170	1888
<i>Bases (unweighted):</i>								
<i>Men</i>	87	98	119	142	139	158	89	832
<i>Women</i>	88	152	181	188	177	180	109	1075
<i>All adults</i>	175	250	300	330	316	338	198	1907

a Excludes self-reported non-smokers who report current use of e-cigarettes, as this also affects cotinine levels

b Because of rounding, the actual differences shown may be different from the apparent difference between the two percentages

**Table 5.4 E-cigarette use, 2014 and 2015, by age and sex**

*Aged 16 and over*

*2014, 2015*

E-cigarette use	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
<b>2014</b>								
Currently using	5	3	7	5	7	2	1	5
Ever previously used <sup>a</sup>	17	17	9	11	8	3	2	10
Never used	78	80	84	84	85	94	96	85
<i>Ever used<sup>b</sup></i>	22	20	16	16	15	6	4	15
<b>2015</b>								
Currently using	6	9	6	9	8	3	2	6
Ever previously used <sup>a</sup>	22	20	13	10	8	4	2	12
Never used	72	71	81	82	85	93	96	82
<i>Ever used<sup>b</sup></i>	28	29	19	18	15	7	4	18
<b>Women</b>								
<b>2014</b>								
Currently using	3	5	7	9	6	3	1	5
Ever previously used <sup>a</sup>	14	12	12	9	9	5	2	9
Never used	83	83	81	82	85	92	97	85
<i>Ever used<sup>b</sup></i>	17	17	19	18	15	8	3	15
<b>2015</b>								
Currently using	2	7	9	10	9	5	2	7
Ever previously used <sup>a</sup>	15	16	11	9	8	6	2	10
Never used	83	77	80	82	83	88	96	83
<i>Ever used<sup>b</sup></i>	17	23	20	18	17	12	4	17

*Continued...*



**Table 5.4 - Continued**

*Aged 16 and over*

2014, 2015

E-cigarette use	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>All adults</b>								
<b>2014</b>								
Currently using	4	4	7	7	6	3	1	5
Ever previously used <sup>a</sup>	16	14	11	10	8	4	2	10
Never used	80	81	82	83	85	93	97	85
<i>Ever used<sup>b</sup></i>	<i>20</i>	<i>19</i>	<i>18</i>	<i>17</i>	<i>15</i>	<i>7</i>	<i>3</i>	<i>15</i>
<b>2015</b>								
Currently using	4	8	7	9	8	4	2	7
Ever previously used <sup>a</sup>	19	18	12	9	8	5	2	11
Never used	78	74	81	82	84	90	96	83
<i>Ever used<sup>b</sup></i>	<i>22</i>	<i>26</i>	<i>19</i>	<i>18</i>	<i>16</i>	<i>10</i>	<i>4</i>	<i>17</i>
<i>Bases (weighted):</i>								
<i>Men 2014</i>	<i>292</i>	<i>356</i>	<i>357</i>	<i>416</i>	<i>347</i>	<i>264</i>	<i>173</i>	<i>2205</i>
<i>Men 2015</i>	<i>326</i>	<i>381</i>	<i>370</i>	<i>445</i>	<i>375</i>	<i>288</i>	<i>190</i>	<i>2376</i>
<i>Women 2014</i>	<i>305</i>	<i>375</i>	<i>379</i>	<i>441</i>	<i>365</i>	<i>294</i>	<i>253</i>	<i>2412</i>
<i>Women 2015</i>	<i>319</i>	<i>405</i>	<i>397</i>	<i>471</i>	<i>394</i>	<i>321</i>	<i>273</i>	<i>2580</i>
<i>All adults 2014</i>	<i>597</i>	<i>731</i>	<i>736</i>	<i>857</i>	<i>712</i>	<i>558</i>	<i>426</i>	<i>4617</i>
<i>All adults 2015</i>	<i>645</i>	<i>786</i>	<i>767</i>	<i>916</i>	<i>770</i>	<i>609</i>	<i>463</i>	<i>4956</i>
<i>Bases (unweighted):</i>								
<i>Men 2014</i>	<i>192</i>	<i>250</i>	<i>306</i>	<i>361</i>	<i>358</i>	<i>361</i>	<i>227</i>	<i>2055</i>
<i>Men 2015</i>	<i>186</i>	<i>239</i>	<i>312</i>	<i>404</i>	<i>410</i>	<i>399</i>	<i>280</i>	<i>2230</i>
<i>Women 2014</i>	<i>224</i>	<i>337</i>	<i>421</i>	<i>431</i>	<i>437</i>	<i>419</i>	<i>313</i>	<i>2582</i>
<i>Women 2015</i>	<i>203</i>	<i>348</i>	<i>392</i>	<i>486</i>	<i>489</i>	<i>461</i>	<i>361</i>	<i>2740</i>
<i>All adults 2014</i>	<i>416</i>	<i>587</i>	<i>727</i>	<i>792</i>	<i>795</i>	<i>780</i>	<i>540</i>	<i>4637</i>
<i>All adults 2015</i>	<i>389</i>	<i>587</i>	<i>704</i>	<i>890</i>	<i>899</i>	<i>860</i>	<i>641</i>	<i>4970</i>

a Excludes those who are currently using

b Includes those who are currently using

**Table 5.5 Non-smokers' exposure to second-hand smoke, 1998 to 2015**

<i>Non-smokers aged 16 and over</i>		<i>1998 to 2015</i>								
<b>Exposure to second-hand smoke in own home</b>	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%
<b>Men</b>										
<b>In own home</b>										
16-74	18	15	10	9	9	8	7	6	8	5
16+	n/a	14	10	9	8	8	7	6	8	4
<b>In other people's home</b>										
16-74	21	16	12	10	11	10	11	10	8	8
16+	n/a	15	11	9	10	9	10	9	8	8
<b>At work</b>										
16-74	23	16	6	6	6	5	6	7	7	6
16+	n/a	15	5	5	5	5	6	6	7	5
<b>Outside buildings, e.g. pubs, shops, hospitals</b>										
16-74	n/a	n/a	n/a	n/a	n/a	n/a	12	15	15	13
16+	n/a	n/a	n/a	n/a	n/a	n/a	11	14	14	12
<b>In cars / vans</b>										
16-74	n/a	n/a	n/a	n/a	n/a	n/a	2	2	3	2
16+	n/a	n/a	n/a	n/a	n/a	n/a	2	2	3	2
<b>In other public places</b>										
16-74	25	26	6	5	7	8	8	8	8	9
16+	n/a	25	6	5	6	7	7	7	7	8
<b>In own or other's home</b>										
16-74	31	24	19	18	17	16	17	15	15	11
16+	n/a	24	18	17	16	15	16	14	14	11
<b>In any public place (2012 onwards)<sup>b</sup></b>										
16+	n/a	n/a	n/a	n/a	n/a	n/a	16	17	17	16
<b>Not exposed to smoke in these places (2012 onwards)<sup>c</sup></b>										
16+	n/a	n/a	n/a	n/a	n/a	n/a	69	70	70	74

*Continued...*

**Table 5.5 - Continued**

*Aged 16 and over*

*1998 to 2015*

<b>Exposure to second-hand smoke in own home</b>	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%
<b>Women</b>										
<b>In own home</b>										
16-74	18	13	10	8	8	6	9	6	6	5
16+	n/a	13	9	8	8	6	8	6	6	5
<b>In other people's home</b>										
16-74	25	21	13	13	14	10	13	11	10	11
16+	n/a	19	12	12	12	9	11	10	10	9
<b>At work</b>										
16-74	14	9	2	3	2	3	3	4	4	3
16+	n/a	8	2	3	2	2	3	3	3	2
<b>Outside buildings, e.g. pubs, shops, hospitals</b>										
16-74	n/a	n/a	n/a	n/a	n/a	n/a	13	16	16	14
16+	n/a	n/a	n/a	n/a	n/a	n/a	12	14	14	12
<b>In cars / vans</b>										
16-74	n/a	n/a	n/a	n/a	n/a	n/a	2	2	1	2
16+	n/a	n/a	n/a	n/a	n/a	n/a	2	1	1	2
<b>In other public places</b>										
16-74	28	28	6	6	7	7	8	7	8	8
16+	n/a	26	5	5	6	7	8	6	7	8
<b>In own or other's home</b>										
16-74	35	29	21	19	19	14	19	16	16	15
16+	n/a	27	19	18	18	14	17	15	15	14
<b>In any public place (2012 onwards)<sup>b</sup></b>										
16+	n/a	n/a	n/a	n/a	n/a	n/a	16	17	18	16
<b>Not exposed to smoke in these places (2012 onwards)<sup>c</sup></b>										
16+	n/a	n/a	n/a	n/a	n/a	n/a	70	71	70	74

*Continued...*

**Table 5.5 - Continued**

<i>Aged 16 and over</i>		<i>1998 to 2015</i>								
<b>Exposure to second-hand smoke in own home</b>	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%
<b>All adults</b>										
<b>In own or other's home</b>										
16-74	33	27	20	19	18	15	18	15	15	13
16+	n/a	25	18	17	17	14	17	14	14	12
<b>In any public place (2012 onwards)<sup>b</sup></b>										
16+	n/a	n/a	n/a	n/a	n/a	n/a	16	17	18	16
<b>Not exposed to smoke in these places (2012 onwards)<sup>c</sup></b>										
16+	n/a	n/a	n/a	n/a	n/a	n/a	70	70	70	74
<i>Bases (weighted):</i>										
Men 16-74	2897	2476	1950	2429	2302	2464	1550	1625	1548	1677
Men 16+	n/a	2695	2137	2655	2524	2707	1709	1786	1707	1851
Women 16-74	3077	2677	2197	2574	2474	2648	1662	1799	1682	1814
Women 16+	n/a	3088	2508	2941	2826	3029	1899	2033	1907	2065
All adults 16-74	5973	5153	4147	5003	4776	5111	3211	3424	3230	3491
All adults 16+	n/a	5783	4645	5596	5350	5736	3608	3819	3613	3916
<i>Bases (unweighted):</i>										
Men 16-74	2552	2299	1771	2146	1991	2166	1403	1417	1394	1499
Men 16+	n/a	2576	2031	2466	2281	2482	1612	1611	1604	1758
Women 16-74	3321	2850	2353	2764	2667	2844	1784	1921	1780	1888
Women 16+	n/a	3284	2724	3199	3089	3292	2080	2193	2061	2224
All adults 16-74	5872	5149	4130	4910	4658	5010	3187	3338	3174	3387
All adults 16+	n/a	5860	4755	5665	5370	5774	3692	3804	3665	3982

a Percentages add to more than 100% as the categories are not mutually exclusive

b Any public place defined as: outside buildings, or in any other public places

c These places defined as: in own home, other people's homes, in cars/vans, outside buildings, at work, or in other public places

**Table 5.6 Children's exposure to second-hand smoke, 2012 to 2015**

*Aged 0 - 15*

*2012 to 2015*

<b>Exposure to second-hand smoke in own home</b>	2012	2013	2014	2015
	%	%	%	%
<b>Boys</b>				
Whether anyone smokes in accommodation	19	18	17	12
Reported exposure to second-hand smoke in own home	12	11	12	6
<b>Girls</b>				
Whether anyone smokes in accommodation	18	15	16	11
Reported exposure to second-hand smoke in own home	12	10	10	5
<b>All children</b>				
Whether anyone smokes in accommodation	19	16	16	12
Reported exposure to second-hand smoke in own home	12	11	11	6
<i>Bases (weighted):</i>				
<i>Boys</i>	914	940	852	725
<i>Girls</i>	873	899	816	695
<i>All children</i>	1787	1839	1668	1420
<i>Bases (unweighted):</i>				
<i>Boys</i>	879	948	842	735
<i>Girls</i>	908	891	826	685
<i>All children</i>	1787	1839	1668	1420

**Table 5.7 Saliva cotinine levels among self-reported cotinine validated non-smokers, 2003 to 2014/2015 combined**

*Self-reported non smokers aged 16 and over with valid saliva cotinine measurement<sup>a</sup>*

*2003 to 2014/2015 combined*

<b>Saliva cotinine level (ng/ml)</b>	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%	%
<b>Men</b>					
Geometric mean saliva cotinine <sup>b</sup>	0.44	0.11	0.11	0.09	0.09
Confidence interval	(0.40-0.47)	(0.10-0.13)	(0.10-0.13)	(0.08-0.10)	(0.08-0.11)
<b>Women</b>					
Geometric mean saliva cotinine <sup>b</sup>	0.37	0.10	0.11	0.08	0.08
Confidence interval	(0.34-0.40)	(0.09-0.11)	(0.10-0.12)	(0.07-0.08)	(0.07-0.09)
<b>All adults</b>					
Geometric mean saliva cotinine <sup>b</sup>	0.40	0.11	0.11	0.08	0.09
Confidence interval	(0.38-0.43)	(0.10-0.12)	(0.10-0.12)	(0.08-0.09)	(0.08-0.09)
<i>Bases (weighted):</i>					
<i>Men</i>	1513	681	642	708	700
<i>Women</i>	1583	694	700	756	755
<i>All adults</i>	3096	1462	1342	1464	1455
<i>Bases (unweighted):</i>					
<i>Men</i>	1472	632	598	659	636
<i>Women</i>	1746	767	781	824	841
<i>All adults</i>	3218	1493	1379	1483	1477

a To be included within this category, participants had to be both self-reported non-smokers and have a saliva cotinine level lower than 12ng/ml

b Geometric means have been presented for non-smokers as their cotinine data have a very skewed and exponential distribution. A geometric mean is an average calculated by multiplying the values of the cases in the sample and taking the nth root, where n is the number of cases. As 95% confidence intervals for the geometric means are more complicated to calculate than for arithmetic means, these have been presented around the estimates rather than standard errors



## 6 DIET

Ian Montagu

### SUMMARY

- **Around one in five adults (21%) met the 5-a-day recommendations on the previous day, while 11% did not consume any fruit or vegetables. These levels have changed little since 2003.**
- Adults consumed a mean of 3.1 portions of fruit and vegetables a day in 2015 (3.3 for women compared with 3.0 for men), similar to those seen in 2003.
- Mean consumption of fruit and vegetables was lowest for those aged 16-24 (2.6 portions) and highest for those aged 55-74 (3.4 portions).
- **In 2015, 12% of children aged 2-15 met the 5-a-day fruit and vegetables recommendations on the previous day.**
- The proportion of children consuming no fruit and vegetables on the previous day in 2015 (7%) was significantly lower than that in 2012 (11%) and 2013 (10%).
- There were no significant differences by age or sex in the proportion of children meeting the 5-a-day recommendations.
- In total, 43% of children whose parents ate no fruit and vegetables on the previous day also ate none themselves, compared with 2% of children whose parents met the 5-a-day recommendations.
- **Mean levels of sodium, potassium and creatinine found in spot urine samples were all higher for men than for women in 2014/2015, although mean Na/Cre and K/Cre ratios were higher for women.**
- Mean levels of urinary sodium and creatinine both decreased with age, while mean K/Cre ratios increased with age.
- **In 2015, 27% of adults and 19% of children consumed vitamin or mineral supplements, including 14% of adults and 16% of children who took supplements containing vitamin D.**
- More women than men took supplements; 30% of women and 24% of men took any supplement, and 16% of women and 12% of men took vitamin D.
- Supplement use was highest among older adults (33-34% of those aged 65 or over), while consumption of vitamin D was highest among those aged 4-5 (25%).

### 6.1 INTRODUCTION

An individual's diet is one of the contributory factors to health over which they have a degree of control. The risk of many non-communicable diseases, including cardiovascular disease, type 2 diabetes and certain types of cancer is affected by the foods people consume. Estimates from international comparisons have suggested that around 30% of cases of cancer<sup>1</sup> and cardiovascular disease<sup>2</sup> worldwide could be prevented by changes in diet, both through improvements in nutritional content and reductions in body mass<sup>3</sup>.



Early research on diet and chronic diseases focussed on the possible role of fat, particularly saturated fat, and fruit and vegetable intake. Some recent studies have questioned the consideration of fruit and vegetables together, and have shown, for example, that vegetable consumption is more important than fruit consumption in explaining reduced risks of certain types of breast cancer<sup>4</sup>, stroke<sup>5</sup>, and diabetes<sup>6</sup>, while reduced risk of coronary heart disease in women<sup>5</sup>, and oesophageal and stomach cancers<sup>7</sup> are better explained by levels of fruit consumption.

Other aspects of diet, including the potentially positive effects of fibre and wholegrains<sup>8</sup>, oily fish intake<sup>9,10</sup> and antioxidant vitamins<sup>11</sup> have been studied in relation to cardiovascular disease and cognitive decline in later life. Folates have been shown to have a role in the prevention of neural tube defects<sup>12</sup>; vitamin D and calcium are determinants of bone health<sup>13</sup>; sugar intake is associated with dental decay<sup>14</sup>; and salt intake is linked to the development of hypertension<sup>15</sup>. A link between consumption of red and processed meats in bowel disease has been proposed<sup>16,17</sup>, while it has been suggested that free sugars may have a particular role in the development of obesity and type 2 diabetes<sup>18</sup>.

Given the broad range of health conditions which may be influenced by diet it is difficult to estimate the economic and social costs of poor eating habits, but some examples can highlight the potential benefits of improving the diet of the population. Treatment of cardiovascular disease, including hypertension, and type 2 diabetes, represent significant costs to the NHS, as do treatment of dental decay in children and bone disease in adults. One study looking at the economic costs of risk factors for chronic disease puts poor diet as the largest burden on the NHS, ahead of overweight and obesity, smoking, alcohol consumption, and physical inactivity<sup>19</sup>.

Surveys of household food intake and of children's diet in Scotland have highlighted socio-economic inequalities in consumption of a wide range of food groups such as fruit and vegetables and soft drinks, though differences in fat and sugar content of the diet between those in more versus less deprived areas are not marked<sup>20,21,22</sup>.

### 6.1.1 Policy background

The most widely promoted diet and health message has been the World Health Organisation (WHO) '5-a-day' advice for adults to consume at least five varied 80g portions of fruit and vegetables per day. In Scotland the poor record on diet was first highlighted in 1993 with the publication of the Scottish Diet report and associated **Action Plan**<sup>23,24</sup>. The **Action Plan** included specific **Scottish Dietary Targets** for eight nutrients and food groups which would constitute a balanced diet. These were replaced in 2013 by the **Scottish Dietary Goals**<sup>25</sup> and revised again in 2016<sup>26</sup>. Goals include the 5-a-day recommendation and a target to reduce salt intake from around 9g to 6g per day for adults. There is a goal in place to reduce average calorie intake by 120 kcal per day and average intake of red meat to 70g per day as well as

advice to limit fat and sugar intake and increase consumption of fibre and oil-rich fish. In 2016 new recommendations were introduced to reduce the average intake of free sugars to 5% of total dietary energy. Intakes of dietary fibre should be increased to 30g/day for adults and intakes of starchy carbohydrates should remain at 50% of total dietary energy. A **soft drinks industry levy**<sup>27</sup> was proposed in the UK Government's 2016 Budget, to be paid by producers and importers of soft drinks across the UK that contain added sugar. Consultation on this is planned in 2016. In addition, existing UK healthy eating advice was updated as the **Eatwell Guide** to illustrate the proportions and types of foods from major food groups which would make up a healthy diet<sup>28</sup>.

Following recommendations from the Scientific Advisory Committee on Nutrition (SACN), Scottish Government advice on vitamin D for all age groups has been updated<sup>29</sup>.

To tackle the poor diet of children in Scotland, the main target has been food in schools with **Healthy Eating in Schools** guidance on implementing the **Schools Food and Nutrition** legislation which prohibits the sale of foods and drinks high in fat, sugar and / or salt in schools<sup>30</sup>. The foods available to children who leave school at lunchtimes have also been considered in the **Beyond the School Gate** advice to caterers in the vicinity of schools<sup>31</sup>.

The Scottish Government has also developed the **Better Eating Better Learning** guidance. This has provided refreshed guidance to a range of stakeholders (schools, local authorities, caterers, procurement departments, parents, children and young people) to support them to work in partnership to make further improvements in school food and food education<sup>32</sup>.

Specific measures which could be taken by retailers, manufacturers and caterers which would affect the wider population are outlined in the Scottish Government's **Supporting Healthy Choices** framework<sup>33</sup>. This is a voluntary framework based on four core principles. These are to:

- Put the health of children first in food-related decisions
- Rebalance promotional activities
- Support consumers and communities
- Formulate healthier products

The Scottish Government is also funding a number of programmes aimed at encouraging people to make healthier choices in the way they shop, cook and eat, through its **Eat Better Feel Better** campaign<sup>34</sup>.

A key part of the **Health Promoting Health Service** is a focus towards the provision of healthier food choices in hospitals. All NHS-run restaurants for staff, visitors and patients now have the Healthyliving Award Plus as a mandatory requirement with all voluntary sector establishments holding the award. The **Healthcare Retail Standard** is being implemented in 2016-17 to ensure that any retail outlet in

healthcare grounds provides a range of food items that are not high in fat, salt and sugar and that only foods which should be consumed more often or in greater amounts, e.g. fruit and vegetables, are promoted<sup>35</sup>.

### **6.1.2 Reporting on diet in the Scottish Health Survey (SHeS)**

This chapter provides information on fruit and vegetable consumption among adults and children from 2003 to 2015. Urinary sodium, potassium and creatinine in adults are presented as an indicator of trends in salt intake from 2003 to 2014/2015 with analysis by age and sex presented for 2014/2015. Information on vitamin and mineral supplement use by adults and children in 2014/2015 is also provided. Supplementary tables on diet, including analysis by socio-economic classification, household income and area deprivation are also published on the Scottish Health Survey website<sup>36</sup>.

## **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 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.

To establish the total number of portions consumed in the 24 hours to midnight preceding the interview, the module includes questions on consumption of the following food types: 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); and fresh fruit juice. A portion is defined as the conventional 80g of a fruit or vegetable. Since 80g is difficult to visualise, a 'portion' was described using more everyday terms, such as tablespoons, cereal bowls and slices. 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 a portion. These everyday measures were converted back to 80g portions prior to analysis. The following table shows the definitions of the portion sizes used for each food item included in the survey:

<b>Food item</b>	<b>Portion size</b>
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 can contribute to the total number of portions consumed. Interviewers record full or half portions, but nothing smaller.

### **6.2.2 Child fruit and vegetable consumption by parental fruit and vegetable consumption**

Analysis of child fruit and vegetable consumption by parental fruit and vegetable consumption is based on children in the main sample where at least one of their parents was also interviewed (and answered the questions on fruit and vegetables). The data have been re-weighted so that the analysis shows the pattern of association between child and parental consumption, and provides population estimates of the prevalence of child fruit and vegetable consumption in households with different parental consumption patterns. For households with fruit and vegetable data for two parents, the measure of parental consumption was based on whichever parent's consumption was the highest.

### **6.2.3 Measuring urinary sodium, potassium and creatinine**

Sodium (Na) is obtained from the diet in the form of sodium chloride (salt) and potassium (K) from fruits and vegetables. Urinary excretion of sodium and potassium over a 24-hour period reflects the dietary intake over that day in healthy individuals. However, collection of urine over 24-hours is inconvenient and completeness of collection is difficult to achieve. Spot samples (taken at any time of day) are much easier to collect but the concentration of electrolytes is influenced by hydration. Creatinine (Cre), a non-enzymic breakdown product of creatine in muscle, is produced and excreted in the urine at a constant rate, so the ratio Na/Cre or K/Cre are considered more robust indices for comparative purposes than sodium or potassium concentrations alone.

High levels of sodium in a urine sample may be indicative of a high salt diet, but may also indicate health problems, including kidney problems. Low levels may also be due to kidney damage, as well as a number of other health problems. Abnormal levels of potassium or creatinine may also indicate kidney or other health problems, as well as dietary intake of potassium in fruit and vegetables and creatine from meat or supplements.

Although the concentration of sodium and potassium in spot urine samples cannot be used to estimate 24-hour excretion and hence intake, the values can provide an indication of differences between subgroups within a population and of trends over time.

Reference ranges for each of the analytes in millimoles per litre (mmol/l) are provided by the laboratories and shown in Table 6A below. These are the range of values that would be expected to be seen in 95% of healthy people.

**Table 6A Reference ranges for urinary sodium, potassium and creatinine**

	Men	Women
Sodium (Na)	27 - 167 mmol/l	27 - 167 mmol/l
Potassium (K)	17 - 83 mmol/l	17 - 83 mmol/l
Creatinine (Cre)	6.0 - 11.8 mmol/l	4.7 - 10.6 mmol/l

These ranges are based on 24-hour excretion. Higher or lower concentrations in the spot urine samples do not necessarily mean abnormal functioning of the kidneys or high or low levels of salt or meat intake, as they will be influenced by levels of hydration and other factors.

Further information about the collection and analysis of urine samples is provided in volume 2 of this report.

#### **6.2.4 Measuring vitamin and mineral supplement use**

The following question, designed to measure self-administered supplement use, is included in the core interview, for all adults and children from 2015:

At present, are you taking any vitamins, fish oils, iron supplements, calcium, other minerals or anything else to supplement your diet or improve your health, other than those prescribed by your doctor?

For those who answered positively, this was followed by a new question:

Are you currently taking vitamin D supplements, including as part of a multi-vitamin supplement?

Women aged between 16 and 49 were also asked about their use of folic acid with the question:

At present, are you taking any folic acid supplements such as Solgar folic acid, Pregnacare tablets, Sanatogen Pronatal, or Healthy Start, to supplement your diet or improve your health?

## **6.3 FRUIT AND VEGETABLE CONSUMPTION**

### **6.3.1 Trends in adult fruit and vegetable consumption since 2003**

In 2015, adults consumed a mean of 3.1 portions of fruit and vegetables per day (median 2.7). These figures were identical to those measured in 2003. Mean and median fruit and vegetable consumption among adults have fluctuated by small amounts across this period (mean 3.1-3.3, median 2.7-3.0).

Just over a fifth (21%) of adults in 2015 met the 5-a-day recommendations on the previous day. This was a significant decrease from a peak of 23% in 2009, but at the same level as in 2003. The proportion of adults eating no fruit and vegetables on the previous day was 11% in 2015, having been at 9-10% in the previous survey years.

Mean fruit and vegetable consumption among women in 2015 was 3.3 portions, whilst among men mean consumption was significantly lower at 3.0 portions. In each year since 2003 the mean level of fruit and vegetable consumption among women has been measured at between 0.1 and 0.3 portions higher than among men.

The proportion of women eating at least the recommended five portions of fruit and vegetables on the previous day in 2015 was 22% (between 20% and 25% in the years 2003 to 2014). The proportion of men meeting the 5-a-day guidelines on the previous day was 19% (between 19% and 22% in the earlier years of the survey). The difference between men (19%) and women (22%) meeting the guideline was not significant. In 2015, significantly more men (13%) than women (9%) ate no fruit and vegetables on the previous day. **Table 6.1**

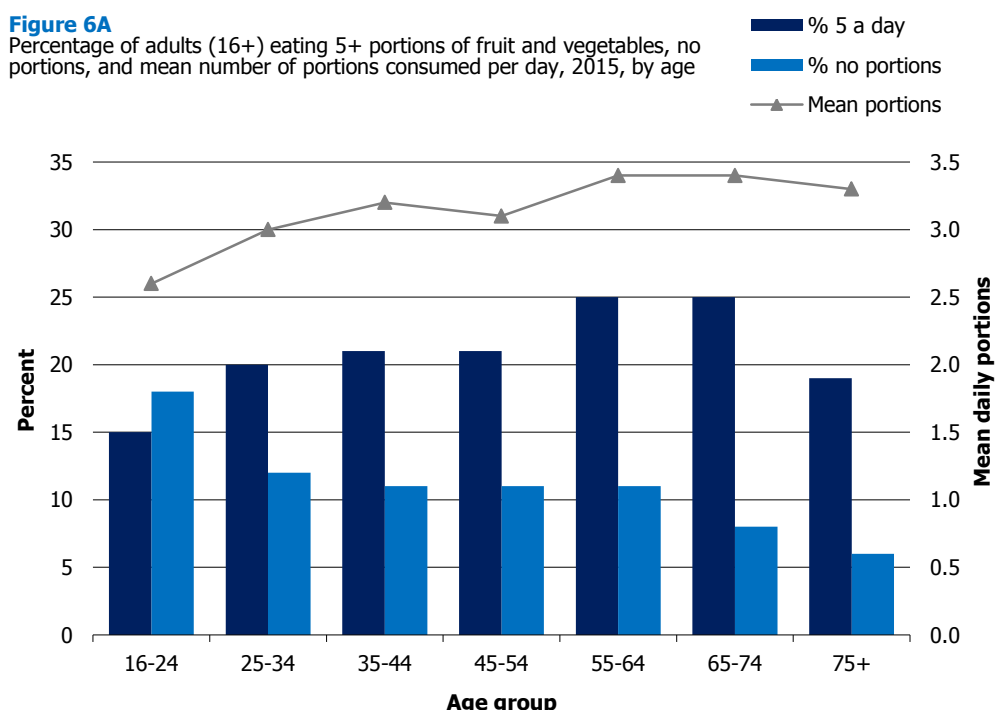
### **6.3.2 Adult fruit and vegetable consumption in 2015, by age and sex**

Figure 6A shows the relationship between the consumption of fruit and vegetables among adults and age in 2015. Mean daily fruit and vegetable consumption was highest among those aged 55-74 (3.4 portions) and lowest for those aged 16-24 (2.6 portions), the same broad pattern as seen in each survey year since 2003.

In 2015, 15% of those aged 16-24 met the recommended 5-a-day guidelines on the previous day, with this rising to 25% among those aged 55-74. Those aged 16-24 were most likely not to have eaten fruit or vegetables (18%) on the previous day, with this declining with age to 6% among those aged 75 and over.

The proportion of men not having eaten any fruit or vegetables on the previous day was highest for those aged 16-24 (22%) and lowest for those aged 75 and over (7%), with the proportion meeting the 5-a-day guideline increasing with age (from 13% among those aged 16-24 to 25% for those aged 75 and over). For women, the proportion not having eaten any fruit or vegetables on the previous day was highest for those aged 16-24 (15%) and lowest for those aged 65 and over (5-6%). The proportion of women meeting the guideline was lower for those aged 16-24 (16%) and 75 and over (15%) than those aged 25-74 (21-28%).

**Figure 6A, Table 6.2**



### 6.3.3 Trends in child fruit and vegetable consumption since 2003

Table 6.3 shows trends in fruit and vegetable consumption among children aged 5-15 since 2003, and among children aged 2-15 since 2008. Due to similarities between the mean level of fruit and vegetable consumption among those aged 2-15 and those aged 5-15 (a difference of only 0-0.1 mean portions each survey year), the following paragraphs focus exclusively on figures for the 2-15 age group. Figures for children aged 5-15 indicate no real difference in fruit and vegetable consumption between 2003 and 2008.

In 2015, mean fruit and vegetable consumption among children aged 2-15 was 2.7 portions. There has been little change in the level of consumption of fruit and vegetables among this age group over time, with mean consumption measured at between 2.6 and 2.8 portions in each survey year since 2008.

From 2008 to 2015, mean fruit and vegetable consumption has fluctuated between 2.7 and 2.9 portions for girls aged 2-15, and between 2.5 and 2.7 portions for boys aged 2-15. In 2015, girls consumed 2.8 mean portions and boys consumed 2.7.

The proportion of those aged 2-15 meeting the recommended 5-a-day guideline on the previous day in 2015 was 12%. As with mean fruit and vegetable consumption among this age group, this figure has fluctuated only by small amounts since 2008 (12-15%).

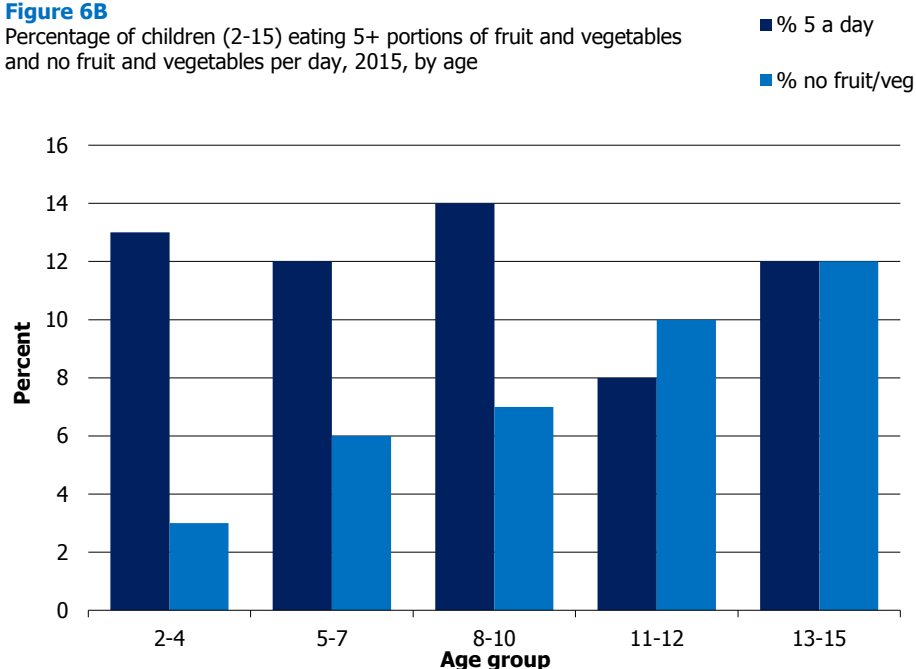
The proportion of those aged 2-15 eating no fruit or vegetables on the previous day was 7% in 2015, a significant decrease on levels seen in 2012 (11%) and 2013 (10%). **Table 6.3**

### 6.3.4 Child fruit and vegetable consumption in 2015, by age and sex

There was no difference in the proportion of children eating their recommended 5 portions of fruit and vegetables on the previous day by either by age group (fluctuating between 8 and 14%) or sex (12% among boys and 13% among girls). The proportion of those aged 2-4 consuming no fruit and vegetables on the previous day was 3%, rising with age to 12% of those aged 13-15. Boys (9%) were significantly more likely to have eaten no fruit and vegetables than girls (5%). Eating no fruit and vegetables tended to increase with age for both boys (4% for those aged 2-4 to 16% for those aged 13-15) and girls (2% for those aged 2-4 to 8-9% for those aged 11-15). **Figure 6B, Table 6.4**

**Figure 6B**

Percentage of children (2-15) eating 5+ portions of fruit and vegetables and no fruit and vegetables per day, 2015, by age



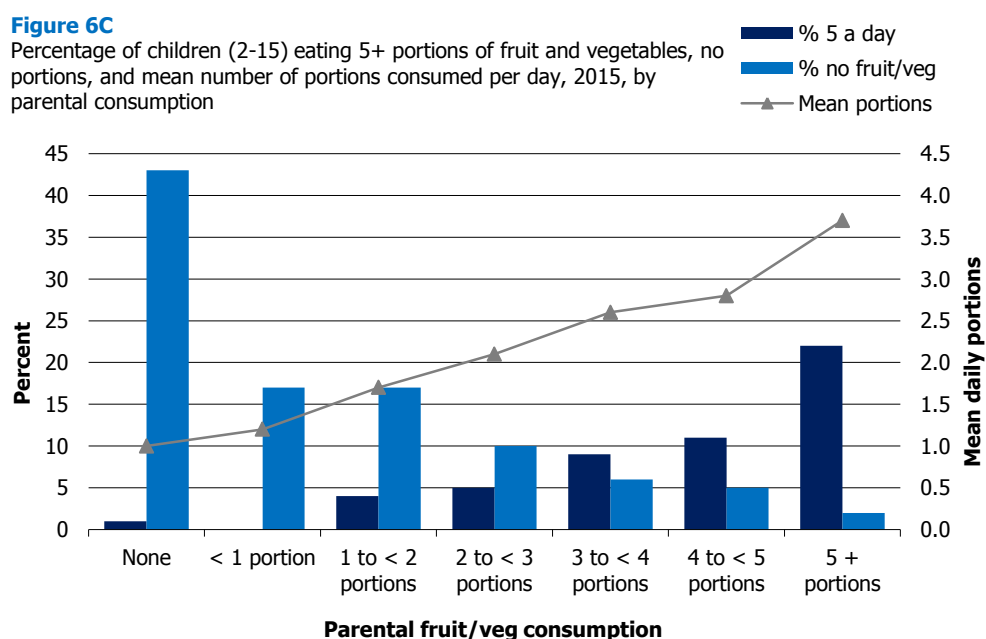


### 6.3.5 Child fruit and vegetable consumption in 2012-2015 (combined), by parental fruit and vegetable consumption

Figure 6C shows the relationship between the consumption of fruit and vegetables by children aged 2-15 and that of their parents in 2012-2015. The mean number of portions consumed by children increased in line with parental consumption from 1.0 portions per day among those whose parents consumed no fruit and vegetables on the previous day to 3.7 portions for those whose parents consumed the recommended daily five or more portions. A similar pattern was seen both for boys (from 1.0 to 3.4 mean portions) and for girls (from 1.0 to 3.9 mean portions).

In 2012-2015, 43% of children aged 2-15 whose parents consumed no fruit and vegetables on the previous day also consumed no fruit and vegetables themselves, compared with 2% of those whose parents consumed the recommended five or more portions. Conversely, 22% of those whose parents did consume the recommended five or more portions met the 5-a-day guideline compared with 1% of those whose parents did not consume any fruit and vegetables.

**Figure 6C, Table 6.5**



## 6.4 URINARY SODIUM, POTASSIUM AND CREATININE IN ADULTS

### 6.4.1 Trends in urinary sodium, potassium and creatinine in adults, since 2010/2011 (combined)

Table 6.6 shows mean urinary sodium (Na), potassium (K) and creatinine (Cre) levels among adults aged 16 and over for survey years 2003, 2008/2009, 2010/2011, 2012/2013 and 2014/2015, measured using spot urine samples. Median levels and levels for the 5th, 10th, 90th and 95th percentiles, are also presented.

Some caution should be applied in the interpretation of these trends, given the changes in assay methods for all three analytes in 2010 (see volume 2 of this report). The following paragraphs therefore cover the period from 2010/2011 to 2014/2015.

In 2014/2015 the mean urinary level of sodium in adults was 100.5mmol/l, with it being significantly higher for men (109.2mmol/l) than for women (92.5mmol/l). Mean sodium levels for all adults have not changed significantly since 2010/2011, although there has been a significant decrease for men since that date, when the mean urinary level of sodium stood at 117.6 mmol/l. Median sodium levels for men and levels at the 10<sup>th</sup> and the 90<sup>th</sup> percentiles also followed this pattern of decline.

