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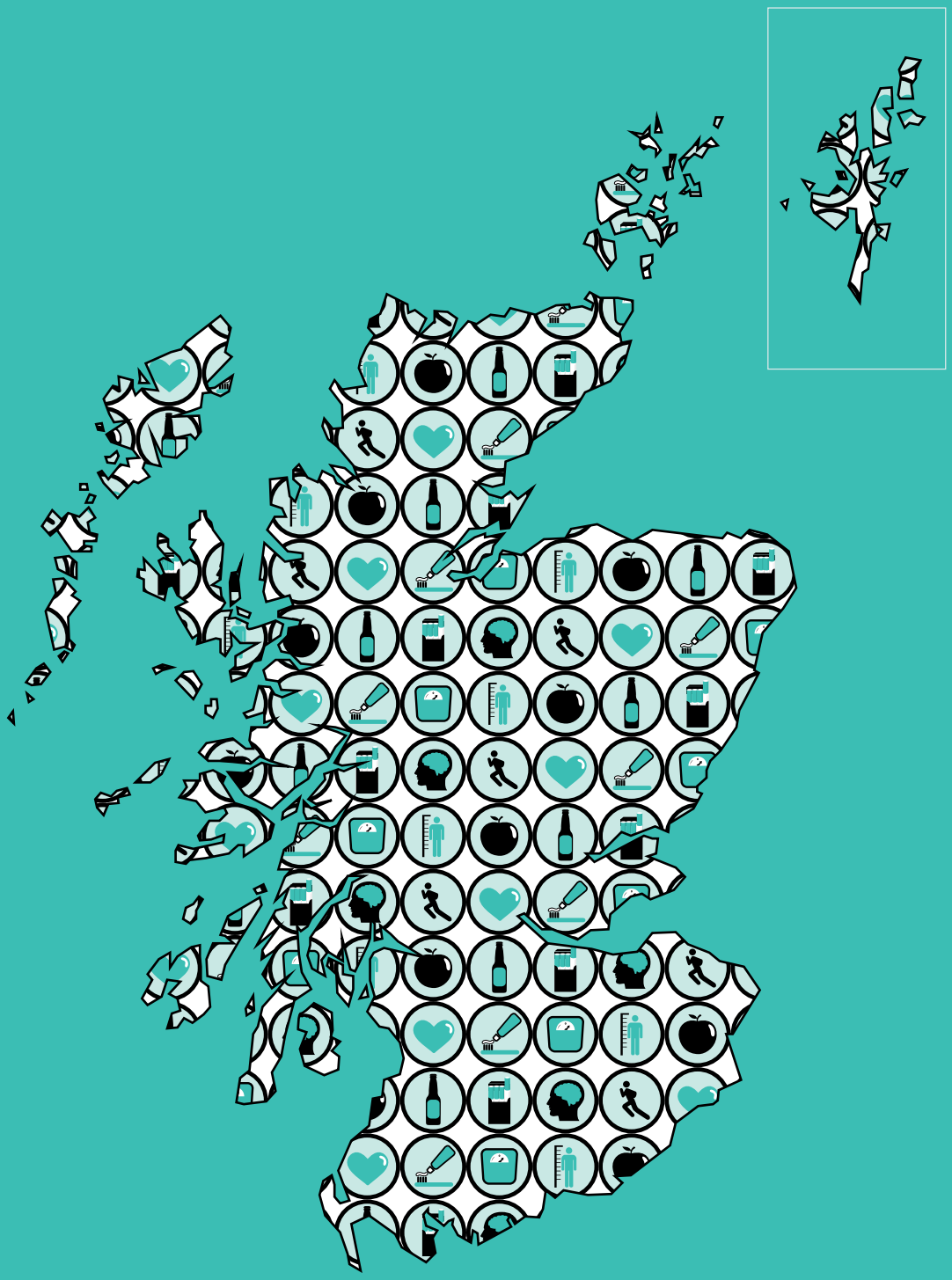

The Scottish Health Survey

2013 edition | volume 1 | main report

A National Statistics Publication for Scotland

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CONTENTS

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Lisa Rutherford, Stephen Hinchliffe and Clare Sharp

FOREWORD FROM THE CHIEF MEDICAL OFFICER

This report presents the findings of the ninth Scottish Health Survey and is the sixth report published since the survey moved to a continuous design in 2008. The 2012-2015 surveys have been 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 the related risk factors, including smoking, alcohol, diet, physical activity and obesity. Information on general health, mental health and dental health are also included.

With the publication of the 2013 survey, we now have data spanning 19 years since the survey was first commissioned in 1995. With each additional survey year, the ability to analyse trends adds considerably to the usefulness of this data source.

The survey design was changed from 2012, with the removal of the nurse visit and the introduction of an interviewer-led biological module covering many of the measurements and samples previously collected via the nurse visit. Results for the interviewer-led biological module are included in the report for the first time this year.

Combining data from the 2012 and 2013 surveys allows for some more detailed analysis to be included in the report this year, including for specific health conditions, risk factors and related health behaviours. This also allows more in-depth results for population sub-groups to be included in the report.

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 6,733 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 Aileen Keel CBE
Acting Chief Medical Officer for Scotland
Scottish Government Health Directorates

INTRODUCTION

Lisa Rutherford

POLICY CONTEXT

Health features prominently in the Scottish Government's National Performance Framework (NPF).[1,2] 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.[2] 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.

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 (SHeS) 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,[3] 1998,[4] and 2003.[5] The 2013 survey was the ninth 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 are being 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 2013 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.[6] IHD is the second most common cause of death in Scotland after cancer, accounting for 14% of deaths in 2012, with a further 8% caused by stroke.[7] 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.[6] The SHeS series now has trend data going back nearly 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 and others and these are reported on separately in Chapters 1-8.

Chapter 9 examines the prevalence and patterning of combinations of risks and vulnerabilities in the population.

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 will be available once 2012-2015 data collection has been completed.

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 4456 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 selection for inclusion, to limit the burden on households.

Two further samples were selected for the survey in 2013: a child boost sample (4147 addresses) in which up to two children in a household were eligible to be interviewed but adults were not, and a Health Board boost sample (1055 addresses) for those Health Boards which opted to boost the number of adults interviewed in their area.

Fieldwork

A letter stating the purpose of the visit was sent to each sampled address in advance of the interviewer visit. Interviewers sought the permission of each eligible adult in the household to be interviewed, and both parents' and children's 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 to 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 2013, across all sample types, interviews were held in 3865 households with 4894 adults (aged 16 and over), and 1839 children (aged 0-15). 1254 adults also completed the biological module. The number of participating households and adults in 2013 is listed in the table below. Further details on survey response in 2013 are presented in Chapter 1, Volume 2.

Main and Health Board boost samples	
Participating households	3259
Eligible households responding	66.3%
Adult interviews	4894
Eligible adults responding	56%
Adults eligible for biological module	1825
Adults who completed biological module	1254
Child boost sample	
Participating households	606
Eligible households responding	72.4%
Child interviews (child boost sample only)	929
Child interviews (main and child boost sample combined	1839

Ethical Approval

Ethical approval for the 2013 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 and women are presented separately where possible. Many of the measures are also reported for the whole adult population. Survey variables are tabulated by age groups and, usually, Scottish Index of Multiple Deprivation (SIMD), National Statistics Socio-Economic Classification (NS-SEC), and equivalised household income.

Statistical information

The SHeS 2013 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 nine surveys in the series to-date (1995, 1998, 2003, 2008-2013). In some cases trend data are restricted to those aged 16-64 (the age range common to all nine 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+.

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

As with surveys from previous years, a copy of the SHeS 2013 data will be deposited at the UK Data Archive along with a copy of the 2012/2013 combined dataset. 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 2013.[8]

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,[9] include guidance on comparing statistics on three of the topics included in this report: alcohol consumption (chapter three), smoking (chapter four) and obesity (chapter seven). 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 2013, and is one of two volumes based on the survey, published as a set as 'The Scottish Health Survey 2013:'

Volume 1: Main Report

1. General health and mental wellbeing
2. Dental health
3. Alcohol consumption
4. Smoking
5. Diet
6. Physical activity
7. Obesity
8. Long-term conditions
9. Multiple risks and vulnerabilities

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 2013 report and a set of web tables are also available on the survey website: www.scotland.gov.uk/scottishhealthsurvey.

References and notes

[1] *Scottish Budget Spending Review 2007*, Edinburgh: Scottish Government, 2007. [online] Available from: <www.scotland.gov.uk/Publications/2007/11/13092240/0> See also: www.scotlandperforms.com

[2] National Performance Framework: Changes to the National Indicator Set, Edinburgh: Scottish Government, 2012. [online] Available from: <www.scotland.gov.uk/About/scotPerforms/NIchanges>
See also: www.scotlandperforms.com

[3] Dong, W. and Erens, B. (1997). *The 1995 Scottish Health Survey.* Edinburgh: The Stationery Office.

[4] Shaw, A., McMunn. A. and Field, J. (2000). *The 1998 Scottish Health Survey.* Edinburgh: The Stationery Office.