Mean urinary potassium levels were also higher for men (59.3 mmol/l) than women (54.6 mmol/l) in 2014/2015. These levels were similar to those observed in 2010/2011. The level for all adults in 2014/2015 was 56.9 mmol/l.

Similarly, mean urinary levels of creatinine were also higher for men (11.4 mmol/l) than women (8.6 mmol/l) in 2014/2015, with no significant change since 2010/2011. The level for all adults in 2014/2015 was 9.9 mmol/l.

As noted in section 6.2.3, the sodium / creatinine and the potassium / creatinine ratios are considered better indices for comparative purposes than sodium or potassium concentrations alone. These have both remained fairly constant between 2010/2011 and 2014/2015 for men and women alike. Mean levels were, however, significantly higher on both measures in 2014/2015 for women (mean Na/Cre ratio 14.2, mean K/Cre ratio 7.7) than men (mean Na/Cre ratio 11.9, mean K/Cre 6.1).

**Table 6.6**

#### **6.4.2 Urinary sodium and potassium in adults in 2014/2015 (combined), by age and sex**

Table 6.7 presents levels of urinary sodium, potassium and creatinine levels for adults in 2014/2015 by age and sex.

Sodium levels among adults in 2014/2015 declined with age. Among those aged 16-44, the mean urinary level of sodium stood at 111.5 mmol/l in 2014/2015, with lower levels for those aged 45-64 (96.0 mmol/l) and those aged 65 and over (84.8 mmol/l).

Mean urinary sodium levels among men were higher than those among women in every age group, albeit with less of a difference between men and women aged 16-44 (117.6 mmol/l for men compared with 105.6 mmol/l for women) than those aged 65 and over (96.0 and 75.9 mmol/l respectively).

Levels of potassium did not vary significantly with age in 2014/2015, with levels for those aged 16-44, 45-64 and 65 and over at 57.8, 57.2 and 54.4 mmol/l respectively.

As with levels of sodium, creatinine levels decreased with age, from 11.1 mmol/l among those aged 16-44 to 9.3 mmol/l among those aged 45-64 and 8.5 mmol/l among those aged 65 and over.

In line with the decreases with age in both mean urinary sodium levels and mean urinary creatinine levels, the mean Na/Cre ratio did not vary significantly with age (between 12.6 and 14.4 for the three age groups).

The mean K/Cre ratio did increase significantly with age, from 6.2 for those aged 16-44 to 7.7 for those aged 65 and over. This pattern held for both men (5.5 to 6.8 respectively) and women (6.8 to 8.5 respectively).

**Table 6.7**

## **6.5 CONSUMPTION OF VITAMIN AND MINERAL SUPPLEMENTS**

### **6.5.1 Adult consumption of vitamin and mineral supplements in 2015, by age and sex**

Figure 6D shows the 2015 levels of consumption of vitamin or mineral supplements among adults aged 16 and over by age and sex. In 2015, 27% of adults consumed vitamin or mineral supplements, including 14% who consumed a supplement containing vitamin D.

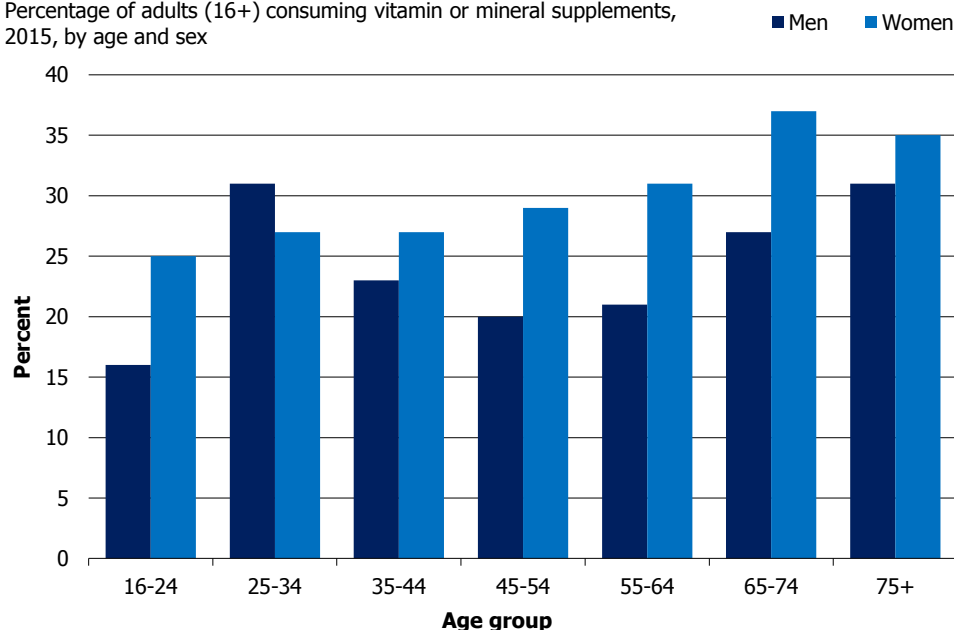
The level of vitamin or mineral supplement consumption differed significantly between men and women in 2015, with 30% of women consuming supplements compared with 24% of men. Women were also significantly more likely than men to take supplements containing vitamin D (16% compared with 12%).

In 2015, among women, supplement consumption was highest in the 65 and over age group (35-37%). Among men, supplement consumption was highest for those aged 25-34 and those aged 75 and over (both 31%). For both men and women, supplement consumption was lowest among those aged 16-24 (16% of men and 25% of women).

**Figure 6D, Table 6.8**

**Figure 6D**

Percentage of adults (16+) consuming vitamin or mineral supplements, 2015, by age and sex



Consumption of supplements containing vitamin D in 2015 was highest for those aged 25-34 (20%) and lowest for those aged 45-54 (10%), with a similar pattern being seen for both men and women.

Supplements containing folic acid were being used by 6% of women aged 16-49 at the time of the survey. Such supplements were being used by 2% of women aged 16-24, 10% of those aged 25-34, 8% aged 35-44, and 3% aged 45-49.

**Table 6.8**

### **6.5.2 Child consumption of vitamin and mineral supplements in 2015, by age and sex**

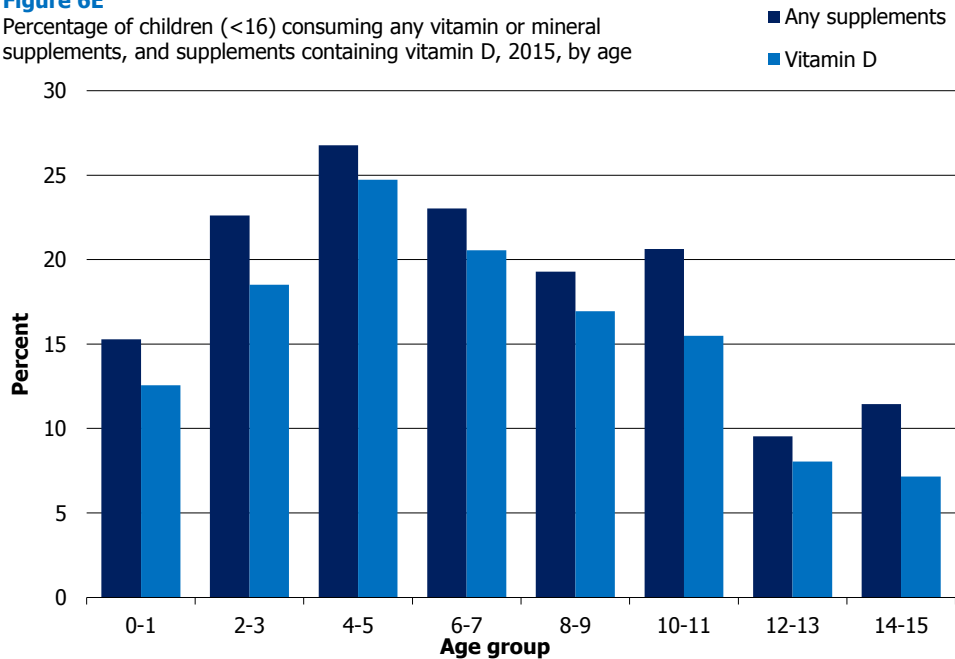
In 2015, 19% of children aged 0-15 consumed vitamin or mineral supplements, including 16% who consumed a supplement containing vitamin D. There were no significant differences for boys and girls either for total vitamin supplementation (19% for both boys and girls) or vitamin D consumption (15% for boys and 16% for girls).

Consumption of vitamins and minerals by children did vary with age. The highest levels of consumption were seen among those aged 4 and 5 (27% were taking any supplements, including 25% who consumed a supplement containing vitamin D). The lowest levels were seen among those aged 12 to 15 (10-11% taking any supplements and 7-8% taking a supplement containing vitamin D).

**Figure 6E, Table 6.9**

**Figure 6E**

Percentage of children (<16) consuming any vitamin or mineral supplements, and supplements containing vitamin D, 2015, by age



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- <sup>36</sup> See: [www.gov.scot/scottishhealthsurvey](http://www.gov.scot/scottishhealthsurvey)

## Table list

Table 6.1	Adult fruit and vegetable consumption, 2003 to 2015
Table 6.2	Adult fruit and vegetable consumption, 2015, by age and sex
Table 6.3	Child fruit and vegetable consumption, 2003 to 2015
Table 6.4	Child fruit and vegetable consumption, 2015, by age and sex
Table 6.5	Child fruit and vegetable consumption, 2012-2015 combined, by parental fruit and vegetable consumption and sex
Table 6.6	Urinary sodium (Na), potassium (K) and creatinine (Cre), Na/Cre ratio, K/Cre ratio, 2003 to 2014/2015 combined
Table 6.7	Urinary sodium (Na), potassium (K) and creatinine (Cre), Na/Cre ratio, K/Cre ratio, 2014/2015 combined, by age and sex
Table 6.8	Adult consumption of vitamin or mineral supplements, 2015, by age and sex
Table 6.9	Child consumption of vitamin or mineral supplements, 2015, by age and sex



**Table 6.1 Adult fruit and vegetable consumption, 2003 to 2015**

<i>Aged 16 and over</i>		<i>2003 to 2015</i>							
<b>Portions per day</b>	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%
<b>Men</b>									
None	11	10	11	12	10	11	11	12	13
5 portions or more	20	20	22	20	20	19	22	20	19
Mean	3.0	3.1	3.1	3.1	3.1	3.0	3.2	3.0	3.0
Standard error of the mean	0.06	0.07	0.05	0.06	0.05	0.08	0.07	0.07	0.07
Median	2.7	2.7	2.8	2.7	2.7	2.7	3.0	2.5	2.5
<b>Women</b>									
None	8	7	7	9	8	9	8	9	9
5 portions or more	22	24	25	23	23	21	22	20	22
Mean	3.2	3.4	3.4	3.3	3.3	3.2	3.3	3.2	3.3
Standard error of the mean	0.05	0.06	0.05	0.05	0.05	0.05	0.06	0.07	0.07
Median	3.0	3.0	3.0	3.0	3.0	2.8	3.0	3.0	3.0
<b>All adults</b>									
None	9	9	9	10	9	10	9	10	11
5 portions or more	21	22	23	22	22	20	22	20	21
Mean	3.1	3.3	3.3	3.2	3.2	3.1	3.2	3.1	3.1
Standard error of the mean	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.06	0.06
Median	2.7	3.0	3.0	3.0	3.0	2.7	3.0	2.7	2.7
<i>Bases (weighted):</i>									
<i>Men</i>	3834	3087	3594	3465	3606	2309	2343	2234	2395
<i>Women</i>	4281	3375	3926	3775	3931	2502	2547	2420	2597
<i>All adults</i>	8115	6462	7520	7239	7537	4811	4890	4654	4992
<i>Bases (unweighted):</i>									
<i>Men</i>	3590	2840	3283	3112	3275	2126	2138	2066	2244
<i>Women</i>	4526	3621	4241	4127	4260	2686	2754	2589	2750
<i>All adults</i>	8116	6461	7524	7239	7535	4812	4892	4655	4994

**Table 6.2 Adult fruit and vegetable consumption, 2015, by age and sex***Aged 16 and over*

2015

Portions per day	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
None	22	12	13	15	12	10	7	13
Less than 1 portion	4	9	5	5	4	7	4	5
1 portion or more but less than 2	23	17	18	18	21	14	18	18
2 portions or more but less than 3	14	18	19	18	17	14	19	17
3 portions or more but less than 4	12	16	15	15	16	21	18	16
4 portions or more but less than 5	11	9	13	9	9	11	10	10
5 portions or more	13	18	18	20	22	23	25	19
Mean	2.5	2.9	2.9	2.9	3.2	3.3	3.4	3.0
Standard error of the mean	0.22	0.18	0.16	0.14	0.16	0.14	0.16	0.07
Median	2.0	2.3	2.5	2.3	2.7	3.0	3.0	2.5
<b>Women</b>								
None	15	11	9	7	9	6	5	9
Less than 1 portion	2	7	3	6	4	4	6	4
1 portion or more but less than 2	22	14	15	20	13	12	18	17
2 portions or more but less than 3	18	17	20	18	19	17	18	18
3 portions or more but less than 4	13	16	12	15	14	22	21	16
4 portions or more but less than 5	13	14	18	12	13	12	17	14
5 portions or more	16	21	24	22	28	26	15	22
Mean	2.8	3.2	3.5	3.3	3.6	3.6	3.2	3.3
Standard error of the mean	0.23	0.15	0.15	0.12	0.14	0.13	0.14	0.07
Median	2.0	3.0	3.0	2.8	3.0	3.3	3.0	3.0
<b>All adults</b>								
None	18	12	11	11	11	8	6	11
Less than 1 portion	3	8	4	5	4	5	5	5
1 portion or more but less than 2	23	15	16	19	17	13	18	17
2 portions or more but less than 3	16	18	19	18	18	16	18	18
3 portions or more but less than 4	13	16	13	15	15	21	20	16
4 portions or more but less than 5	12	12	15	11	11	12	14	12
5 portions or more	15	20	21	21	25	25	19	21
Mean	2.6	3.0	3.2	3.1	3.4	3.4	3.3	3.1
Standard error of the mean	0.16	0.13	0.12	0.10	0.11	0.11	0.12	0.06
Median	2.0	2.7	2.8	2.7	3.0	3.2	3.0	2.7

*Continued...*

**Table 6.2 -Continued***Aged 16 and over*

2015

Portions per day	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
<i>Bases (weighted):</i>								
<i>Men</i>	339	385	372	445	375	288	190	2395
<i>Women</i>	333	405	397	473	394	321	274	2597
<i>All adults</i>	672	790	769	918	770	610	464	4992
<i>Bases (unweighted):</i>								
<i>Men</i>	194	241	313	406	410	400	280	2244
<i>Women</i>	211	348	392	487	489	461	362	2750
<i>All adults</i>	405	589	705	893	899	861	642	4994

**Table 6.3 Child fruit and vegetable consumption, 2003 to 2015**

<i>Aged 2-15</i>		<i>2003 to 2015</i>							
<b>Portions per day</b>	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%
<b>Boys</b>									
<b>Total 5-15</b>									
None	12	13	10	12	11	13	12	12	10
5 portions or more	12	14	13	11	12	11	13	15	11
Mean	2.6	2.6	2.6	2.5	2.6	2.4	2.6	2.7	2.6
Standard error of the mean	0.07	0.11	0.07	0.10	0.09	0.10	0.10	0.13	0.10
Median	2.0	2.0	2.3	2.3	2.3	2.0	2.3	2.2	2.3
<b>Total 2-15</b>									
None	n/a	11	9	11	10	12	11	10	9
5 portions or more	n/a	14	14	12	13	12	13	13	12
Mean	n/a	2.7	2.7	2.6	2.7	2.5	2.7	2.7	2.7
Standard error of the mean	n/a	0.09	0.06	0.09	0.08	0.09	0.09	0.11	0.09
Median	n/a	2.3	2.4	2.3	2.5	2.2	2.3	2.3	2.3
<b>Girls</b>									
<b>Total 5-15</b>									
None	12	9	10	11	10	11	11	10	6
5 portions or more	13	14	15	12	11	12	12	13	13
Mean	2.6	2.8	2.8	2.6	2.7	2.8	2.7	2.8	2.8
Standard error of the mean	0.07	0.10	0.09	0.09	0.09	0.10	0.09	0.11	0.12
Median	2.0	2.5	2.3	2.5	2.5	2.7	2.7	2.3	2.5
<b>Total 2-15</b>									
None	n/a	8	9	10	9	9	10	9	5
5 portions or more	n/a	13	16	13	12	14	13	14	13
Mean	n/a	2.9	2.9	2.7	2.8	2.9	2.8	2.8	2.8
Standard error of the mean	n/a	0.09	0.08	0.08	0.08	0.09	0.09	0.10	0.10
Median	n/a	2.7	2.7	2.5	2.5	2.7	2.7	2.7	2.5

*Continued...*

**Table 6.3 -Continued**

*Aged 2-15*

*2003 to 2015*

<b>Portions per day</b>	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%
<b>All children</b>									
<b>Total 5-15</b>									
None	12	11	10	12	10	12	12	11	8
5 portions or more	12	14	14	12	12	11	12	14	12
Mean	2.6	2.7	2.7	2.6	2.6	2.6	2.7	2.7	2.7
Standard error of the mean	0.05	0.08	0.06	0.07	0.07	0.08	0.08	0.09	0.08
Median	2.0	2.3	2.3	2.3	2.3	2.3	2.5	2.3	2.3
<b>Total 2-15</b>									
None	n/a	10	9	11	9	11	10	10	7
5 portions or more	n/a	13	15	12	13	13	13	14	12
Mean	n/a	2.8	2.8	2.6	2.7	2.7	2.7	2.8	2.7
Standard error of the mean	n/a	0.07	0.05	0.07	0.06	0.07	0.07	0.08	0.07
Median	n/a	2.5	2.5	2.3	2.5	2.5	2.5	2.3	2.5
<i>Bases (weighted):</i>									
Boys 5-15	1225	618	910	621	686	614	637	576	492
Boys 2-15	n/a	791	1153	792	881	800	830	742	626
Girls 5-15	1166	591	867	591	652	588	607	551	472
Girls 2-15	n/a	736	1108	759	835	759	787	720	627
All children 5-15	2391	1209	1777	1212	1338	1202	1243	1128	964
All children 2-15	n/a	1527	2261	1551	1716	1559	1616	1461	1253
<i>Bases (unweighted):</i>									
Boys 5-15	1152	591	923	629	649	580	608	563	489
Boys 2-15	n/a	764	1153	821	855	761	819	729	634
Girls 5-15	1170	597	837	532	619	602	554	567	456
Girls 2-15	n/a	752	1100	708	833	784	761	730	612
All children 5-15	2322	1188	1760	1161	1268	1182	1162	1130	945
All children 2-15	n/a	1516	2253	1529	1688	1545	1580	1459	1246

**Table 6.4 Child fruit and vegetable consumption, 2015, by age and sex**

*Aged 2-15*

2015

Portions per day	Age					Total
	2-4	5-7	8-10	11-12	13-15	
	%	%	%	%	%	%
<b>Boys</b>						
None	4	6	9	12	16	9
Less than 1 portion	4	7	5	6	5	6
1 portion or more but less than 2	21	17	18	33	24	22
2 portions or more but less than 3	21	20	27	17	17	21
3 portions or more but less than 4	21	26	20	13	14	20
4 portions or more but less than 5	15	13	11	11	9	12
5 portions or more	13	11	10	9	15	12
Mean	2.9	2.8	2.6	2.2	2.6	2.7
Standard error of the mean	0.14	0.18	0.15	0.22	0.25	0.09
Median	2.8	2.8	2.5	1.7	2.0	2.3
<b>Girls</b>						
None	2	5	4	9	8	5
Less than 1 portion	9	4	4	5	8	6
1 portion or more but less than 2	19	18	18	26	27	21
2 portions or more but less than 3	25	25	21	24	22	24
3 portions or more but less than 4	20	21	23	17	16	20
4 portions or more but less than 5	10	14	10	12	9	11
5 portions or more	13	13	19	7	10	13
Mean	2.8	2.9	3.2	2.4	2.5	2.8
Standard error of the mean	0.15	0.17	0.22	0.22	0.21	0.10
Median	2.7	2.7	3.0	2.5	2.0	2.5
<b>All children</b>						
None	3	6	7	10	12	7
Less than 1 portion	7	6	5	5	7	6
1 portion or more but less than 2	20	17	18	30	26	21
2 portions or more but less than 3	23	23	24	20	20	22
3 portions or more but less than 4	21	23	22	15	15	20
4 portions or more but less than 5	12	14	11	11	9	11
5 portions or more	13	12	14	8	12	12
Mean	2.8	2.8	2.9	2.3	2.6	2.7
Standard error of the mean	0.10	0.13	0.12	0.15	0.15	0.07
Median	2.7	2.7	2.7	2.0	2.0	2.5

*Continued...*

**Table 6.4 -Continued***Aged 2-15*

2015

Portions per day	Age					Total
	2-4	5-7	8-10	11-12	13-15	
<i>Bases (weighted):</i>						
<i>Boys</i>	134	142	149	88	113	626
<i>Girls</i>	155	139	122	79	131	627
<i>All children</i>	289	281	271	167	244	1253
<i>Bases (unweighted):</i>						
<i>Boys</i>	145	150	153	79	107	634
<i>Girls</i>	156	142	118	74	122	612
<i>All children</i>	301	292	271	153	229	1246

**Table 6.5 Child fruit and vegetable consumption, 2012-2015 combined, by parental fruit and vegetable consumption and sex**

Aged 2-15

2012-2015 combined

Portions per day	Parental consumption <sup>a</sup>							Total
	None	Less than 1 portion	1 portion or more but less than 2	2 portions or more but less than 3	3 portions or more but less than 4	4 portions or more but less than 5	5 portions or more	
	%	%	%	%	%	%	%	%
<b>Boys</b>								
None	43	[18]	19	11	7	8	3	12
Less than 1 portion	6	[33]	11	7	6	5	3	7
1 portion or more but < 2	29	[29]	32	32	21	21	17	25
2 portions or more but < 3	12	[15]	21	27	29	25	18	22
3 portions or more but < 4	8	[-]	11	15	16	18	23	16
4 portions or more but < 5	-	[5]	2	4	11	14	15	9
5 portions or more	2	[-]	4	5	11	10	20	10
Mean	1.0	[1.0]	1.6	2.0	2.6	2.6	3.4	2.4
Standard error of the mean	0.14	[0.22]	0.13	0.10	0.14	0.14	0.12	0.06
Median	1.0	[0.7]	1.3	2.0	2.3	2.3	3.2	2.0
<b>Girls</b>								
None	42	*	15	9	4	3	2	9
Less than 1 portion	6	*	7	7	5	3	2	5
1 portion or more but < 2	27	*	33	22	22	18	8	20
2 portions or more but < 3	13	*	21	32	30	26	17	23
3 portions or more but < 4	8	*	17	18	18	25	27	20
4 portions or more but < 5	3	*	3	6	13	14	20	12
5 portions or more	1	*	3	5	8	12	25	12
Mean	1.0	*	1.9	2.2	2.7	3.0	3.9	2.7
Standard error of the mean	0.14	*	0.12	0.11	0.11	0.15	0.13	0.07
Median	1.0	*	1.7	2.3	2.5	3.0	3.7	2.5

Continued...



**Table 6.5 -Continued**

*Aged 2-15*

*2012 to 2015 combined*

Portions per day	Parental consumption <sup>a</sup>							Total
	None	Less than 1 portion	1 portion or more but less than 2	2 portions or more but less than 3	3 portions or more but less than 4	4 portions or more but less than 5	5 portions or more	
	%	%	%	%	%	%	%	%
<b>All children</b>								
None	43	17	17	10	6	5	2	10
Less than 1 portion	6	30	9	7	5	4	2	6
1 portion or more but < 2	28	25	33	28	22	19	13	22
2 portions or more but < 3	12	20	21	29	29	25	17	23
3 portions or more but < 4	8	5	14	17	17	21	25	18
4 portions or more but < 5	1	3	2	5	12	14	18	10
5 portions or more	1	-	4	5	9	11	22	11
Mean	1.0	1.2	1.7	2.1	2.6	2.8	3.7	2.6
Standard error of the mean	0.11	0.19	0.10	0.08	0.09	0.11	0.10	0.05
Median	1.0	1.0	1.5	2.0	2.5	2.7	3.5	2.3
<i>Bases (weighted):</i>								
Boys	96	33	212	269	231	210	355	1452
Girls	89	30	197	230	252	185	378	1398
All children	185	63	408	498	482	395	733	2850
<i>Bases (unweighted):</i>								
Boys	84	33	209	259	220	205	354	1403
Girls	87	28	196	236	257	200	362	1405
All children	171	61	405	495	477	405	716	2808

<sup>a</sup> The highest of any resident parent

**Table 6.6 Urinary sodium (Na), potassium (K) and creatinine (Cre), Na/Cre ratio, K/Cre ratio, 2003 to 2014/2015 combined**

Urinary sodium, potassium, creatinine (mmol/l)	2003 to 2014/2015 combined				
	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%	%
<b>Men</b>					
<b>Sodium (mmol/l)</b>					
Mean	129.3	120.9	117.6	113.8	109.2
Standard error of the mean	3.69	2.18	2.35	2.36	2.56
5th percentile	34	37	30	29	28
10th percentile	51	47	45	43	37
Median	125	117	113	108	103
90th percentile	215	197	195	190	184
95th percentile	230	219	213	210	211
<b>Potassium (mmol/l)</b>					
Mean	67.1	67.9	62.4	58.5	59.3
Standard error of the mean	1.70	1.44	1.31	1.29	1.08
5th percentile	18	17	16	15	15
10th percentile	26	24	23	22	24
Median	63	64	59	57	56
90th percentile	115	119	105	101	101
95th percentile	129	138	119	101	101
<b>Creatinine (mmol/l)</b>					
Mean	14.3	12.7	11.8	11.5	11.4
Standard error of the mean	0.37	0.27	0.27	0.32	0.26
5th percentile	3.8	2.9	2.6	2.5	2.3
10th percentile	5.6	4.3	3.7	3.7	3.3
Median	13.9	12.2	11.0	10.6	10.8
90th percentile	23.5	20.9	20.1	20.2	19.4
95th percentile	27.5	23.7	24.8	24.3	22.4
<b>Na/Cre ratio</b>					
Mean	10.9	11.6	12.0	12.3	11.9
Standard error of the mean	0.42	0.27	0.26	0.32	0.28
5th percentile	3.5	3.5	3.6	3.3	3.2
10th percentile	4.7	4.7	4.7	5.0	4.6
Median	9.5	10.3	10.9	11.1	10.4
90th percentile	17.7	19.2	20.4	20.5	20.6
95th percentile	21.8	23.2	24.3	25.4	24.5

*Continued...*

**Table 6.6 -Continued***Aged 16 and over with a valid urine sample**2003 to 2014/2015 combined*

<b>Urinary sodium, potassium, creatinine (mmol/l)</b>	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%	%
<b>K/Cre ratio</b>					
Mean	5.2	5.9	5.9	5.9	6.1
Standard error of the mean	0.13	0.10	0.11	0.13	0.14
5th percentile	2.0	2.3	2.4	2.3	2.5
10th percentile	2.6	3.0	2.8	2.9	3.0
Median	4.7	5.5	5.6	5.5	5.6
90th percentile	8.1	9.8	9.2	9.3	9.6
95th percentile	9.6	11.2	10.6	10.5	11.5
<b>Women</b>					
<b>Sodium (mmol/l)</b>					
Mean	104.3	97.9	91.5	95.1	92.5
Standard error of the mean	2.88	1.85	2.16	2.10	2.10
5th percentile	26	23	22	23	22
10th percentile	36	32	28	31	30
Median	97	87	81	85	84
90th percentile	189	186	176	176	174
95th percentile	214	212	197	202	194
<b>Potassium (mmol/l)</b>					
Mean	58.3	60.1	55.6	53.1	54.6
Standard error of the mean	1.57	1.16	1.25	1.00	0.98
5th percentile	14	14	12	14	15
10th percentile	19	19	17	19	20
Median	52	55	48	49	51
90th percentile	108	111	105	97	101
95th percentile	132	129	123	101	101
<b>Creatinine (mmol/l)</b>					
Mean	10.3	9.2	8.5	8.7	8.6
Standard error of the mean	0.30	0.18	0.22	0.22	0.20
5th percentile	2.2	1.8	1.6	1.7	1.8
10th percentile	2.8	2.8	2.1	2.4	2.4
Median	9.3	8.3	7.4	7.5	7.6
90th percentile	19.1	16.9	16.4	17.0	16.2
95th percentile	22.1	19.5	19.2	19.6	19.7

*Continued...*

**Table 6.6 -Continued**

	<i>Aged 16 and over with a valid urine sample</i>					<i>2003 to 2014/2015 combined</i>				
<b>Urinary sodium, potassium, creatinine (mmol/l)</b>	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%	%					
<b>Na/Cre ratio</b>										
Mean	13.3	13.3	14.6	13.9	14.2					
Standard error of the mean	0.46	0.30	0.36	0.35	0.37					
5th percentile	3.6	3.5	3.3	3.7	3.5					
10th percentile	4.8	4.9	5.0	5.2	4.6					
Median	11.3	11.4	12.4	12.1	12.1					
90th percentile	22.2	23.4	26.8	24.5	25.0					
95th percentile	27.3	27.7	32.8	28.0	29.7					
<b>K/Cre ratio</b>										
Mean	6.5	7.4	7.9	7.4	7.7					
Standard error of the mean	0.14	0.12	0.14	0.15	0.13					
5th percentile	2.6	3.0	3.0	3.0	3.1					
10th percentile	3.1	3.8	3.7	3.6	3.9					
Median	6.0	6.6	7.1	6.6	6.9					
90th percentile	10.5	11.8	13.0	11.9	12.3					
95th percentile	12.5	14.5	15.9	14.2	14.4					
<b>All adults</b>										
<b>Sodium (mmol/l)</b>										
Mean	116.1	109.0	104.3	104.1	100.5					
Standard error of the mean	2.76	1.55	1.72	1.76	1.82					
5th percentile	29	27	24	25	24					
10th percentile	40	38	33	35	34					
Median	110	99	98	96	93					
90th percentile	202	191	187	185	180					
95th percentile	222	217	208	206	204					
<b>Potassium (mmol/l)</b>										
Mean	62.5	63.9	58.9	55.7	56.9					
Standard error of the mean	1.13	1.00	0.93	0.88	0.80					
5th percentile	16	15	13	15	15					
10th percentile	21	21	19	21	21					
Median	58	59	54	53	54					
90th percentile	110	113	105	100	101					
95th percentile	131	133	121	101	101					

*Continued...*

**Table 6.6 -Continued**

	<i>Aged 16 and over with a valid urine sample</i>				
	<i>2003, 2008/2009 combined to 2014/2015 combined</i>				
<b>Urinary sodium, potassium, creatinine (mmol/l)</b>	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined	2014/2015 combined
	%	%	%	%	%
<b>Creatinine (mmol/l)</b>					
Mean	12.2	10.9	10.1	10.1	9.9
Standard error of the mean	0.25	0.17	0.19	0.21	0.18
5th percentile	2.4	2.2	1.9	2.1	2.0
10th percentile	3.6	3.2	2.5	2.8	2.6
Median	11.4	10.1	9.2	9.0	9.0
90th percentile	22.0	19.3	18.6	18.5	17.9
95th percentile	25.0	22.1	22.3	22.0	20.9
<b>Na/Cre ratio</b>					
Mean	12.2	12.5	13.3	13.1	13.1
Standard error of the mean	0.32	0.21	0.23	0.25	0.25
5th percentile	3.5	3.5	3.5	3.5	3.3
10th percentile	4.7	4.8	4.8	5.0	4.6
Median	10.4	10.9	11.5	11.6	11.2
90th percentile	20.2	21.4	23.7	22.7	22.9
95th percentile	25.4	26.4	29.5	26.8	27.5
<b>K/Cre ratio</b>					
Mean	5.9	6.7	6.9	6.7	6.9
Standard error of the mean	0.11	0.09	0.10	0.11	0.11
5th percentile	2.3	2.6	2.6	2.7	2.7
10th percentile	2.9	3.3	3.2	3.2	3.3
Median	5.3	6.1	6.3	5.9	6.3
90th percentile	9.6	10.9	11.3	10.6	11.1
95th percentile	11.3	12.7	13.6	12.9	13.6
<i>Bases (weighted):</i>					
<i>Men</i>	535	998	885	896	894
<i>Women</i>	594	1075	915	974	976
<i>All adults</i>	1129	2074	1800	1870	1869
<i>Bases (unweighted):</i>					
<i>Men</i>	508	921	793	846	821
<i>Women</i>	640	1165	1004	1026	1050
<i>All adults</i>	1148	2086	1797	1872	1871

**Table 6.7 Urinary sodium (Na), potassium (K) and creatinine (Cre), Na/Cre ratio, K/Cre ratio, 2014/2015 combined, by age and sex**

*Aged 16 and over with a valid urine sample*

*2014/2015 combined*

Urinary sodium, potassium, creatinine (mmol/l)	Age			Total
	16-44	45-64	65+	
	%	%	%	%
<b>Men</b>				
<b>Sodium (mmol/l)</b>				
Mean	117.6	105.6	96.0	109.2
Standard error of the mean	4.68	3.54	3.12	2.56
5th percentile	27	30	31	28
10th percentile	36	40	38	37
Median	121	98	92	103
90th percentile	197	178	160	184
95th percentile	220	204	184	211
<b>Potassium (mmol/l)</b>				
Mean	59.2	60.7	57.4	59.3
Standard error of the mean	1.91	1.71	1.71	1.08
5th percentile	14	16	17	15
10th percentile	23	27	26	24
Median	55	57	55	56
90th percentile	101	101	90	101
95th percentile	101	101	101	101
<b>Creatinine (mmol/l)</b>				
Mean	12.6	10.7	9.7	11.4
Standard error of the mean	0.50	0.40	0.44	0.26
5th percentile	2.4	2.4	1.9	2.3
10th percentile	3.5	3.1	3.1	3.3
Median	12.3	9.5	9.3	10.8
90th percentile	20.3	18.0	16.6	19.4
95th percentile	25.1	20.9	19.7	22.4
<b>Na/Cre ratio</b>				
Mean	11.4	11.9	13.0	11.9
Standard error of the mean	0.42	0.46	0.77	0.28
5th percentile	2.9	3.4	2.6	3.2
10th percentile	4.4	4.8	4.7	4.6
Median	9.9	10.4	10.7	10.4
90th percentile	20.3	20.4	23.5	20.6
95th percentile	23.3	24.1	31.0	24.5

*Continued...*

**Table 6.7 -Continued**

*Aged 16 and over with a valid urine sample*

*2014/2015 combined*

Urinary sodium, potassium, creatinine (mmol/l)	Age			Total
	16-44	45-64	65+	
	%	%	%	%
<b>K/Cre ratio</b>				
Mean	5.5	6.6	6.8	6.1
Standard error of the mean	0.23	0.21	0.21	0.14
5th percentile	2.3	3.1	3.4	2.5
10th percentile	2.6	3.6	3.9	3.0
Median	4.9	6.3	6.3	5.6
90th percentile	9.1	9.9	10.0	9.6
95th percentile	10.9	12.2	11.5	11.5
<b>Women</b>				
<b>Sodium (mmol/l)</b>				
Mean	105.6	87.0	75.9	92.5
Standard error of the mean	3.78	3.19	2.32	2.10
5th percentile	23	19	23	22
10th percentile	32	29	34	30
Median	94	80	71	84
90th percentile	186	154	127	174
95th percentile	220	182	144	194
<b>Potassium (mmol/l)</b>				
Mean	56.5	54.0	52.0	54.6
Standard error of the mean	1.72	1.73	1.78	0.98
5th percentile	12	15	16	15
10th percentile	20	22	20	20
Median	53	51	48	51
90th percentile	101	101	92	101
95th percentile	101	101	99	101
<b>Creatinine (mmol/l)</b>				
Mean	9.6	8.0	7.5	8.6
Standard error of the mean	0.33	0.35	0.37	0.20
5th percentile	1.9	1.6	1.7	1.8
10th percentile	2.7	2.2	2.1	2.4
Median	9.0	7.0	6.4	7.6
90th percentile	17.7	15.7	13.9	16.2
95th percentile	22.1	19.3	17.6	19.7

*Continued...*

**Table 6.7 -Continued***Aged 16 and over with a valid urine sample**2014/2015 combined*

Urinary sodium, potassium, creatinine (mmol/l)	Age			Total
	16-44	45-64	65+	
	%	%	%	%
<b>Na/Cre ratio</b>				
Mean	13.6	14.0	15.5	14.2
Standard error of the mean	0.48	0.46	1.15	0.37
5th percentile	3.5	3.5	3.2	3.5
10th percentile	4.9	5.5	4.0	4.6
Median	12.0	12.3	11.8	12.1
90th percentile	23.6	25.2	28.6	25.0
95th percentile	28.4	28.5	34.7	29.7
<b>K/Cre ratio</b>				
Mean	6.8	8.2	8.5	7.7
Standard error of the mean	0.17	0.25	0.27	0.13
5th percentile	2.8	3.6	3.5	3.1
10th percentile	3.3	4.1	4.3	3.9
Median	6.3	7.5	7.5	6.9
90th percentile	10.3	12.7	14.4	12.3
95th percentile	12.9	15.0	17.5	14.4
<b>All adults</b>				
<b>Sodium (mmol/l)</b>				
Mean	111.5	96.0	84.8	100.5
Standard error of the mean	3.38	2.33	1.85	1.82
5th percentile	23	24	24	24
10th percentile	35	33	35	34
Median	104	90	80	93
90th percentile	195	165	141	180
95th percentile	220	190	164	204
<b>Potassium (mmol/l)</b>				
Mean	57.8	57.2	54.4	56.9
Standard error of the mean	1.37	1.24	1.33	0.80
5th percentile	13	16	17	15
10th percentile	21	22	22	21
Median	54	55	51	54
90th percentile	101	101	92	101
95th percentile	101	101	100	101