[5] Bromley, C., Sproston, K. and Shelton, N. [eds] (2005). *The Scottish Health Survey 2003*. Edinburgh: The Scottish Executive.

[6] *Better Heart Disease and Stroke Care Action Plan*. Edinburgh, Scottish Government, 2009 http://www.scotland.gov.uk/Resource/Doc/277650/0083350.pdf

[7] Available from: http://www.gro-scotland.gov.uk/files2/stats/high-level-summary/j11198/j1119814.htm

[8] See: www.scotland.gov.uk/scottishhealthsurvey

[9] Comparing official statistics across the UK. Full report available from: https://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.

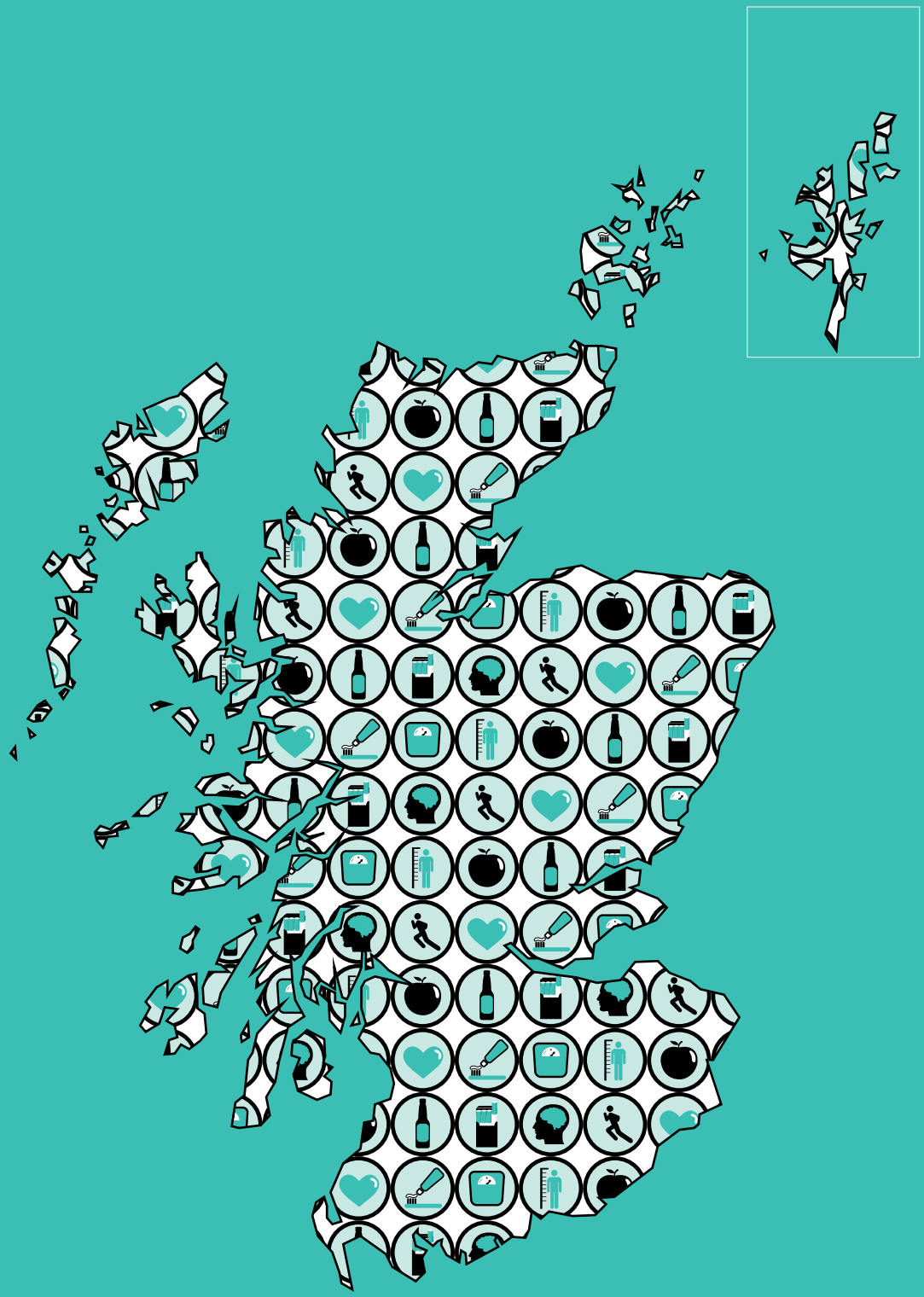
4 Values for means, medians, percentiles and standard errors are shown to an appropriate number of decimal places. Standard Errors may sometimes be abbreviated to SE for space reasons.

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.



Chapter 1

General health, mental wellbeing & caring

1 GENERAL HEALTH, MENTAL WELLBEING AND CARING

Linsay Gray and Alastair H Leyland

SUMMARY

Self-assessed general health

- In 2013, as in previous years, three quarters (74%) of adults (aged 16 and over) assessed their health in general as either 'good' or 'very good,' while 8% assessed their heath as being either 'bad' or 'very bad'.
- Most children (95%) aged 0-15, in 2013, had general health that was described as either 'good' or 'very good,' while for just 1% it was described as 'bad' or 'very bad'. General health assessments of children have not changed significantly since 2008.
- Self-assessed general health remained significantly associated with age for both adults and children. For example, while 0% of men and 3% of women aged 16-24 described their health as 'bad' or 'very bad,' the equivalent figures for those aged 75 and over were 18% and 14%, respectively.

Mental wellbeing, depression and anxiety

- The mean score for adults on the Warwick Edinburgh Mental Wellbeing Scale (WEMWBS) in 2013 was 50.0. Mean wellbeing scores have not changed significantly since the scale was introduced in 2008.
- In 2012/2013, around one in ten (9%) adults had two or more symptoms of depression, indicating moderate to high severity. Prevalence of two or more symptoms of anxiety was also 9%.
- There has been significant increase in the percentage of adults displaying 1 symptom of depression (from 5% in 2010/2011 to 8% in 2012/2013) coupled with a small drop in the percentage displaying no symptoms (from 86% in 2008/2009 to 83% in 2012/2013). A similar pattern was observed for symptoms of anxiety (11% had one symptom in 2012/2013).

Suicide attempts and self-harm

- In 2012/2013, 5% of adults reported having attempted suicide at some point in their life, with women (6%) more likely than men (3%) to report having made an attempt.
- The percentage of adults reporting that they had deliberately self-harmed without suicidal intent at some point in their life was 5% in 2012/2013. Although this represents a significant increase from 2% in 2010/2011 and 3% in 2008/2009, some of this increase may be due to a change in the way the questions have been asked since 2012.

Stress at work

- In 2013, 14% of adults (aged 16 and over) in paid employment or on government training reported that their job was 'very' or 'extremely stressful'. This has not changed significantly over time.

Unpaid care provision

- In 2013, 16% of adults aged 16 and over were regular providers of unpaid care to a family member, friend or someone else.
- Women were more likely than men to provide unpaid care (19% and 13%, respectively), with the gap between men and women most notable for the 35 to 64 age group.
- Children aged 4-15 were less likely than adults to be unpaid carers, with 4% reporting providing unpaid care in 2013. Caring levels were similar for boys and girls (3% and 4%, respectively), however, children aged 12-15 were much more likely to be carers than those aged 4-11 (8% and 2%, respectively).
- In 2012/2013, 30% of adult carers provided up to 4 hours of care per week, 36% provided 5-19 hours, while 28% cared for 20 hours or more each week (including 15% who cared for 50 hours or more). The duration of unpaid care provided increased with carers' age.

1.1 INTRODUCTION

This chapter covers two interrelated topics. The first is self-assessed general health and the second is mental health and wellbeing. Both are critical measures of the population's overall health status and are key markers of health inequalities.[1] The chapter also presents figures on the provision of unpaid care to others because of a long-term physical condition, mental ill-health or disability, or problems related to old age.

The World Health Organisation (WHO) considers mental wellbeing to be fundamental to their definition of health.[2] 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.

Mental illness 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.[3] 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.[3] 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.[2,3] Inequalities in mental health and wellbeing exist. Globally, depression is more prevalent among women than men.[2] While throughout Europe, prevalence of most mental disorders is higher among those living in more deprived areas.[3]

The provision of unpaid care to family members, friends or others is not shared equally across social groups, with women more likely to provide care than men, especially between the ages of 35 and 64. The health and wellbeing of carers can be negatively affected by the demands placed upon them, with many carers themselves living with long-term conditions, or experiencing low wellbeing.

1.1.1 Policy background

The **Mental Health Strategy for Scotland: 2012-2015**,[3] published in August 2012, sets 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 promotes safe, effective and person-centred health and care. In addition to focussing on improved service delivery there is also a focus on the actions that individuals and communities can take to maintain and improve their own health.