*Continued...*



**Table 6.7 -Continued**

*Aged 16 and over with a valid urine sample*

*2014/2015 combined*

Urinary sodium, potassium, creatinine (mmol/l)	Age			Total
	16-44	45-64	65+	
	%	%	%	%
<b>Creatinine (mmol/l)</b>				
Mean	11.1	9.3	8.5	9.9
Standard error of the mean	0.32	0.28	0.31	0.18
5th percentile	2.1	2.0	1.8	2.0
10th percentile	2.9	2.4	2.2	2.6
Median	10.6	8.4	7.8	9.0
90th percentile	19.6	17.0	15.7	17.9
95th percentile	22.8	19.7	19.5	20.9
<b>Na/Cre ratio</b>				
Mean	12.6	13.0	14.4	13.1
Standard error of the mean	0.33	0.31	0.79	0.25
5th percentile	3.3	3.4	3.1	3.3
10th percentile	4.7	4.9	4.2	4.6
Median	11.0	11.6	11.3	11.2
90th percentile	21.8	23.2	26.0	22.9
95th percentile	25.6	27.1	32.1	27.5
<b>K/Cre ratio</b>				
Mean	6.2	7.4	7.7	6.9
Standard error of the mean	0.15	0.18	0.20	0.11
5th percentile	2.5	3.3	3.5	2.7
10th percentile	2.9	3.9	4.0	3.3
Median	5.7	6.8	6.9	6.3
90th percentile	9.8	11.4	12.4	11.1
95th percentile	12.0	13.9	15.8	13.6
<i>Bases (weighted):</i>				
<i>Men</i>	<i>412</i>	<i>304</i>	<i>178</i>	<i>894</i>
<i>Women</i>	<i>424</i>	<i>327</i>	<i>224</i>	<i>976</i>
<i>All adults</i>	<i>836</i>	<i>631</i>	<i>402</i>	<i>1869</i>
<i>Bases (unweighted):</i>				
<i>Men</i>	<i>298</i>	<i>292</i>	<i>231</i>	<i>821</i>
<i>Women</i>	<i>408</i>	<i>362</i>	<i>280</i>	<i>1050</i>
<i>All adults</i>	<i>706</i>	<i>654</i>	<i>511</i>	<i>1871</i>

**Table 6.8 Adult consumption of vitamin or mineral supplements, 2015, by age and sex**

<i>Aged 16 and over</i>								<i>2015</i>
Consumption of vitamin or mineral supplements	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Taking any supplement	16	31	23	20	21	27	31	24
Taking supplement containing vitamin D	11	19	13	8	10	12	10	12
No supplements taken	84	69	77	80	79	73	69	76
<b>Women</b>								
Taking any supplement	25	27	27	29	31	37	35	30
Taking supplement containing vitamin D	14	20	19	12	16	17	15	16
Taking supplement containing folic acid <sup>a</sup>	2	10	8	3	n/a	n/a	n/a	6
No supplements taken	75	73	73	71	69	63	65	70
<b>All adults</b>								
Taking any supplement	21	29	25	24	26	33	34	27
Taking supplement containing vitamin D	12	20	16	10	13	15	13	14
No supplements taken	79	71	75	76	74	67	66	73
<i>Bases (weighted):</i>								
<i>Men</i>	339	385	372	445	375	288	190	2395
<i>Women</i>	333	405	397	473	394	321	274	2597
<i>Women aged 16-49</i>	333	405	393	223	n/a	n/a	n/a	1354
<i>All adults</i>	672	790	769	918	770	610	464	4992
<i>Bases (unweighted):</i>								
<i>Men</i>	194	241	313	406	410	400	280	2244
<i>Women</i>	211	348	392	487	489	461	362	2750
<i>Women aged 16-49</i>	211	348	389	229	n/a	n/a	n/a	1177
<i>All adults</i>	405	589	705	893	899	861	642	4994

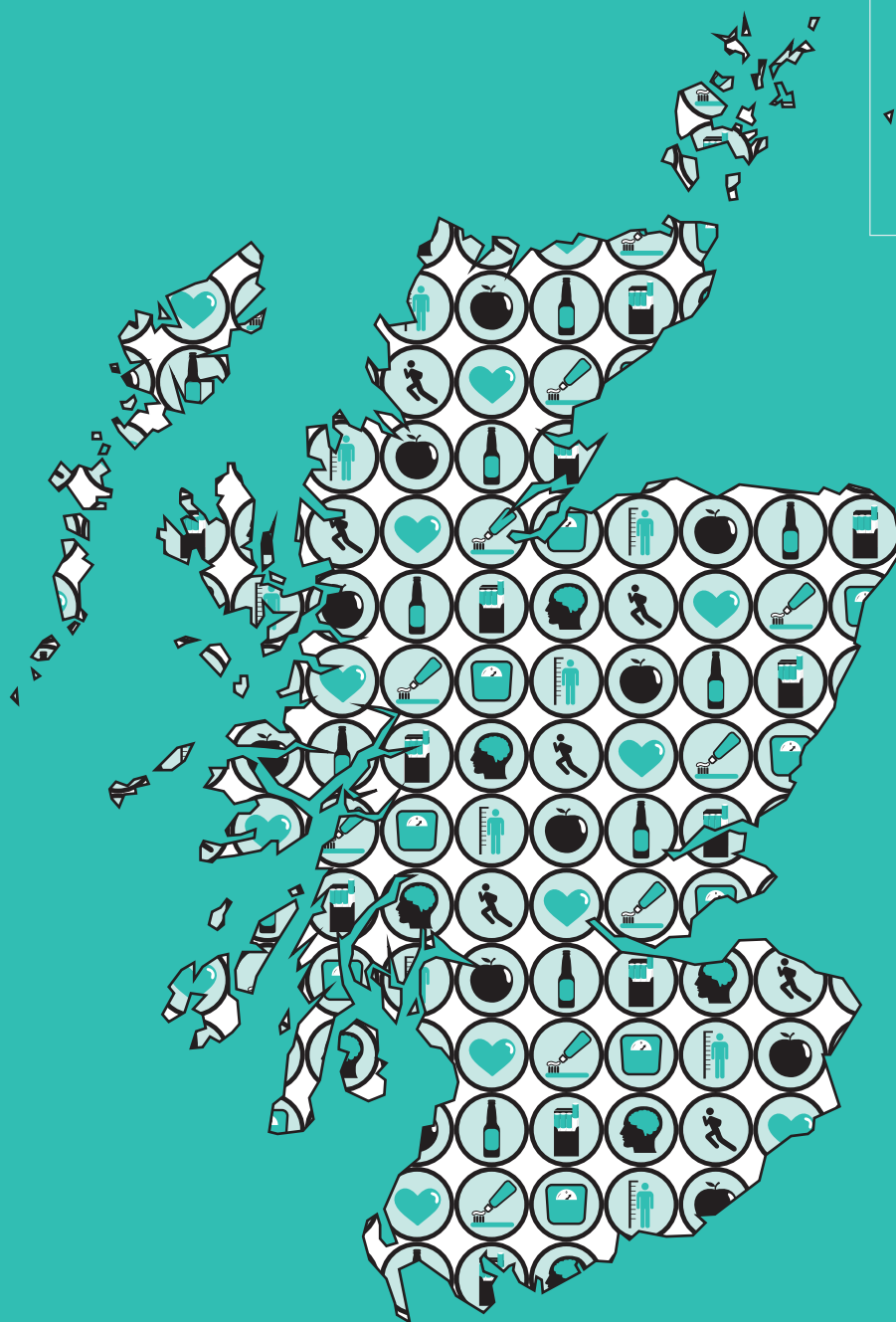
a Asked of women aged 16-49. Total is for that age group only

**Table 6.9 Child consumption of vitamin or mineral supplements, 2015, by age and sex**

*Aged 16 and over*

2015

Consumption of vitamin or mineral supplements	Age								Total
	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	
	%	%	%	%	%	%	%	%	%
<b>Boys</b>									
Taking any supplement	18	22	29	20	19	22	10	12	19
Taking supplement containing vitamin D	15	17	25	19	17	16	7	7	15
No supplements taken	82	78	71	80	81	78	90	88	81
<b>Girls</b>									
Taking any supplement	12	23	25	27	19	19	9	11	19
Taking supplement containing vitamin D	9	20	24	23	17	15	9	7	16
No supplements taken	88	77	75	73	81	81	91	89	81
<b>All children</b>									
Taking any supplement	15	23	27	23	19	21	10	11	19
Taking supplement containing vitamin D	13	19	25	21	17	15	8	7	16
No supplements taken	85	77	73	77	81	79	90	89	81
<i>Bases (weighted):</i>									
<i>Boys</i>	98	87	92	97	88	105	83	75	725
<i>Girls</i>	68	105	107	82	81	75	93	84	695
<i>All children</i>	166	191	199	180	169	179	176	160	1420
<i>Bases (unweighted):</i>									
<i>Boys</i>	100	94	99	102	98	94	77	71	735
<i>Girls</i>	73	105	106	87	83	68	81	82	685
<i>All children</i>	173	199	205	189	181	162	158	153	1420



# Chapter 7

## Physical Activity

## 7 PHYSICAL ACTIVITY

Peter Hovald

### SUMMARY

- **Just under two-thirds (63%) of adults met the guideline for Moderate or Vigorous Physical Activity (MVPA) in 2015, a similar level to that seen since 2012 (62-64%).**
- Men (67%) were significantly more likely to meet the MVPA guideline than women (59%).
- Just over a quarter (26%) of adults met both the MVPA and muscle strengthening guidelines, with men being significantly more likely to do so than women (29% compared with 24%).
- The proportion of adults meeting both guidelines decreased with age, from 42% of those aged 16-24 to 7% of those aged 75 and over.
- Adults spent an average of 5.2 hours being sedentary on weekdays and 5.9 hours on weekend days, excluding time at work.
  
- **In 2015, just under three-quarters (73%) of children met the guideline on physical activity (including school-based activity), a similar proportion to that seen in 2008 (71%).**
- Boys (77%) were more likely to meet the guideline than girls (69%).
- The proportion of children meeting the guideline in 2012-2015 was significantly higher if their mother was active at the recommended level than if their mother was not. There was no significant difference according to whether their father met the recommendations or not.
- Around two-thirds (68%) of children had participated in sport in the prior week, a similar level to 2014 (67%) but lower than in 2008 (71%).
- Sports participation levels were comparable for boys (69%) and girls (66%).
- Children were sedentary for an average of 3.3 hours on weekdays and 4.5 hours on weekend days, excluding time at school or nursery.

### 7.1 INTRODUCTION

Being active is important for physical and mental health in many ways, including reducing the risk of over 25 chronic conditions including coronary heart disease, stroke, type 2 diabetes, cancer, obesity and musculoskeletal problems. It also has secondary prevention benefits for many other conditions<sup>1</sup>.

The benefits of being regularly active extend beyond physical health, with evidence that certain forms of increased activity may also improve mental wellbeing, another key health priority in Scotland<sup>2</sup>. Exercise is now recommended by The Royal College of Psychiatrists as a treatment for depression in adults<sup>3</sup>, and the Scottish Intercollegiate Guidelines Network (SIGN) national clinical guidelines for non-pharmaceutical management of depression states that structured exercise programmes may be an option for depressed people<sup>4</sup>.

Physical activity is particularly important for older people, helping people to live independently for longer. Many activities of daily living, such as getting out of a chair, or climbing stairs, do not necessarily require significant aerobic fitness, but do require strength and balance, which can also help reduce falls. Because older adults have the lowest physical activity levels of any age group and have the highest risk of disability, increasing physical activity in older adults is an important way to improve healthy life expectancy<sup>5</sup>. Being physically active and fit, among other factors, is related to better mental ageing<sup>6</sup>. High activity levels in childhood provide both immediate and longer-term benefits, for example by promoting cognitive skills and bone strength, reducing the incidence of metabolic risk factors such as obesity and hypertension, and setting in place activity habits that endure into adulthood, with evidence showing an association between sedentary behaviour and overweight and obesity<sup>7</sup>.

The World Health Organisation (WHO) estimated, in 2008, that 3.2 million deaths per year could be attributed to low physical activity levels<sup>8</sup>. It is estimated that in Scotland low activity contributes to around 2,500 deaths per year and costs the National Health Service around £91 million annually<sup>9</sup>.

### 7.1.1 Policy background

Helping more people to be more active, more often is an over-arching policy objective of the Scottish Government. This commitment is reflected by the inclusion of a National Indicator to 'increase physical activity' in the **National Performance Framework**<sup>10</sup>. Data from the Scottish Health Survey (SHeS) are used to monitor indicator performance. Physical activity is also relevant to a number of other National Performance Framework indicators, such as increasing active travel, improving levels of educational attainment, improving mental wellbeing and increasing the proportion of healthy weight children.

The **Active Scotland Outcomes Framework**<sup>11</sup>, published in December 2014, sets out the Scottish Government's ambitions for a more active Scotland, describing the key outcomes desired for sport and physical activity in Scotland over the next ten years. Success will depend on the collective efforts of communities, individuals and a wide range of partners in areas such as health and social care, education, environment, transport, communities and sport and active recreation. A range of indicators track progress on the Active Scotland Outcomes Framework using data from SHeS.

The key national legacy programme designed to influence population levels of activity in adults and children is the national **Physical Activity Implementation Plan: A More Active Scotland - Building a Legacy from the Commonwealth Games (PAIP)**<sup>12</sup>. The PAIP is a 10 year plan which adapts the key elements of the 2010 Toronto Charter for Physical Activity to Scotland, and links this directly to the Scottish Government's legacy ambitions for the Commonwealth Games<sup>13</sup>. The Toronto Charter was developed following extensive worldwide expert consultation and makes the case for increased action and greater investment in physical activity for health, environmental, economic and other wider outcomes.

Recognising the important role walking has in staying active, the Scottish Government launched its **National Walking Strategy**<sup>14</sup> in June 2014. The National Walking Strategy Action Plan was launched in March 2016.

Information on physical and sedentary activity collected during the survey is used to inform some of the intermediate-term indicators used to monitor the progress of the **Obesity Route Map**<sup>15</sup>.

The **Active Scotland** web portal, developed by NHS Health Scotland, helps physical activity staff and health professionals signpost the public to physical activity opportunities<sup>16</sup>. Key initiatives to tackle inactivity among children and young people include the **Active Schools** network, which aims to increase the number of sport and physical activity opportunities available to children to participate in sport before school, during lunch and after school<sup>17</sup>. Alongside this is the **Sport Strategy for Children and Young People** which aims to boost physical activity and participation and make sport as accessible and enjoyable as possible<sup>18</sup>.

Several programmes to increase physical activity have been designed to capitalise on the opportunities presented by the 2014 Commonwealth Games in Glasgow, Progress is being tracked via **Assessing Legacy 2014**<sup>19</sup>. Through five rounds of awards, a total of 188 projects across Scotland received awards from the Legacy 2014 Active Places Fund, enabling communities to build, upgrade and improve facilities to drive participation in sport and physical activity.

### 7.1.2 Guidelines on physical activity

In July 2011, drawing on evidence about activity and health, the Chief Medical Officers of each of the four UK countries introduced revised guidelines on physical activity. The revisions followed guidance issued by the WHO and are in line with similar changes made to advice on activity levels in both the USA and Canada. The guidance, tailored to specific age groups over the life course, is as follows:

**Table 7A UK CMOs' physical activity guidelines**

Age group	Guidelines
<b>Early years – children under 5 years</b>	<ul style="list-style-type: none"> <li>○ Physical activity should be encouraged from birth, particularly through floor-based play and water-based activities in safe environments.</li> <li>○ Children capable of walking unaided should be physically active daily for at least 180 minutes (3 hours), spread throughout the day.</li> <li>○ Minimise amount of time spent being sedentary (being restrained or sitting) for extended periods (except time spent sleeping).</li> </ul>
<b>Children and young people aged 5 to 18</b>	<ul style="list-style-type: none"> <li>○ Should engage in moderate to vigorous activity for at least 60 minutes and up to several hours every day.</li> <li>○ Vigorous activities, including those that strengthen muscles and bones, should be carried out on at least 3 days a week.</li> <li>○ Extended periods of sedentary activities should be limited.</li> </ul>

	<ul style="list-style-type: none"> <li>○ Should be active daily.</li> </ul>
<b>Adults aged 19-64</b>	<ul style="list-style-type: none"> <li>○ Should engage in at least moderate activity for a minimum of 150 minutes a week (accumulated in bouts of at least 10 minutes) - for example by being active for 30 minutes on five days a week.</li> <li>○ Alternatively, 75 minutes of vigorous activity spread across the week will confer similar benefits to 150 minutes of moderate activity (or a combination of moderate and vigorous activity).</li> <li>○ Activities that strengthen muscles should be carried out on at least two days a week.</li> <li>○ Extended periods of sedentary activities should be limited.</li> </ul>
<b>Adults aged 65 and over</b>	<ul style="list-style-type: none"> <li>○ In addition to the guidance for adults aged 19-64, older adults are advised that any amount of physical activity is better than none, and more activity provides greater health benefits.</li> <li>○ Older adults at risk of falls should incorporate activities to improve balance and coordination on at least two days a week.</li> </ul>

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

Adult adherence to the new guidelines on moderate / vigorous physical activity (MVPA) in 2015 is presented in this chapter along with the adherence to the guidance on doing muscle-strengthening activities at least two days a week and levels of sedentary time. Trends in child physical activity, both including and excluding school-based activities are also presented as are physical activity levels by parental physical activity. The trend in child participation in sports and exercise has also been updated and child sedentary levels in 2015 are also presented. As noted above, these headline measures are key indicators for a number of strategies.

Supplementary tables on physical activity are available on the survey website<sup>20</sup>.

## 7.2 METHODS AND DEFINITIONS

### 7.2.1 Adult physical activity questionnaire

The SHeS questionnaire<sup>21</sup> asks about four main types of physical activity:

- Home-based activities (housework, gardening, building work and DIY)
- Walking
- Sports and exercise, and
- Activity at work.

Information is collected on the:

- time spent being active



- intensity of the activities undertaken, and
- frequency with which activities are performed.

## 7.2.2 Adherence to adult physical activity guidelines

Monitoring adherence to the revised guidelines (discussed in Section 7.1.2) required several changes to be made to the SHeS physical activity questions in 2012. Details of the amendments made to the module, and fuller details of the information collected about physical activity, are outlined in the 2012 SHeS annual report<sup>22</sup>.

The current activity guidelines advise 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”. A more detailed discussion of this calculation is provided in the 2012 report<sup>22</sup>.

**Table 7B Adult summary activity levels<sup>a</sup>**

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.

<sup>a</sup> Only 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 adults<sup>23</sup>. 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
- Walking, and
- Housework or gardening (children aged 8 and over only).

Children are asked to provide information on the average duration of sports and exercise activities for a typical weekday and typical weekend day. They are not asked to differentiate between different weekday or weekend days or to provide a specific duration for each separate day.

Since 2008, children at school have also been asked about any active things they have done as part of lessons (using the same format of questions as for all other activity types). Full details of all the information collected was provided in the 2012 report<sup>22</sup>.

### 7.2.4 Adherence to child physical activity guidelines

For the purposes of calculating physical activity levels, it was assumed that all reported activities were of at least moderate intensity. Data on each of the different activities have been summarised to provide an overall measure of child physical activity. This summary measure takes into account both the average time spent participating in physical activity, and the number of active days in the last week. Each child's level of physical activity was assigned to one of three categories:

**Table 7C Child summary activity levels**

Meets guideline	Active on 7 days in last week for an average of at least 60 minutes per day
Some activity	Active on 7 days in last week for an average of 30 to 59 minutes per day
Low activity	Active on fewer than 7 days in last week or for an average of less than 30 minutes a day

### 7.2.5 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 computer) 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.

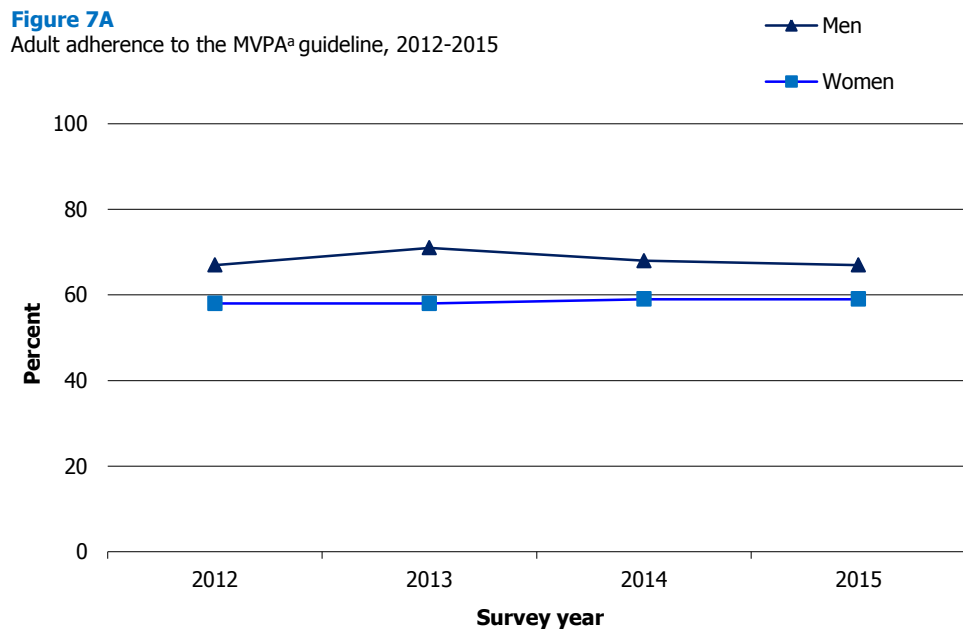
### 7.3 ADULT PHYSICAL ACTIVITY LEVELS

#### 7.3.1 Summary activity levels since 2012

In 2015, just under two-thirds (63%) of adults met the MVPA guidelines. Additionally, 12% of respondents reported some physical activity, 5% reported low levels, and 21% reported very low levels. Men were significantly more likely than women to meet the guidelines on physical activity in 2015 (67% compared with 59%), as in previous survey years.

Data on adherence to the current recommendation have been collected on the survey since 2012. The proportion of all adults meeting the guidelines has stayed relatively static from 2012 to 2015, ranging from 62-64% (63% in 2015). There was a significant increase in the percentage of men active at the recommended level between 2012 and 2013 (from 67% to 71%), which has since returned to the previous level (68% in 2014, 67% in 2015). Levels have remained similar for women across the same overall period (58% in 2012 and 2013, 59% in 2014 and 2015), as shown in Figure 7A.

**Figure 7A, Table 7.1**



<sup>a</sup> Meets moderate / vigorous physical activity guidelines of 150 minutes of moderate, or 75 minutes<sup>a</sup> vigorous activity, or combination of both each week

#### 7.3.2 Adherence to muscle strengthening and MVPA guidelines in 2015

SHeS collects data on adherence to guidelines on muscle strengthening activities (performing muscle strengthening exercises on at least two days per week). In 2015, just over a quarter (26%) of adults

aged 16 and over met both the muscle strengthening and MVPA guidelines, with 1% meeting the muscle strengthening guideline only. Just over a third (36%) met the MVPA guideline but not the recommended level of muscle strengthening activity. The remaining 36% of adults met neither guideline.

Whether adults were male or female was significantly associated with activity levels. In 2015, men were significantly more likely than women to meet both the MVPA and muscle strengthening guideline (29% for men compared with 24% for women) and less likely to meet neither guideline (32% and 40% respectively). There was no significant difference between the proportion of men (38%) and women (35%) who met the MVPA guidelines only.

In 2015, the proportion of adults meeting both the MVPA and muscle strengthening guidelines declined with age, from 42% of those aged 16-24 to 7% of those aged 75 and over. Those meeting neither guideline increased with age, from just under a quarter (23%) of those aged 16-24 to just over two-thirds (68%) of those aged 75 and over. Similar patterns were seen for both men and women, with adherence to both guidelines declining from those aged 16-24 to those aged 75 and over (47% to 10% for men, 37% to 5% for women) and adherence to neither guideline increasing across the same age groups (21% to 56% for men, 25% to 76% for women).

**Table 7.2**

### **7.3.3 Adults' sedentary time in 2015**

The Scottish Government advises adults to avoid extended periods of sedentary time. In 2015, SHeS collected data regarding the amount of time adults spent being sedentary on both weekdays and on weekends. Figures 7B, 7C and Table 7.3 show the average number of hours that adults in Scotland spent sitting (including TV and non-TV hours) per weekday and weekend day by sex and age, excluding time spent at work.

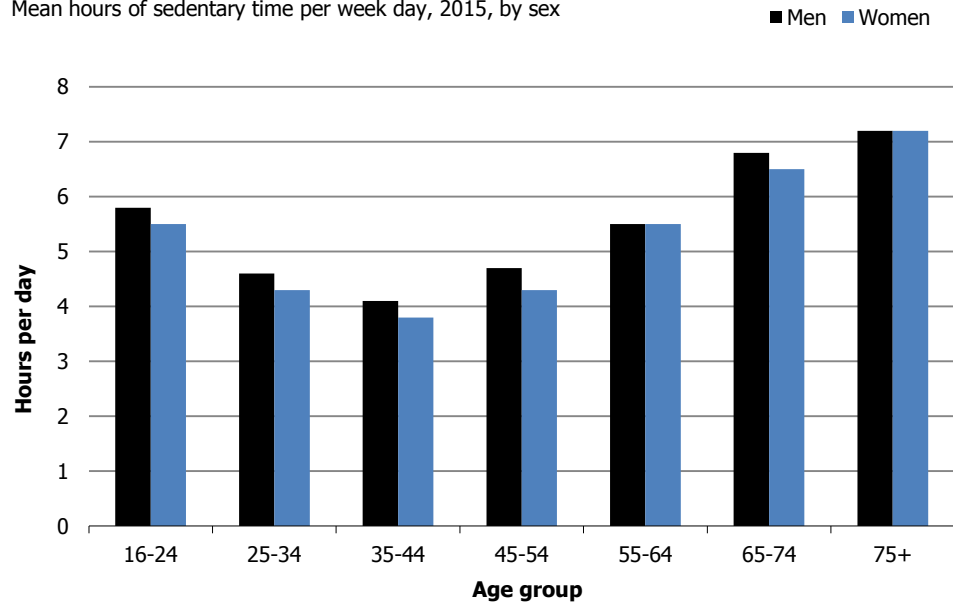
In 2015, adults in Scotland spent an average of 5.2 hours being sedentary on weekdays and 5.9 hours on weekend days, excluding time spent at work. The average time men spent being sedentary was significantly higher than for women both on weekdays (5.3 hours compared with 5.1) and weekend days (6.1 hours compared with 5.8 hours).

Sedentary activity patterns by age in 2015 were the same on weekdays and weekend days. Sedentary levels declined from those aged 16-24 (5.6 hours on weekday, 6.2 on weekends) to those aged 35-44 (4.0 hours and 5.0 hours respectively) before increasing with age. Those aged 75 and over sat for the greatest amount of time, on average, on both weekdays and weekend days (7.2 hours and 7.4 hours respectively). Sedentary activity patterns by age were similar for men and women.

**Figure 7B, Figure 7C, Table 7.3**

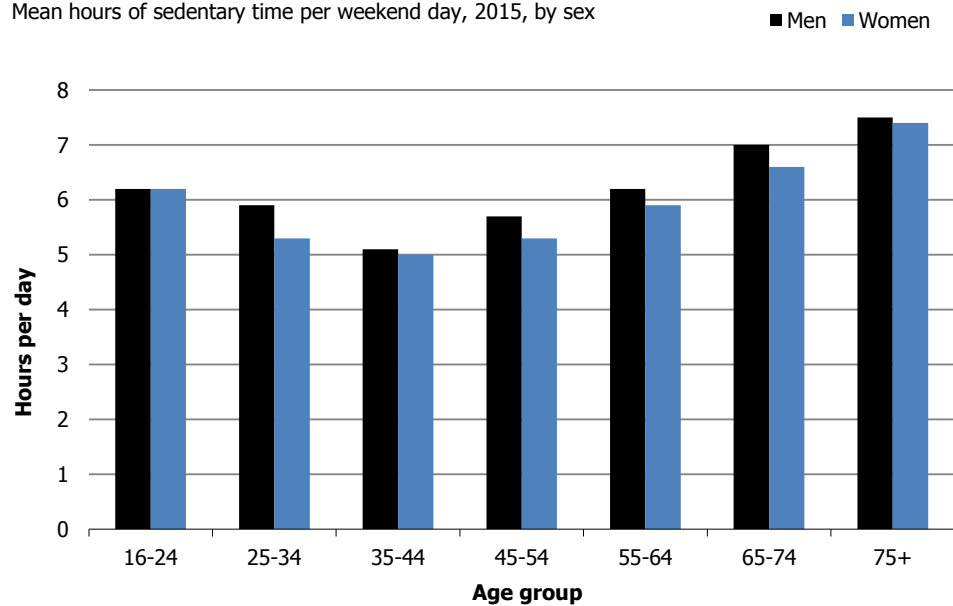
**Figure 7B**

Mean hours of sedentary time per week day, 2015, by sex



**Figure 7C**

Mean hours of sedentary time per weekend day, 2015, by sex



## 7.4 CHILD PHYSICAL ACTIVITY LEVELS

### 7.4.1 Proportion of children meeting physical activity guideline since 1998

SHeS has collected data on child physical activity levels since 1998, with school-based activity reported on since 2008. Figure 7D and Table 7.4 show the proportion of children aged 2-15 years reporting sufficient physical activity to meet the guidelines across this time period.

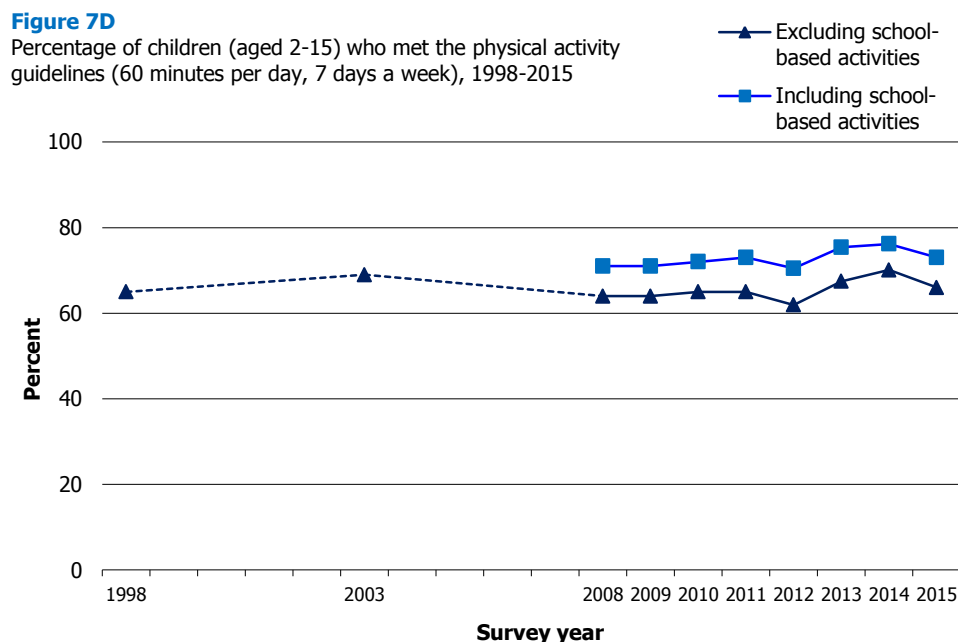
As shown in Figure 7D, around three quarters (73%) of children met the guideline on physical activity (including school activity) in 2015, with boys (77%) being significantly more likely to do so than girls (69%).

When school-based activity is excluded, around two thirds (66%) were active at the recommended level with the proportion of boys (71%) significantly higher than the proportion of girls (61%).

Trends in physical activity for all children have fluctuated over the years but are similar in 2015 and 2008 both when school-based activities are included (73% meeting guidelines in 2015 compared with 71% in 2008) and when they are excluded (66% and 64% respectively).

While figures for boys were similar in 2008 and 2015 (77% in both when school-based activity included, 72% in 2008 and 71% in 2015 when school-based activity excluded) there has been more fluctuation in physical activity levels for girls. Levels of physical activity rose from 2008 to a peak in 2014 and then stayed at statistically similar levels in 2015, with this being the case both when school-based activity was included (64%, 73% and 69%) and when it was excluded (56%, 67% and 61%).

**Figure 7D, Table 7.4**



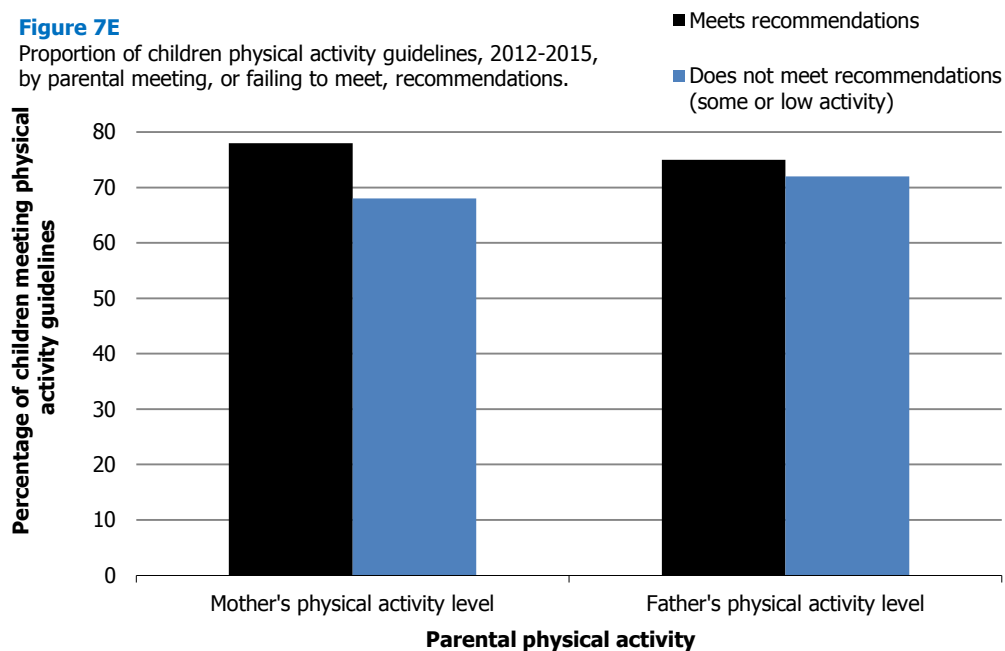
#### 7.4.2 Summary of children’s physical activity by parental physical activity, 2012-2015 (combined)

To increase the sample size available, detailed analysis of children’s physical activity by parental physical activity levels used data from the 2012, 2013, 2014 and 2015 surveys combined.

The 2012-2015 data shows that the proportion of children meeting the physical activity recommendation was significantly higher if their mother was active at the recommended level (78% of children) than if they were not (68% of children). This was the case both when the children were boys (82% meeting recommended levels if their mother met the guidelines compared with 71% doing so if their mother did not) and when they were girls (73% compared with 65% respectively).

There was no significant difference in children’s physical activity according to whether their father met the recommended levels or not. In 2012-2015, 75% of children reached the guidelines if they had a father who met their recommended level and 72% of children met the guidelines if their father did not. Data by sex of child showed a similar pattern, with no significant difference between either boys (81% meeting the guidelines if their father met the guidelines compared with 75% if their father did not) and girls (69% and 70% respectively).

**Figure 7E, Table 7.5**



### 7.4.3 Proportion of children participating in sport since 1998

SHeS collects data on the proportion of children who report taking part in sport in the week prior to being interviewed. These data, collected in 1998, 2003 and then annually since 2008, are displayed in Figure 7F.

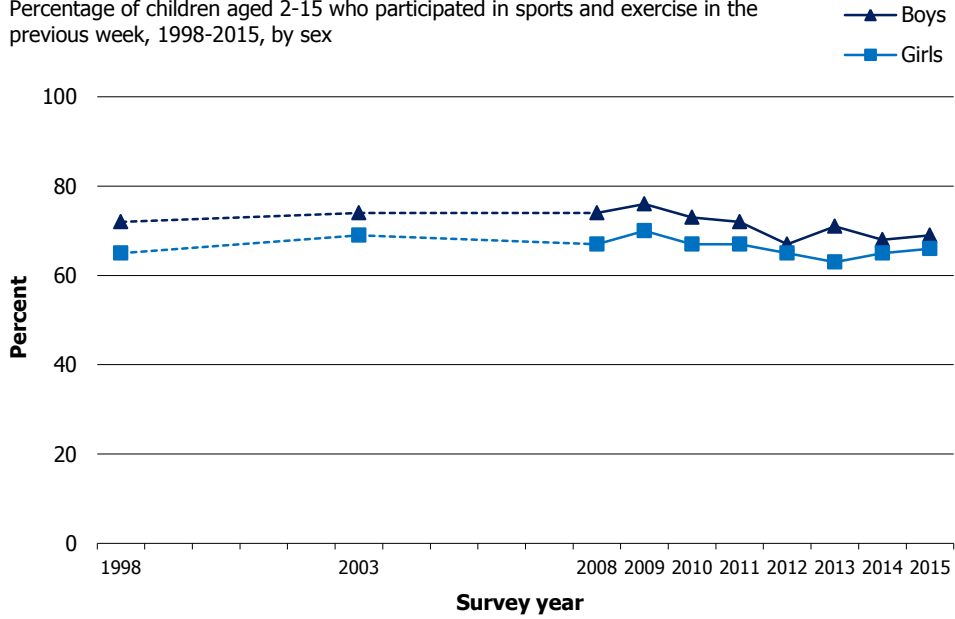
In 2015 around two-thirds (68%) of children aged 2-15 participated in sport in the week prior to interview, with there being no statistically significant difference between boys (69%) and girls (66%).

Levels of participation in sport for children aged 2-15 have tended to fluctuate over the years, with a decline between 2008 (71%) and 2012 (66%) before stabilising at a similar level in later years (67% in 2013 and 2014, 68% in 2015). Participation patterns over the years have been largely comparable for both sexes, with similar levels in 2015 to those in 2012 for both boys (69% in 2015 compared with 67% in 2012) and girls (66% and 65% respectively).

**Figure 7F, Table 7.6**

**Figure 7F**

Percentage of children aged 2-15 who participated in sports and exercise in the previous week, 1998-2015, by sex



#### 7.4.4 Children's sedentary time in 2015

As with adults, SHeS 2015 also collected data on the amount of time children aged 2-15 spent being sedentary (including both TV and non-TV time), excluding time at school or nursery. In 2015, children spent an average of 3.3 hours being sedentary on weekdays and 4.5 hours on weekend days. Levels of sedentary activity did not vary significantly between boys and girls either on weekdays (3.2 hours for boys compared with 3.3 for girls) or on weekends (4.6 hours and 4.4 hours respectively).

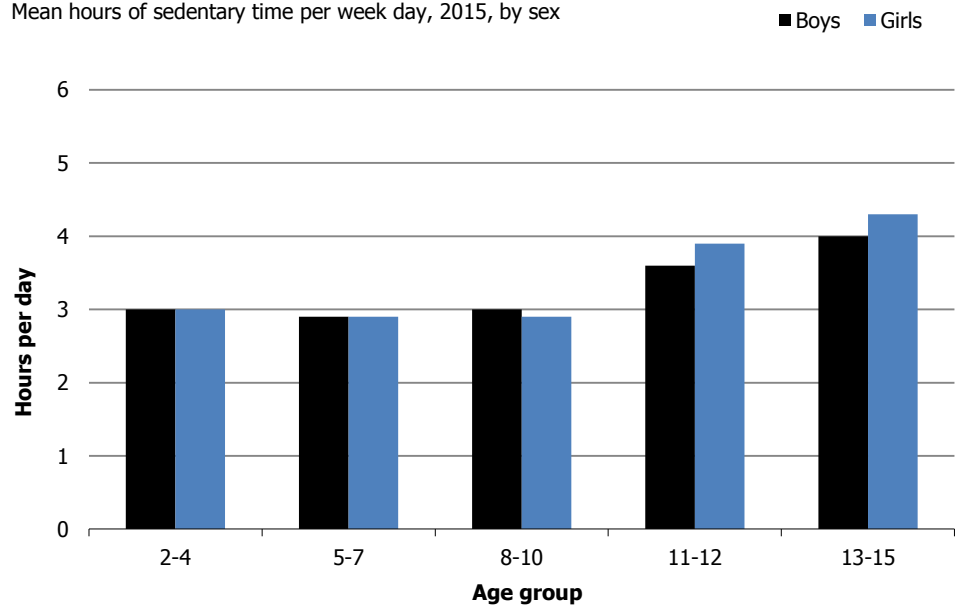
In 2015, the amount of sedentary time reported was associated with age. Children aged 11-15 reported a greater amount of time spent being sedentary on weekdays (3.8-4.2 hours on average) than those aged 2-10 (2.9-3.0 hours). A similar pattern was observed for weekend days with those aged 11-15 spending 5.2-5.6 hours being sedentary and those aged 2-10 spending 3.8-4.4 hours.

**Figure 7G, Figure 7H, Table 7.7**



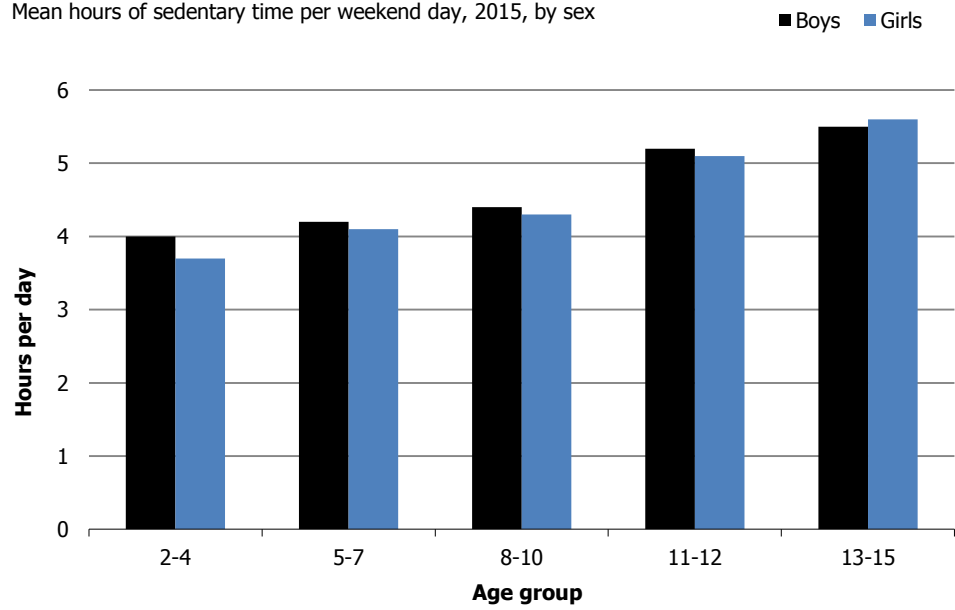
**Figure 7G**

Mean hours of sedentary time per week day, 2015, by sex



**Figure 7H**

Mean hours of sedentary time per weekend day, 2015, by sex



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- <sup>9</sup> See: [www.gov.scot/Topics/ArtsCultureSport/Sport/physicalactivity](http://www.gov.scot/Topics/ArtsCultureSport/Sport/physicalactivity)
- <sup>10</sup> See: [www.gov.scot/About/Performance/scotPerforms/indicator/physicalactivity](http://www.gov.scot/About/Performance/scotPerforms/indicator/physicalactivity)
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- <sup>13</sup> See:  
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- <sup>23</sup> 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.

## Table list

Table 7.1	Adult summary activity levels, 2012 to 2015
Table 7.2	Adult adherence to muscle strengthening and MVPA guidelines, 2015, by age and sex
Table 7.3	Adults' sedentary time, 2015, by age and sex
Table 7.4	Proportion of children meeting physical activity guideline (including and excluding activity at school), 1998 to 2015
Table 7.5	Children's summary physical activity levels (including activity at school), 2012-2015 combined, by parental physical activity, and sex of child
Table 7.6	Proportion of children participating in sport, 1998 to 2015
Table 7.7	Children's sedentary time, 2015, by age and sex

**Table 7.1 Adult summary activity levels, 2012 to 2015**

<i>Aged 16 and over</i>		<i>2012 to 2015</i>			
<b>Summary activity levels<sup>a</sup></b>	2012	2013	2014	2015	
	%	%	%	%	
<b>Men</b>					
Meets MVPA guidelines	67	71	68	67	
Some activity	10	8	10	9	
Low activity	4	3	4	4	
Very low activity	19	18	19	19	
<b>Women</b>					
Meets MVPA guidelines	58	58	59	59	
Some activity	14	14	12	14	
Low activity	6	5	5	5	
Very low activity	23	23	24	23	
<b>All adults</b>					
Meets MVPA guidelines	62	64	63	63	
Some activity	12	11	11	12	
Low activity	5	4	4	5	
Very low activity	21	21	22	21	
<i>Bases (weighted):</i>					
<i>Men</i>	2307	2336	2225	2383	
<i>Women</i>	2505	2542	2411	2585	
<i>All adults</i>	4811	4878	4636	4968	
<i>Bases (unweighted):</i>					
<i>Men</i>	2122	2129	2054	2229	
<i>Women</i>	2685	2747	2581	2733	
<i>All adults</i>	4807	4876	4635	4962	

a Meets moderate / vigorous physical activity (MVPA) guidelines: at least 150 minutes of moderately intensive physical activity or 75 minutes vigorous activity per week or an equivalent combination of both. Some activity: 60-149 minutes of moderate activity or 30-74 minutes of vigorous activity or an equivalent combination of these. Low activity: 30-59 minutes of moderate activity or 15-29 minutes of vigorous activity or an equivalent combination of these. Very low activity: Less than 30 minutes of moderate activity or less than 15 minutes of vigorous activity or an equivalent combination of these.

**Table 7.2 Adult adherence to muscle strengthening and MVPA guidelines, 2015, by age and sex**

<i>Aged 16 and over</i>								<i>2015</i>
<b>Proportion meeting guidelines<sup>a</sup></b>	<b>Age</b>							<b>Total</b>
	16-24 <sup>b</sup>	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Meets MVPA & muscle guidelines	47	39	35	29	21	13	10	29
Meets MVPA guidelines only	31	39	43	37	38	44	32	38
Meets muscle guideline only	-	1	1	1	0	1	2	1
Meets neither guideline	21	21	21	32	41	42	56	32
<i>Total meeting MVPA guideline</i>	79	78	78	66	59	57	42	67
<i>Total meeting muscle guideline</i>	47	40	37	30	21	14	12	30
<b>Women</b>								
Meets MVPA & muscle guidelines	37	30	29	27	18	14	5	24
Meets MVPA guidelines only	35	37	38	39	37	34	19	35
Meets muscle guideline only	3	2	1	0	2	2	1	1
Meets neither guideline	25	31	33	34	43	49	76	40
<i>Total meeting MVPA guideline</i>	72	67	67	66	55	48	23	59
<i>Total meeting muscle guideline</i>	40	32	30	27	19	16	5	25
<b>All Adults</b>								
Meets MVPA & muscle guidelines	42	35	32	28	19	13	7	26
Meets MVPA guidelines only	33	38	40	38	38	39	24	36
Meets muscle guideline only	1	1	1	1	1	2	1	1
Meets neither guideline	23	26	27	33	42	46	68	36
<i>Total meeting MVPA guideline</i>	75	72	72	66	57	52	31	63
<i>Total meeting muscle guideline</i>	43	36	33	29	20	15	8	28

*Continued...*

**Table 7.2 -Continued**

<i>Aged 16 and over</i>								<i>2015</i>
<b>Proportion meeting guidelines<sup>a</sup></b>	<b>Age</b>							<b>Total</b>
	16-24 <sup>b</sup>	25-34	35-44	45-54	55-64	65-74	75+	
<i>Bases (weighted):</i>								
<i>Men</i>	339	383	372	444	370	285	189	2383
<i>Women</i>	333	401	395	470	392	320	273	2585
<i>All adults</i>	672	784	767	914	763	606	463	4968
<i>Bases (unweighted):</i>								
<i>Men</i>	194	239	313	403	406	396	278	2229
<i>Women</i>	211	343	390	483	486	459	361	2733
<i>All adults</i>	405	582	703	886	892	855	639	4962

a Meets moderate / vigorous physical activity (MVPA) guidelines = 150 mins moderate / 75 mins vigorous / combination of both per week; Meets muscle guideline = carries out activities that strengthen muscles on at least two days per week

b Physical activity guidelines for those aged 16-18 are at least one hour of moderate or vigorous activity each day. As SHeS participants of that age were given the adult questionnaire, which does not ask separately about each day, they have been included in this table assessed against the adult criteria

**Table 7.3 Adults' sedentary time, 2015, by age and sex**

*Aged 16 and over*

2015

Sedentary leisure time in hours (TV & non-TV) <sup>a</sup>	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
<b>Weekday</b>								
Mean	5.8	4.6	4.1	4.7	5.5	6.8	7.2	5.3
Standard error of the mean	0.21	0.16	0.14	0.15	0.15	0.15	0.20	0.07
Median	5	4	4	4	5	6	7	5
% in bottom quartile (≤3.50)	20	38	48	37	26	8	7	29
% in second quartile (3.51-5.00)	34	33	32	36	32	26	22	32
% in third quartile (5.01-7.00)	22	16	12	17	22	32	29	20
% in top quartile (≥7.01)	24	12	8	10	20	34	41	19
<b>Weekend</b>								
Mean	6.2	5.9	5.1	5.7	6.2	7.0	7.5	6.1
Standard error of the mean	0.24	0.18	0.16	0.18	0.17	0.16	0.23	0.08
Median	6	6	5	5	6	7	7	6
% in bottom quartile (≤4.00)	28	30	45	40	28	19	17	31
% in second quartile (4.01-5.50)	32	33	29	25	34	28	27	30
% in third quartile (5.51-7.00)	19	18	16	18	16	26	24	19
% in top quartile (≥7.01)	20	18	9	16	21	28	32	19
<b>Women</b>								
<b>Weekday</b>								
Mean	5.5	4.3	3.8	4.3	5.5	6.5	7.2	5.1
Standard error of the mean	0.18	0.12	0.11	0.10	0.13	0.14	0.16	0.06
Median	5	4	4	4	5	6	7	5
% in bottom quartile (≤3.50)	22	42	54	42	27	12	6	32
% in second quartile (3.51-5.00)	32	34	28	36	30	25	19	30
% in third quartile (5.01-7.00)	25	15	13	12	24	29	31	20
% in top quartile (≥7.01)	21	9	5	10	19	33	44	18

*Continued...*



**Table 7.3-Continued**

*Aged 16 and over*

2015

Sedentary leisure time in hours (TV + non-TV) <sup>a</sup>	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Weekend</b>								
Mean	6.2	5.3	5.0	5.3	5.9	6.6	7.4	5.8
Standard error of the mean	0.25	0.16	0.13	0.12	0.12	0.15	0.16	0.07
Median	6	5	5	5	6	6	7	6
% in bottom quartile (≤4.00)	29	44	44	42	30	23	13	34
% in second quartile (4.01-5.50)	32	28	34	31	36	28	26	31
% in third quartile (5.51-7.00)	21	16	14	16	20	27	31	20
% in top quartile (≥7.01)	18	12	8	11	14	22	30	16
<b>All Adults</b>								
<b>Weekday</b>								
Mean	5.6	4.4	4.0	4.5	5.5	6.6	7.2	5.2
Standard error of the mean	0.14	0.11	0.10	0.09	0.11	0.11	0.13	0.05
Median	5	4	4	4	5	6	7	5
% in bottom quartile (≤3.50)	21	40	51	40	27	11	7	30
% in second quartile (3.51-5.00)	33	34	30	36	31	25	21	31
% in third quartile (5.01-7.00)	24	16	13	14	23	31	30	20
% in top quartile (≥7.01)	22	11	6	10	20	34	43	19
<b>Weekend</b>								
Mean	6.2	5.6	5.0	5.5	6.0	6.8	7.4	5.9
Standard error of the mean	0.19	0.13	0.11	0.12	0.11	0.12	0.15	0.06
Median	6	5	5	5	6	7	7	6
% in bottom quartile (≤4.00)	29	37	45	41	29	21	15	33
% in second quartile (4.01-5.50)	32	30	32	28	35	28	26	30
% in third quartile (5.51-7.00)	20	17	15	17	18	26	28	19
% in top quartile (≥7.01)	19	15	9	14	18	25	31	17

*Continued...*

**Table 7.3-Continued**

*Aged 16 and over*

2015

Sedentary leisure time in hours (TV + non-TV) <sup>a</sup>	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
<i>Bases (weighted):</i>								
<i>Men weekday</i>	339	383	372	442	374	280	190	2380
<i>Men weekend</i>	328	385	372	442	373	282	190	2371
<i>Women weekday</i>	333	405	396	470	393	317	270	2583
<i>Women weekend</i>	329	403	397	469	394	318	268	2578
<i>All adults weekday</i>	672	788	768	912	767	598	460	4963
<i>All adults weekend</i>	657	788	769	911	766	600	457	4949
<i>Bases (unweighted):</i>								
<i>Men weekday</i>	194	240	313	404	408	390	278	2227
<i>Men weekend</i>	187	241	313	403	407	392	278	2221
<i>Women weekday</i>	211	348	391	485	487	457	357	2736
<i>Women weekend</i>	209	344	392	484	488	458	354	2729
<i>All adults weekday</i>	405	588	704	889	895	847	635	4963
<i>All adults weekend</i>	396	585	705	887	895	850	632	4950

a Excludes those without a limiting illness or disability who said they were sedentary for > 14 hours a day

**Table 7.4 Proportion of children meeting physical activity guideline (including and excluding activity at school), 1998 to 2015**

<i>Aged 2-15</i>		<i>1998 to 2015</i>								
<b>Proportion meeting guideline<sup>a,b</sup></b>	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%
<b>Boys</b>										
Excluding activity at school	72	74	72	69	68	69	66	70	73	71
Including activity at school	n/a	n/a	77	75	75	76	73	78	79	77
<b>Girls</b>										
Excluding activity at school	59	63	56	58	62	62	58	64	67	61
Including activity at school	n/a	n/a	64	66	70	70	68	72	73	69
<b>All children</b>										
Excluding activity at school	65	69	64	64	65	65	62	67	70	66
Including activity at school	n/a	n/a	71	71	72	73	70	75	76	73
<i>Bases (weighted):</i>										
<i>Boys</i>	1088	1478	776	1142	784	867	791	825	735	616
<i>Girls</i>	1032	1424	721	1096	743	830	748	777	711	617
<i>All children</i>	2120	2903	1497	2237	1527	1697	1539	1602	1446	1233
<i>Bases (unweighted):</i>										
<i>Boys</i>	1972	1428	750	1142	811	841	753	815	723	625
<i>Girls</i>	1881	1444	737	1085	694	826	774	753	721	604
<i>All children</i>	3853	2872	1487	2227	1505	1667	1527	1568	1444	1229

a At least 60 minutes of activity on all 7 days in previous week

b Children aged 2-3 were not asked about school activities, children aged 4 were included if they had started school

**Table 7.5 Children's summary physical activity levels (including activity at school), 2012-2015 combined, by parental physical activity, and sex of child**

Aged 2-15

2012-2015 combined

Summary activity levels <sup>a</sup>	Mother's physical activity level <sup>b</sup>		Father's physical activity level <sup>b</sup>	
	Meets recommendations	Does not meet recommendations	Meets recommendations	Does not meet recommendations
	%	%	%	%
<b>Boys</b>				
Meets recommendations	82	71	81	75
Some activity	12	18	13	15
Low activity	6	11	6	10
<b>Girls</b>				
Meets recommendations	73	65	69	70
Some activity	17	20	20	20
Low activity	10	16	11	10
<b>All children</b>				
Meets recommendations	78	68	75	72
Some activity	14	19	16	17
Low activity	8	13	8	10
<i>Bases (weighted):</i>				
<i>Boys</i>	945	365	594	178
<i>Girls</i>	899	375	608	178
<i>All children</i>	1844	740	1201	357
<i>Bases (unweighted):</i>				
<i>Boys</i>	915	360	576	180
<i>Girls</i>	909	376	617	173
<i>All children</i>	1824	736	1193	353

a Meets recommendations (children) = at least 60 minutes of activity on all 7 days in previous week; some activity = 30-59 minutes of activity on all 7 days; low activity = lower level of activity (these categories were described in previous reports as "high", "medium" and "low", the labels have changed but the definitions for the categories remain the same)

b Meets recommendations (adults)=30 minutes or more on at least 5 days a week

**Table 7.6 Proportion of children participating in sport, 1998 to 2015**

<i>Aged 2-15</i>		<i>1998 to 2015</i>								
<b>Participation in any sport during last week</b>	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%
<b>Boys</b>										
Yes	72	74	74	76	73	72	67	71	68	69
No	28	26	26	24	27	28	33	29	32	31
<b>Girls</b>										
Yes	65	69	67	70	67	67	65	63	65	66
No	35	31	33	30	33	33	35	37	35	34
<b>All children</b>										
Yes	69	72	71	73	70	69	66	67	67	68
No	31	28	29	27	30	31	34	33	33	32
<i>Bases (weighted):</i>										
<i>Boys</i>	1096	1514	790	1155	794	878	802	830	742	627
<i>Girls</i>	1046	1448	736	1110	763	838	759	788	720	627
<i>All children</i>	2142	2961	1526	2265	1556	1716	1561	1617	1462	1254
<i>Bases (unweighted):</i>										
<i>Boys</i>	1987	1462	763	1156	823	853	763	819	729	635
<i>Girls</i>	1905	1467	752	1102	711	835	784	762	730	612
<i>All children</i>	3892	2929	1515	2258	1534	1688	1547	1581	1459	1247

**Table 7.7 Children's sedentary time, 2015, by age and sex**

<i>Aged 2-15</i>						<i>2015</i>
Sedentary leisure time in hours (TV + non-TV)	Age					Total
	2-4	5-7	8-10	11-12	13-15	
	%	%	%	%	%	%
<b>Boys</b>						
<b>Weekday</b>						
Mean	3.0	2.9	3.0	3.6	4.0	3.2
Standard error of the mean	0.12	0.11	0.12	0.16	0.13	0.06
Median	3	3	3	4	4	3
% in bottom quartile (≤3.50)	35	32	31	16	10	26
% in second quartile (3.51-5.00)	25	36	36	30	19	30
% in third quartile (5.01-7.00)	25	22	19	23	28	23
% in top quartile (≥7.01)	15	10	14	32	43	21
<b>Weekend</b>						
Mean	4.0	4.2	4.4	5.2	5.5	4.6
Standard error of the mean	0.17	0.17	0.16	0.38	0.22	0.10
Median	4	4	4	5	5	4
% in bottom quartile (≤4.00)	44	38	31	18	10	30
% in second quartile (4.01-5.50)	18	23	22	28	19	22
% in third quartile (5.51-7.00)	27	27	33	25	34	29
% in top quartile (≥7.01)	11	12	14	29	36	19
<b>Girls</b>						
<b>Weekday</b>						
Mean	3.0	2.9	2.9	3.9	4.3	3.3
Standard error of the mean	0.12	0.09	0.11	0.19	0.15	0.06
Median	3	3	3	4	4	3
% in bottom quartile (≤3.50)	33	32	34	10	3	24
% in second quartile (3.51-5.00)	27	32	34	29	20	29
% in third quartile (5.01-7.00)	27	26	21	24	27	25
% in top quartile (≥7.01)	13	9	11	37	51	22

*Continued...*

**Table 7.7 -Continued**

*Aged 2-15*

2015

Sedentary leisure time in hours (TV + non-TV)	Age					Total
	2-4	5-7	8-10	11-12	13-15	
	%	%	%	%	%	%
<b>Weekend</b>						
Mean	3.7	4.1	4.3	5.1	5.6	4.4
Standard error of the mean	0.16	0.16	0.15	0.23	0.21	0.09
Median	4	4	4	5	6	4
% in bottom quartile ( $\leq 3.50$ )	41	36	32	20	12	30
% in second quartile (3.51-5.00)	29	27	26	17	14	24
% in third quartile (5.01-7.00)	27	25	30	39	38	31
% in top quartile ( $\geq 7.01$ )	3	11	12	24	36	16
<b>All children</b>						
<b>Weekday</b>						
Mean	3.0	2.9	3.0	3.8	4.2	3.3
Standard error of the mean	0.09	0.07	0.09	0.12	0.10	0.05
Median	3	3	3	4	4	3
% in bottom quartile ( $\leq 4.00$ )	34	32	33	13	6	25
% in second quartile (4.01-5.50)	26	34	35	29	20	29
% in third quartile (5.51-7.00)	26	24	20	24	27	24
% in top quartile ( $\geq 7.01$ )	14	10	13	34	47	21
<b>Weekend</b>						
Mean	3.8	4.2	4.4	5.2	5.6	4.5
Standard error of the mean	0.12	0.12	0.12	0.23	0.16	0.07
Median	4	4	4	5	6	4
% in bottom quartile ( $\leq 3.50$ )	42	37	31	19	11	30
% in second quartile (3.51-5.00)	24	25	24	23	16	23
% in third quartile (5.01-7.00)	27	26	32	32	36	30
% in top quartile ( $\geq 7.01$ )	7	12	13	27	36	17

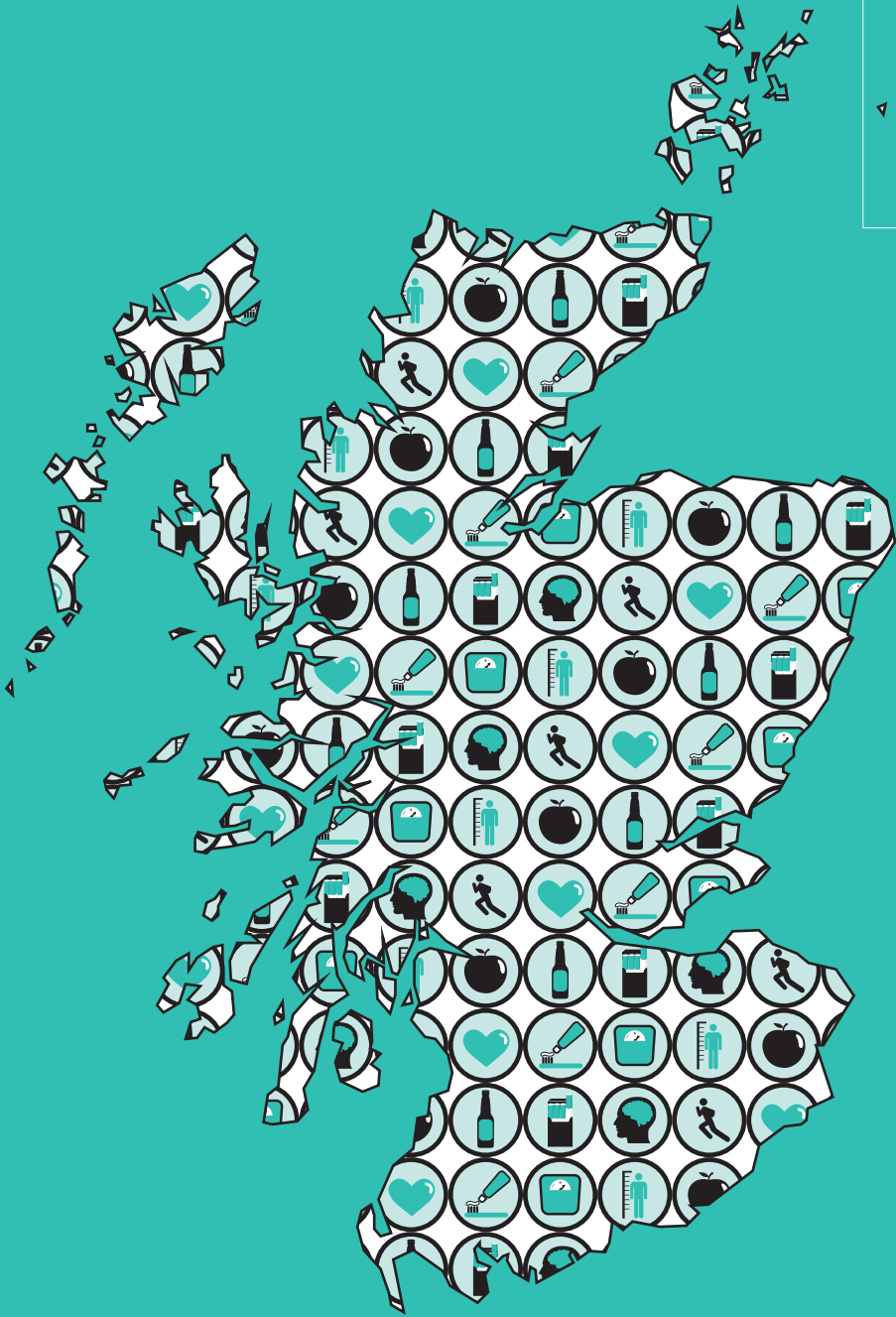
*Continued...*

**Table 7.7 -Continued***Aged 2-15*

2015

<b>Sedentary leisure time in hours (TV + non-TV)</b>	<b>Age</b>					<b>Total</b>
	2-4	5-7	8-10	11-12	13-15	
<i>Bases (weighted):</i>						
<i>Boys weekday</i>	121	139	142	83	97	582
<i>Boys weekend</i>	133	138	140	81	93	586
<i>Girls weekday</i>	147	138	120	77	112	594
<i>Girls weekend</i>	153	136	121	78	113	602
<i>All children weekday</i>	268	278	262	160	209	1176
<i>All children weekend</i>	286	274	261	159	207	1187
<i>Bases (unweighted):</i>						
<i>Boys weekday</i>	131	147	146	75	93	592
<i>Boys weekend</i>	144	146	145	74	88	597
<i>Girls weekday</i>	149	141	116	71	102	579
<i>Girls weekend</i>	154	138	117	72	105	586
<i>All children weekday</i>	280	288	262	146	195	1171
<i>All children weekend</i>	298	284	262	146	193	1183





# Chapter 8

## Obesity

## 8 OBESITY

Joe Rose

### SUMMARY

- **In 2015, two-thirds of adults (65%) were overweight, including 29% who were obese, figures which have changed little since 2008.**
- Levels of obesity were similar for both men and women (28% of men and 30% of women).
- Overweight and obesity remain significantly associated with age. In 2015, 38% of men aged 16-24 were overweight or obese, rising to 82% of men aged 65-74. There was a similar pattern for women, with 46-47% of women aged 16-34 overweight or obese, compared with 75% of those aged 75 and over.
- **Waist circumferences were higher on average in 2014/2015 than in 2003 for both men (98.2 cm in 2014/2015 and 95.3cm in 2003) and women (89.5 cm in 2014/2015, 86.3 cm in 2003).**
- The proportion of men with a raised waist circumference (greater than 102cm) increased from 28% in 2003 to 37% in 2014/2015. The proportion of women with a raised waist circumference (greater than 88cm) increased from 39% to 52% over the same period.
- Around two-thirds of all women (66%) and three in five men (59%) had an increased risk of disease based on their BMI and waist circumference.
- Overall, 28% of men were categorised as being at very high risk level or above, and 3% at extremely high risk level. Equivalent figures for women were 32% at very high risk level or above, and 4% at extremely high risk level.
- **The proportion of boys of healthy weight (73% in 2015) has increased year on year since 2011 (63%) and is comparable to the level seen in 1998 (70%).**
- The proportion of girls who were a healthy weight in 2015 was 70%, a level which has remained relatively steady since 1998.
- Just over one in four (28%) children were at risk of overweight in 2015, with no significant difference between boys and girls (26% of boys and 29% of girls).
- In 2015, 15% of boys and 14% of girls were at risk of obesity, figures which were identical to those in 1998.
- Compared with a child with parents of a healthy weight, a child with an obese parent was significantly more likely to be at risk of overweight, including obesity (40% compared with 22%), or at risk of obesity (23% compared with 11%).

### 3.1 INTRODUCTION

Overweight and obesity have been defined as abnormal or excessive fat accumulation that may impair health<sup>1,2</sup>. Obesity is associated with an increased risk of a number of common causes of disease and, at high levels of obesity (BMI of 35 or above), death.<sup>3</sup> The impact of overweight and obesity upon quality of life and health is felt across the lifecourse. During childhood, those who are overweight or obese have an increased risk of conditions such as hypertension, type 2 diabetes and asthma<sup>4,5</sup>. If their weight continues to be unhealthy into

adulthood, children are at an increased risk of numerous conditions associated with adult obesity, such as diabetes, cardiovascular disease, osteoarthritis and some cancers<sup>6,7,8</sup>. There is also evidence suggesting a link between overweight and obesity in midlife and dementia in old age<sup>9,10,11</sup>.

Scotland has one of the worst obesity records among OECD countries<sup>12</sup>. Various studies have attempted to estimate the costs to the NHS in Scotland of overweight and obesity combined, with suggested figures ranging between £363 and £600 million (the majority of these costs are incurred as a result of associated conditions such as cardiovascular disease and type 2 diabetes, rather than direct costs of treating or managing overweight and obesity)<sup>13</sup>. The latest estimate of the total (direct and indirect) cost of overweight and obesity to Scottish society, including labour market related costs such as lost productivity, have been put at £0.9-4.6 billion<sup>13</sup>. The health and economic consequences of obesity mean that tackling it remains a key priority for government and public health professionals.

### 8.1.1 Policy background

A number of government policies and initiatives aimed at addressing the issue of obesity are in place in Scotland. In the **Prevention of Obesity Route Map**, the Scottish Government and COSLA outlined their long-term commitment to tackle overweight and obesity and achieve a healthier Scotland<sup>12</sup>. The long-term goals of the route map are to have the majority of Scotland's adult population in normal weight throughout life, to have reduced levels of type 2 diabetes, and to have fewer overweight or obese children in Scotland<sup>14</sup>. The commitment to the latter of these goals is reinforced by the inclusion of the National Indicator to 'increase the proportion of healthy weight children' in the **National Performance Framework (NPF)**<sup>15</sup>.

The Scottish Health Survey (SHeS) is used to monitor progress towards the NPF indicator on healthy weight children and several of the **Obesity Route Map** indicators<sup>16</sup>. Scotland's children and young people's mental health indicators set also includes an indicator on child obesity prevalence<sup>17</sup>.

**Eat Better Feel Better** is a campaign aimed at promoting healthier eating as a simple, affordable choice for everyone in Scotland. Connecting people with local cooking classes, food co-ops and community groups that can offer support on nutrition and food, the campaign aims to have a long-lasting effect on families and communities. It is supported by supermarkets and the convenience sector throughout Scotland and aims to promote the healthier eating message to as many shoppers as possible.

Regular physical activity helps people maintain a healthy weight. One of the themes of **Legacy 2014** programmes is to use the opportunities presented by the 2014 Commonwealth Games to help people be more physically active<sup>18</sup>. The **Physical Activity Implementation Plan** is one of the many legacy programmes developed under the 'active' theme to meet this desired outcome<sup>19</sup>. The 10 year plan, launched in 2014, links

directly to the Scottish Government's legacy ambitions for the Commonwealth Games.

### **8.1.2 Reporting on obesity in the Scottish Health Survey (SHeS)**

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 as opposed to using self-reported measures which are known to be less accurate<sup>20,21</sup>. Height and weight are used to calculate Body Mass Index (BMI), the primary measure of obesity used in the SHeS series. Both adult and child trends in BMI are examined in this chapter as are adult waist circumference and child BMI by parental BMI. Supplementary tables are also available on the Scottish Government SHeS website<sup>22</sup>.

### **8.1.3 Comparability with other UK statistics**

Adult obesity is defined consistently in the Scottish Health Survey and the other health surveys within the UK using BMI classifications. Height and weight measurements are self-reported in the Welsh Health Survey 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, the Scottish Health Survey and Health Survey for England are the most closely aligned.

## **8.2 METHODS AND DEFINITIONS**

### **8.2.1 Methods**

Full details of the protocols used for collecting height, weight and waist circumference measurements are included in Volume 2 of this report and are summarised here.

#### **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 plane<sup>23</sup>. 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.

## **Weight**

Weight was measured using either Seca or Tanita electronic scales, both of 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, or unsteady on their feet. Due to the scale limits, when using a Tanita scale those who weighed more than 130 kg were asked for an estimate of their weight, with estimates required for those weighing more than 200 kg if Seca scales were being used. 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.

## **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. Results in this chapter are calibrated to allow the comparison of interviewer measurements with those previously taken by nurses.

The protocol for collecting waist measures also changed in 2012. 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.

### **8.2.2 Definitions**

#### **Body Mass Index (BMI)**

Body Mass Index (BMI) is a widely accepted measure that allows for differences in weight due to height. It is defined as weight (kg)/square of height (m<sup>2</sup>). This has been used as a measure of obesity in 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) classification<sup>24</sup>:

BMI (kg/m <sup>2</sup> )	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.

## 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 physique<sup>25,26</sup>. Nor does it take account of the distribution of fat in the body. It has therefore been suggested that waist circumference (WC) may be a better means of identifying those with a health risk than BMI<sup>2,27,28</sup>.

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 women<sup>29</sup>. Following the protocol introduced to SHeS in 2012, described in Section 8.2.1, the equivalent cut-offs on SHeS are 102.75cm for men and 91.35cm for women<sup>30</sup>.

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 95<sup>th</sup> percentile of waist circumference for healthy people, indicating that few healthy people have a waist circumference above these thresholds<sup>31</sup>.

## 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 waist circumference (WC) than using either measure on their own<sup>7</sup>.

The classification categories suggested by SIGN<sup>7</sup> 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 the

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

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

Source: based on Table 3, P11, in SIGN 115<sup>7</sup>.

### Child BMI classification

BMI is defined for children in the same way as it is for adults: weight (kg)/square of height (m<sup>2</sup>). The International Obesity Task Force concluded that BMI is a reasonable measure of adiposity in children<sup>32</sup> and it is the key measure of overweight and obesity for children used in the SHeS series. Waist measurements were not collected in the child interview.

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 gender<sup>33</sup>.

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<sup>34,35</sup> (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)<sup>36,37</sup>. SIGN recommends that these reference curves and thresholds should be used for population surveillance in Scotland<sup>7</sup>. 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<sup>38,39,40,41</sup>.

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

SHeS uses a method developed by ISD Scotland to plot the exact ages of the children in the sample against the reference population data<sup>42</sup>. 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 children, defined as neither underweight nor overweight or obese<sup>43</sup>. The presented data 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.

Other changes made to the presentation of child BMI data in 2012 are discussed in detail in Chapter 7 of the 2012 annual report<sup>44</sup>.

### **8.2.3 Children's BMI categories, by parental BMI**

Information in the chapter showing children's BMI by parental BMI is based on children in the main sample where at least one of their parents was also interviewed and had a valid BMI measurement. The data have been re-weighted so this analysis shows the pattern of association between parental and child BMI, and provides population estimates of the prevalence of child unhealthy weight in households with different parental profiles.

For households with BMI measures for two parents, the measure of parental BMI was based on whichever parent's BMI was the highest. If just one parent's BMI was measured this was used for this analysis. For example, if both parents were overweight or obese, or both were of normal weight or underweight, the parental BMI value matched that of both parents. If one parent was overweight and one was normal weight, the parental BMI was taken from the overweight parent. In households



where one parent was interviewed, or just one parent provided a valid BMI measurement, the parental value matched that parent's BMI.

### 8.3 ADULT OVERWEIGHT AND OBESITY PREVALENCE

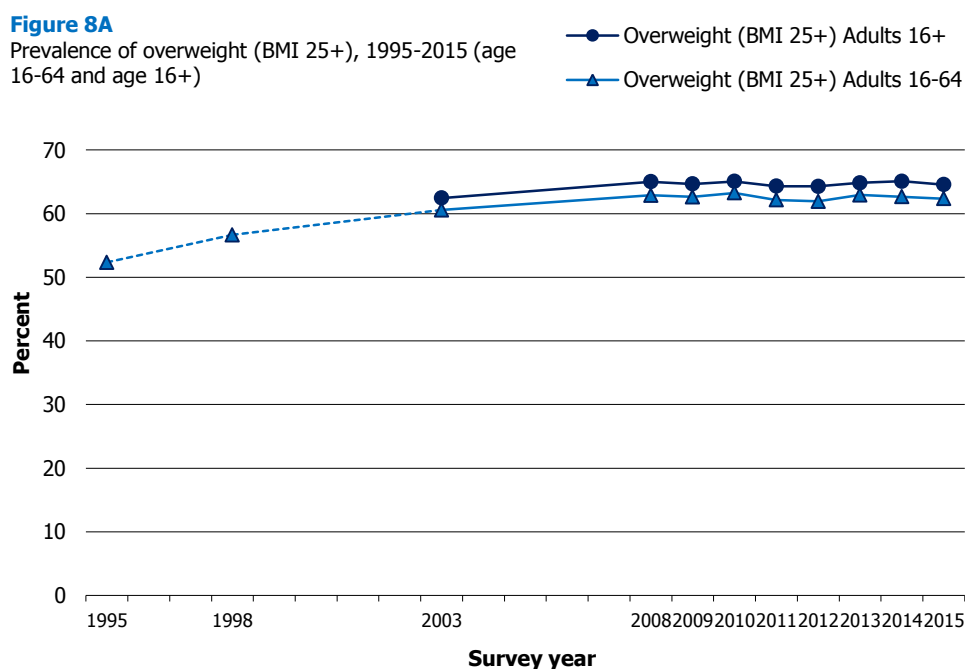
#### 8.3.1 Trends in overweight including obesity prevalence since 1995

Overweight including obesity (BMI of 25 kg/m<sup>2</sup> or above) prevalence since 1995 is shown in Table 8.1.