Supporting the Scottish Government's overall purpose, the strategy builds upon the work of a number of key policy documents including **Delivering for Mental Health**[4] (published in 2006), and **Towards a Mentally Flourishing Scotland**,[5] which preceded the current strategy, and 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**[6] ten year national strategy on preventing suicide, the Scottish Government demonstrated its ongoing commitment to reducing suicide in the **Suicide Prevention Strategy 2013-2016**[7] 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.[7] 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.[7]

One of the Scottish Government's National Outcomes is the overall strategic objective for health: We live longer, healthier lives.[8] This is supported by a number of National Indicators including **'improve self-assessed general health'** and **'improve mental wellbeing'.**[8] Data from the Scottish Health Survey (SHeS) is used to monitor progress towards both these indicators. 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. 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.[9] SHeS is the data source for 28 of the 54 indicators for adults[10] and over 20 of the indicators for children.[11]

There was an NHS Scotland HEAT target to reduce the suicide rate between 2002 and 2013 by 20%.[12] By 2013, the suicide rate declined by 19%, just short of the target.[12] There are additional 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 from December 2014.[13] Figures for the quarter ending

September 2014 show that the target was met for 78% of referrals of children and young people. Figures from data at an early stage of development suggest that around 81% of patients (across all ages) starting a psychological therapy met the target during the same period.[13,14]

The Scottish Government published **Caring Together: The Carers Strategy for Scotland 2010-15**,[15] in July 2010. Building on the work of an earlier publication, **The Future of Unpaid Care in Scotland**,[16] the strategy sets out actions to support carers and ensure their health and wellbeing. These include the Scottish Government's commitment to the voluntary sector **Short Breaks Fund**,[17] and the inclusion of an indicator on carers in the core part of the GP contract.[18] Moreover, the **Reshaping Care for Older People Change Fund**[19] is supporting the carers of older people in many different ways.

Recognising that children and young people may also provide unpaid care – and are likely to have particular needs – the Scottish Government, along with COSLA, published a separate strategy to support them: **Getting it Right for Young Carers**,[20] which aims to ensure that young carers are relieved of inappropriate caring roles and supported to be children first and foremost. Questions to ascertain the prevalence of young carers (aged 4-15) were introduced to SHeS in 2012.

1.1.2 Reporting on mental health, wellbeing and unpaid care provision in the Scottish Health Survey (SHeS)

This chapter begins by updating adult and child trends in self-assessed health, a useful measure of how individuals regard their own overall health status. Trends in wellbeing have also been updated for men and women separately. Prevalence of depression and anxiety symptoms among adults in 2012/2013 is compared with prevalence in earlier years of the survey. The chapter then provides the latest figures for self-perceived work-related stress among adults in paid employment or on government training. As only a sub-sample of adults were asked questions on depression, anxiety, self-harm and suicide, the figures presented in this chapter are based on combined years of data to allow for greater accuracy.

The overall prevalence of providing unpaid care in 2013 is presented, with separate figures provided for children (aged 4-15) and adults (aged 16 and over). In addition, the number of hours of unpaid care provided by carers per week is also shown. To increase the precision of these latter estimates, they are based on two years of combined data.

1.2 METHODS AND DEFINITIONS

1.2.1 Self-assessed general health

Each year participants aged 13 and over are asked to rate their health in general with possible 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 on children is used in the calculation of healthy life expectancy used to monitor the purpose target on this. It is also included in both the adult and child mental health indicators sets.[9]

1.2.2 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).[21] 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.[22] 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.[23]

WEMWBS is used to monitor the National Indicator '**improve mental wellbeing**'.[8] It is also part of the Scottish Government's adult mental health indicator set, and mean score for parents of children aged 15 years and under on WEMWBS is included in the mental health indicator set for children.[9]

1.2.3 Depression and anxiety

Details on symptoms of depression and anxiety are collected via a standardised instrument, the Revised Clinical Interview Schedule (CIS-R). The CIS-R is a well-established tool for measuring the prevalence of mental disorders.[24] The complete CIS-R comprises 14 sections, each covering a type of neurotic symptom and asks about presence of symptoms in the week preceding the interview. Prevalence of two of these neurotic symptoms - 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.[25] Since 2012 the questions have been included in the biological module, with participants completing the questions themselves on the interviewer laptop (CASI).

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.

1.2.4 Suicide attempts

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

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

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

Since 2012 the questions have been included in the biological module, with participants completing the questions themselves on the interviewer laptop (CASI).

1.2.5 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 deliberately 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 deliberately harmed in the last year is one of the national mental health indicators for adults.[9]

Since 2012 the questions have been included in the biological module, with participants completing the questions themselves on the interviewer laptop (CASI).

1.2.6 Self-perceived work related stress

In 2009, 2011 and 2013, the survey also included a series of questions on working life from the adult mental health indicators set.[10] As work is considered to be an important contextual factor associated with mental health, adults in paid employment or on a government training scheme were asked questions about their experience of stress at work, as well as their work/life balance, and working conditions. Results for the question on stress at work are included in this chapter.

1.2.7 Provision of unpaid care

The provision of unpaid care is measured by asking participants if they look after, or give any regular help or support to, family members, friends, neighbours or others because of a long-term physical condition, mental ill-health or disability; or problems related to old age. Caring which is done as part of any paid employment is not asked about. This question has been asked of adults aged 16 and over since 2008, and of children aged 4 to 15 since 2012. Those who say they provide such care are then asked how many hours per week they typically provide. Additional questions, not reported here, explore the support available to carers, and the impact that caring has on activities such as employment.

1.3 SELF-ASSESSED GENERAL HEALTH

1.3.1 Trends in self-assessed general health among adults since 2008

The proportion of adults (aged 16 and over) self-reporting 'good' or 'very good' general health has been relatively constant since 2008 (between 74% and 77%), as presented in Table 1.1. Similarly, in the last six years there has been very little change in the percentage assessing their health as 'bad' or 'very bad' (7% in 2008 to 2011; 9% in 2012 and 8% in 2013). Self-assessed general health has been stable among both men and women over this period. **Table 1.1**

1.3.2 Trends in self-assessed general health among children since 2008

The proportion of children (aged under 16) reported to be in 'good' or 'very good' general health has also remained stable since 2008 (95% in both 2008 and 2013). Between 2008 and 2013, the general health of just 0-1% of children was described as 'bad' or 'very bad'. While the percentage in 'very good' health increased significantly between 2008 and 2011, prevalence had returned to 2008 levels by 2013 (66%). Self-reported general health has been relatively stable over the years for both boys and girls. **Table 1.1**

1.3.3 Self-assessed general health among adults in 2013, by age and sex

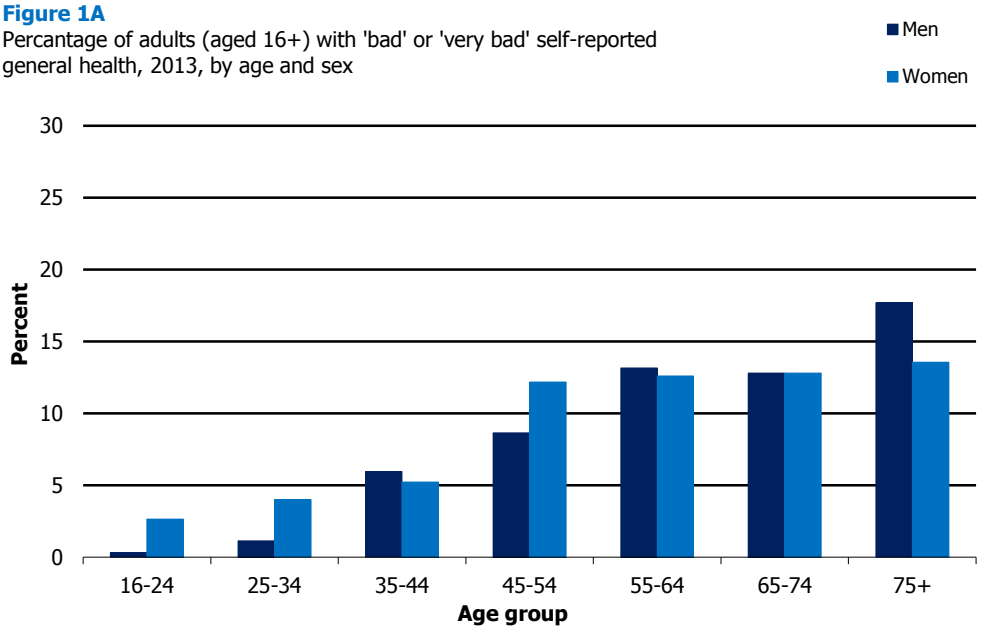
In 2013, one in three (34%) adults assessed their health in general as 'very good', and a further 40% described theirs as 'good'. Overall, 8% assessed their general heath as 'bad' or 'very bad'. Men and women's assessments of their general health were not significantly different from each other in 2013 (75% of men and 74% of women reported that their health in general was 'good' or 'very good').

As expected, there were strong age-related patterns to self-assessed general health (Figure 1A). Younger people were more likely than older age groups to describe their health as 'good' or 'very good' in 2013, as in previous years. For example, 93% of men aged 16-24 described their health as 'good' or 'very good' compared with 49% of those aged 75 and over; the respective figures for women were 86% and 56%. As

shown in Figure 1A, the prevalence of 'bad' or 'very bad' health was negligible for the youngest age group (0% for men and 3% for women), compared with 18% of men and 14% of women aged 75 and over. This age-related pattern was more pronounced among men.

Figure 1A, Table 1.2

Figure 1A
Percantage of adults (aged 16+) with 'bad' or 'very bad' self-reported general health, 2013, by age and sex



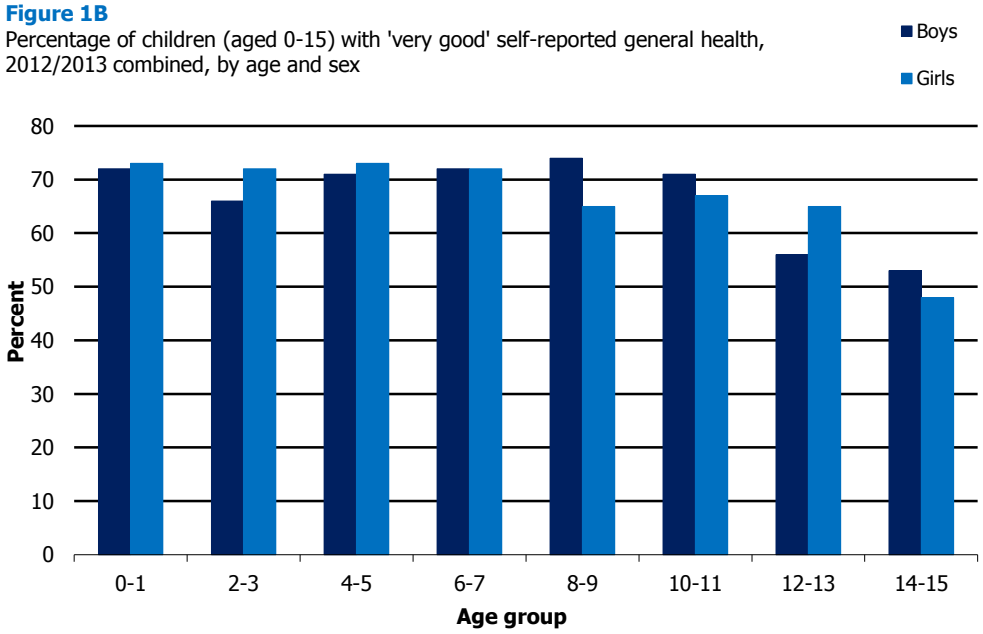
1.3.4 Self-assessed general health among children in 2012/2013 combined, by age and sex

Overall, in 2012/2013, two in three (67%) children aged 0-15 had general health that was described as 'very good', and a further 27% were described as being in 'good' health. The general health of 5% of children was described as 'fair', while for just 1% it was described as 'bad' or 'very bad'. The general health of boys and girls was very similar in 2013, with 94% of boys and 95% of girls in either 'good' or 'very good' health, and just 1% of both boys and girls described as being in either 'bad' or 'very bad' health.

General health assessments varied significantly by age for children, with the percentage reported to be in 'very good' health higher among younger children and lower among those aged 12 and over (Figure 1B). For example, the general health of 66-74% of boys aged under 12 was reported to be 'very good', compared with 53-56% of those aged 12-15. More markedly, the general health of 65-73% of girls under 13 was reported as 'very good' compared with 48% of those aged 14-15.

Figure 1B, Table 1.3

Figure 1B
Percentage of children (aged 0-15) with 'very good' self-reported general health, 2012/2013 combined, by age and sex



1.4 WELLBEING

1.4.1 Trends in adult mean WEMWBS score since 2008

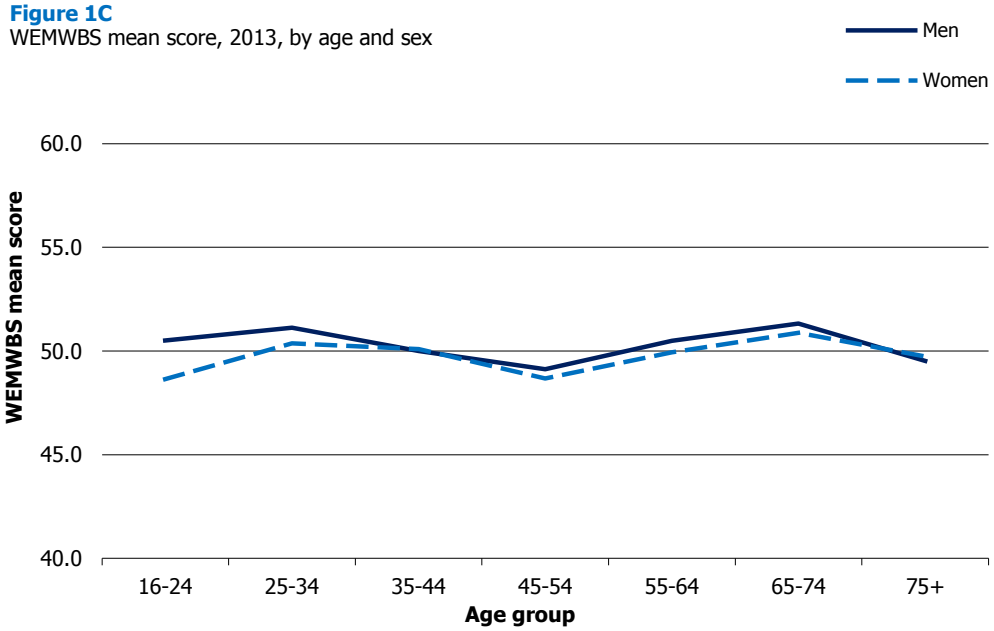
Table 1.4 demonstrates that mean scores for the WEMWBS measure of wellbeing have been relatively stable over the last six years, with only minor, non-significant, fluctuations since 2008 (50.0 in both 2008 and 2013). Wellbeing scores have not changed significantly for either sex since 2008 (ranging between 49.9 and 50.4 in men and between 49.4 and 49.7 in women). **Table 1.4**

1.4.2 Adult mean WEMWBS score in 2013, by age and sex

At 50.3, the WEMWBS mean score for men in 2013 was not significantly different to the score for women (49.7).

As found in previous survey years,[26] positive wellbeing has a non-linear age-related pattern. Among men, those aged 25-34 (51.1) and 65-74 (51.3) had the highest mean WEMWBS scores while those aged 45-54 (49.1) had the lowest (Figure 1C). For women, those aged 25-34 (50.4) and 65-74 (50.9) had the highest mean scores, while those aged 45-54 (48.7), along with those aged 16-24 (48.6), had the lowest. While survey data from a single year are cross-sectional and thus unable to detect age-related changes within cohorts, this pattern fits broadly with the recognised U-shaped curve in subjective wellbeing, in which levels of self-reported subjective wellbeing fall during the middle years of life.[27] **Figure 1C, Table 1.5**

Figure 1C
WEMWBS mean score, 2013, by age and sex



1.5 DEPRESSION AND ANXIETY

1.5.1 Trends in symptoms of depression since 2008/2009

In 2012/2013, around one in ten (9%) adults had two or more symptoms of depression, indicating moderate to high severity; the equivalent figure in both 2008/2009 and 2010/2011 (8%) was very similar. There has, however, been a small but statistically significant decrease in the percentage of adults exhibiting no symptoms of depression (from 86% in 2008/2009 to 83% in 2012/2013), coupled with a corresponding increase in the prevalence of 1 symptom (from 5% in 2008/2009 and 2010/2011 to 8% in 2012/2013).

While the observed differences for women over the years were not statistically significant, there have been some significant changes in prevalence for men. Since 2008/2009 there has been a significant decline in the percentage of men exhibiting no depressive symptoms (from 89% to 84%). This decline was coupled with a corresponding increase in the percentage exhibiting one symptom (4% in 2008/2009 and 7% in 2012/2013). The observed increase in the percentage of men with 2 or more symptoms was not statistically significant (7% in 2008/2009 and 9% in 2012/2013). **Table 1.6**

1.5.2 Trends in symptoms of anxiety since 2008/2009

The percentage of adults with two or more symptoms of anxiety, indicating moderate to high severity, has not changed significantly since 2008/2009 (9% in 2008/2009 and 9% in 2012/2013). There has, however, been a significant decrease in the percentage of adults exhibiting no symptoms of anxiety (from 83% in 2008/2009 to 79% in 2012/2013) and a small but significant increase in prevalence of one symptom (from 9% in 2008/2009 and 7% in 2010/2011 to 11% in 2012/2013).

Across the years, the percentage of women exhibiting two or more symptoms of anxiety has always been higher than for men (12% and 7% in 2012/2013). Prevalence of one symptom has also been higher for women than for men (14% and 8%, respectively in 2012/2013).