Prevalence of overweight including obesity in adults aged 16 and over has remained largely unchanged, between 64% and 65%, since 2008 (65% in 2015), following a significant increase between 2003 and 2008 (62% in 2003, 65% in 2008). As shown in Figure 8A, the longer trend for adults aged 16-64 follows the same pattern, while also showing a significant increase between 1995 (52%) and 2003 (61%).

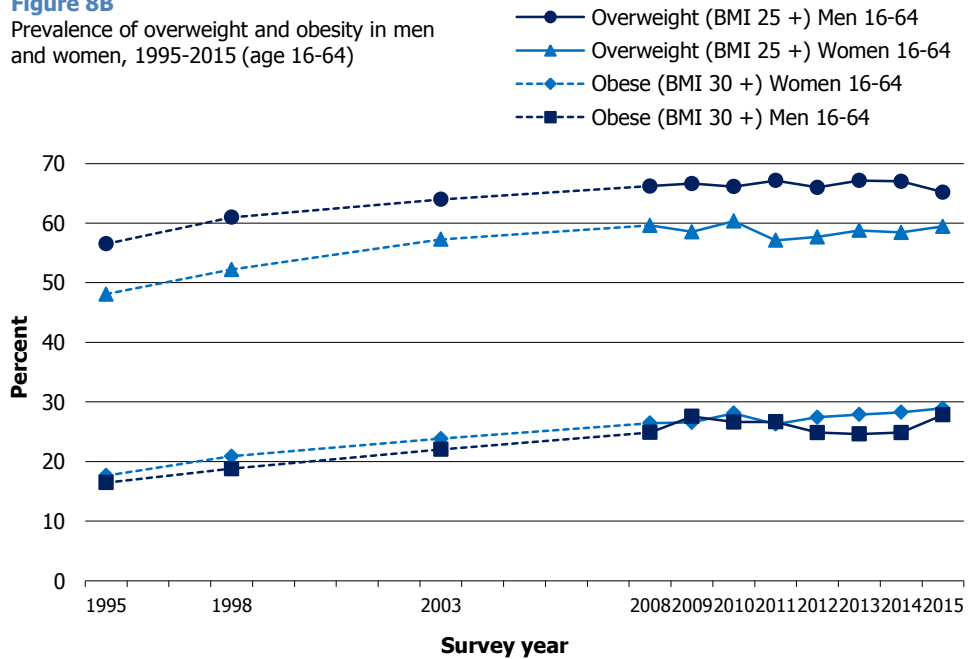
Separate trends for men and women are consistent with the overall trends for all adults, as shown in Figure 8B. Since 2008 levels have remained fairly static, with men continuing to be significantly more likely than women to be overweight including obese (67% for men and 62% for women in 2015). The longer trends for men and women aged 16-64 show significant increases between 1995 and 2008 in the prevalence of overweight (including obesity) for both men and women.

**Figure 8A, Figure 8B, Table 8.1**



**Figure 8B**

Prevalence of overweight and obesity in men and women, 1995-2015 (age 16-64)



### 8.3.2 Trends in obesity and morbid obesity prevalence since 1995

Levels of obesity, including morbid obesity (BMI of 30kg/m<sup>2</sup> or above), among adults aged 16 and over have remained fairly constant between 2008 and 2015, at between 27% and 29% (29% in 2015). This followed a significant increase between 2003 (24%) and 2008 (27%). The longer trend for adults aged 16-64 shows a significant increase between 1995 and 2003, from 17% to 23%. Since 2003, the first year with data for all ages, figures for adults aged 16-64 were one or two percentage point lower than those for adults aged 16 and over.

Figures for men and women were similar for most years. This was also the case in 2015, with 28% of men and 30% of women aged 16 and over categorised as obese.

**Table 8.1**

### 8.3.3 Trends in mean adult BMI since 1995

Mean BMI for all adults increased by a small but significant amount between 2003 and 2008 (from 27.1kg/m<sup>2</sup> to 27.4 kg/m<sup>2</sup>), with little fluctuation since then (27.6 kg/m<sup>2</sup> in 2015). The mean BMI for men and women was similar in 2015 (a mean of 27.7 kg/m<sup>2</sup> for men and 27.5 kg/m<sup>2</sup> for women). The trend for adults aged 16-64 showed a significant increase between 1995 and 2003 (from 25.9 kg/m<sup>2</sup> to 26.9 kg/m<sup>2</sup>) with little change since then (27.5 kg/m<sup>2</sup> in 2015).

**Table 8.1**

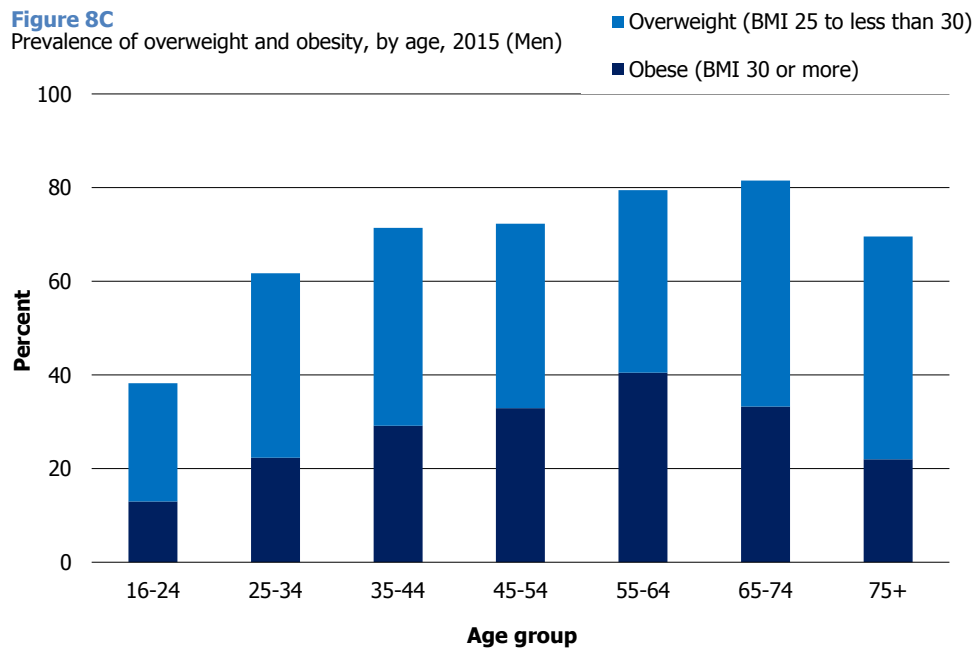
### 8.3.4 Adult BMI in 2015, by age and sex

In 2015, around two thirds (65%) of those aged 16 and over were overweight, including obese (BMI of 25 kg/m<sup>2</sup> or above), whilst 29% were obese (BMI of 30 kg/m<sup>2</sup> or above). The mean BMI among adults aged 16 or over was 27.6 kg/m<sup>2</sup>, whereas the maximum recommended BMI considered to be within the healthy range is 25 kg/m<sup>2</sup>.

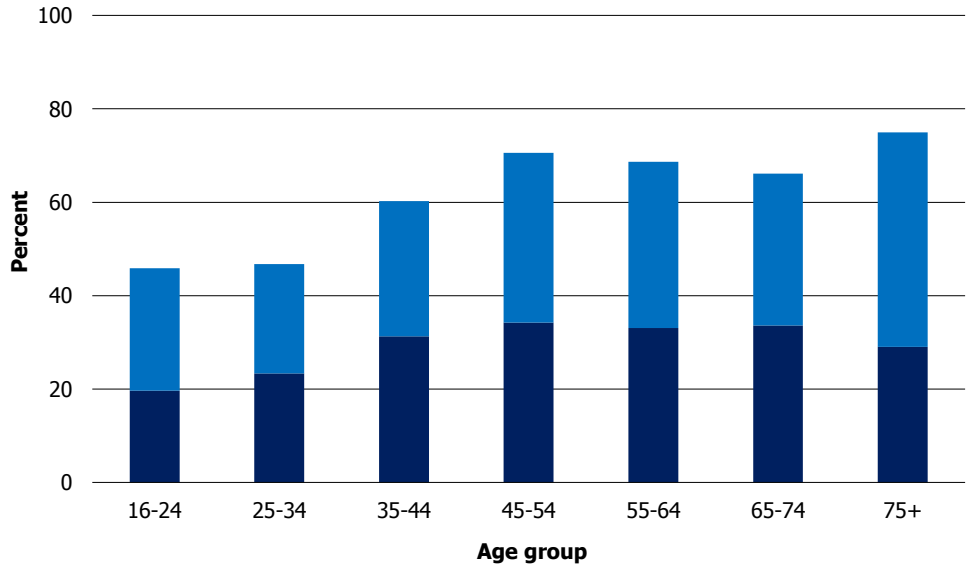
Men remained significantly more likely than women to be overweight including obese (67% compared with 62%) in 2015, with women being more likely to have a BMI within the healthy weight range (36% compared with 32% of men). There was no statistically significant difference between the proportion of women (30%) and men (28%) who were obese (including morbidly obese). Mean BMI was also similar for men and women in 2015 (27.7 kg/m<sup>2</sup> for men and 27.5 kg/m<sup>2</sup> for women).

As shown in Figures 8C and 8D, there was a strong association between age and BMI in 2015. Among men, the proportion who were overweight (including obese) steadily increased by age from just under 4 in 10 (38%) of those aged 16-24 years to more than 8 in 10 (82%) of those aged 65-74. Obesity levels among men peaked at age 55-64 (40%). Among women, overweight including obesity levels also increased by age, from 46-47% of those aged 16-34, to 66-75% for those aged 45 and over. Obesity prevalence among women was highest among those aged 45-74 (33-34%).

**Figure 8C, Figure 8D, Table 8.2**



**Figure 8D**  
Prevalence of overweight and obesity, by age, 2015 (Women)



## 8.4 WAIST CIRCUMFERENCE AND DISEASE RISK (BASED ON BMI AND WAIST CIRCUMFERENCE)

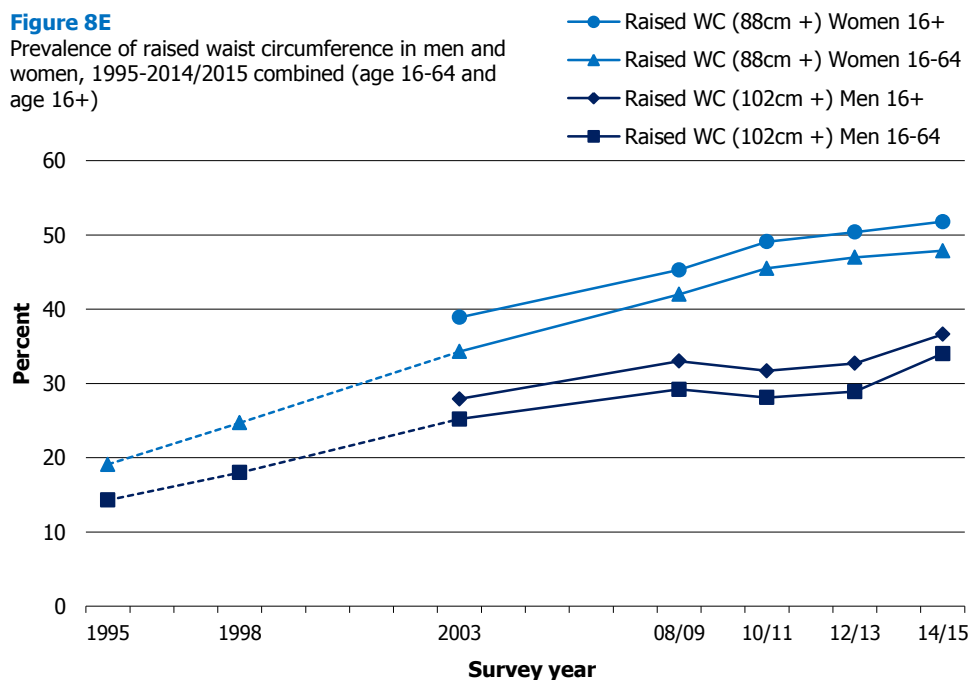
### 8.4.1 Trends in mean and raised waist circumference since 1995

Waist circumferences were higher on average in 2014/2015 than in 2003 for those aged 16 and over (men: 98.2 cm in 2014/2015 and 95.3cm in 2003, women: 89.5 cm in 2014/2015 and 86.3 cm in 2003, using nurse equivalent measures). The longer trend for adults aged 16-64 shows a larger increase going back to 1995 for both groups.

The proportion of men aged 16 and over with a raised waist circumference (greater than 102cm) increased from 28% in 2003 to 37% in 2015. A similar pattern was evident for women in the same age group, albeit with a higher proportion being found to have a raised waist circumference of greater than 88cm (39% in 2003 compared with 52% in 2014/2015). For both men and women, the trend for those aged 16-64 shows further increases between 1995 and 2003. **Figure 8E, Table 8.3**

**Figure 8E**

Prevalence of raised waist circumference in men and women, 1995-2014/2015 combined (age 16-64 and age 16+)



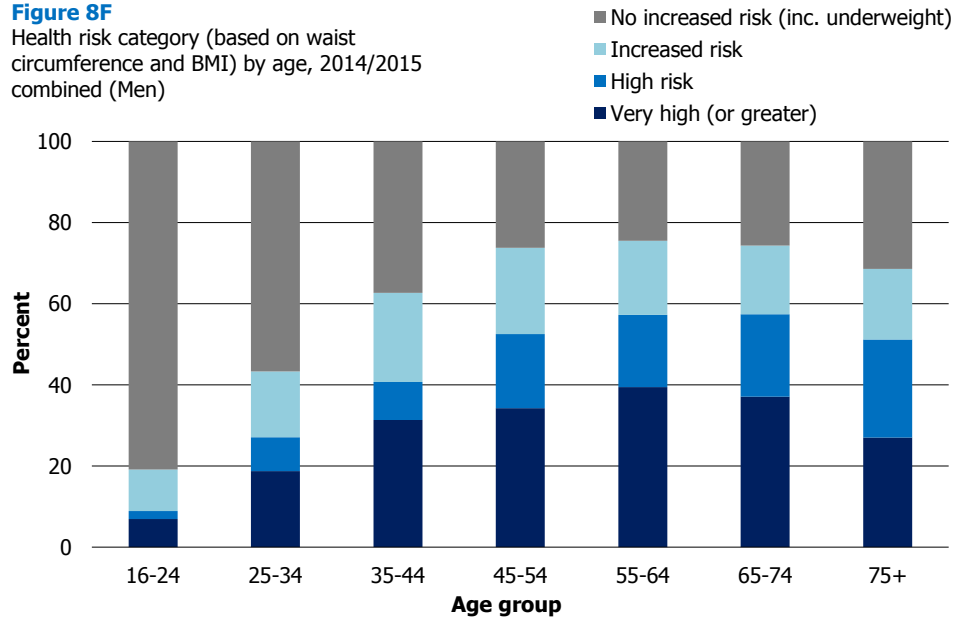
#### 8.4.2 Health risk category associated with overweight and obesity based on Body Mass Index (BMI) and waist circumference, 2014/2015 (combined)

Around two-thirds of women (66%) and three in five men (59%) had at least an increased health risk based on their BMI and waist circumference in 2014/2015. Overall, 42% of men were categorised as being at high risk level or above, with 28% at very high risk level or above, and 3% at extremely high risk level. Equivalent figures for women were 55% at high risk level or above, 32% at very high risk level or above, and 4% at extremely high risk level.

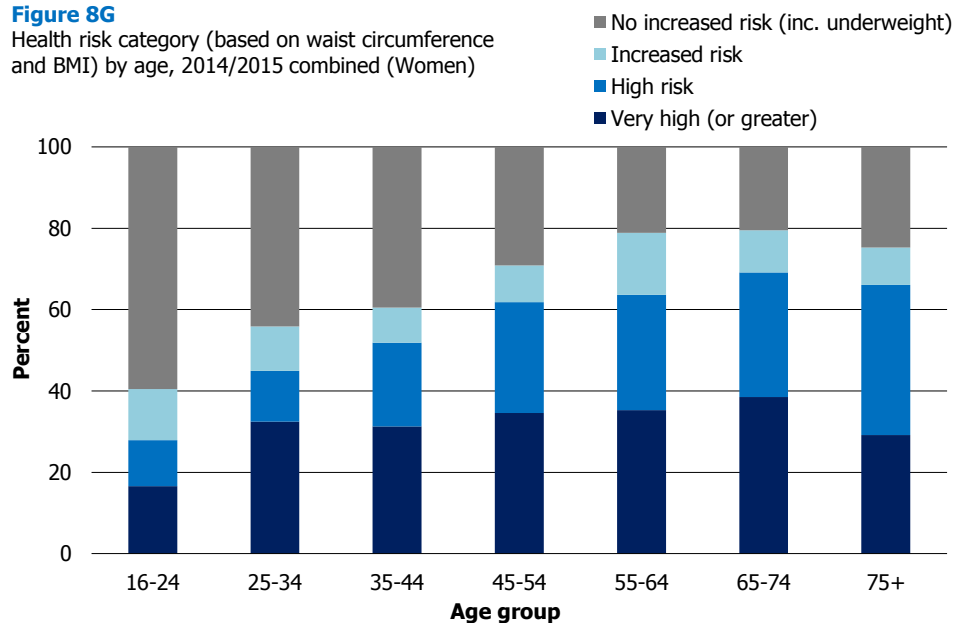
Risk tended to increase with age for both men and women, until older age. Just under a tenth (9%) of men aged 16-24 were classified as being at high risk or above, with this rising to 51- 57% of those aged 45 and over. For women, 28% of those aged 16-24 were at high risk or above, rising 62-69% of those aged 65-74.

**Figure 8F, Figure 8G, Table 8.4**

**Figure 8F**  
Health risk category (based on waist circumference and BMI) by age, 2014/2015 combined (Men)



**Figure 8G**  
Health risk category (based on waist circumference and BMI) by age, 2014/2015 combined (Women)



## 8.5 CHILD HEALTHY WEIGHT, OVERWEIGHT AND OBESITY

### 8.5.1 Trends in child healthy weight, overweight and obesity prevalence since 1998

A child is described as being of a healthy weight if their BMI is above the 2<sup>nd</sup> percentile and below the 85<sup>th</sup> percentile of the UK 1990 reference curves. In 2015, 72% of all children aged 2-15 had a BMI within the healthy weight range, an increase from the low of 65% in 2011 and at a similar level to 1998 (70%).

Between 1998 and 2010 the proportion of boys aged 2-15 with a healthy weight fluctuated from 61-70% but since 2011 (63%) the figure has steadily risen up to the current figure of 73%. This is matched by the

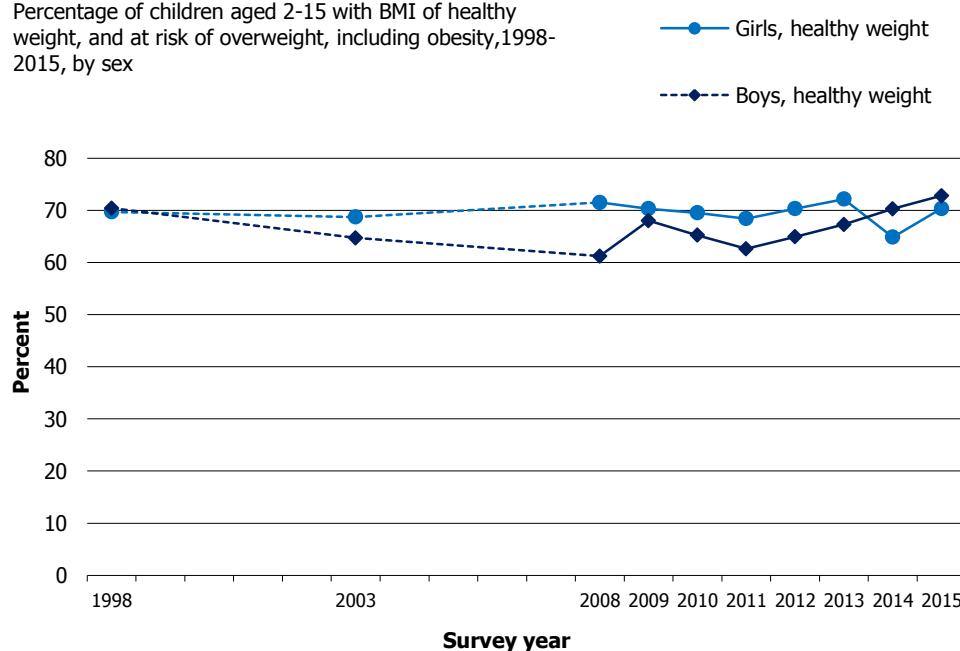
decline in the number of boys who are at risk of being overweight in the same period (from 36% in 2011 to 26% in 2015).

No clear pattern across time is evident for girls. The percentage of girls within the healthy weight range in 2015 (70%) is at a similar level to all survey years since 1998 (between 65% and 72%). With the exception of an unusually high figure in 2014 (34%), the proportion of girls at risk of overweight including obesity has not changed significantly over the years (29% in 2015, and between 27% and 30% in all other years from 1998 to 2013).

**Figure 8H, Table 8.5**

**Figure 8H**

Percentage of children aged 2-15 with BMI of healthy weight, and at risk of overweight, including obesity, 1998-2015, by sex



The percentage of boys and girls at risk of obesity (BMI at or above the 95<sup>th</sup> percentile of the UK 1990 references curves) has remained relatively consistent over time. In 2015, 14% of girls and 15% of boys were at risk of obesity, the same as the levels for each group in 1998 and not significant significantly different from any of the intervening years.

**Table 8.5**

### 8.5.2 Child BMI categories in 2015, by age and sex

In 2015, more than 7 in every 10 children (72%) were of a healthy weight, 13% were at risk of being overweight (not including those at risk of obesity), and 15% were at risk of being obese. In total, 1% of children were underweight. There was no statistically significant difference between the proportion of boys (27%) and girls (30%) who were outwith the healthy range.

In 2015, differences in prevalence of risk of overweight and risk of obesity across the age groups were not statistically significant.

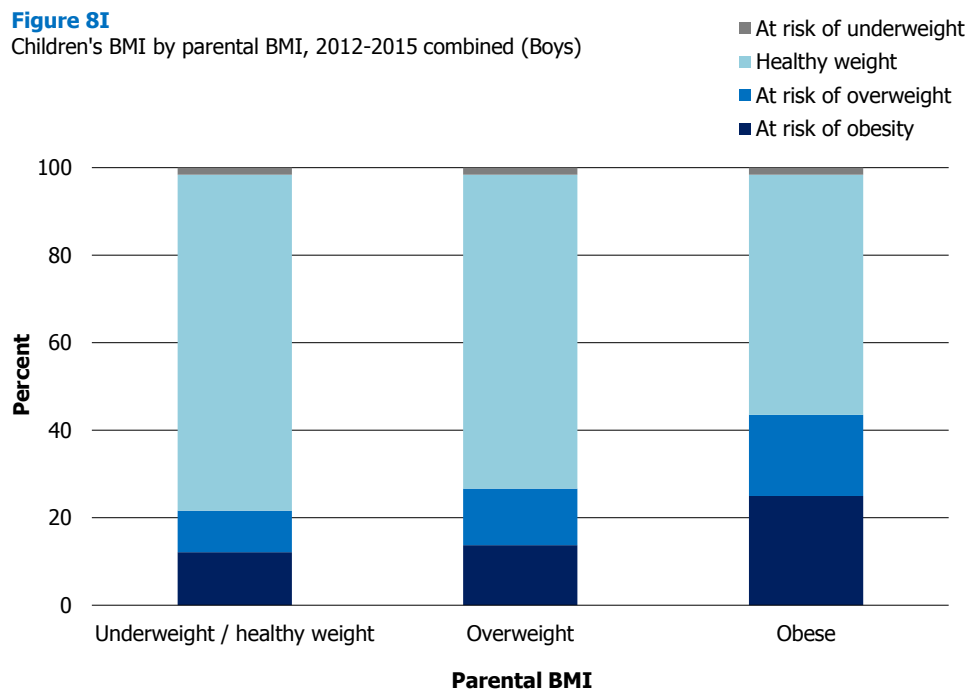
**Table 8.6**

### 8.5.3 Child BMI categories in 2015, by parental BMI

Children with at least one parent who was overweight (but not obese) were found to be statistically no more likely than children with parents of a healthy weight or underweight to be a healthy weight (73% and 76% respectively). However, this was not the case for children with a parent who is obese, with a significantly lower proportion (58%) of those children being a healthy weight.

Children with an obese parent were significantly more likely to be at risk of being overweight including obese (40%) than both those with an overweight parent (25%) and those with no overweight parent (22%). They were also significantly more likely to be at risk of being obese (23%, compared with 13% of those with an overweight parent and 11% of those with no overweight parent). Patterns were similar for both boys and girls.

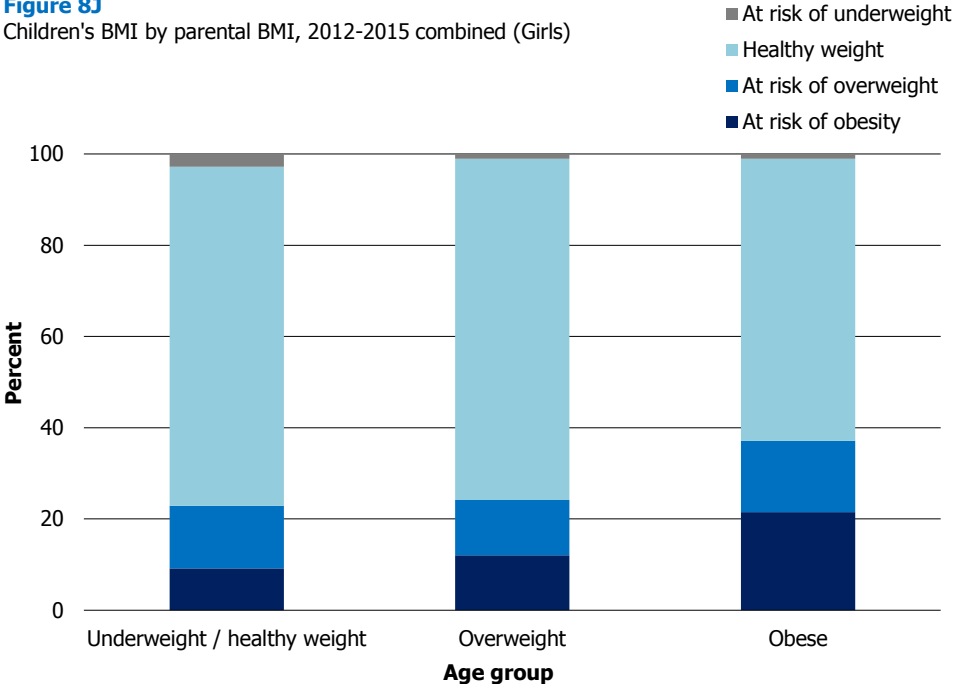
**Figure 8I, Figure 8J, Table 8.7**





**Figure 8J**

Children's BMI by parental BMI, 2012-2015 combined (Girls)



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- |                | <b>2003</b>    | <b>2008 onwards</b>  |
|----------------|----------------|----------------------|
| 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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## Table list

Table 8.1	Mean adult BMI, prevalence of overweight and obesity, 1995 to 2015
Table 8.2	Adult BMI, 2015, by age and sex
Table 8.3	Mean and raised waist circumference (WC), 1995 to 2014/2015 combined
Table 8.4	Health risk category associated with overweight and obesity based on BMI and waist circumference, 2014/2015 combined, by age and sex
Table 8.5	Proportion of children with BMI within the healthy range, at risk of overweight and at risk of obesity, 1998 to 2015
Table 8.6	Children's BMI, 2015, by age and sex
Table 8.7	Children's BMI, 2012-2015 combined, by parental BMI and sex

**Table 8.1 Mean adult BMI, prevalence of overweight and obesity, 1995 to 2015**

*Aged 16 and over with valid height and weight measurements*

*1995 to 2015*

<b>BMI (kg/m<sup>2</sup>)</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>Men</b>											
<b>25 and over<sup>a</sup></b>											
16-64	57	61	64	66	67	66	67	66	67	67	65
16+	n/a	n/a	65	68	68	68	69	68	69	69	67
<b>30 and over<sup>b</sup></b>											
16-64	16	19	22	25	28	27	27	25	25	25	28
16+	n/a	n/a	22	26	28	27	28	27	26	26	28
<b>40 and over<sup>c</sup></b>											
16-64	1	1	2	1	2	2	2	2	2	2	2
16+	n/a	n/a	2	1	2	2	2	2	2	2	2
<b>Mean</b>											
16-64	26.0	26.4	26.9	27.1	27.6	27.3	27.4	27.2	27.3	27.3	27.6
16+	n/a	n/a	27.0	27.3	27.6	27.5	27.6	27.4	27.5	27.5	27.7
<b>SE of the mean</b>											
16-64	0.09	0.09	0.12	0.13	0.14	0.15	0.14	0.16	0.16	0.20	0.18
16+	n/a	n/a	0.10	0.12	0.12	0.13	0.12	0.14	0.14	0.17	0.15
<b>Women</b>											
<b>25 and over<sup>a</sup></b>											
16-64	48	52	57	60	59	60	57	58	59	58	59
16+	n/a	n/a	60	62	61	62	60	60	61	61	62
<b>30 and over<sup>b</sup></b>											
16-64	18	21	24	26	27	28	26	27	28	28	29
16+	n/a	n/a	26	27	28	29	28	28	30	29	30
<b>40 and over<sup>c</sup></b>											
16-64	1	2	4	4	4	4	4	4	5	4	3
16+	n/a	n/a	3	3	4	3	4	3	4	4	3
<b>Mean</b>											
16-64	25.7	26.3	26.9	27.2	27.2	27.4	27.3	27.3	27.4	27.4	27.4
16+	n/a	n/a	27.2	27.4	27.4	27.6	27.5	27.4	27.6	27.6	27.5
<b>SE of the mean</b>											
16-64	0.10	0.11	0.14	0.16	0.14	0.14	0.14	0.17	0.20	0.18	0.19
16+	n/a	n/a	0.12	0.13	0.13	0.12	0.12	0.14	0.17	0.16	0.15

*Continued...*

**Table 8.1 - Continued**

*Aged 16 and over with valid height and weight measurements*

*1995 to 2015*

<b>BMI (kg/m<sup>2</sup>)</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>All adults</b>											
<b>25 and over<sup>a</sup></b>											
16-64	52	57	61	63	63	63	62	62	63	63	62
16+	n/a	n/a	62	65	65	65	64	64	65	65	65
<b>30 and over<sup>b</sup></b>											
16-64	17	20	23	26	27	27	26	26	26	27	28
16+	n/a	n/a	24	27	28	28	28	27	28	28	29
<b>40 and over<sup>c</sup></b>											
16-64	1	1	3	2	3	3	3	3	3	3	3
16+	n/a	n/a	3	2	3	2	3	3	3	3	3
<b>Mean</b>											
16-64	25.9	26.4	26.9	27.2	27.4	27.4	27.3	27.2	27.4	27.4	27.5
16+	n/a	n/a	27.1	27.4	27.5	27.5	27.5	27.4	27.5	27.6	27.6
<b>SE of the mean</b>											
16-64	0.06	0.07	0.10	0.11	0.11	0.11	0.11	0.12	0.14	0.15	0.13
16+	n/a	n/a	0.09	0.10	0.09	0.10	0.10	0.11	0.13	0.12	0.12
<b>Bases</b>											
<i>(weighted):</i>											
Men 16-64	3677	3673	2702	2240	2629	2487	2513	1706	1671	1574	1658
Men 16+	n/a	n/a	3217	2692	3161	2992	3003	2048	2027	1919	2043
Women 16-64	3634	3572	2776	2258	2560	2435	2478	1640	1694	1616	1620
Women 16+	n/a	n/a	3458	2829	3214	3046	3100	2063	2104	2028	2075
All adults 16-64	7311	7245	5478	4498	5189	4922	4991	3346	3366	3190	3278
All adults 16+	n/a	n/a	6675	5521	6375	6038	6103	4110	4130	3948	4118
<b>Bases</b>											
<i>(unweighted):</i>											
Men 16-64	3307	3110	2368	1824	2131	2020	2092	1381	1415	1305	1323
Men 16+	n/a	n/a	3016	2457	2843	2674	2745	1876	1844	1771	1863
Women 16-64	4007	3783	2908	2294	2685	2553	2596	1676	1791	1632	1564
Women 16+	n/a	n/a	3684	3020	3456	3327	3389	2221	2288	2198	2187
All adults 16-64	7314	6893	5276	4118	4816	4573	4688	3057	3206	2937	2887
All adults 16+	n/a	n/a	6700	5477	6299	6001	6134	4097	4132	3969	4050

a 25 and over = overweight / obese / morbidly obese

b 30 and over = obese / morbidly obese

c 40 and over = morbidly obese

**Table 8.2 Adult BMI, 2015, by age and sex**

*Aged 16 and over with valid height and weight measurements*

2015

BMI (kg/m <sup>2</sup> )	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Less than 18.5	1	0	-	0	1	1	-	1
18.5 to less than 25	61	38	29	27	20	17	30	32
25 to less than 30	25	39	42	39	39	48	48	39
30 to less than 40	12	22	28	29	35	31	22	26
40+	1	0	1	4	5	3	0	2
<i>All 25 and over<sup>a</sup></i>	38	62	71	72	79	82	70	67
<i>All 30 and over<sup>b</sup></i>	13	22	29	33	40	33	22	28
Mean	24.8	26.8	27.9	28.5	29.4	28.8	27.6	27.7
Standard error of the mean	0.44	0.33	0.34	0.34	0.32	0.30	0.35	0.15
<b>Women</b>								
Less than 18.5	4	1	2	1	2	3	3	2
18.5 to less than 25	50	52	38	29	30	31	22	36
25 to less than 30	26	23	29	36	36	33	46	32
30 to less than 40	18	21	29	29	30	31	27	27
40+	1	2	3	5	3	3	2	3
<i>All 25 and over<sup>a</sup></i>	46	47	60	71	69	66	75	62
<i>All 30 and over<sup>b</sup></i>	20	23	31	34	33	34	29	30
Mean	25.4	26.5	27.5	28.6	28.2	28.2	27.7	27.5
Standard error of the mean	0.49	0.42	0.32	0.36	0.35	0.32	0.34	0.15
<b>All adults</b>								
<i>All 25 and over<sup>a</sup></i>	42	54	66	71	74	74	73	65
<i>All 30 and over<sup>b</sup></i>	16	23	30	34	37	33	26	29
Mean	25.1	26.7	27.7	28.5	28.8	28.5	27.7	27.6
Standard error of the mean	0.33	0.27	0.23	0.25	0.25	0.23	0.25	0.12
<i>Bases (weighted):</i>								
<i>Men</i>	297	347	331	362	322	248	137	2043
<i>Women</i>	250	329	326	384	331	265	190	2075
<i>All adults</i>	547	676	657	745	653	513	326	4118
<i>Bases (unweighted):</i>								
<i>Men</i>	166	213	275	323	346	338	202	1863
<i>Women</i>	160	280	321	397	406	376	247	2187
<i>All adults</i>	326	493	596	720	752	714	449	4050

a 25 and over = overweight (including obese)

b 30 and over = obese



**Table 8.3 Mean and raised waist circumference (WC), 1995 to 2014/2015 combined**

*Aged 16 and over with valid waist measurements*

*1995 to 2014/2015 combined*

Waist Circumference (WC)	1995 to 2014/2015 combined						
	1995	1998	2003	2008/ 2009 combined	2010/ 2011 combined	2012/ 2013 combined	2014/ 2015 combined
	cm	cm	cm	cm	cm	cm	cm
<b>Men</b>							
<b>Mean WC</b>							
16-64 (nurse / nurse equivalent)	90.2	91.8	94.2	95.3	95.1	96.2	97.2
16+ (nurse / nurse equivalent)	n/a	n/a	95.3	96.5	96.3	97.4	98.2
16+ (interviewer)	n/a	n/a	n/a	n/a	n/a	98.1	98.9
<b>SE of the mean</b>							
16-64 (nurse / nurse equivalent)	0.19	0.21	0.43	0.67	0.67	0.57	0.64
16+ (nurse / nurse equivalent)	n/a	n/a	0.38	0.58	0.59	0.51	0.54
16+ (interviewer)	n/a	n/a	n/a	n/a	n/a	0.52	0.55
<b>% with raised WC<sup>a</sup></b>							
16-64	14	18	25	29	28	29	34
16+	n/a	n/a	28	33	32	33	37
<b>Women</b>							
<b>Mean WC</b>							
16-64 (nurse / nurse equivalent)	78.5	80.9	84.9	87.2	87.9	88.7	88.4
16+ (nurse / nurse equivalent)	n/a	n/a	86.3	88.3	89.0	89.6	89.5
16+ (interviewer)	n/a	n/a	n/a	n/a	n/a	93.1	93.0
<b>SE of the mean</b>							
16-64 (nurse / nurse equivalent)	0.21	0.22	0.40	0.56	0.55	0.60	0.54
16+ (nurse / nurse equivalent)	n/a	n/a	0.35	0.48	0.47	0.50	0.46
16+ (interviewer)	n/a	n/a	n/a	n/a	n/a	0.56	0.51
<b>% with raised WC<sup>a</sup></b>							
16-64	19	25	34	42	46	47	48
16+	n/a	n/a	39	45	49	50	52
<b>Bases (weighted):</b>							
Men 16-64	3426	3240	2099	875	787	855	827
Men 16+	n/a	n/a	2532	1061	962	1054	1029
Women 16-64	3329	3150	2077	888	785	848	832
Women 16+	n/a	n/a	2679	1134	1010	1092	1076
<b>Bases (unweighted):</b>							
Men 16-64	3061	2761	1765	699	636	714	669
Men 16+	n/a	n/a	2356	970	865	970	927
Women 16-64	3661	3340	2179	919	830	895	865
Women 16+	n/a	n/a	2850	1224	1107	1177	1181

a A raised WC is more than 102 cm for men and more than 88 cm for women, using the nurse equivalent measures. These are equivalent to 102.75cm and 91.35 cm using the interviewer measures