Table 1.6

1.6 SUICIDE ATTEMPTS AND DELIBERATE SELF-HARM

1.6.1 Trends in suicide attempts since 2008/2009

In 2012/2013, 5% of adults reported having attempted suicide at some point in their life (Table 1.6); similar to levels in 2010/2011 (5%) and 2008/2009 (4%). While death records for the general population indicate that men are markedly more likely than women to **complete** a suicide,[28] when asked, women are more likely to report having **made an attempt** (6%, compared with 3% of men in 2012/2013). This is in line with findings from previous years.[26]

Table 1.6

1.6.2 Trends in deliberate self-harm since 2008/2009

In 2012/2013, 5% of adults aged 16 and over reported that at some point in their life they had deliberately harmed themselves without suicidal intent. This represents a significant increase in deliberate self-harm since 2010/2011, when 2% reported having done it at some point (3% in 2008/2009). Deliberate self-harm levels did not differ significantly between men and women (4% and 6%, respectively).

Table 1.6

1.7 INTERPRETING THE RECENT TRENDS IN MENTAL HEALTH

As already noted,[25] in 2012 the questions on depression, anxiety, suicide attempts and self-harm (all reported above) switched from being asked face-to-face by nurses, to being asked in a computer-assisted self-completion, as part of the biological module. The 2011 SHeS report noted that the prevalence of self-harm is typically higher when asked about in a self-completion rather than a face-to-face interview.[29] As the questions moved to a self-completion from 2012 onwards it is therefore possible that this change in interview mode contributed to the increase in prevalence. Similarly, we cannot discount the possibility that the decrease in the proportion of men reporting no depression symptoms, and in women reporting no anxiety symptoms, was caused by the change in interview mode. However, the static figures for suicide attempts suggest that the issue of mode effects and reporting biases operate in complex ways. The figures from the 2014 survey onwards will help to establish whether the 2012/2013 results are outliers, or are in fact evidence that earlier figures in the series were perhaps underrepresenting the prevalence of some of these outcomes in the population.

1.8 SELF-PERCEIVED WORK-RELATED STRESS

1.8.1 Trends in self-perceived work-related stress since 2009

The figures presented in Table 1.7 show that the percentage of adults (aged 16 and over) reporting that their jobs were 'very' or 'extremely stressful' has not changed significantly over time for those in paid employment or on a government training scheme (14% in 2013, 15% in 2011 and 14% in 2009). Similarly, there has been no change in the proportion of adults describing their job as 'not at all' stressful (18% in 2013 and 19% in 2009).

In addition to the 14% of adults in paid employment or on a government training programme who reported that their job was 'very' or 'extremely stressful,' around a third (32%) described their job as 'moderately stressful' and a similar proportion (35%) reported that theirs was 'mildly stressful'. Just under a fifth (18%) did not find their job at all stressful. There was no significant difference between the percentage of men and women reporting that their job was 'very' or 'extremely stressful' (13% and 15%, respectively). **Table 1.7**

1.9 PROVISION OF UNPAID CARE

1.9.1 Unpaid caring prevalence in 2013, by age and sex

Table 1.8 presents the prevalence of unpaid care provision in 2013, by age group. Among those aged 16 and over, 16% said they were providing unpaid care for a family member, friend or someone else, with women more likely to report this than men (19% and 13%, respectively). As previously reported,[26] the gap between the proportion of men and women providing unpaid care was largest for those aged 35 to 64. Unpaid care provision increases with age peaking at age 55-64 (19% of men, 28% of women), and then declined among the oldest age groups.

Children aged 4-15 were much less likely than adults to provide unpaid care for others, with 4% reporting this in 2013. Caring levels were very similar for boys and girls aged 4 to 15 (3% and 4%, respectively). There was, however, a notable increase in care provision with increased age, from 2% of those aged 4-11 to 8% of those aged 12-15. **Table 1.8**

References and notes

[1] Inequalities in Health. Report of the Measuring Inequalities in Health Working Group. Measuring Inequalities in Health Working Group, 2003. www.scotland.gov.uk/Resource/Doc/47171/0013513.pdf

[2] Mental Health Action Plan 2013-2020. World Health Organization, 2013. http://apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf?ua=1

[3] Mental Health Strategy for Scotland 2012-2015. Scottish Government, 2012. www.scotland.gov.uk/Publications/2012/08/9714/2

[4] Delivering for mental health. Scottish Government, 2006. www.scotland.gov.uk/Publications/2006/11/30164829/0

[5] Towards a mentally flourishing Scotland: policy and action plan 2009-2011. Scottish Government, 2009. www.scotland.gov.uk/Resource/Doc/271822/0081031.pdf

[6] See: www.chooselife.net/

[7] Scottish Government Suicide Prevention Strategy 2013-2016. Scottish Government, 2013. www.scotland.gov.uk/Publications/2013/12/7616

[8] The National Performance Framework is described here: www.scotland.gov.uk/About/Performance/purposestratobjs

[9] See: www.healthscotland.com/scotlands-health/population/mental-health-indicators.aspx

[10] Scotland's Mental Health: Adults 2012. Edinburgh: NHS Health Scotland, 2012. See: www.healthscotland.com/documents/6123.aspx

[11] 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

[12] The suicide reduction HEAT target is described here: http://www.scotland.gov.uk/About/Performance/scotPerforms/partnerstories/NHSScotlandperformance/SuicideReduction

[13] The CAMHS 18 week treatment HEAT target is described here: www.scotland.gov.uk/About/Performance/scotPerforms/partnerstories/NHSScotlandperformance/CAMHS18weeks

[14] The access to psychological therapies HEAT target is described here: www.scotland.gov.uk/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.

[15] Caring Together: The Carers Strategy for Scotland 2010-2015. Edinburgh: Scottish Government, 2010. www.scotland.gov.uk/Publications/2010/07/23153304/0

[16] The Future of Unpaid Care in Scotland. Edinburgh: Scottish Executive, 2006. www.scotland.gov.uk/Publications/2006/02/28094157/0

[17] For information on the Short Breaks Fund see: www.sharedcarescotland.org.uk/short-breaks-fund.html

[18] For information on the inclusion of the carers indicator in the GP contract see: www.scotland.gov.uk/Publications/2013/05/8702/2

[19] For information about the Reshaping Care for Older People Change Fund, see: www.scotland.gov.uk/Topics/Health/Support-Social-Care/Support/Older-People/ReshapingCare

[20] Getting it Right for Young Carers: The Young Carer's Strategy for Scotland: 2010-2015. Scottish Government, 2010. www.scotland.gov.uk/Publications/2010/08/16095043/0

[21] The briefing paper on the development of WEMWBS is available here: http://www.healthscotland.com/scotlands-health/population/Measuring-positive-mental-health.aspx

[22] 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.

[23] 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.

[24] 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.

[25] 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.

[26] The General health chapters from previous Scottish Health Survey reports are available via the Scottish Government website at www.scotland.gov.uk/Topics/Statistics/Browse/Health/scottish-health-survey/Publications

[27] Blanchflower, D.G. and Oswald, A.J. (2008). Is well-being U-shaped over the life cycle? Social Science & Medicine. 66, 1733–1749.

[28] For information about deaths by suicide in Scotland in 2013 see: http://www.scotpho.org.uk/health-wellbeing-and-disease/suicide/key-points

[29] McManus, S. (2012). Chapter 1: General Health and Mental Wellbeing. In Rutherford, L., Sharp, C. and Bromley, C. [Eds]. The Scottish Health Survey 2011 – Volume 1: Adults. Edinburgh: Scottish Government. http://www.scotland.gov.uk/Publications/2012/09/7854/6

Table list

Additional tables available on the survey website include:

- Self-assessed general health, adults and children, by age & key demographics
- Life satisfaction, by age & key demographics
- Mean life satisfaction score, by age & key demographics
- Adult mean WEMWBS score, by age & key demographics
- Adult GHQ score (grouped), by age & key demographics
- Adult GHQ mean score, by age & key demographics
- Provides any regular help or care for any sick, disabled or frail person, by age & key demographics
- Hours spent each week providing help or unpaid care, by age & key demographics
- Length of time providing unpaid care, by age & key demographics
- Whether employment affected by unpaid caring responsibilities, by age & key demographics
- Sources of support as a carer, by age & key demographics

Table 1.1 Self-assessed general health, adults and children, 2008 to 2013

All ages *2008 to 2013*

Self-assessed general health	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%
Men						
Very good	37	37	35	37	36	34
Good	39	40	41	41	39	41
Fair	16	16	17	16	17	17
Bad	6	6	5	5	6	6
Very bad	2	1	2	2	2	2
Good/Very good	*76*	*77*	*76*	*77*	*75*	*75*
Bad/very bad	*7*	*7*	*7*	*7*	*8*	*8*
Women						
Very good	35	36	35	36	32	34
Good	40	41	39	39	41	40
Fair	19	17	18	18	18	18
Bad	5	6	6	6	7	7
Very bad	2	1	2	2	2	2
Good/Very good	*75*	*77*	*74*	*74*	*73*	*74*
Bad/very bad	*7*	*7*	*8*	*8*	*9*	*9*
All adults						
Very good	36	36	35	36	34	34
Good	39	40	40	40	40	40
Fair	17	16	18	17	17	17
Bad	5	6	6	6	7	6
Very bad	2	1	2	2	2	2
Good/Very good	*75*	*77*	*75*	*76*	*74*	*74*
Bad/very bad	*7*	*7*	*7*	*7*	*9*	*8*