**Table 8.4 Health risk category associated with overweight and obesity based on BMI and waist circumference, 2014/2015 combined, by age and sex**

*Aged 16 and over with valid height, weight and waist measurements<sup>a</sup>*

*2014/2015 combined*

Waist circumference <sup>b</sup> & BMI classification <sup>c</sup>	Health risk category <sup>d</sup>	Age							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
<b>Men</b>									
<b>Underweight</b>									
Low WC	Not applicable	8	-	-	-	1	1	-	1
High WC	Not applicable	-	-	-	-	-	-	-	-
Very high WC	Not applicable	-	-	-	-	-	-	-	-
<i>All underweight</i>		8	-	-	-	1	1	-	1
<b>Normal</b>									
Low WC	No increased risk	60	41	22	17	12	15	12	26
High WC	No increased risk	-	1	2	3	2	5	14	3
Very high WC	Increased	-	-	-	-	-	-	-	-
<i>All normal</i>		60	41	25	20	14	20	26	29
<b>Overweight</b>									
Low WC	No increased risk	13	15	13	6	9	5	6	10
High WC	Increased	9	16	22	21	18	17	17	18
Very high WC	High	1	6	6	16	17	17	24	11
<i>All overweight</i>		23	37	40	43	45	39	47	39
<b>Obesity I</b>									
Low WC	Increased	1	-	-	-	-	-	-	0
High WC	High	1	3	4	2	1	4	0	2
Very high WC	Very high	3	16	19	26	29	30	21	21
<i>All obese I</i>		6	19	22	29	30	34	22	23
<b>Obesity II</b>									
Low WC	Very high	-	-	-	-	-	-	-	-
High WC	Very high	-	-	-	-	-	-	-	-
Very high WC	Very high	1	3	7	3	9	6	4	5
<i>All obese II</i>	<i>Very high</i>	1	3	7	3	9	6	4	5
<b>Obesity III</b>									
Low WC	Extremely high	-	-	-	-	-	-	-	-
High WC	Extremely high	-	-	-	-	-	-	-	-
Very high WC	Extremely high	2	0	6	4	2	1	2	3
<i>All obese III</i>	<i>Extremely high</i>	2	0	6	4	2	1	2	3
<b>Men – Overall risk<sup>d</sup></b>									
	Not applicable	8	-	-	-	1	1	-	1
	No increased	73	57	37	26	23	25	31	39
	Increased	10	16	22	21	18	17	17	18
	High	2	8	9	18	18	20	24	14
	Very high	5	19	26	30	38	36	25	25
	Extremely high	2	0	6	4	2	1	2	3
	<i>Increased risk or above</i>	19	43	63	74	76	74	69	59
	<i>High risk or above</i>	9	27	41	52	57	57	51	42
	<i>Very/extremely high risk</i>	7	19	31	34	39	37	27	28

*Continued...*

**Table 8.4 - Continued**

*Aged 16 and over with valid height, weight and waist measurements<sup>a</sup>*

*2014/2015 combined*

Waist circumference <sup>b</sup> & BMI classification <sup>c</sup>	Health risk category <sup>d</sup>	Age							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
<b>Women</b>									
<b>Underweight</b>									
Low WC	Not applicable	6	0	2	0	2	2	2	2
High WC	Not applicable	-	-	-	-	-	-	1	0
Very high WC	Not applicable	-	-	-	-	-	-	-	-
<i>All underweight</i>		6	0	2	0	2	2	3	2
<b>Normal</b>									
Low WC	No increased risk	41	30	19	14	9	9	9	19
High WC	No increased risk	11	13	17	13	9	10	12	12
Very high WC	Increased	0	5	3	3	9	6	6	4
<i>All normal</i>		52	47	40	30	27	24	27	36
<b>Overweight</b>									
Low WC	No increased risk	2	1	1	1	1	-	-	1
High WC	Increased	12	6	5	6	7	5	3	6
Very high WC	High	10	12	21	27	28	30	37	23
<i>All overweight</i>		24	20	27	34	36	35	40	30
<b>Obesity I</b>									
Low WC	Increased	-	-	-	-	-	-	-	-
High WC	High	1	-	-	0	-	1	-	0
Very high WC	Very high	13	18	21	21	19	23	22	20
<i>All obese I</i>		14	18	21	21	19	24	22	20
<b>Obesity II</b>									
Low WC	Very high	-	-	-	-	-	-	-	-
High WC	Very high	-	-	-	-	-	-	-	-
Very high WC	Very high	2	12	7	7	11	11	6	8
<i>All obese II</i>	<i>Very high</i>	2	12	7	7	11	11	6	8
<b>Obesity III</b>									
Low WC	Extremely high	-	-	-	-	-	-	-	-
High WC	Extremely high	-	-	-	-	-	-	-	-
Very high WC	Extremely high	2	3	4	7	6	5	1	4
<i>All obese III</i>	<i>Extremely high</i>	2	3	4	7	6	5	1	4
<b>Women – Overall risk<sup>d</sup></b>									
	Not applicable	6	0	2	0	2	2	3	2
	No increased	53	44	37	29	19	18	22	32
	Increased	13	11	9	9	15	10	9	11
	High	11	12	21	27	28	31	37	23
	Very high	15	29	28	28	29	34	29	28
	Extremely high	2	3	4	7	6	5	1	4
	<i>Increased risk or above</i>	40	56	61	71	79	79	75	66
	<i>High risk or above</i>	28	45	52	62	64	69	66	55
	<i>Very/extremely high risk</i>	17	32	31	35	35	39	29	32

*Continued...*

**Table 8.4 - Continued**

Aged 16 and over with valid height, weight and waist measurements<sup>a</sup>

2014/2015 combined

Waist circumference <sup>b</sup> & BMI classification <sup>c</sup>	Health risk category <sup>d</sup>	Age							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
<i>Bases (weighted)</i>									
<i>Men</i>		137	168	161	190	153	118	72	998
<i>Women</i>		123	169	166	190	153	124	93	1019
<i>Bases (unweighted)</i>									
<i>Men</i>		95	114	131	163	152	157	85	897
<i>Women</i>		88	166	201	196	184	179	104	1118

a Percentages and bases in this table are based on those who have a valid measurement for waist circumference, in addition to valid measurements of height and weight. Therefore subtotals for BMI categories by age and sex in this table are not definitive

b Nurse equivalent waist circumference categories according to WHO/SIGN guidelines (115): low: <94cm for men and <80cm for women; high: ≥94cm and <102cm for men, ≥80cm and <88cm for women; very high: ≥102cm for men and ≥88cm for women (nurse equivalent measures)

c BMI categories according to WHO guidelines: Underweight: Less than 18.5kg/m<sup>2</sup>, Normal: 18.5 to less than 25kg/m<sup>2</sup>, Overweight: 25 to less than 30kg/m<sup>2</sup>, Obesity I: 30 to less than 35kg/m<sup>2</sup>, Obesity II: 35 to less than 40kg/m<sup>2</sup>, Obesity III: 40kg/m<sup>2</sup> or more

d Health risk category according to SIGN guidelines (115)

**Table 8.5 Proportion of children with BMI within the healthy range, at risk of overweight and at risk of obesity, 1998 to 2015**

*Aged 2-15 with valid height and weight measurements<sup>a</sup>*

*1998 to 2015*

<b>BMI status (National BMI percentiles)</b>	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%
<b>Boys</b>										
Within healthy range <sup>b</sup>	70	65	61	68	65	63	65	67	70	73
Outwith healthy range <sup>c</sup>	30	35	39	32	35	37	35	33	30	27
At risk of overweight (including obesity) <sup>d</sup>	29	34	38	31	33	36	34	31	28	26
At risk of obesity <sup>e</sup>	15	18	19	17	18	20	20	17	16	15
<b>Girls</b>										
Within healthy range <sup>b</sup>	70	69	72	70	70	68	70	72	65	70
Outwith healthy range <sup>c</sup>	30	31	29	30	31	32	30	28	35	30
At risk of overweight (including obesity) <sup>d</sup>	29	30	28	29	30	29	27	27	34	29
At risk of obesity <sup>e</sup>	14	14	14	16	14	15	14	15	18	14
<b>All children</b>										
Within healthy range <sup>b</sup>	70	67	66	69	67	65	68	70	68	72
Outwith healthy range <sup>c</sup>	30	33	34	31	33	35	33	30	32	28
At risk of overweight (including obesity) <sup>d</sup>	29	32	33	30	31	33	31	29	31	28
At risk of obesity <sup>e</sup>	14	16	17	16	16	17	17	16	17	15
<i>Bases (weighted):</i>										
<i>Boys</i>	985	1243	669	958	641	655	663	687	620	502
<i>Girls</i>	931	1182	621	924	612	621	620	660	590	467
<i>All children</i>	1916	2425	1290	1882	1253	1276	1283	1347	1210	969
<i>Bases (unweighted):</i>										
<i>Boys</i>	1780	1208	652	967	662	643	630	678	608	508
<i>Girls</i>	1704	1215	640	914	569	626	644	630	602	452
<i>All children</i>	3484	2423	1292	1881	1231	1269	1274	1308	1210	960

a Children whose BMI was more than 7 standard deviations above or below the norm for their age were excluded from the table

b BMI above 2nd percentile, below 85th percentile

c BMI at or below 2nd percentile, at or above 85th percentile

d BMI at or above 85th percentile

e BMI at or above 95th percentile

**Table 8.6 Children's BMI, 2015, by age and sex**

*Aged 2-15 with valid height and weight measurements<sup>a</sup>*

2015

BMI status (National BMI percentiles)	Age			Total
	2-6	7-11	12-15	
	%	%	%	%
<b>Boys</b>				
At risk of underweight <sup>b</sup>	1	2	1	1
Healthy weight <sup>c</sup>	77	69	72	73
At risk of overweight <sup>d</sup>	8	12	12	11
At risk of obesity <sup>e</sup>	14	17	15	15
<i>Outwith healthy range<sup>f</sup></i>	23	31	28	27
<i>Overweight (including obese)<sup>g</sup></i>	22	29	27	26
<b>Girls</b>				
At risk of underweight <sup>b</sup>	0	-	1	0
Healthy weight <sup>c</sup>	73	68	69	70
At risk of overweight <sup>d</sup>	14	17	16	15
At risk of obesity <sup>e</sup>	13	15	15	14
<i>Outwith healthy range<sup>f</sup></i>	27	32	31	30
<i>Overweight (including obese)<sup>g</sup></i>	27	32	30	29
<b>All children</b>				
At risk of underweight <sup>b</sup>	1	1	1	1
Healthy weight <sup>c</sup>	75	69	71	72
At risk of overweight <sup>d</sup>	11	14	14	13
At risk of obesity <sup>e</sup>	13	16	15	15
<i>Outwith healthy range<sup>f</sup></i>	25	31	29	28
<i>Overweight (including obese)<sup>g</sup></i>	24	30	29	28
<i>Bases (weighted):</i>				
<i>Boys</i>	178	196	128	502
<i>Girls</i>	185	154	128	467
<i>All children</i>	363	349	256	969
<i>Bases (unweighted):</i>				
<i>Boys</i>	190	200	118	508
<i>Girls</i>	180	151	121	452
<i>All children</i>	370	351	239	960

a Children whose BMI was more than 7 standard deviations above or below the norm for their age were excluded from the table

b BMI at or below 2nd percentile

c BMI above 2nd percentile, below 85th percentile

d BMI at or above 85th percentile, below 95th percentile

e BMI at or above 95th percentile

f BMI at or below 2nd percentile, at or above 85th percentile

g BMI at or above 85th percentile

**Table 8.7 Children's BMI, 2012-2015 combined, by parental BMI and sex**

*Aged 2-15 with both valid height and weight measurements<sup>a</sup> with at least one parent with both valid height and weight measurements (main sample only)*

*2012-2015 combined*

BMI status (National BMI percentiles)	Parental BMI		
	Underweight/ healthy weight	Overweight	Obese
	%	%	%
<b>Boys</b>			
At risk of underweight <sup>b</sup>	2	2	2
Healthy weight <sup>c</sup>	77	72	55
At risk of overweight <sup>d</sup>	10	13	19
At risk of obesity <sup>e</sup>	12	14	25
<i>Outwith healthy range<sup>f</sup></i>	23	28	45
<i>Overweight (including obese)<sup>g</sup></i>	22	27	43
<b>Girls</b>			
At risk of underweight <sup>b</sup>	3	1	1
Healthy weight <sup>c</sup>	74	75	62
At risk of overweight <sup>d</sup>	14	12	16
At risk of obesity <sup>e</sup>	9	12	21
<i>Outwith healthy range<sup>f</sup></i>	26	25	38
<i>Overweight (including obese)<sup>g</sup></i>	23	24	37
<b>All children</b>			
At risk of underweight <sup>b</sup>	2	1	1
Healthy weight <sup>c</sup>	76	73	58
At risk of overweight <sup>d</sup>	11	13	17
At risk of obesity <sup>e</sup>	11	13	23
<i>Outwith healthy range<sup>f</sup></i>	24	27	42
<i>Overweight (including obese)<sup>g</sup></i>	22	25	40
<i>Bases (weighted):</i>			
<i>Boys</i>	291	395	390
<i>Girls</i>	245	367	398
<i>All children</i>	537	762	788
<i>Bases (unweighted):</i>			
<i>Boys</i>	276	397	382
<i>Girls</i>	246	369	400
<i>All children</i>	522	766	782

a Children whose BMI was more than 3 standard deviations above or below the norm for their age were excluded from the table

b BMI at or below 5th percentile

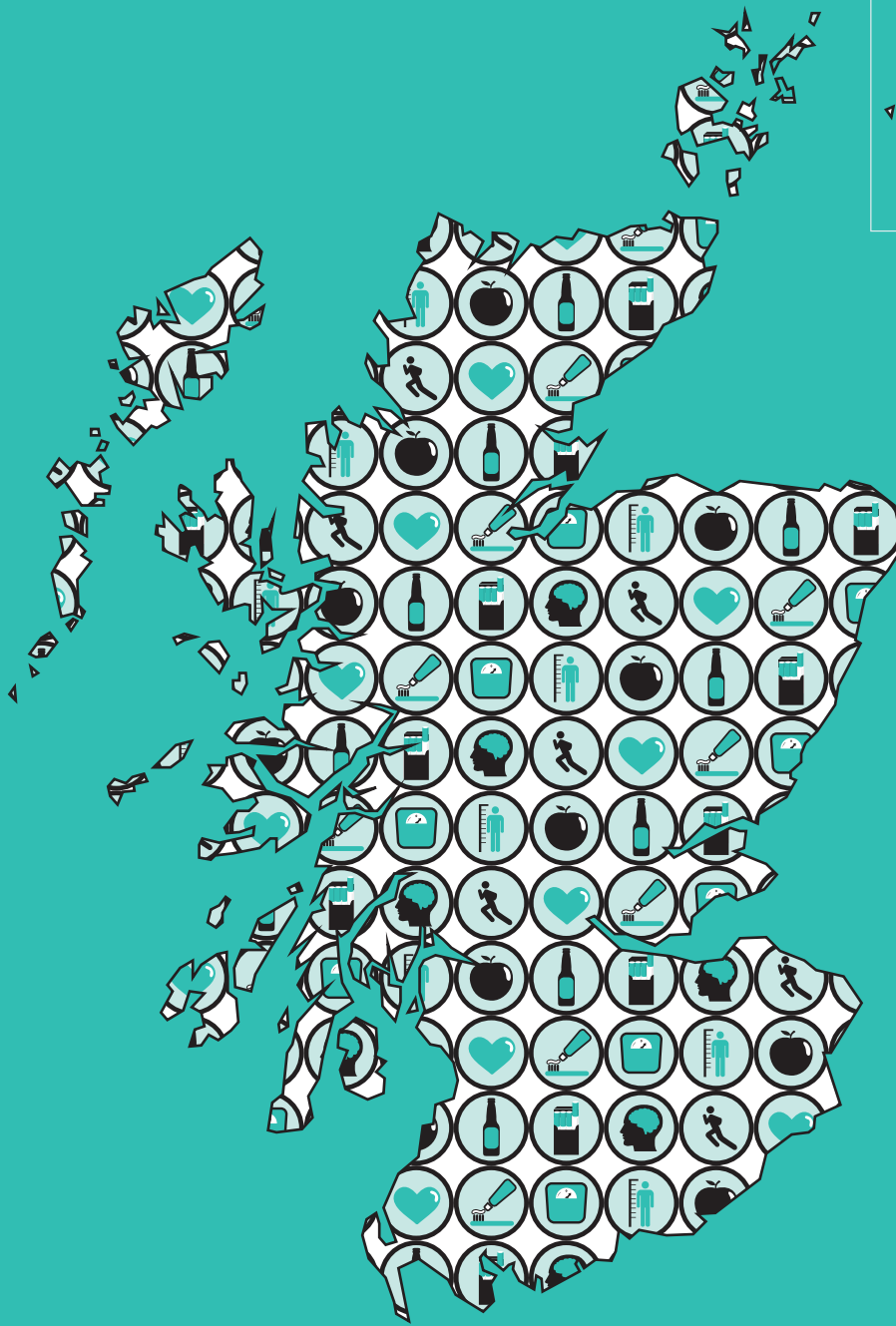
c BMI above 5th percentile, below 85th percentile

d BMI at or above 85th percentile, below 95th percentile

e BMI at or above 95th percentile

f BMI at or below 5th percentile, at or above 85th percentile

g BMI at or above 85th percentile



# Chapter 9

## Cardiovascular Conditions and Diabetes



## 9 CARDIOVASCULAR CONDITIONS AND DIABETES

Laura Brown

### SUMMARY

- **Fifteen percent of adults aged 16 and over reported ever having been diagnosed with any CVD condition by a doctor in 2015 (similar to the levels of 14-16% since 2003).**
- Among adults aged 16 and over, 19% had any CVD condition or diabetes, 6% had doctor-diagnosed diabetes and 8% had ischaemic heart disease (IHD) or stroke.
- Doctor-diagnosed diabetes increased significantly between 2003 and 2011 (4% to 6%) and has remained at this level since.
- From 2003 to 2015, figures for any CVD condition (14-16%) and IHD (6-7%) were relatively static.
- Prevalence levels of IHD or stroke were significantly higher for men (9%) than for women (6%).
- **In 2014/2015, 29% of adults aged 16 and over had survey-defined hypertension, significantly higher than doctor-diagnosed levels (25%).**
- The level of survey-defined hypertension has not changed from 2012/2013.
- Prevalence was higher for men (31%) than women (27%) and rose from 3% of those aged 16-24 to 71% of those aged 75 and over.
- More than half (58%) of adults with survey-defined hypertension reported it had been diagnosed by a doctor.

### 9.1 INTRODUCTION

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. It is one of the leading contributors to the global disease burden<sup>1</sup>. Its main components are ischaemic heart disease (IHD) (or coronary heart disease) and stroke, both of which have been identified as clinical priorities for the NHS in Scotland<sup>2,3</sup>. Diseases of the circulatory system are the second most common causes of death in Scotland after cancer, accounting for 27% of deaths in 2015 (compared with 28% for cancer). This includes 12% of deaths which are caused by IHD, with a further 7% caused by cerebrovascular disease (e.g. stroke)<sup>4</sup>. Early mortality from heart disease and stroke have both improved in recent years, but concern remains about continuing inequalities in relation to morbidity and mortality linked to these conditions<sup>2,3</sup>.

The increasing prevalence (albeit at a reduced rate) of diabetes, the most common metabolic disorder, is a major health issue for Scotland. Scotland has one of the highest levels of type 1 diabetes in Europe, but it is the increasing prevalence of type 2 diabetes – linked to obesity, physical inactivity and ageing – which is driving the increased prevalence and causing concern<sup>5</sup>. Diabetes is a risk factor in premature mortality, although more effective treatments of diabetes and hypertension have offset some of the excess risk in recent years and mean some people may be living longer and better with the condition<sup>5</sup>.

### 9.1.1 Policy background

One of the Scottish Government's **National Performance Framework National Outcomes** is for people in Scotland to 'live longer, healthier lives'<sup>6</sup>. There is also a National Performance indicator to 'reduce premature mortality' (deaths from all causes in those aged under 75)<sup>7</sup>. CVD is described as one of the key 'big killer' diseases around which action must be taken if this target is to be met. In addition, a number of the National Indicators<sup>8</sup> are linked to key CVD risk factors, most notably smoking<sup>9</sup>, but also physical activity<sup>10</sup> and healthy weight children<sup>11</sup> (the latter two are also major risk factors for diabetes).

In recognition of the challenges posed by long-term conditions such as CVD, diabetes and respiratory conditions – both for the individual and their families, as well as for health and care services – the Scottish Government's over-arching strategy for long-term conditions was published in 2009. The **Action Plan** recognised the need for system-wide action in response to the challenge presented by the increasing prevalence of long-term conditions within the context of an ageing population, the links to health inequalities, and the particular challenges of multi-morbidity – the presence of two or more long-term conditions. The **Keep Well Programme**<sup>12</sup> focussed on delivering health improvements in deprived communities by offering health checks to individuals aged 40-64, including screening for CVD and its main risk factors.

The **Heart Disease and Stroke Action Plan**<sup>2</sup> which was published in 2009, and the **Diabetes Action Plan**<sup>5</sup> which was published in 2010, both set out a comprehensive programme for further reducing deaths and improving the lives of people living with heart disease, stroke and diabetes. These have been refreshed and separate **Heart Disease**<sup>13</sup>, **Stroke**<sup>14</sup> and **Diabetes**<sup>15</sup> **Improvement Plans** were published in August 2014 and November 2014. These set out key priorities for the delivery of improvements of treatment and care in heart disease, stroke and diabetes.

### 9.1.2 Reporting on CVD conditions and diabetes in the Scottish Health Survey (SHeS)

SHeS is an important source of information on the prevalence of CVD conditions and diabetes in Scotland. It also offers valuable information on the patterning of these conditions across different groups in society. In this chapter, trends in self-reported CVD conditions and diabetes prevalence for adults are updated for 2015. Updated trends in adult hypertension are presented and the extent of diagnosis, treatment and control of hypertension are also explored.

Supplementary tables providing additional data on these conditions are also available on the Scottish Government SHeS website<sup>16</sup>.

## 9.2 METHODS AND DEFINITIONS

### 9.2.1 Methods

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 module<sup>17</sup>, 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 administration<sup>18</sup>.

As a result, unadjusted measurements collected by interviewers are used within the report for more recent periods (2012/2013 and 2014/2015), 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 reading in the survey are available in Volume 2 of this report.

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.

### **Use of medication**

During the biological module, participants were asked about all the prescribed medications they were currently taking (i.e. taken in the last seven days). During the data processing phase, medications were coded according to the classification in the British National Formulary (BNF), and from this classification it is possible to identify lipid-lowering and anti-platelet medication. Some analyses in this chapter examine the effect of the use of these drugs.

## **9.2.2 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'<sup>19</sup>.

### **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. 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 management<sup>20</sup> 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.

## 9.3 CARDIOVASCULAR CONDITIONS AND DIABETES

### 9.3.1 Trends in any CVD, diabetes, any CVD or diabetes, IHD, stroke, and IHD or stroke prevalence since 1995

#### Any CVD

In 2015, roughly one in seven (15%) adults aged 16 and over reported that they had been diagnosed by a doctor with any CVD condition. This figure does not differ significantly from those in 2014 (16%) or previous years (14-16% from 2003 to 2013). The longer-term trend for those aged 16-64 showed little change in the earliest survey years (9% in 1995, 8% in 1998 and 9% in 2003) suggesting that prevalence has remained largely static across the entire survey period. Prevalence for those aged 16-64 was 10% in 2015.

As noted in previous reports<sup>21</sup>, the proportion of men aged 16 and over with any CVD conditions increased gradually from 15% in the 2003-2009 period to 18% in 2014. In 2015, levels stayed at a statistically similar level (16%) to those in both the aforementioned periods. Prevalence for women aged 16 and over remained relatively stable, fluctuating between 14% and 16% since 2003 (15% in 2015).

**Figure 9A, Table 9.1**

#### Doctor-diagnosed diabetes

From 2003 to 2015 there have been significant increases in the prevalence of doctor-diagnosed diabetes among all adults aged 16 and over (4% to 6%), men aged 16 and over (4% to 7%) and women aged 16 and over (4% to 5%). Data for all adults aged 16-64 from 1995 to 2003 (2% in all survey years) suggest that this trend did not begin earlier.

**Figure 9A, Table 9.1**

#### Any CVD or diabetes

Prevalence of the combined measure of any CVD or diabetes for adults aged 16 and over increased significantly from 2003 (17%) to 2015 (19%), although figures were largely unchanged in recent years (19-20% between 2012 and 2015). A similar pattern can be observed among adults aged 16-64 (a significant increase from 11% in 2003 to 13% in 2015), with figures from 1995 (10%), 1998 (10%) and 2003 (11%) suggesting the upward trend did not start before 2003.

There was a similar increase over time from 2003 to 2015 for men (17% to 20%) albeit with the 2014 figure being significantly higher (23%) and possibly the result of sampling fluctuation. There were no significant differences between women from 2003 (16%) to 2015 (18%).

**Figure 9A, Table 9.1**

#### IHD

The proportion of adults aged 16 and over reporting an IHD diagnosis ranged between 6% and 7% between 2003 and 2015 (6% in 2015).

While there has been a significant downward trend in IHD among women aged 16 and over (from 7% in 2003 to 5% in 2015), there has been little change in IHD prevalence among men over this same period, with figures varying from 7-8% (7% in 2015). **Figure 9A, Table 9.1**

### Stroke

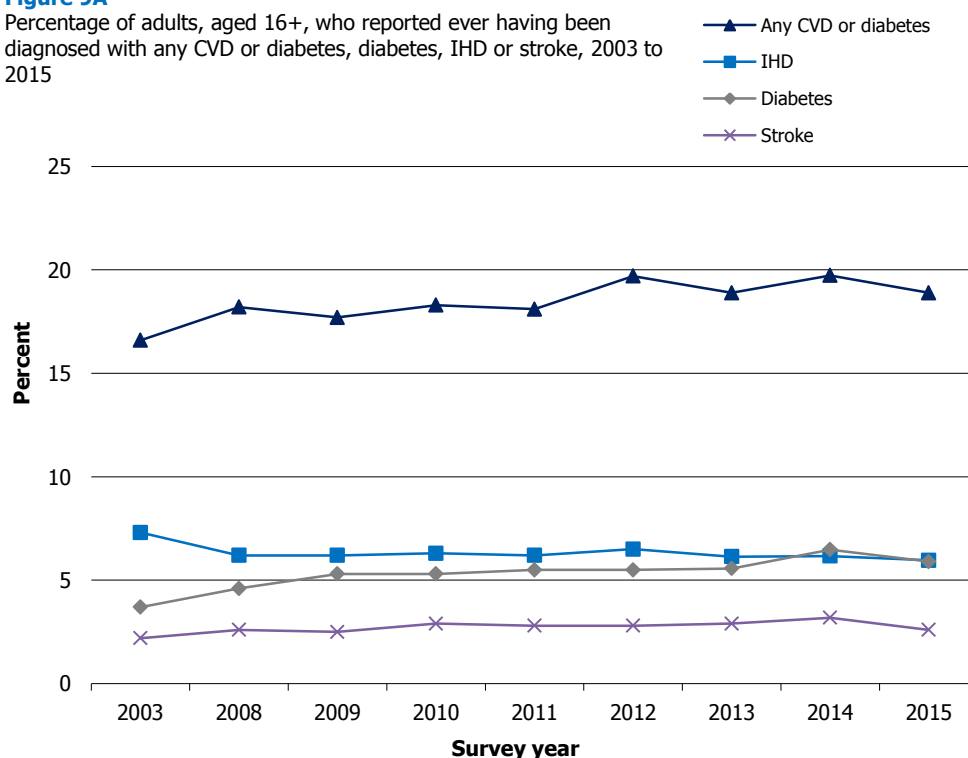
There is no significant difference in stroke prevalence for adults aged 16 and over between 2003 (2%) and 2015 (3%). For both men and women prevalence has been 2-3% since data were first collected in 2003. **Figure 9A, Table 9.1**

### IHD or stroke

The combined prevalence of IHD or stroke has not changed significantly from 2003 (9%) to 2015 (8%). While there has been no significant change in the proportion of men aged 16 and over reporting either condition (10% in 2003 and 9% in 2015), there has been a significant drop in prevalence among women (8% in 2003 to 6% in 2015). **Table 9.1**

**Figure 9A**

Percentage of adults, aged 16+, who reported ever having been diagnosed with any CVD or diabetes, diabetes, IHD or stroke, 2003 to 2015



### 9.3.2 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 2015, by age and sex

#### Any CVD

In 2015, 15% of adults aged 16 and over reported being diagnosed with any CVD condition. Levels did not vary significantly between men (16%) and women (15%), with levels of prevalence increasing significantly with age (from 6% for those aged 16-24 to 44% for those aged 75 and

over). Levels increased with age for both men and women but with a sharper gradient of increase for men (from 3% of those aged 16-24 to 49% for those aged 75 and over) than for women (from 9% to 40% respectively).

**Table 9.2**

### **Doctor-diagnosed diabetes**

In 2015, 6% of adults aged 16 and over reported that a doctor had diagnosed them with diabetes, with no statistical difference in prevalence by sex (7% of men and 5% of women). There was a clear age-related pattern to prevalence with none of those aged 16-24 reporting a diagnosis, compared with 13-14% of adults aged 65 and over. Similar patterns of increase were seen for both men and women.

**Figure 9B, Table 9.2**

### **Any CVD or diabetes**

Around a fifth (19%) of adults in Scotland in 2015 reported any CVD or diabetes diagnosed by a doctor, with comparable proportions for men (20%) and women (18%). Similar to the pattern discussed above for any CVD, prevalence was lower among younger age groups (6% of adults aged 16-24) and increased with age up to 49% of adults aged 75 and over. A sharper rate of increase with age was again apparent for men (from 3% for those aged 16-24 to 55% for those aged 75 and over) than for women (9% to 46% respectively).

**Figure 9B, Table 9.2**

### **IHD**

In 2015, 6% of adults in Scotland reported ever having being diagnosed with IHD with a significant difference in prevalence between men (7%) and women (5%). Prevalence was very low among adults aged 16-44 (0-1%), and rose to 4-6% for those aged 45-64 and 14-25% for those aged 65 and over. Prevalence increased with age for men from 0.5% or less for those aged 16-34 to 32% for those aged 75 and over, with a slower rate of increase for women (0-1% to 20% respectively).

**Figure 9B, Table 9.2**

### **Stroke**

In line with previous years<sup>21</sup>, the proportion of adults in Scotland reporting ever having had a stroke in 2015 remained low (3%), with similar levels for men and women (both 3%). The proportion of those aged 16-54 with a diagnosis was 0-1%, increasing to 4-5% of adults aged 55-74 and 10% of those aged 75 and over. Men and women had similar patterns of prevalence by age.

**Figure 9B, Table 9.2**

### **IHD or stroke**

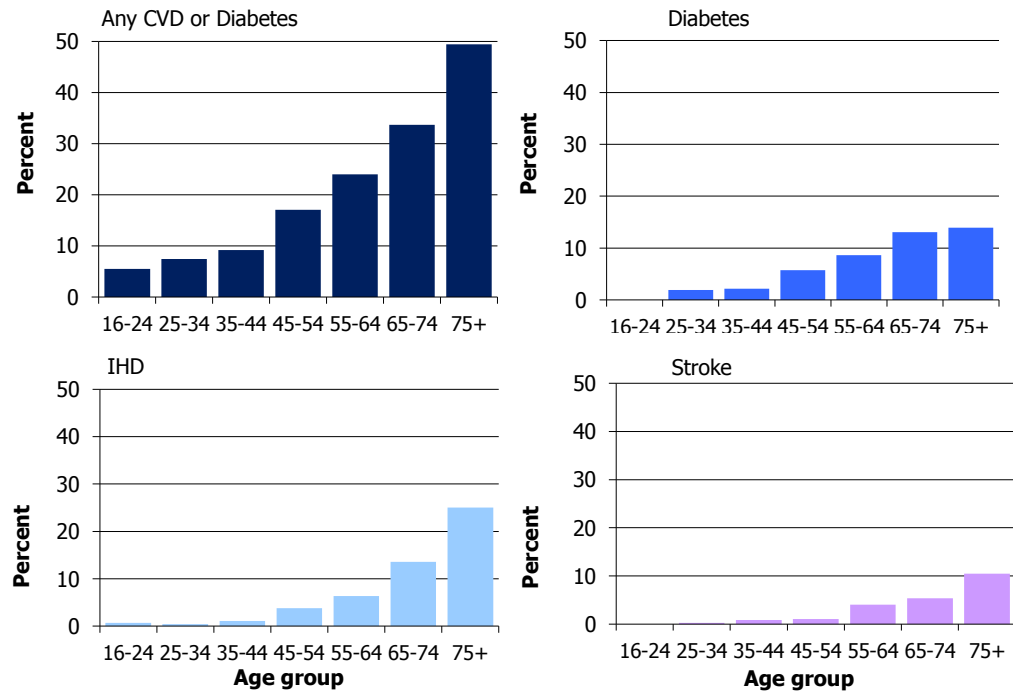
In 2015, 8% of adults reported having had a stroke or IHD that had been diagnosed by a doctor, with statistically higher figures for men (9%) than women (6%). Prevalence increased with age, from 1% in the two youngest age groups (16-24 and 25-34), to 32% of adults aged 75 and over. As with the measure for IHD, rates rose with age more steeply for men (from 0.5% or less for those aged 16-34 to 38% for those aged 75 and over) than for women (1% to 28%).

**Table 9.2**



**Figure 9B**

Percentage of adults, aged 16+, who reported ever being diagnosed with any CVD, diabetes, IHD or stroke, 2015, by age

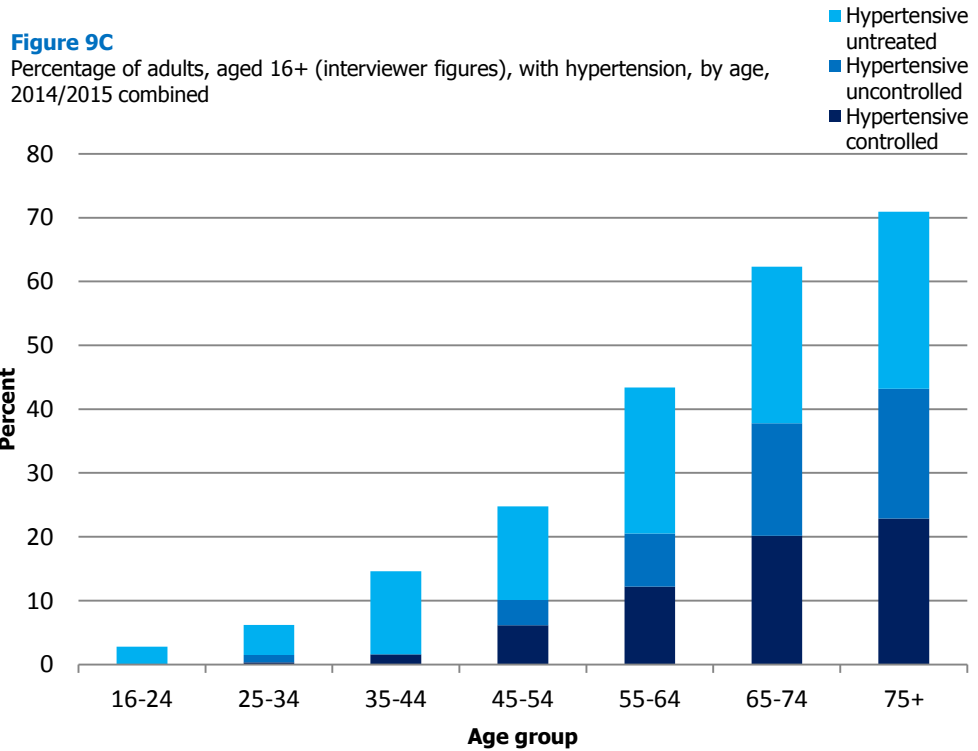


### 9.3.3 Blood pressure level, 2014/2015 (combined), by age and sex

To increase the sample size available, data from the 2014 and 2015 surveys combined were used in the blood pressure analysis. In 2014/2015 (using unadjusted interviewer figures, see section 9.2.1), 29% of adults aged 16 and over in Scotland had survey-defined hypertension<sup>22</sup>, consisting of 15% with untreated hypertension, 8% with controlled hypertension and 6% with hypertension that was uncontrolled despite being treated.

There was a significant association between presence of hypertension and age in 2014/2015, with 3% of the youngest age group (aged 16-24) having survey-defined hypertension rising to 71% among those aged 75 and over. While prevalence was significantly higher among men than women (31% compared with 27% respectively), different patterns by age were seen for each sex, with a sharper rate of increase for women (from 1% for those aged 16-24 to 76% for those aged 75 and over) than for men (from 5% to 65% respectively).