Continued…

Table 1.1 - *Continued*

All ages *2008 to 2013*

Self-assessed general health	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%
Boys						
Very good	68	69	65	69	65	68
Good	26	27	29	27	29	26
Fair	5	4	5	4	6	5
Bad	1	0	1	0	0	1
Very bad	0	0	0	-	0	0
Good/Very good	*94*	*96*	*94*	*96*	*94*	*94*
Bad/very bad	*1*	*0*	*1*	*0*	*0*	*1*
Girls						
Very good	65	68	65	70	70	64
Good	31	27	29	26	25	30
Fair	4	4	4	3	5	4
Bad	1	1	1	1	1	1
Very bad	0	-	0	0	-	-
Good/Very good	*96*	*95*	*95*	*96*	*95*	*95*
Bad/very bad	*1*	*1*	*1*	*1*	*1*	*1*
All children						
Very good	66	68	65	70	68	66
Good	29	27	29	27	27	28
Fair	4	4	5	3	5	5
Bad	1	0	1	1	0	1
Very bad	0	0	0	0	0	0
Good/Very good	*95*	*95*	*94*	*96*	*94*	*95*
Bad/very bad	*1*	*1*	*1*	*1*	*0*	*1*

Continued…

Table 1.1 - *Continued*

All ages *2008 to 2013*

Self-assessed general health	2008	2009	2010	2011	2012	2013
Bases (weighted):						
Men	*3087*	*3598*	*3464*	*3608*	*2309*	*2344*
Women	*3376*	*3926*	*3775*	*3932*	*2504*	*2546*
All adults	*6463*	*7524*	*7239*	*7541*	*4813*	*4890*
Boys	*896*	*1333*	*916*	*1015*	*912*	*940*
Girls	*854*	*1273*	*876*	*970*	*873*	*899*
All children	*1750*	*2606*	*1792*	*1985*	*1786*	*1839*
Bases (unweighted):						
Men	*2840*	*3285*	*3112*	*3279*	*2127*	*2138*
Women	*3622*	*4241*	*4128*	*4262*	*2686*	*2753*
All adults	*6462*	*7526*	*7240*	*7541*	*4813*	*4891*
Boys	*872*	*1333*	*960*	*998*	*878*	*948*
Girls	*878*	*1272*	*832*	*987*	*908*	*891*
All children	*1750*	*2605*	*1792*	*1985*	*1786*	*1839*

Table 1.2 Adult self-assessed general health, 2013, by age and sex

Aged 16 and over *2013*

Self-assessed general health	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Very good	51	42	37	33	30	23	12	34
Good	42	47	45	43	36	33	37	41
Fair	7	10	13	15	21	31	33	17
Bad	0	1	4	6	9	11	13	6
Very bad	-	-	2	2	4	2	5	2
Good/Very good	*93*	*88*	*81*	*76*	*65*	*56*	*49*	*75*
Bad/very bad	*0*	*1*	*6*	*9*	*13*	*13*	*18*	*8*
Women								
Very good	41	41	40	36	28	26	19	34
Good	45	41	41	35	39	40	37	40
Fair	11	14	13	16	20	22	30	18
Bad	3	2	3	10	10	11	11	7
Very bad	-	2	2	2	2	2	2	2
Good/Very good	*86*	*82*	*81*	*71*	*68*	*66*	*56*	*74*
Bad/very bad	*3*	*4*	*5*	*12*	*13*	*13*	*14*	*9*
All Adults								
Very good	46	41	38	34	29	24	16	34
Good	43	44	43	39	38	37	37	40
Fair	9	12	13	16	21	26	32	17
Bad	1	2	4	8	10	11	12	6
Very bad	-	1	2	2	3	2	3	2
Good/Very good	*89*	*85*	*81*	*74*	*67*	*61*	*53*	*74*
Bad/very bad	*1*	*3*	*6*	*10*	*13*	*13*	*15*	*8*
Bases (weighted):								
Men	*339*	*367*	*387*	*438*	*366*	*269*	*178*	*2344*
Women	*334*	*389*	*412*	*462*	*383*	*303*	*264*	*2546*
All adults	*673*	*756*	*799*	*900*	*749*	*572*	*442*	*4890*
Bases (unweighted):								
Men	*207*	*310*	*339*	*395*	*353*	*318*	*216*	*2138*
Women	*242*	*419*	*432*	*540*	*442*	*373*	*305*	*2753*
All adults	*449*	*729*	*771*	*935*	*795*	*691*	*521*	*4891*

Table 1.3 Child self-assessed general health, 2012/2013 combined, by age and sex

Aged 0 - 15 *2012/2013 combined*

Self-assessed general health	Age								Total
	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	
	%	%	%	%	%	%	%	%	%
Boys									
Very good	72	66	71	72	74	71	56	53	67
Good	24	29	24	22	21	25	32	41	27
Fair	4	4	4	7	5	4	11	6	5
Bad	-	0	1	-	-	-	2	-	0
Very Bad	-	1	0	-	-	-	-	-	0
Good/Very good	*96*	*95*	*95*	*93*	*95*	*96*	*88*	*94*	*94*
Bad/very bad	*-*	*1*	*1*	*-*	*-*	*-*	*2*	*-*	*1*
Girls									
Very good	73	72	73	72	65	67	65	48	67
Good	21	23	23	25	31	29	30	43	28
Fair	6	5	3	2	3	3	5	7	4
Bad	0	-	2	0	1	1	0	2	1
Very Bad	-	-	-	-	-	-	-	-	-
Good/Very good	*93*	*95*	*95*	*97*	*96*	*96*	*94*	*91*	*95*
Good/Very good	*96*	*95*	*95*	*93*	*95*	*96*	*88*	*94*	*94*
Bad/very bad	*-*	*1*	*1*	*-*	*-*	*-*	*2*	*-*	*1*
All children									
Very good	73	69	72	72	70	69	60	50	67
Good	22	26	23	23	26	27	31	42	27
Fair	5	4	3	5	4	3	8	7	5
Bad	0	0	1	0	1	1	1	1	1
Very Bad	-	0	0	-	-	-	-	-	0
Good/Very good	*95*	*95*	*95*	*95*	*96*	*96*	*91*	*93*	*94*
Bad/very bad	*0*	*0*	*2*	*0*	*1*	*1*	*1*	*1*	*1*
Bases (weighted):									
Boys	*220*	*252*	*242*	*221*	*222*	*231*	*238*	*226*	*1852*
Girls	*221*	*234*	*242*	*220*	*191*	*232*	*236*	*196*	*1772*
All children	*441*	*486*	*484*	*441*	*413*	*463*	*474*	*422*	*3625*
Bases (unweighted):									
Boys	*244*	*258*	*250*	*217*	*229*	*203*	*214*	*211*	*1826*
Girls	*251*	*267*	*252*	*226*	*197*	*203*	*213*	*190*	*1799*
All children	*495*	*525*	*502*	*443*	*426*	*406*	*427*	*401*	*3625*

Table 1.4 WEMWBS mean scores, 2008 to 2013

Aged 16 and over *2008 to 2013*

WEMWBS scores[a]	2008	2009	2010	2011	2012	2013
Men						
Mean	50.2	49.9	50.2	50.2	50.4	50.3
SE of the mean	0.20	0.16	0.19	0.19	0.24	0.25
Standard deviation	8.55	8.02	8.37	8.35	8.34	8.56
Women						
Mean	49.7	49.7	49.6	49.7	49.4	49.7
SE of the mean	0.16	0.16	0.17	0.17	0.22	0.21
Standard deviation	8.48	8.51	8.67	8.37	8.63	8.70
All Adults						
Mean	50.0	49.7	49.9	49.9	49.9	50.0
SE of the mean	0.14	0.12	0.14	0.14	0.18	0.17
Standard deviation	8.52	8.28	8.54	8.36	8.50	8.65
Bases (weighted):						
Men	*2785*	*3282*	*3171*	*3191*	*2063*	*2110*
Women	*3026*	*3586*	*3478*	*3540*	*2256*	*2351*
All adults	*5812*	*6868*	*6649*	*6731*	*4319*	*4461*
Bases (unweighted):						
Men	*2539*	*2994*	*2842*	*2900*	*1909*	*1938*
Women	*3248*	*3886*	*3805*	*3845*	*2431*	*2561*
All adults	*5787*	*6880*	*6647*	*6745*	*4340*	*4499*

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 1.5 WEMWBS mean scores, 2013, by age and sex

Aged 16 and over *2013*

WEMWBS scores[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Men								
Mean	50.5	51.1	50.0	49.1	50.5	51.3	49.5	50.3
SE of the mean	0.69	0.56	0.63	0.53	0.58	0.54	0.73	0.25
Standard deviation	8.00	7.49	8.58	8.88	9.14	8.73	9.09	8.56
Women								
Mean	48.6	50.4	50.1	48.7	49.9	50.9	49.7	49.7
SE of the mean	0.62	0.45	0.48	0.48	0.48	0.61	0.52	0.21
Standard deviation	8.37	8.36	8.60	9.28	8.69	9.44	7.65	8.72
All Adults								
Mean	49.6	50.7	50.1	48.9	50.2	51.1	49.7	50.0
SE of the mean	0.48	0.36	0.42	0.39	0.36	0.44	0.47	0.17
Standard deviation	8.23	7.96	8.58	9.09	8.91	9.11	8.24	8.65
Bases (weighted):								
Men	*303*	*336*	*346*	*402*	*331*	*245*	*147*	*2110*
Women	*300*	*362*	*392*	*437*	*357*	*284*	*219*	*2351*
All adults	*603*	*699*	*738*	*839*	*687*	*529*	*365*	*4461*
Bases (unweighted):								
Men	*185*	*283*	*305*	*368*	*322*	*293*	*182*	*1938*
Women	*221*	*393*	*412*	*514*	*416*	*350*	*255*	*2561*
All adults	*406*	*676*	*717*	*882*	*738*	*643*	*437*	*4499*

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 1.6 CIS-R anxiety and depression scores, attempted suicide and deliberate self-harm, 2008 to 2013

Aged 16 and over and participated in nurse visit (2008-2011) or biological module (2012-2013) — *2008 to 2013*

Mental health problem	2008/2009 combined	2010/2011 combined	2012/2013 combined
	%	%	%
Men			
Depression symptom score			
0	89	89	84
1	4	4	7
2 or more symptoms[a]	7	7	9
Anxiety symptom score			
0	87	87	85
1	6	5	8
2 or more symptoms[b]	7	8	7
Suicide attempts			
No	97	96	97
Yes	3	4	3
Deliberate self-harm			
No	98	98	96
Yes	2	2	4
Women			
Depression symptom score			
0	84	85	82
1	6	6	10
2 or more symptoms[a]	10	9	8
Anxiety symptom score			
0	78	81	74
1	11	9	14
2 or more symptoms[b]	11	10	12
Suicide attempts			
No	94	94	94
Yes	6	6	6
Deliberate self-harm			
No	96	97	94
Yes	4	3	6

Continued…

Table 1.6 - *Continued*

Aged 16 and over and participated in nurse visit (2008-2011) or biological module (2012-2013) — *2008 to 2013*

Mental health problem	2008/2009 combined	2010/2011 combined	2012/2013 combined
	%	%	%
All adults			
Depression symptom score[c]			
0	86	87	83
1	5	5	8
2 or more symptoms[a]	8	8	9
Anxiety symptom score[d]			
0	83	84	79
1	9	7	11
2 or more symptoms[b]	9	9	9
Suicide attempts			
No	96	95	95
Yes	4	5	5
Deliberate self-harm			
No	97	98	95
Yes	3	2	5
Bases (weighted):			
Men	*1066*	*972*	*1051*
Women	*1154*	*1059*	*1129*
All adults	*2220*	*2031*	*2179*
Bases (unweighted):			
Men	*974*	*875*	*971*
Women	*1246*	*1155*	*1214*
All adults	*2220*	*2030*	*2185*

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 Stress at work, 2009 to 2013

Aged 16 and over in paid employment / government training programme — *2009, 2011, 2013*

Stress at work	2009	2011	2013
	%	%	%
Men			
Not at all stressful	21	17	19
Mildly stressful	30	36	35
Moderately stressful	36	32	33
Very stressful	9	11	10
Extremely stressful	3	3	3
Very stressful/Extremely stressful[a]	*13*	*15*	*13*
Women			
Not at all stressful	16	19	18
Mildly stressful	34	32	35
Moderately stressful	34	35	32
Very stressful	12	12	13
Extremely stressful	4	2	2
Very stressful/Extremely stressful[a]	*16*	*14*	*15*
All adults			
Not at all stressful	19	18	18
Mildly stressful	32	34	35
Moderately stressful	35	33	32
Very stressful	11	12	11
Extremely stressful	4	3	3
Very stressful/Extremely stressful[a]	*14*	*15*	*14*
Bases (weighted):			
Men	*771*	*677*	*672*
Women	*673*	*647*	*635*
All adults	*1444*	*1324*	*1307*
Bases (unweighted):			
Men	*655*	*581*	*583*
Women	*702*	*674*	*677*
All adults	*1357*	*1255*	*1260*

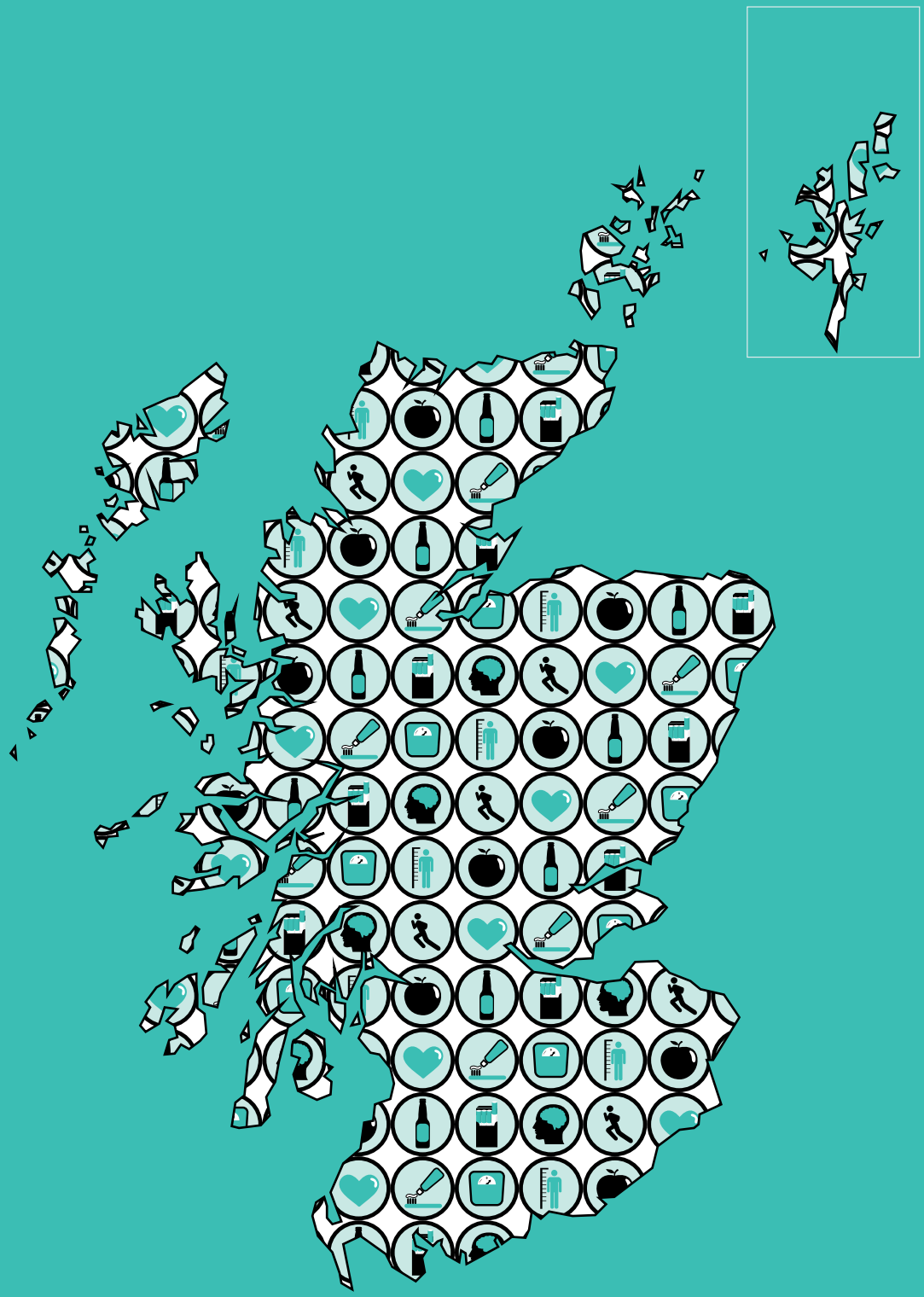
a Percentage of adults who find their job very or extremely stressful is part of the national mental health indicator set for adults

Table 1.8 Caring prevalence, 2013, by age and sex

Aged 4 and over *2013*

Regular carer[a]	Age										Total 16+
	4-11	12-15	Total 4-15	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%	%	%	%
Male											
Provides regular care	1	8	3	9	9	10	15	19	17	13	13
Female											
Provides regular care	2	7	4	14	12	21	25	28	20	9	19
All											
Provides regular care	2	8	4	12	10	16	20	23	19	11	16
Bases (weighted):											
Male	*476*	*225*	*701*	*339*	*367*	*387*	*438*	*366*	*269*	*178*	*2345*
Female	*462*	*214*	*676*	*334*	*389*	*412*	*462*	*383*	*303*	*265*	*2547*
All persons	*938*	*439*	*1376*	*673*	*756*	*799*	*900*	*749*	*572*	*443*	*4891*
Bases (unweighted):											
Male	*478*	*202*	*680*	*207*	*310*	*339*	*395*	*353*	*318*	*217*	*2139*
Female	*445*	*183*	*628*	*242*	*419*	*432*	*540*	*442*	*373*	*306*	*2754*
All persons	*923*	*385*	*1308*	*449*	*729*	*771*	*935*	*795*	*691*	*523*	*4893*

a Provides regular help or care for any person for reasons of long-term ill-health, disability or problems relating to old age (excluding caring done as part of paid employment)



Chapter 2

Dental health

2 DENTAL HEALTH

Anna Marcinkiewicz

SUMMARY

Natural teeth prevalence

- In 2013, nine in ten adults had some natural teeth, with men significantly more likely than women to report having at least some (92%, compared with 88%). Although the Scottish Government's target that 90% of all adults living in Scotland would possess some natural teeth by 2010 was met overall, the proportion for women remained below the target level.
- The proportion of 16 to 64 year olds with no natural teeth has decreased since 1995 (11%), and has remained at around 4% since 2008.
- In line with earlier years, in 2013, natural teeth prevalence decreased with age, with just over half (55%) of adults aged over 75 reporting some natural teeth. Older men were significantly more likely than older women to have some natural teeth (64% of those aged 75 and over, compared with 49% of women of the same age).