**Figure 9C, Table 9.3**



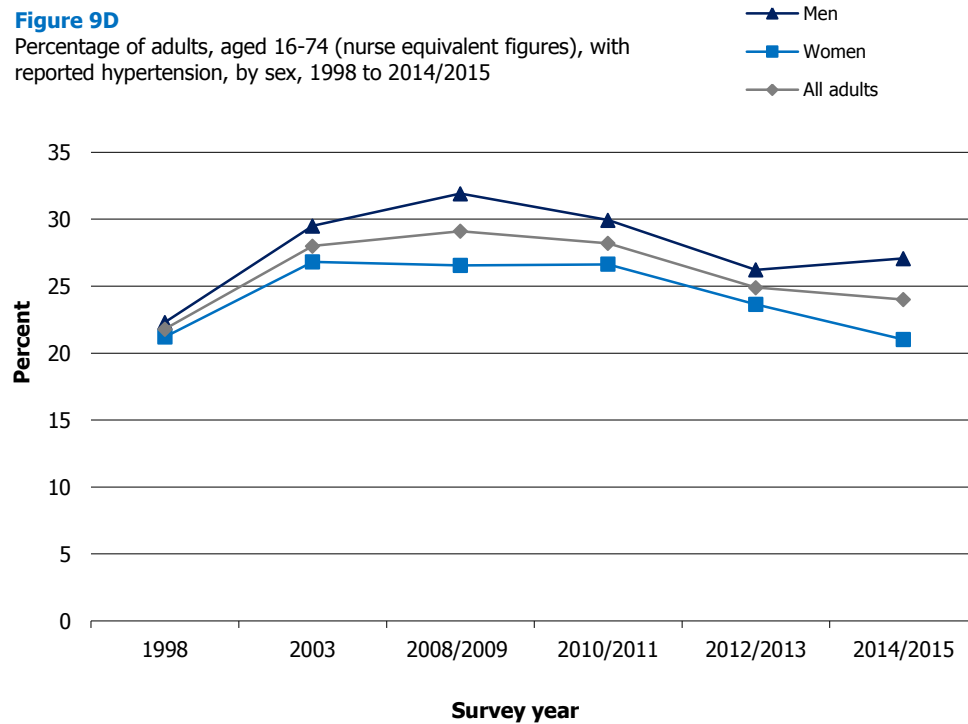
### 9.3.4 Blood pressure level, 1998 to 2014/2015 (combined)

2014/2015 data for blood pressure using interviewer figures (see section 9.2.1) showed 29% of adults aged 16 and over having survey-defined hypertension, the same proportion as in 2012/2013. The longer-term trend using nurse-equivalent calibrated estimates for all adults from 2003, showed a significant decrease between 2010/2011 (33%) and 2012/2013 (28%) and remained at this level in 2014/2015. Nurse-equivalent figures for those aged 16-74 suggest that there may have been an earlier increase in prevalence, with a significant change from 22% in 1998 to 28% in 2003 (as shown in Figure 9D).

**Figure 9D, Table 9.4**

**Figure 9D**

Percentage of adults, aged 16-74 (nurse equivalent figures), with reported hypertension, by sex, 1998 to 2014/2015



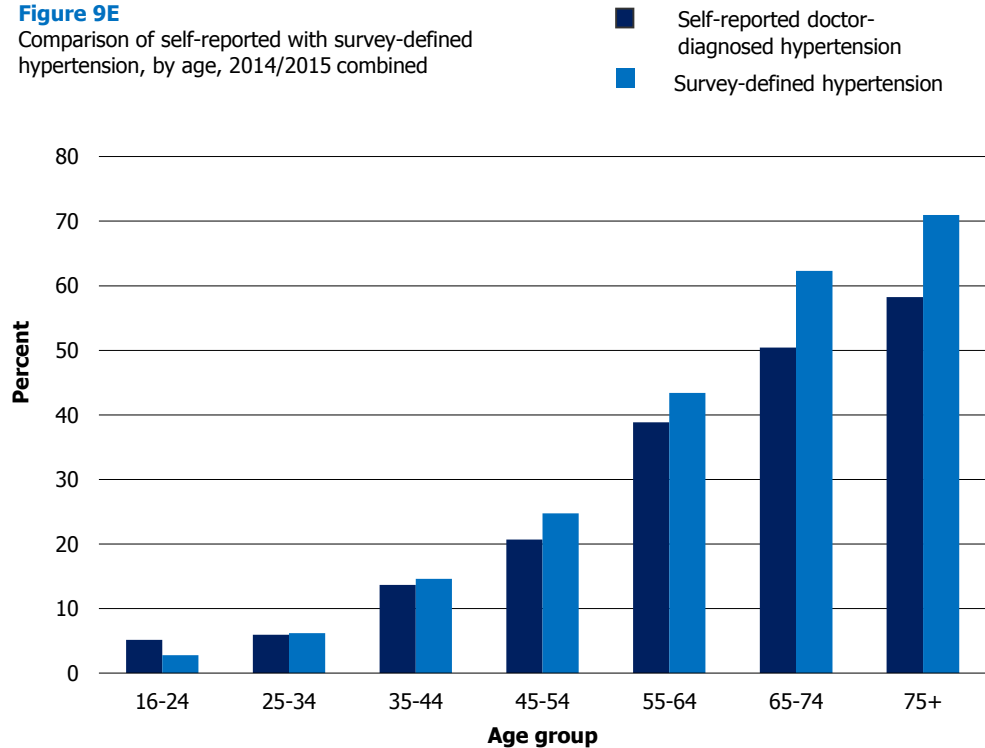
### 9.3.5 Comparison of doctor-diagnosed with survey-defined hypertension, 2014/2015 (combined), by age and sex

To increase the sample size available, the comparison of doctor-diagnosed hypertension with survey-defined hypertension, by age and sex, used data from the 2014 and 2015 surveys combined. In 2014/2015, 25% of adults aged 16 and over reported that they had received a diagnosis of hypertension from a doctor compared with 29% of adults having survey-defined hypertension. For both men and women, survey-defined hypertension was four percentage points higher than doctor-diagnosed hypertension (31% and 27% for men, 27% and 23% for women).

Across the age groups, prevalence of survey-defined hypertension was generally higher than reported doctor-diagnosed hypertension in 2014/2015 combined, with the gap between the two growing with age. Whereas for those aged 16-24, survey-defined hypertension was two percentage points lower than doctor-diagnosed hypertension (3% and 5%), there was no difference at age 25-34 (both 6%). For those aged 75 and over survey-defined hypertension was 13 percentage points higher (71% compared with 58% for doctor diagnosed hypertension). Among those aged 75 and over, the percentage point gap between prevalence of survey-defined and reported doctor-diagnosed hypertension was 17 for women (76% and 59% respectively) compared with 8 for men (65% and 57% respectively).

**Figure 9E, Table 9.5**

**Figure 9E**  
Comparison of self-reported with survey-defined hypertension, by age, 2014/2015 combined



### 9.3.6 Detection and treatment of hypertension, 2014/2015 (combined), by age and sex

The detection rate in Table 9.6 shows the proportion of participants with survey-defined hypertension who reported doctor-diagnosed hypertension. In 2014/2015 the hypertension detection rate among adults with survey-defined hypertension was 58%. Detection rates were patterned by age, increasing from 44% among adults aged 35-54, to 57% for those aged 55-64 and 69% for adults aged 65 and over. Age-related patterns of detection differed by sex, with there being a significant increase with age for men from 51-54% for those aged 35-64 to 69-70% for those aged 65 and over. For women, there was a significant and steeper increase from 29% for those aged 35-54 to 64-69% for those aged 55 and over.

In 2014/2015, around one in five adults (21%) with survey-defined hypertension were on medication for high blood pressure but also had high blood pressure readings (hypertension treated but not controlled). As with detection rates, there was an age-related pattern to treated but not controlled hypertension, increasing from one in ten adults (10%) aged 35-54 to nearly three in ten adults (28-29%) aged 65 and over. In 2014/2015, over a quarter of adults with survey-defined hypertension (27%) were taking medication and did not have a high blood pressure reading (hypertension treated and controlled). There continued to be an age-related pattern, with levels increasing from 20% of adults aged 35-54, to 28% of those aged 55-64 and 32% of adults aged 65 and over.

**Table 9.6**

## References and notes

- <sup>1</sup> Lozano R. et al. Global and regional mortality from 235 causes of death for 20 age groups in 1990 and 2010: a systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*. 2012. Vol 380. Issue 9859: 2095-128.
- <sup>2</sup> See: [www.gov.scot/Resource/0045/00458289.pdf](http://www.gov.scot/Resource/0045/00458289.pdf)
- <sup>3</sup> See: [www.gov.scot/Resource/0045/00458309.pdf](http://www.gov.scot/Resource/0045/00458309.pdf)
- <sup>4</sup> See: [www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/births-deaths-and-other-vital-events-preliminary-annual-figures/2015](http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/births-deaths-and-other-vital-events-preliminary-annual-figures/2015)
- <sup>5</sup> *Diabetes Action Plan 2010: Quality Care for Diabetes in Scotland*. Edinburgh, Scottish Government. 2010.
- <sup>6</sup> See: [www.gov.scot/About/Performance/scotPerforms/outcome](http://www.gov.scot/About/Performance/scotPerforms/outcome)
- <sup>7</sup> See: [www.gov.scot/About/Performance/scotPerforms/indicator/mortality](http://www.gov.scot/About/Performance/scotPerforms/indicator/mortality)
- <sup>8</sup> See: [www.gov.scot/About/Performance/scotPerforms](http://www.gov.scot/About/Performance/scotPerforms)
- <sup>9</sup> See: [www.gov.scot/About/Performance/scotPerforms/indicator/smoking](http://www.gov.scot/About/Performance/scotPerforms/indicator/smoking)
- <sup>10</sup> See: [www.gov.scot/About/Performance/scotPerforms/indicator/physicalactivity](http://www.gov.scot/About/Performance/scotPerforms/indicator/physicalactivity)
- <sup>11</sup> See: [www.gov.scot/About/Performance/scotPerforms/indicator/healthyweight](http://www.gov.scot/About/Performance/scotPerforms/indicator/healthyweight)
- <sup>12</sup> See: [www.healthscotland.com/keep-well.aspx](http://www.healthscotland.com/keep-well.aspx)
- <sup>13</sup> *Heart Disease Improvement Plan*. Edinburgh, Scottish Government. 2014. [www.gov.scot/Publications/2014/08/5434](http://www.gov.scot/Publications/2014/08/5434)
- <sup>14</sup> *Stroke Improvement Plan*. Edinburgh, Scottish Government. 2014. [www.gov.scot/Publications/2014/08/9114](http://www.gov.scot/Publications/2014/08/9114)
- <sup>15</sup> *Diabetes Improvement Plan*. Edinburgh, Scottish Government. 2014. [www.gov.scot/Publications/2014/11/6742](http://www.gov.scot/Publications/2014/11/6742)
- <sup>16</sup> See: [www.scotland.gov.uk/scottishhealthsurvey](http://www.scotland.gov.uk/scottishhealthsurvey)
- <sup>17</sup> For a detailed description of the biological module see Volume 2 of this report
- <sup>18</sup> Rutherford, L and Purdon, S. SHeS Waist and blood pressure validation study. Edinburgh: Scottish Government, 2013. <http://www.scotland.gov.uk/Topics/Statistics/Browse/Health/scottish-health-survey/WBPstudy>
- <sup>19</sup> Diabetes and high blood pressure are not included in the definition of 'any CVD condition' as they are risk factors for CVD.
- <sup>20</sup> Ramsay, L.E., Williams, B., Johnston, G.D., MacGregor, G.A., Poston, L., Potter, J.F., Poulter, N.R. and Russel, G. (1999). Guidelines for management of hypertension: report of the Third Working Party of the British Hypertension Society, 1999. *Journal of Human Hypertension*. 13:569-592.
- <sup>21</sup> Christie, S. Chapter 8: Cardiovascular diseases and diabetes. In: Campbell-Jack, D, Hinchliffe S and Bromley C (eds). *Scottish Health Survey 2014 - Volume 1 Main Report*. Edinburgh: Scottish Government. 2015
- <sup>22</sup> See Section 9.2.2 for definitions.

## Table list

Table 9.1	Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 1995 to 2015
Table 9.2	Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 2015, by age and sex
Table 9.3	Blood pressure level, 2014/2015 combined, by age and sex
Table 9.4	Blood pressure level, 1998 to 2014/2015 combined
Table 9.5	Comparison of doctor-diagnosed with survey-defined hypertension, 2014/2015 combined, by age and sex
Table 9.6	Detection and treatment of hypertension, 2014/2015 combined, by age and sex

**Table 9.1 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 1995 to 2015**

<i>Aged 16 and over</i>		<i>1995 to 2015</i>									
<b>Any CVD<sup>a</sup> / doctor-diagnosed diabetes<sup>b</sup> / any CVD or diabetes<sup>b</sup> / IHD<sup>c</sup> / stroke / IHD or stroke</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>Men</b>											
<b>Any CVD</b>											
16-64	8	8	10	10	10	11	10	10	9	13	10
16+	n/a	n/a	15	15	15	16	16	17	16	18	16
<b>Doctor-diagnosed diabetes</b>											
16-64	2	2	2	3	5	5	4	4	3	5	4
16+	n/a	n/a	4	5	6	6	6	6	6	8	7
<b>Any CVD or diabetes</b>											
16-64	9	10	11	12	13	14	13	13	12	17	13
16+	n/a	n/a	17	18	19	20	19	20	19	23	20
<b>IHD</b>											
16-64	4	4	4	3	4	3	3	3	3	4	3
16+	n/a	n/a	8	7	7	8	8	7	7	8	7
<b>Stroke</b>											
16-64	1	1	1	1	1	2	1	1	2	2	1
16+	n/a	n/a	2	3	3	3	3	3	3	3	3
<b>IHD or stroke</b>											
16-64	5	4	5	4	4	5	4	4	4	6	5
16+	n/a	n/a	10	9	9	10	9	9	10	10	9
<b>Women</b>											
<b>Any CVD</b>											
16-64	9	9	9	11	9	9	8	11	11	9	10
16+	n/a	n/a	15	16	14	14	14	16	15	14	15
<b>Doctor-diagnosed diabetes</b>											
16-64	2	2	2	3	3	3	3	3	3	3	3
16+	n/a	n/a	4	4	5	4	5	5	5	5	5

*Continued...*

**Table 9.1 - Continued**

*Aged 16 and over*

*1995 to 2015*

<b>Any CVD<sup>a</sup> / doctor-diagnosed diabetes<sup>b</sup> / any CVD or diabetes<sup>b</sup> / IHD<sup>c</sup> / stroke / IHD or stroke</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>Any CVD or diabetes</b>											
16-64	10	10	10	13	11	11	11	14	13	11	13
16+	n/a	n/a	16	18	17	17	17	19	19	17	18
<b>IHD</b>											
16-64	3	3	3	2	2	2	2	2	2	2	2
16+	n/a	n/a	7	6	5	5	5	6	5	5	5
<b>Stroke</b>											
16-64	1	1	1	1	1	1	1	2	2	1	1
16+	n/a	n/a	2	3	2	3	3	3	3	3	3
<b>IHD or stroke</b>											
16-64	3	3	3	3	2	3	3	4	3	3	3
16+	n/a	n/a	8	8	7	7	7	8	7	7	6
<b>All adults</b>											
<b>Any CVD</b>											
16-64	9	8	9	10	9	10	9	11	10	11	10
16+	n/a	n/a	15	15	14	15	15	16	15	16	15
<b>Doctor-diagnosed diabetes</b>											
16-64	2	2	2	3	4	4	4	4	3	4	4
16+	n/a	n/a	4	5	5	5	6	6	6	6	6
<b>Any CVD or diabetes</b>											
16-64	10	10	11	13	12	12	12	14	12	14	13
16+	n/a	n/a	17	18	18	18	18	20	19	20	19
<b>IHD</b>											
16-64	4	3	3	3	3	3	3	3	2	3	3
16+	n/a	n/a	7	6	6	6	6	7	6	6	6
<b>Stroke</b>											
16-64	1	1	1	1	1	2	1	1	2	1	1
16+	n/a	n/a	2	3	3	3	3	3	3	3	3

*Continued...*



**Table 9.1 - Continued**

*Aged 16 and over*

*1995 to 2015*

<b>Any CVD<sup>a</sup> / doctor-diagnosed diabetes<sup>b</sup> / any CVD or diabetes<sup>b</sup> / IHD<sup>c</sup> / stroke / IHD or stroke</b>	1995	1998	2003	2008	2009	2010	2011	2012	2013	2014	2015
	%	%	%	%	%	%	%	%	%	%	%
<b>IHD or stroke</b>											
16-64	4	4	4	4	3	4	4	4	4	4	4
16+	n/a	n/a	9	8	8	8	8	8	8	8	8
<i>Bases (weighted):</i>											
Men 16-64	3898	3953	3188	2542	2955	2837	2953	1885	1900	1799	1921
Men 16+	n/a	n/a	3857	3086	3601	3465	3608	2308	2347	2236	2400
Women 16-64	3988	3989	3327	2640	3068	2947	3069	1956	1978	1874	2001
Women 16+	n/a	n/a	4291	3372	3926	3774	3931	2506	2545	2421	2595
All adults 16-64	7886	7946	6517	5182	6023	5784	6023	3841	3878	3673	3922
All adults 16+	n/a	n/a	8142	6459	7526	7240	7539	4814	4892	4657	4996
<i>Bases (unweighted):</i>											
Men 16-64	3520	3367	2771	2084	2408	2293	2423	1517	1605	1479	1567
Men 16+	n/a	n/a	3610	2840	3287	3112	3277	2125	2140	2066	2247
Women 16-64	4397	4212	3461	2694	3211	3083	3178	1974	2073	1858	1926
Women 16+	n/a	n/a	4538	3618	4239	4127	4261	2688	2752	2588	2748
All adults 16-64	7917	7583	6233	4778	5619	5376	5601	3491	3678	3337	3493
All adults 16+	n/a	n/a	8142	6458	7526	7239	7538	4813	4892	4654	4995

a Any cardiovascular condition, including IHD (heart attack or angina), stroke, heart murmur, abnormal heart rhythm or 'other heart trouble' - excludes diabetes and high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

**Table 9.2 Any CVD, doctor-diagnosed diabetes, any CVD or diabetes, IHD, stroke, IHD or stroke, 2015, by age and sex**

<i>Aged 16 and over</i>								<i>2015</i>
<b>Any CVD<sup>a</sup> / doctor-diagnosed diabetes<sup>b</sup> / any CVD or diabetes<sup>b</sup> / IHD<sup>c</sup> / stroke / IHD or stroke</b>	<b>Age</b>							<b>Total</b>
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Any CVD	3	4	6	14	23	30	49	16
Doctor-diagnosed diabetes	-	2	3	7	10	15	16	7
Any CVD or diabetes	3	5	9	19	29	39	55	20
IHD	-	0	2	6	9	18	32	7
Stroke	-	0	1	1	5	5	10	3
IHD or Stroke	-	0	3	6	13	22	38	9
<b>Women</b>								
Any CVD	9	7	9	12	14	20	40	15
Doctor-diagnosed diabetes	-	2	2	4	8	12	12	5
Any CVD or diabetes	9	9	10	15	20	29	46	18
IHD	1	0	0	2	4	9	20	5
Stroke	-	0	1	1	3	5	11	3
IHD or Stroke	1	1	1	3	7	13	28	6
<b>All adults</b>								
Any CVD	6	6	8	13	19	25	44	15
Doctor-diagnosed diabetes	-	2	2	6	9	13	14	6
Any CVD or diabetes	6	7	9	17	24	34	49	19
IHD	1	0	1	4	6	14	25	6
Stroke	-	0	1	1	4	5	10	3
IHD or Stroke	1	1	2	5	10	17	32	8
<i>Bases (weighted):</i>								
<i>Men</i>	339	386	376	445	375	290	190	2400
<i>Women</i>	333	405	397	472	394	321	273	2595
<i>All adults</i>	672	791	773	917	770	611	463	4996
<i>Bases (unweighted):</i>								
<i>Men</i>	194	242	315	406	410	401	279	2247
<i>Women</i>	211	348	392	486	489	461	361	2748
<i>All adults</i>	405	590	707	892	899	862	640	4995

a Any cardiovascular condition, including IHD (heart attack or angina), stroke, heart murmur, abnormal heart rhythm or 'other heart trouble' - excludes diabetes and high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

**Table 9.3 Blood pressure level, 2014/2015 combined, by age and sex**

*Aged 16 and over with a valid blood pressure reading and data on medication*

*2014/2015 combined*

Blood pressure level	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Normotensive	95	92	80	69	49	38	35	69
Hypertensive controlled	-	-	2	10	10	23	23	8
Hypertensive uncontrolled	-	1	-	7	11	15	19	6
Hypertensive untreated	5	7	18	14	30	23	23	16
<i>Total with hypertension</i>	5	8	20	31	51	62	65	31
<b>Women</b>								
Normotensive	99	96	91	81	63	37	24	73
Hypertensive controlled	-	1	1	3	14	18	22	7
Hypertensive uncontrolled	-	1	-	1	6	20	22	6
Hypertensive untreated	1	3	8	15	17	26	32	13
<i>Total with hypertension</i>	1	4	9	19	37	63	76	27
<b>All adults</b>								
Normotensive	97	94	85	75	57	38	29	71
Hypertensive controlled	-	0	2	6	12	20	23	8
Hypertensive uncontrolled	-	1	-	4	8	18	20	6
Hypertensive untreated	3	5	13	15	23	25	28	15
<i>Total with hypertension</i>	3	6	15	25	43	62	71	29
<i>Bases (weighted):</i>								
<i>Men</i>	128	139	156	159	131	104	71	888
<i>Women</i>	122	147	145	179	150	119	96	959
<i>All adults</i>	250	286	301	339	281	224	167	1847
<i>Bases (unweighted):</i>								
<i>Men</i>	84	98	121	142	131	139	87	802
<i>Women</i>	87	147	180	184	183	172	109	1062
<i>All adults</i>	171	245	301	326	314	311	196	1864

**Table 9.4 Blood pressure level, 1998 to 2014/2015 combined***Aged 16 and over with a valid blood pressure reading and data on medication**1998 to 2014/2015 combined*

<b>Blood pressure level</b>	1998	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined <sup>a</sup>	2014/2015 combined <sup>a</sup>
	%	%	%	%	%	%
<b>Men</b>						
<b>Normotensive</b>						
16-74 (nurse / nurse equivalent)	78	71	68	70	74	73
16+ (nurse / nurse equivalent)	n/a	67	65	67	72	70
16-74 (interviewer)	n/a	n/a	n/a	n/a	73	72
16+ (interviewer)	n/a	n/a	n/a	n/a	71	69
<b>Hypertensive controlled</b>						
16-74 (nurse / nurse equivalent)	3	5	8	6	4	7
16+ (nurse / nurse equivalent)	n/a	6	8	8	5	8
16-74 (interviewer)	n/a	n/a	n/a	n/a	4	7
16+ (interviewer)	n/a	n/a	n/a	n/a	5	8
<b>Hypertensive uncontrolled</b>						
16-74 (nurse / nurse equivalent)	4	5	6	6	5	5
16+ (nurse / nurse equivalent)	n/a	6	7	7	6	6
16-74 (interviewer)	n/a	n/a	n/a	n/a	5	5
16+ (interviewer)	n/a	n/a	n/a	n/a	6	6
<b>Hypertensive untreated</b>						
16-74 (nurse / nurse equivalent)	16	20	18	18	17	15
16+ (nurse / nurse equivalent)	n/a	21	19	19	18	16
16-74 (interviewer)	n/a	n/a	n/a	n/a	18	16
16+ (interviewer)	n/a	n/a	n/a	n/a	19	16
<b>Total with hypertension</b>						
16-74 (nurse / nurse equivalent)	22	30	32	30	26	27
16+ (nurse / nurse equivalent)	n/a	33	35	33	28	30
16-74 (interviewer)	n/a	n/a	n/a	n/a	27	28
16+ (interviewer)	n/a	n/a	n/a	n/a	29	31

*Continued...*

**Table 9.4 - Continued***Aged 16 and over with a valid blood pressure reading and data on medication**1998 to 2014/2015 combined*

<b>Blood pressure level</b>	1998	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined <sup>a</sup>	2014/2015 combined <sup>a</sup>
	%	%	%	%	%	%
<b>Women</b>						
<b>Normotensive</b>						
16-74 (nurse / nurse equivalent)	79	73	73	73	76	79
16+ (nurse / nurse equivalent)	n/a	67	69	68	71	74
16-74 (interviewer)	n/a	n/a	n/a	n/a	76	79
16+ (interviewer)	n/a	n/a	n/a	n/a	71	73
<b>Hypertensive controlled</b>						
16-74 (nurse / nurse equivalent)	4	6	7	6	6	6
16+ (nurse / nurse equivalent)	n/a	7	9	8	7	8
16-74 (interviewer)	n/a	n/a	n/a	n/a	6	6
16+ (interviewer)	n/a	n/a	n/a	n/a	7	7
<b>Hypertensive uncontrolled</b>						
16-74 (nurse / nurse equivalent)	4	6	6	6	7	4
16+ (nurse / nurse equivalent)	n/a	9	8	9	8	6
16-74 (interviewer)	n/a	n/a	n/a	n/a	7	4
16+ (interviewer)	n/a	n/a	n/a	n/a	8	6
<b>Hypertensive untreated</b>						
16-74 (nurse / nurse equivalent)	13	15	14	15	11	11
16+ (nurse / nurse equivalent)	n/a	17	15	16	13	13
16-74 (interviewer)	n/a	n/a	n/a	n/a	12	11
16+ (interviewer)	n/a	n/a	n/a	n/a	14	13
<b>Total with hypertension</b>						
16-74 (nurse / nurse equivalent)	21	27	27	27	24	21
16+ (nurse / nurse equivalent)	n/a	33	31	32	29	26
16-74 (interviewer)	n/a	n/a	n/a	n/a	24	21
16+ (interviewer)	n/a	n/a	n/a	n/a	29	27

*Continued...*

**Table 9.4 - Continued***Aged 16 and over with a valid blood pressure reading and data on medication**1998 to 2014/2015 combined*

<b>Blood pressure level</b>	1998	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined <sup>a</sup>	2014/2015 combined <sup>a</sup>
	%	%	%	%	%	%
<b>All adults</b>						
<b>Normotensive</b>						
16-74 (nurse / nurse equivalent)	78	72	71	72	75	76
16+ (nurse / nurse equivalent)	n/a	67	67	67	72	72
16-74 (interviewer)	n/a	n/a	n/a	n/a	74	75
16+ (interviewer)	n/a	n/a	n/a	n/a	71	71
<b>Hypertensive controlled</b>						
16-74 (nurse / nurse equivalent)	4	6	7	6	5	6
16+ (nurse / nurse equivalent)	n/a	7	9	8	6	8
16-74 (interviewer)	n/a	n/a	n/a	n/a	5	6
16+ (interviewer)	n/a	n/a	n/a	n/a	6	8
<b>Hypertensive uncontrolled</b>						
16-74 (nurse / nurse equivalent)	4	8	6	6	6	5
16+ (nurse / nurse equivalent)	n/a	5	8	8	7	6
16-74 (interviewer)	n/a	n/a	n/a	n/a	6	5
16+ (interviewer)	n/a	n/a	n/a	n/a	7	6
<b>Hypertensive untreated</b>						
16-74 (nurse / nurse equivalent)	14	17	16	16	14	13
16+ (nurse / nurse equivalent)	n/a	18	17	17	15	14
16-74 (interviewer)	n/a	n/a	n/a	n/a	15	14
16+ (interviewer)	n/a	n/a	n/a	n/a	16	15
<b>Total with hypertension</b>						
16-74 (nurse / nurse equivalent)	22	28	29	28	25	24
16+ (nurse / nurse equivalent)	n/a	33	33	33	28	28
16-74 (interviewer)	n/a	n/a	n/a	n/a	26	25
16+ (interviewer)	n/a	n/a	n/a	n/a	29	29

*Continued...*

**Table 9.4 - Continued***Aged 16 and over with a valid blood pressure reading and data on medication**1998 to 2014/2015 combined*

<b>Blood pressure level</b>	1998	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined <sup>a</sup>	2014/2015 combined <sup>a</sup>
<i>Bases (weighted):</i>						
<i>Men, 16-74</i>	3356	1883	831	751	807	817
<i>Men, 16+</i>	<i>n/a</i>	2032	899	815	879	888
<i>Women, 16-74</i>	3329	2101	889	785	851	863
<i>Women, 16+</i>	<i>n/a</i>	2383	998	879	949	959
<i>All adults, 16-74</i>	3343	3985	1720	1536	1658	1680
<i>All adults, 16+</i>	<i>n/a</i>	4415	1897	1694	1828	1847
<i>Bases (unweighted):</i>						
<i>Men, 16-74</i>	3018	1726	748	653	744	715
<i>Men, 16+</i>	<i>n/a</i>	1933	839	736	828	802
<i>Women, 16-74</i>	3709	2256	970	869	927	953
<i>Women, 16+</i>	<i>n/a</i>	2538	1084	978	1037	1062
<i>All adults, 16-74</i>	3364	3982	1718	1522	1671	1668
<i>All adults, 16+</i>	<i>n/a</i>	4471	1923	1714	1865	1864

<sup>a</sup> Measurements were taken by an interviewer from 2012 onwards and converted to an equivalent of the nurse measure

**Table 9.5 Comparison of doctor-diagnosed with survey-defined hypertension, 2014/2015 combined, by age and sex**

*Aged 16 and over*

*2014/2015 combined*

Hypertension	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
<b>Men</b>								
Self-reported doctor-diagnosed hypertension <sup>a</sup>	5	4	22	26	45	50	57	27
Survey-defined hypertension	5	8	20	31	51	62	65	31
<b>Women</b>								
Self-reported doctor-diagnosed hypertension <sup>a</sup>	5	8	5	15	33	51	59	23
Survey-defined hypertension	1	4	9	19	37	63	76	27
<b>All adults</b>								
Self-reported doctor-diagnosed hypertension <sup>a</sup>	5	6	14	21	39	50	58	25
Survey-defined hypertension	3	6	15	25	43	62	71	29
<i>Bases (weighted)<sup>b,c</sup>:</i>								
<i>Men, self-reported doctor-diagnosed hypertension</i>	<i>150</i>	<i>171</i>	<i>167</i>	<i>198</i>	<i>166</i>	<i>128</i>	<i>84</i>	<i>1064</i>
<i>Men, survey-defined hypertension</i>	<i>128</i>	<i>139</i>	<i>156</i>	<i>159</i>	<i>131</i>	<i>104</i>	<i>71</i>	<i>888</i>
<i>Women, self-reported doctor-diagnosed hypertension</i>	<i>148</i>	<i>180</i>	<i>176</i>	<i>210</i>	<i>175</i>	<i>143</i>	<i>120</i>	<i>1150</i>
<i>Women, survey-defined hypertension</i>	<i>122</i>	<i>147</i>	<i>145</i>	<i>179</i>	<i>150</i>	<i>119</i>	<i>96</i>	<i>959</i>
<i>All adults, self-reported doctor-diagnosed hypertension</i>	<i>298</i>	<i>351</i>	<i>343</i>	<i>408</i>	<i>341</i>	<i>270</i>	<i>204</i>	<i>2214</i>
<i>All adults, survey-defined hypertension</i>	<i>250</i>	<i>286</i>	<i>301</i>	<i>339</i>	<i>281</i>	<i>224</i>	<i>167</i>	<i>1847</i>
<i>Bases (unweighted)<sup>b,c</sup>:</i>								
<i>Men, self-reported doctor-diagnosed hypertension</i>	<i>100</i>	<i>116</i>	<i>136</i>	<i>168</i>	<i>164</i>	<i>169</i>	<i>103</i>	<i>956</i>
<i>Men, survey-defined hypertension</i>	<i>84</i>	<i>98</i>	<i>121</i>	<i>142</i>	<i>131</i>	<i>139</i>	<i>87</i>	<i>802</i>
<i>Women, self-reported doctor-diagnosed hypertension</i>	<i>107</i>	<i>176</i>	<i>212</i>	<i>213</i>	<i>210</i>	<i>204</i>	<i>134</i>	<i>1256</i>
<i>Women, survey-defined hypertension</i>	<i>87</i>	<i>147</i>	<i>180</i>	<i>184</i>	<i>183</i>	<i>172</i>	<i>109</i>	<i>1062</i>
<i>All adults, self-reported doctor-diagnosed hypertension</i>	<i>207</i>	<i>292</i>	<i>348</i>	<i>381</i>	<i>374</i>	<i>373</i>	<i>237</i>	<i>2212</i>
<i>All adults, survey-defined hypertension</i>	<i>171</i>	<i>245</i>	<i>301</i>	<i>326</i>	<i>314</i>	<i>311</i>	<i>196</i>	<i>1864</i>

a Excluding hypertension only in pregnancy

b Bases for self-reported doctor-diagnosed hypertension: age 16 and over who took part in bio module

c Bases for survey-defined hypertension: age 16 and over with valid BP measurements



**Table 9.6 Detection and treatment of hypertension, 2014/2015 combined, by age and sex**

*Aged 16 and over with survey-defined hypertension*

*2014/2015 combined*

Detection and treatment levels	Age					Total	
	16-34	35-54	55-64	65-74	75+		
	%	%	%	%	%	%	
<b>Men</b>							
Hypertension detection rate <sup>a</sup>	*	54	51	69	70	57	
Hypertension treated, but not controlled <sup>b</sup>	*	14	21	25	29	21	
Hypertension treated and controlled <sup>c</sup>	*	23	20	37	36	26	
<b>Women</b>							
Hypertension detection rate <sup>a</sup>	*	29	64	69	69	60	
Hypertension treated, but not controlled <sup>b</sup>	*	4	17	31	29	22	
Hypertension treated and controlled <sup>c</sup>	*	15	38	28	30	28	
<b>All adults</b>							
Hypertension detection rate <sup>a</sup>	*	44	57	69	69	58	
Hypertension treated, but not controlled <sup>b</sup>	*	10	19	28	29	21	
Hypertension treated and controlled <sup>c</sup>	*	20	28	32	32	27	
<i>Bases (weighted):</i>							
<i>Men</i>		18	80	66	64	46	274
<i>Women</i>		7	47	56	75	71	256
<i>All adults</i>		25	128	122	139	117	530
<i>Bases (unweighted):</i>							
<i>Men</i>		12	63	67	85	61	288
<i>Women</i>		7	52	67	106	80	312
<i>All adults</i>		19	115	134	191	141	600

a Detection rate is the proportion of those with survey defined hypertension, who say they have been told by a doctor they have high blood pressure

b Of those with survey-defined hypertension, the proportion who are on medication for high blood pressure and also have high blood pressure readings

c Of those with survey-defined hypertension, the proportion who are on medication for high blood pressure and do not have high blood pressure readings



## 10 INJURIES / ACCIDENTS

*Diarmid Campbell-Jack*

### SUMMARY

- **Just over a tenth (11%) of adults aged 16 and over in 2013/2015 had an accident in the previous twelve months, a comparable prevalence to that in 2009/2011 (11%) and 2003 (12%).**
- Prevalence of accidents was similar for men (12%) and women (11%), with higher prevalence for those aged 16-24 (16%) than those aged 25 and over (9-12%).
- The proportion of children aged 0-15 having had an accident in the previous twelve months was similar in 2003 (16%), 2009/2011 (14%) and 2013/2015 (15%).
- The proportion of boys (17%) having had an accident in the last twelve months in 2013/2015 was significantly higher than the proportion of girls (12%).
- For children, prevalence of accidents tended to increase with age, from 9% among those aged 0-1 to 20-22% among those aged 12-15.
- **The main cause of accidents for all respondents (aged 0 and above) was a fall, slip or trip (57% of adults and 53% of children who had had an accident in the last 12 months), followed by sports or recreational accidents (12% of adults and 21% of children).**
- Falls, slips or trips were more frequently cited by women than men (68% compared with 46%), while women were less likely than men to cite sports or recreational activities (6% compared with 18%) and accidents using a tool, implement or equipment (2% compared with 12%).

### 10.1 INTRODUCTION

After cardiovascular disease, cancer and respiratory disease, injury is the fourth most common cause of death in the European Union and the most common in young ages<sup>1</sup>.

The risk of death and severe injury is particularly high in such diverse areas as the home, leisure activities and sports, road transportation, the workplace and in connection with consumer products and services<sup>2</sup>.

Accidents accounted for just over 3% of all deaths in Scotland in 2014. However, among those aged between 10 and 34, they were the cause of around one third of deaths, making them the most common cause of death in this age group<sup>3</sup>.

Figures for hospital admissions and deaths caused by unintentional injuries are reported by ISD Scotland for both children and adults<sup>4</sup>. In 2014/15, there were 7,763 emergency hospital admissions among children in Scotland as a result of unintentional injuries, accounting for approximately one in eight of all emergency admissions for those aged under 15 years. Administrative statistics suggest hospital admissions for children caused by unintentional injuries reduced from 2006 until 2013 but have increased slightly in the last two years.

Figures for adult hospital admissions and death caused by unintentional injuries showed 1,727 deaths in 2014 and 46,947 emergency admissions in adults aged 15 and over<sup>5</sup>. The rate for men has been gradually decreasing since a peak in 2009 while the rate for women has shown a slight increase over the last ten years but has been more consistent over recent years.

In addition to this, there were 52 deaths in 2014 and 2,532 emergency admissions to hospital in 2014/15 for assault.

### 10.1.1 Policy background

The National Falls Programme supports Community Falls Leads across Scotland to develop and implement local integrated falls prevention and management and fracture prevention pathways in Health and Social Care Partnership areas. Health and Social Care Partnerships have been established under the **Public Bodies (Joint Working) (Scotland) Act 2014** to develop more preventative, anticipatory and person-centred approaches to care. These approaches are core elements of the National Falls Programme.

The Programme's focus is currently on partnership working to deliver the **Prevention and Management of Falls in the Community Framework for Action**, published in 2014. The Framework aims to support a more consistent approach to falls prevention and management, enabling people to access the information, advice, support and care they need regardless of where they are on the falls pathway.

The **Scottish Action Plan on Health and Safety**<sup>6</sup> was published in 2007 in order to promote good health and safety practice in Scotland, including challenging those failing to meet standards and promoting the benefits of good health and safety management to Scottish businesses and Scotland's economy.

The 2008 report of the Ministerial Taskforce on Health Inequalities **Equally Well**<sup>7</sup> included a recommendation to target children from disadvantaged areas who are at greater risk of road traffic related unintentional injuries. **Go Safe: Scotland's Road Safety Framework to 2020**<sup>8</sup> was published in 2009, outlining the vision of a steady reduction in the numbers of those killed and seriously injured, leading eventually to a future where no-one is killed on Scotland's roads and there is a much reduced injury rate. This was reviewed in 2016 in the **Road Safety Framework: Mid-term Review**<sup>9</sup> and three key priority focus areas were identified around speed, age, and vulnerable road users.

Other key areas of focus have been fire safety<sup>10</sup>, school trips and occupational health and safety, including for major employers such as the NHS<sup>11</sup>. Initiatives to reduce the incidence and severity of unintentional injuries in childhood focus on multiple settings, including roads and pavements<sup>12</sup>. The Scottish Government works with a number

of partner agencies to reduce unintentional injuries (the Royal Society for the Prevention of Accidents, the Child Accident Prevention Trust, Scottish Accident Prevention Council), and supports an annual child safety week to disseminate messages about unintentional injury prevention.

The **Building Safer Communities (BSC)** initiative is part of the justice change programme that contributes to the Justice Strategy. BSC works collaboratively with local and national partners to help communities make best use of their existing strengths.

BSC sets out a vision of a flourishing, optimistic Scotland in which resilient individuals, families and communities live safe from crime, disorder, danger and harm. Phase 2 aims to reduce the number of victims of unintentional harm. The Scottish Health Survey will provide useful information to monitor progress against this aim.

### **10.1.2 Definition of injury and accidents**

The term 'injury' is generally preferred to 'accidents' as the latter implies events are inevitable and unavoidable whereas a high proportion of these incidents are now regarded as being preventable<sup>13</sup>.

In order to maintain continuity with earlier data in the Scottish Health Survey and for ease of understanding among participants, the 2015 Scottish Health Survey continued to refer to 'accidents' in all questionnaires, with this covering a very broad range of events from the extremely serious through to the relatively trivial. As a result, when referring to data from the Scottish Health Survey the term 'accident' is used whereas 'injury' is used solely to refer to data from other sources specifically collected as injuries.

### **10.1.3 Reporting on accidents in the Scottish Health Survey (SHeS)**

This chapter presents trends over time in accident rates since 1998 for both adults and children by age and sex. It then looks at the causes of accidents among both adults and children by age and sex using combined 2013/2015 data.

## **10.2 METHODS AND DEFINITIONS OF MEASUREMENT**

### **10.2.1 Accident classification and recall period**

In order to concentrate on events which are most salient to those monitoring health in Scotland, the definition of 'accident' used in the Scottish Health Survey (SHeS) is any which resulted in injury or physical harm where advice was sought from a doctor, nurse or other health professional, or which caused time to be taken off work or school.

Participants were asked to recall any accidents they had had in the 12 months prior to the interview which fitted this definition. Figures shown within the report, however, are based only on those accidents about

which advice was sought from a doctor or which required a visit to hospital.

All those who reported having at least one accident of this kind were then asked detailed questions about the nature and cause of the most recent accident. The reference period of 12 months before the interview was chosen so as to be sufficiently long to generate details of enough accidents for analysis, yet short enough for participants to be able to remember accurate details about their most recent unintentional injury.

### **10.2.2 Coverage of accidents**

The survey covers most, but not all, accidents to adults and children. Since SHeS collects data directly from participants, fatal accidents are excluded. In addition, there will be under-representation of accidents that lead to long-term hospitalisation. For these reasons, the accident data presented in this chapter can best be described as non-fatal accident prevalence for the household population. Reported prevalence will most likely slightly under-estimate true accident prevalence because of the exclusions. However, since the great majority of accidents do not lead to long-term stays in hospitals, any downward bias should be small.

### **10.2.3 Causes of accidents**

Participants who had at least one accident in the twelve months prior to interview were asked to describe the cause of the most recent accident and interviewers coded responses using the following options:

- hit by a falling object
- fall, slip or trip
- road traffic accident
- sports or recreational accident
- use of tool or implement, or piece of electrical or mechanical equipment
- burn or scald
- animal or insect bite or sting
- caused by another person (e.g. attacked)
- lifting
- other

### **10.2.4 Data collection years**

Some caution is needed in the interpretation of the data on cause of accident derived from this interviewer coding. What is coded in individual cases will depend firstly upon how the participant describes the accident and secondly on how the interviewer interprets that description. For example, an accident in which a child sprains their ankle when playing football may be described as a fall by one participant (“I fell and sprained my ankle”) or as a sporting accident by another (“I sprained my ankle when I was out playing football”). If the participant describes the accident to the interviewer as “I fell and

sprained my ankle” then some interviewers may code this as a fall or slip automatically whereas others may probe further, establish that the participant was playing football at the time of the fall, and code it as a sports accident. Interviewers were briefed to code more than one cause per accident if appropriate, the intention being to collect as full a description of the accident as possible in order to avoid misclassification. One implication of the ambiguity in coding is that prevalence of accidents cannot be readily derived for different types of accident.

The same information about accidents was collected in the 1998 and 2003 surveys and biennially from 2009 onwards. It is next due to be asked in 2017. As many of the figures are based only on those who had an accident, to increase the sample size available for analysis data from the 2013 and 2015 surveys have been combined to enable more robust estimates to be presented.

### **10.3 TRENDS IN ACCIDENT PREVALENCE**

#### **10.3.1 Adult accident prevalence, 1998 to 2013/2015 (combined), by age and sex**

The prevalence of accidents for adults aged 16 and over in 1998, 2003, 2009/2011 and 2013/2015 by age and sex are shown in table 10.1 In 1998, data were obtained for adults aged 16-74, whereas for the other survey years they were collected for all adults aged 16 years or older. As a result of these changes, this section focuses on data from 2003 onwards.

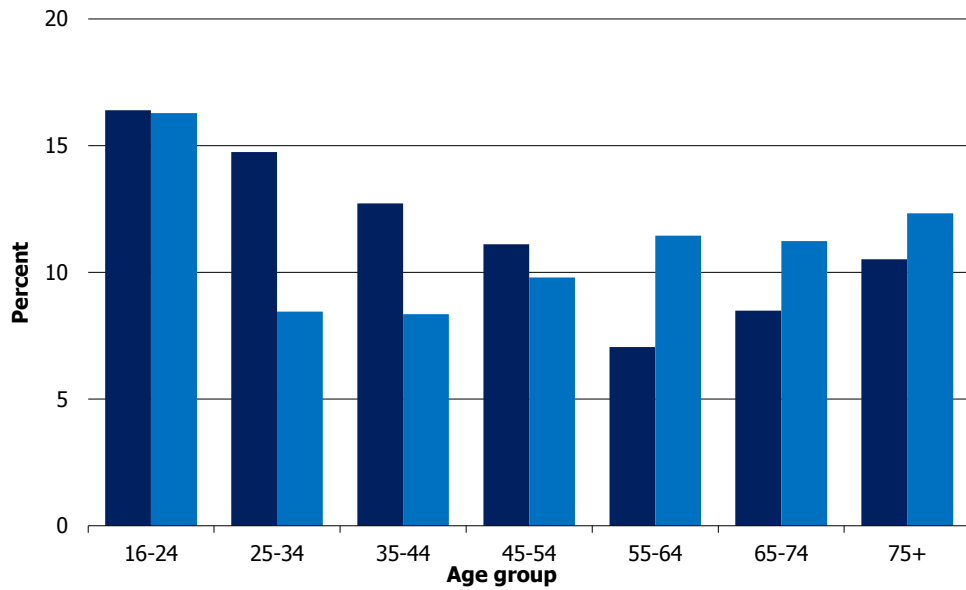
The prevalence of accidents for all adults aged 16 and over was 12% in 2003 and stayed at similar levels (11%) in both 2009/2011 and 2013/2015. There was no significant difference in accident prevalence in 2013/2015 between men (12%) and women (11%), with those aged 16-24 (16%) having a higher prevalence of accidents than those aged 25 and over (9-12%). Patterns for men and women by age were largely comparable, with the highest prevalence for both groups being among those aged 16-24 (16% for both men and women). There was, however, a significantly higher proportion of men aged 25-34 (15%) compared to women in the same age group (8%) who had experienced an accident in the last twelve months.

**Figure 10A, Table 10.1**

**Figure 10A**

Prevalence of accidents among adults, 2013/2015 combined, by age and sex

■ Men ■ Women



### 10.3.2 Child accident prevalence, 1998, to 2013/2015 (combined), by age and sex

Accident prevalence for 1998, 2003, 2009/2011 and 2013/2015, by age and sex are shown in table 10.2 for children. As infants aged 0-1 were not included in the 1998 survey, comparisons focus on data from 2003 onwards.

In 2013/2015, 15% of all children aged 0-15 had at least one accident in the previous twelve months, a comparable figure to that seen in both 2003 (16%) and 2009/2011 (14%). As in previous survey periods, there was a higher prevalence of accidents in 2013/2015 for boys (17%) than girls (12%). Again, as in 2003 and 2009/2011, the lowest prevalence was among those aged 0-1 (9%), and the highest among those aged 12-15 (20-22%).

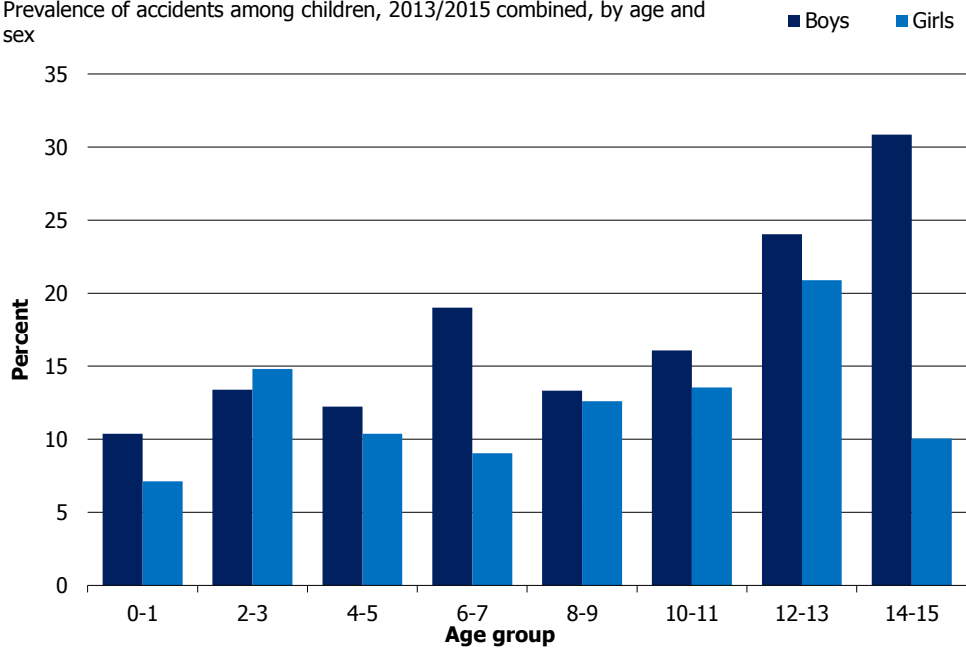
Those aged 0-1 had the lowest prevalence of accidents for both boys (10%) and girls (7%). Prevalence generally increased with age for boys from 10% of those aged 0-1 to 24-31% of those aged 12-15. For girls prevalence was highest among those aged 12-13 (21%).

**Figure 10B, Table 10.2**



**Figure 10B**

Prevalence of accidents among children, 2013/2015 combined, by age and sex



### 10.3.3 Causes of accidents, 2013/2015 (combined), by age and sex

Table 10.3 shows the causes of accidents for all respondents who had had an accident (age 0 and over) by age and sex for 2013/2015. The most common cause of accidents for adults was a fall, slip or trip; 57% of those who had had an accident in the last 12 months mentioned this as the cause, or one of the causes, of their most recent accident. Sports or recreational accidents (12%) and road traffic accidents (9%) were both mentioned by around a tenth of those who had had an accident in the last twelve months. Women who had had an accident were more likely than men to have had a fall, slip or trip (68% compared with 46%) while men were more likely to have had a sports or recreational accident (18% compared with 6% for women) or an accident due to using a tool, implement or equipment (12% compared with 2%).

As with adults, the most common cause of accidents for children was also falls, slips or trips, with this being reported as a cause for 53% of those who had had an accident in the last 12 months. Sports or recreational accidents were reported as the cause for 21% of children who had had an accident, and another person was cited as the cause for 9%.

In 2013/2015, accidents due to a fall, slip or trip were most common for the youngest age group (63% for those aged 0-7) and those aged 45 and over (65-79%). Both sports or recreational accidents and accidents involving another person were most common for those aged 8-15 (28% and 11% respectively).

**Table 10.3**

## References and notes

- <sup>1</sup> See: [ec.europa.eu/health/healthy\\_environments/policy/injury/index\\_en.htm](http://ec.europa.eu/health/healthy_environments/policy/injury/index_en.htm)
- <sup>2</sup> See: [www.scotpho.org.uk/health-wellbeing-and-disease/injuries/introduction](http://www.scotpho.org.uk/health-wellbeing-and-disease/injuries/introduction)
- <sup>3</sup> See: [www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/vital-events-reference-tables/2014/section-6-deaths-causes](http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/general-publications/vital-events-reference-tables/2014/section-6-deaths-causes). Note that the NRS definition of an accident is wider than that which is likely to be understood by SHeS respondents.
- <sup>4</sup> See: [www.isdscotland.org/Health-Topics/Emergency-Care/Publications/2016-03-08/2016-03-08-UI-Report.pdf?71883791686](http://www.isdscotland.org/Health-Topics/Emergency-Care/Publications/2016-03-08/2016-03-08-UI-Report.pdf?71883791686)
- <sup>5</sup> See: [www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/vital-events-reference-tables](http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/vital-events-reference-tables)
- <sup>6</sup> See: [www.gov.scot/Resource/Doc/173320/0048375.pdf](http://www.gov.scot/Resource/Doc/173320/0048375.pdf)
- <sup>7</sup> See: [www.gov.scot/Resource/Doc/229649/0062206.pdf](http://www.gov.scot/Resource/Doc/229649/0062206.pdf)
- <sup>8</sup> See: [www.gov.scot/Resource/Doc/274654/0082190.pdf](http://www.gov.scot/Resource/Doc/274654/0082190.pdf)
- <sup>9</sup> See: [www.transport.gov.scot/system/files/TS-%20Road%20Safety%20Framework%20-%20mid%20term%20review%20-%20March%202016.pdf](http://www.transport.gov.scot/system/files/TS-%20Road%20Safety%20Framework%20-%20mid%20term%20review%20-%20March%202016.pdf)
- <sup>10</sup> See: [www.gov.scot/Topics/Justice/policies/police-fire-rescue/fire/FireLaw/](http://www.gov.scot/Topics/Justice/policies/police-fire-rescue/fire/FireLaw/)
- <sup>11</sup> See: [www.gov.scot/Resource/Doc/346075/0115178.pdf](http://www.gov.scot/Resource/Doc/346075/0115178.pdf)
- <sup>12</sup> See: [news.scotland.gov.uk/News/New-road-safety-app-is-out-of-this-world-15fc.aspx](http://news.scotland.gov.uk/News/New-road-safety-app-is-out-of-this-world-15fc.aspx)
- <sup>13</sup> See: [www.scotpho.org.uk/health-wellbeing-and-disease/injuries/introduction](http://www.scotpho.org.uk/health-wellbeing-and-disease/injuries/introduction)

**Table list**

- Table 10.1 Prevalence of accidents among adults, 1998 to 2013/2015 combined, by age and sex
- Table 10.2 Prevalence of accidents among children, 1998 to 2013/2015 combined, by age and sex
- Table 10.3 Causes of accidents, 2013/2015 combined, by age and sex

**Table 10.1 Prevalence of accidents among adults, 1998 to 2013/2015 combined, by age and sex**

*Aged 16 and over*

*1998 to 2013/2015 combined*

One or more accidents during previous 12 months	Age							Total 16-74	Total 16+
	16-24	25-34	35-44	45-54	55-64	65-74	75+		
	%	%	%	%	%	%	%	%	%
<b>Men</b>									
1998	32	23	18	10	8	6	n/a	17	n/a
2003	19	21	12	13	8	6	12	14	13
2009/2011 combined	15	13	13	9	10	7	10	11	11
2013/2015 combined	16	15	13	11	7	8	11	12	12
<b>Women</b>									
1998	18	12	9	10	10	11	n/a	11	n/a
2003	14	10	10	7	10	11	16	10	11
2009/2011 combined	14	8	9	8	9	8	15	9	10
2013/2015 combined	16	8	8	10	11	11	12	11	11
<b>All adults</b>									
1998	25	18	13	10	9	9	n/a	14	n/a
2003	16	15	11	10	9	9	15	12	12
2009/2011 combined	15	11	11	9	9	8	13	10	11
2013/2015 combined	16	12	10	10	9	10	12	11	11

*Continued...*

**Table 10.1 - Continued**

*Aged 16 and over*

*1998 to 2013/2015 combined*

One or more accidents during previous 12 months	Age							Total 16-74	Total 16+
	16-24	25-34	35-44	45-54	55-64	65-74	75+		
<i>Bases (weighted):</i>									
Men 1998	708	954	904	780	607	470	n/a	4423	n/a
Men 2003	579	606	761	668	569	405	259	3588	3847
Men 2009/2011 combined	357	392	412	437	378	261	178	2236	2414
Men 2013/2015 combined	309	352	344	410	344	265	175	2025	2200
Women 1998	677	942	913	798	662	585	n/a	4577	n/a
Women 2003	566	658	812	691	601	493	468	3821	4290
Women 2009/2011 combined	339	390	451	475	399	301	275	2354	2629
Women 2013/2015 combined	306	372	365	435	362	296	250	2137	2387
All adults 1998	1384	1896	1817	1578	1270	1054	n/a	9000	n/a
All adults 2003	1145	1264	1573	1359	1170	898	728	7409	8137
All adults 2009/2011 combined	697	782	862	912	776	562	453	4591	5044
All adults 2013/2015 combined	615	725	709	846	706	561	426	4162	4587
<i>Bases (unweighted):</i>									
Men 1998	399	764	828	694	683	573	n/a	3941	n/a
Men 2003	335	453	733	614	633	509	326	3277	3603
Men 2009/2011 combined	199	272	365	414	393	329	242	1972	2214
Men 2013/2015 combined	176	263	301	386	352	341	245	1819	2064
Women 1998	528	974	1008	896	809	891	n/a	5106	n/a
Women 2003	404	600	886	795	777	581	493	4043	4536
Women 2009/2011 combined	251	377	486	526	504	365	325	2509	2834
Women 2013/2015 combined	205	367	379	459	418	388	310	2216	2526
All adults 1998	927	1738	1836	1590	1492	1464	n/a	9047	n/a
All adults 2003	739	1053	1619	1409	1410	1090	819	7320	8139
All adults 2009/2011 combined	450	649	851	940	897	694	567	4481	5048
All adults 2013/2015 combined	381	630	680	845	770	729	555	4035	4590

**Table 10.2 Prevalence of accidents among children, 1998 to 2013/2015 combined, by age and sex**

*Aged 0-15*

*1998 to 2013/2015 combined*

One or more accidents during previous 12 months	Age								Total 2-15	Total 0-15
	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15		
	%	%	%	%	%	%	%	%	%	%
<b>Boys</b>										
1998	n/a	22	14	15	18	21	26	24	20	n/a
2003	12	20	15	14	16	20	26	22	19	19
2009/2011 combined	9	14	10	13	11	17	27	26	17	16
2013/2015 combined	10	13	12	19	13	16	24	31	18	17
<b>Girls</b>										
1998	n/a	13	10	14	10	15	23	13	14	n/a
2003	8	14	10	11	14	16	12	14	13	13
2009/2011 combined	8	19	12	12	13	12	10	13	13	12
2013/2015 combined	7	15	10	9	13	14	21	10	13	12
<b>All children</b>										
1998	n/a	18	12	15	14	18	25	19	17	n/a
2003	10	17	13	12	15	18	20	18	16	16
2009/2011 combined	9	17	11	12	12	15	18	20	15	14
2013/2015 combined	9	14	11	14	13	15	22	20	16	15

*Continued...*

**Table 10.2 - Continued**

*Aged 0-15*

*1998 to 2013/2015 combined*

One or more accidents during previous 12 months	Age								Total 2-15	Total 0-15
	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15		
	%	%	%	%	%	%	%	%	%	%
<i>Bases (weighted):</i>										
Boys 1998	<i>n/a</i>	146	155	163	157	162	159	154	1096	<i>n/a</i>
Boys 2003	185	190	204	207	220	231	240	223	1515	1700
Boys 2009/2011 combined	170	162	169	163	132	171	163	158	1118	1288
Boys 2013/2015 combined	172	170	187	178	162	191	157	147	1193	1365
Girls 1998	<i>n/a</i>	139	149	156	149	153	153	147	1046	<i>n/a</i>
Girls 2003	173	195	187	225	178	238	220	204	1448	1621
Girls 2009/2011 combined	175	151	143	136	157	162	168	140	1057	1232
Girls 2013/2015 combined	142	182	188	159	163	157	168	148	1165	1307
All children 1998	<i>n/a</i>	286	305	319	306	315	312	301	2142	<i>n/a</i>
All children 2003	359	385	391	432	398	470	461	427	2963	3321
All children 2009/2011 combined	345	313	312	298	289	333	331	298	2175	2520
All children 2013/2015 combined	314	352	375	338	325	348	325	296	2358	2672
<i>Bases (unweighted):</i>										
Boys 1998	<i>n/a</i>	308	261	279	281	284	292	282	1987	<i>n/a</i>
Boys 2003	191	204	210	208	217	193	219	213	1464	1655
Boys 2009/2011 combined	164	156	170	169	141	167	159	164	1126	1290
Boys 2013/2015 combined	190	182	200	180	164	167	143	139	1175	1365
Girls 1998	<i>n/a</i>	268	272	264	259	296	275	271	1905	<i>n/a</i>
Girls 2003	199	205	191	226	184	239	216	206	1467	1666
Girls 2009/2011 combined	179	163	150	128	148	157	164	141	1051	1230
Girls 2013/2015 combined	166	207	190	159	155	138	150	142	1141	1307
All children 1998	<i>n/a</i>	576	533	543	540	580	567	553	3892	<i>n/a</i>
All children 2003	390	409	401	434	401	432	435	419	2931	3321
All children 2009/2011 combined	343	319	320	297	289	324	323	305	2177	2520
All children 2013/2015 combined	356	389	390	339	319	305	293	281	2316	2672

**Table 10.3 Causes of accidents, 2013/2015 combined, by age and sex***All who had an accident in last 12 months**2013/2015 combined*

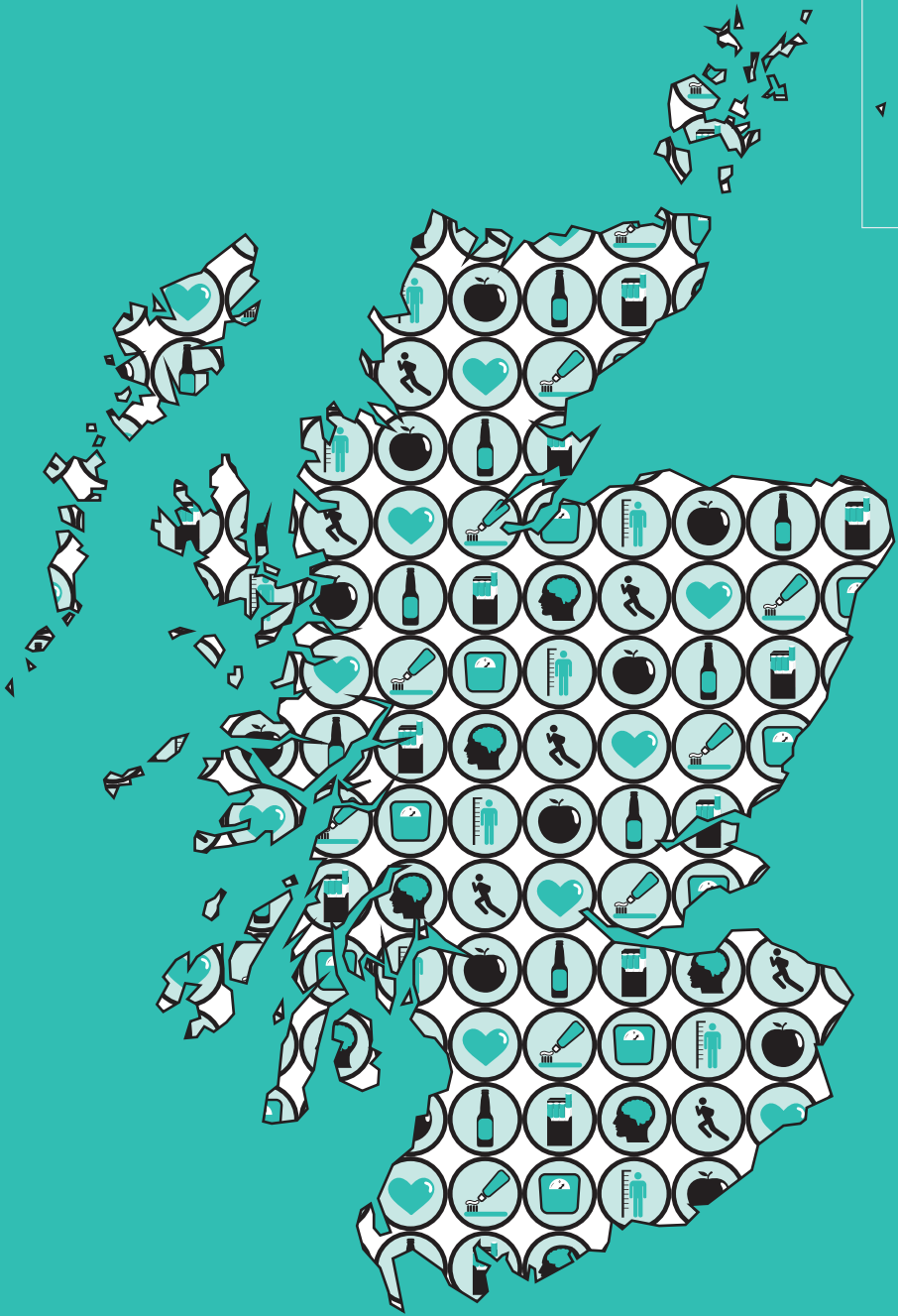
Cause of accident	Age					Total 0-15	Total 16+
	0-7	8-15	16-44	45-64	65+		
	%	%	%	%	%	%	%
<b>Males</b>							
Hit by a falling object	6	6	1	2	4	6	2
Fall, slip or trip	61	50	35	47	78	54	46
Road traffic accident	-	0	9	11	3	0	9
Sports or recreational accident	9	29	25	14	-	22	18
Use of tool, implement or equipment	3	1	17	8	1	2	12
Burn or scald	2	0	1	-	-	1	1
Animal or insect bite or sting	1	-	1	3	2	0	2
Another person	5	7	6	3	-	6	4
Lifting	-	-	2	3	3	-	2
Other	14	8	6	11	9	10	8
<b>Females</b>							
Hit by a falling object	1	3	2	-	3	2	2
Fall, slip or trip	66	43	52	78	79	52	68
Road traffic accident	5	3	18	2	2	4	9
Sports or recreational accident	10	25	11	5	-	19	6
Use of tool, implement or equipment	-	1	2	2	3	1	2
Burn or scald	3	-	3	2	-	1	2
Animal or insect bite or sting	-	2	-	1	-	1	0
Another person	5	18	2	3	-	13	2
Lifting	-	2	5	3	-	1	3
Other	9	8	6	9	12	9	9
<b>All persons</b>							
Hit by a falling object	4	5	1	1	4	4	2
Fall, slip or trip	63	47	42	65	79	53	57
Road traffic accident	2	1	13	6	2	2	9
Sports or recreational accident	9	28	19	9	-	21	12
Use of tool, implement or equipment	2	1	11	4	3	1	7
Burn or scald	2	0	2	1	-	1	1
Animal or insect bite or sting	0	1	0	2	1	1	1
Another person	5	11	4	3	-	9	3
Lifting	-	1	3	3	1	0	3
Other	12	8	6	10	11	10	8

*Continued...*



**Table 10.3 - Continued***All who had an accident in last 12 months**2013/2015 combined*

Cause of accident	Age					Total 0-15	Total 16+
	0-7	8-15	16-44	45-64	65+		
<i>Bases (weighted)</i>							
<i>Males</i>	105	178	181	78	58	283	318
<i>Females</i>	80	120	129	113	89	200	332
<i>All persons</i>	185	299	311	192	147	483	650
<i>Bases (unweighted)</i>							
<i>Males</i>	103	123	119	68	50	226	237
<i>Females</i>	76	84	94	87	78	160	259
<i>All persons</i>	179	207	213	155	128	386	496



# Appendix A:

## Glossary

## APPENDIX A: GLOSSARY

This glossary explains terms used in the report, other than those fully described in particular chapters.

### **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-2013 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 (BMI)**, **Waist circumference**

### **Arithmetic mean**

See **Mean**

### **AUDIT**

The Alcohol Use Disorders Identification Test (AUDIT) is a tool developed by the World Health Organisation used to measure harmful alcohol consumption or dependence. In 2012 it was used on SHeS, replacing the CAGE questionnaire, which was also used to identify prevalence of problem drinking. AUDIT consists

of 10 questions – questions 1-3 are indicators of consumption, questions 4-6 are indicators of alcohol dependency and questions 7-10 are indicators of harmful consumption. A score of 8 or more are taken to be indicative of an alcohol use disorder. Scores 8 to 15 suggest “hazardous” drinking behaviour and scores of 16 to 19 indicate “harmful” behaviour, although neither of these groups tend to be considered in isolation. Due to the (potentially) sensitive nature of the questions, this questionnaire was administered in self-completion format. All participants who drank alcohol more than very occasionally were asked to complete the questions.

**Bases**

See **Unweighted bases, Weighted bases**

**Blood pressure**

Systolic (SBP) and diastolic (DBP) blood pressure were measured using a standard method (see Volume 2, Appendix B for measurement protocol). In adults, high blood pressure is defined as SBP  $\geq$ 140 mmHg or DBP  $\geq$ 90 mmHg or on antihypertensive drugs.

**Body mass index**

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/m<sup>2</sup>)</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 percentiles 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**

Participants were classified as having cardiovascular disease (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.

**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.

**Creatinine**

This is excreted in urine and unlike sodium and potassium is relatively stable over time. Therefore in the analysis of urinary salt, the ratio of sodium to creatinine and of potassium to creatinine are analysed as proxy measures for dietary sodium and potassium. See also **Urine, Sodium, Potassium**.

**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).

**Equivalised Household income**

Making precise estimates of household income, as is done for example in the Family Resources Survey, requires far more interview time than was available in the Health Survey. Household income was thus established by means of a card (see Volume 2, Appendix A) on which banded incomes were presented. Information was obtained from the household reference person (HRP) or their partner. Initially they were asked to state their own (HRP and partner) aggregate gross

income, and were then asked to estimate the total household income including that of any other persons in the household. Household income can be used as an analysis variable, but there has been increasing interest recently in using measures of equivalised income that adjust income to take account of the number of persons in the household. Methods of doing this vary in detail: the starting point is usually an exact estimate of net income, rather than the banded estimate of gross income obtained in the Health Survey. The method used in the present report was to use the “modified” OECD equivalisation scale used in the Household Below Average Income poverty estimates. This represents a change from previous years of the survey, in which the McClements scoring system was used. The OECD equivalisation was undertaken as follows:

1. A score was allocated to each household member, and these were added together to produce an overall household score. Household members were given scores as follows.

Head of household	0.67
Other adults	0.33
Each Child 0-13	0.20
Each child 14+	0.33

2. The equivalised income was derived as the annual household income divided by the household score.
3. This equivalised annual household income was attributed to all members of the household, including children.
4. Households were ranked by equivalised income, and quintiles q1- q5 were identified. Because income was obtained in banded form, there were clumps of households with the same income spanning the quintiles. It was decided not to split clumps but to define the quintiles as ‘households with equivalised income up to q1’, ‘over q1 up to q2’ etc.
5. All individuals in each household were allocated to the equivalised household income quintile to which their household had been allocated. Insofar as the mean number of persons per household may vary between quintiles, the numbers in the quintiles will be unequal. Inequalities in numbers are also introduced by the clumping referred to above, and by the fact that in any sub-group analysed the proportionate distribution across quintiles will differ from that of the total sample.

Reference: Institute for Fiscal Studies,  
<http://www.ifs.org.uk/wheredoyoufitin/about.php>

### **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.

**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**.

**GHQ12** The General Health Questionnaire (GHQ12) 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' GHQ12 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.

**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** The household reference person (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.

<b>Income</b>	See <b>Equivalised household income</b>
<b>Ischaemic heart disease</b>	Ischaemic heart disease (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.
<b>Long-term conditions &amp; limiting long-term conditions</b>	<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> <p>The 2015 report presents experimental statistics on multiple conditions, which vary the way in which long-term conditions were defined. See <b>Multiple Conditions</b>.</p>
<b>Mean</b>	Most means in this report are <b>Arithmetic means</b> (the sum of the values for cases divided by the number of cases). See also <b>Geometric means</b> which are used in the analysis of saliva samples.
<b>Median</b>	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.
<b>Morbid obesity</b>	See <b>Body mass index</b> .
<b>Multiple conditions</b>	<p>See also <b>Long-term conditions &amp; limiting long-term conditions</b> and <b>Cardiovascular disease</b>. Tables on multiple conditions are classed as experimental statistics, and definitions may be reviewed in future years.</p> <p>The number of conditions is calculated based on the number of different conditions reported in response to the long-term conditions questions. In addition to this, if a respondent said they had doctor-diagnosed diabetes or that they had doctor-diagnosed hypertension in response to the cardiovascular disease questions, but they had not mentioned them as a long-term condition, these were each counted as a condition.</p> <p>Conditions were considered different if they came under different chapters in the International Classification of Diseases (ICD-10) (15 in total, using chapters I to XIV, plus an “other”). The</p>



exceptions to this were with respect to chapter IV, in which diabetes and other endocrine and metabolic illnesses were counted separately, and chapter IX, in which stroke, angina, hypertension, other heart problems, and other circulatory system problems were all counted separately. Thus, up to 20 different conditions were counted.

The number of physical conditions was counted in the same way, but with conditions coded under chapter V of the ICD (mental and behavioural disorders) excluded.

**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 C)

**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**.

**Potassium** The intake of potassium (K) can be estimated by measuring urinary excretion. This is collected in the biological module using a spot urine sample. See also **Urine, Sodium, Creatinine**. There is an inverse association between potassium intake and blood pressure.

**Quintile** Quintiles are percentiles which divide a distribution into fifths, i.e., the 20th, 40th, 60th and 80th percentiles.

**Revised Clinical Interview Schedule** 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 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 2015.

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.

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**

The Scottish Index of Multiple Deprivation (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 2012.  
<http://www.scotland.gov.uk/Topics/Statistics/SIMD>

**Sodium**

The intake of sodium (Na) can be estimated by measuring urinary excretion. This was collected in the biological module using a spot urine sample. There is an association between sodium intake and blood pressure. See also **Urine, Potassium, Creatinine**.

**SDQ**

The Strengths and Difficulties Questionnaire (SDQ) is designed to detect behavioural, emotional and relationship difficulties in children aged 4-16. The questionnaire is based on 25 items: 10 strengths, 14 difficulties and one neutral item. The 25 items are divided into 5 scales of 5 items each: hyperactivity, emotional symptoms, conduct problems, peer problems and prosocial

behaviour. Each SDQ item has three possible answers which are assigned a value 0,1 or 2. The score for each scale is generated by adding up the scores on the 5 items within that scale, producing scale scores ranging from 0 to 10. A 'Total Difficulties' score is derived from the sum of scores from each of the scales except the Prosocial Behaviour scale, producing a total score from 0 to 40. The SDQ was used for children aged 4-12 since the 2008 survey.

The SDQ correlates highly with the Rutter questionnaire and the Child Behaviour Checklist, both of which are long established behavioural screening questionnaires for children that have been proved valid and reliable in many contexts and correlate highly with one another. The SDQ is shorter than these screening instruments and is the first to include a scale focusing on positive behaviour: the Prosocial Behaviour Scale.

Reference: Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A Research Note. *Journal of Child Psychology and Psychiatry*. 38: 581-586.

### **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.

### **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.

<b>Standardisation</b>	In this report, standardisation refers to standardisation (or 'adjustment') by age (see <b>Age standardisation</b> ).
<b>Systolic blood</b>	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 <b>Blood pressure, Diastolic blood pressure</b> .
<b>Unit of alcohol</b>	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.
<b>Urine</b>	A spot urine sample was collected from participants in the biological module. This was used for the analysis of dietary <b>Sodium, Potassium</b> and <b>Creatinine</b> . Epidemiological, clinical and animal-experimental evidence shows a direct relationship between dietary electrolyte consumption and blood pressure (BP).
<b>Unweighted bases</b>	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.
<b>Waist Circumference</b>	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.
<b>Weighted bases</b>	See also <b>Unweighted bases</b> . 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.
<b>WEMWBS</b>	The Warwick-Edinburgh Mental Well-being Scale (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.

The briefing paper on the development of WEMWBS is available online from:

<<http://www.wellscotland.info/guidance/How-to-measure-mental-wellbeing/How-to-start-measuring-mental-wellbeing/The-Warwick-Edinburgh-Mental-Wellbeing-Scale->>

## A NATIONAL STATISTICS PUBLICATION FOR SCOTLAND

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### Correspondence and enquiries

For enquiries about this publication please contact:

Julie Landsberg

Public Health Team Health Analytical Services Division

DG Health and Social Care

Telephone: 0131 244 2368

e-mail: [scottishealthsurvey@scotland.gsi.gov.uk](mailto:scottishealthsurvey@scotland.gsi.gov.uk)

For general enquiries about Scottish Government statistics please contact:

Office of the Chief Statistician, Telephone: 0131 244 0442,

e-mail: [statistics.enquiries@scotland.gsi.gov.uk](mailto:statistics.enquiries@scotland.gsi.gov.uk)

### How to access background or source data

The data collected for this statistical report:

will be made available via the UK Data Service

may be made available on request, subject to consideration of legal and ethical factors. Please contact [scottishhealthsurvey@gov.scot](mailto:scottishhealthsurvey@gov.scot) for further information.

Further breakdowns of the data:

are available via the Scottish Health Survey website

[www.scotland.gov.uk/Topics/Statistics/Browse/Health/scottish-health-survey](http://www.scotland.gov.uk/Topics/Statistics/Browse/Health/scottish-health-survey)

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