Visiting the dentist

- In 2013, three quarters (74%) of adults reported visiting the dentist in the year prior to interview, an increase from 69% in 2009.
- Women remain more likely than men to have been to the dentist in the previous year (76%, compared with 71% of men).
- Older people aged 75 and above were least likely to report having visited the dentist in the last year (52%, compared with 67% of those aged 65-74 and 75-81% of those aged 16-64).
- Four in ten adults reported feeling nervous about visiting the dentist. Women were more likely than men to report feeling very nervous about going (20%, compared with 13%).
- Most adults (72%) did not report experiencing any difficulties when visiting the dentist. One in ten mentioned difficulties in getting an appointment that suited, while a similar proportion reported that dental treatment was too expensive (9%).

2.1 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.[1] 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.[1]

Child and adults registration rates have increased in recent years, with more than 91% of children and 84% of adults registered with an NHS dentist at the end of March 2014.[2] 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.[1] In recent years there has also been a reduction in general anaesthetics for dental extractions among children.[1]

Despite these improvements, inequalities in oral health persist and the latest figures indicate that there continues to be an increase in the incidence of oral cancer.[1]

2.1.1 Policy background

In 2005, **An Action Plan for Improving Oral Health and Modernising NHS Dental Services in Scotland** was published.[3] The plan recognised the inequalities in oral health, the problems with access to services, and that poor dental health in adults often has its origins in childhood. A series of national dental health targets were set out in the **Action Plan**, including the aim that, by 2010, 90% of all adults in Scotland would have some natural teeth.

Childsmile, developed from the **Action Plan**, is a national programme designed to improve the oral health of children in Scotland and to reduce inequalities both in dental health and in access to dental health services.[4] In addition, the SIGN guidance on preventing caries in children aged 0-18 was updated in March 2014 (SIGN 138).[5]

Other recent developments include the publication of the **National Oral Health Improvement Strategy for Priority Groups** in 2012.[6] The strategy, which set out a number of measures to prevent oral disease in adults vulnerable to poor oral health, including frail older people, those with special care needs or who are homeless, was published in May 2012.[7] A report on the oral health of prisoners and young offenders was published in June 2014,[8] and in August 2014 was accompanied by a set of guidelines for trainers on better oral care for offenders.

In 2012, NHS Health Scotland published Oral Health and Nutritional Guidance for Professionals.[9] In the same year, NHS Health Scotland also published **Alcohol and Oral Health: Understanding risk, raising awareness and giving advice**.[10] Since the publication of the 2012 SHeS annual report, the Scottish Dental Clinical Effectiveness Programme has published new guidance on the prevention and treatment of periodontal diseases in primary care.[11]

The NHS HEAT target[12] to increase NHS dentist registration rates for 3 to 5 year olds to 80% by 2010/11 was surpassed and the latest available figures show 92% registered.[2] A second HEAT target sets out the aim to provide two or more fluoride varnish applications to at least 60% of 3- and 4-year olds in each SIMD quintile every year by March 2014.[13] In the year ending March 2013, one year before the target end date, the worst-performing age/quintile combination was 10.1%. While there has been significant variation across Health Boards, across Scotland use of fluoride varnishing has been highest among those in the most deprived SIMD quintiles.[14]

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

The focus of this chapter is on dental health and dental treatment. The section on dental health presents the findings on the prevalence of natural teeth in the Scottish population since 1995 and allows for further analysis by age and gender. The remainder of the chapter explores dental treatment in relation to the pattern of visits to the dentist, anxiety about going to the dentist and the difficulties experienced when arranging to see a dentist. Additional tables are available from the Scottish Government SHeS website.[15]

2.2 METHODS AND DEFINITIONS

Adults aged 16 and over are asked questions on dental health annually and on dental health services 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.

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 (between 1995-2003 and from 2008 onwards) should be made with caution.

2.3 DENTAL HEALTH

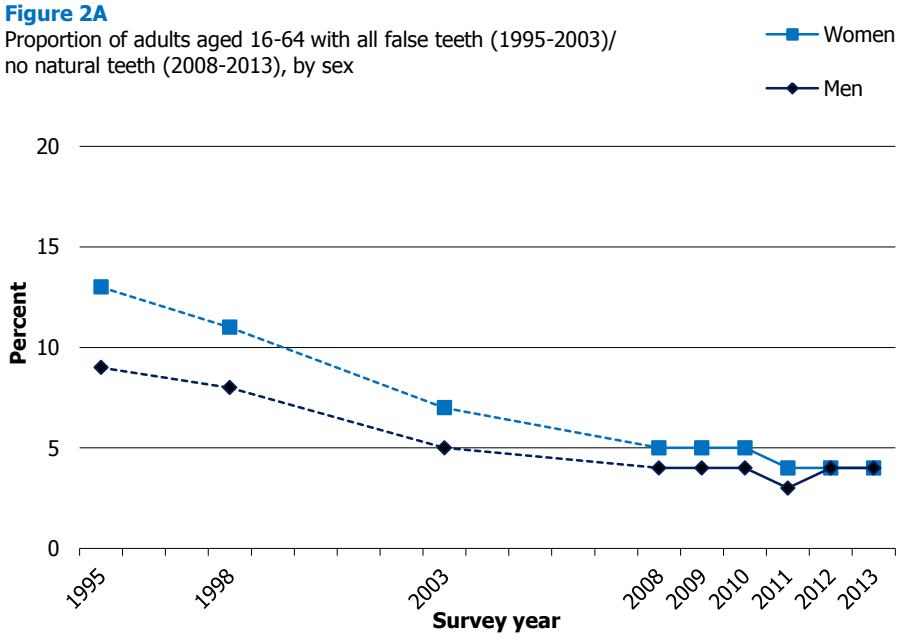
2.3.1 Trends in prevalence of natural teeth since 1995

Trends in natural teeth prevalence for adults aged 16 and over are presented in Figure 2A and Table 2.1 from 1995 onwards. As a result of changes to the sample composition in 2003, figures presented here for the first two survey years (1995 and 1998) are based on those aged 16 to 64 only. From 2003 onwards figures for both those aged 16 to 64 and all adults aged 16 and over are presented.

Over the years there has been a downward trend in the proportion of 16-64 year olds with no natural teeth. In 1995, around one in ten (11%) had all false teeth, while the percentage with no natural teeth has been between 3% and 5% since 2008 (4% in 2013). Trends for men and women have been similar, with 13% of women aged 16-64 with all false teeth in 1995, compared with 4% with no natural teeth in 2013. The equivalent figures for men in this age group were 9% in 1995 and 4% in 2013. The percentage of adults aged 16 and over with no natural teeth

has not changed significantly since 2008 (12% in 2008 and 10% in 2013). **Figure 2A, Table 2.1**

Figure 2A
Proportion of adults aged 16-64 with all false teeth (1995-2003)/ no natural teeth (2008-2013), by sex



The **Action Plan for Improving Oral Health and Modernising NHS Dental Services in Scotland** set out the aim that 90% of all adults living in Scotland would possess some natural teeth by 2010.[3] This target was met in 2011 and has been maintained since then (90% in 2013). The percentage of women with some natural teeth has not changed significantly since 2008 and the 90% target is yet to be met (88% in 2013, compared with 92% of men).

The percentage of adults aged 16 and over with 20 or more natural teeth has increased significantly since 2008 (from 71% to 74% in 2013). **Table 2.1**

2.3.2 Number of natural teeth and prevalence of no natural teeth in 2013, by age and sex

Natural teeth prevalence in 2013 is presented in Table 2.2, by age and sex. In 2013, 90% of adults aged 16 and over had at least some natural teeth, while 10% had no natural teeth at all. Around three-quarters (74%) of adults had 20 or more natural teeth, 11% had between 10 and 19 natural teeth and 5% had fewer than 10.

Men were significantly more likely than women to have some natural teeth (92%, compared with 88%). There was an inverse relationship between natural teeth prevalence and age for both men and women. In 2013, 95-100% of those aged 16-54 had at least some natural teeth, compared with 76-87% of those aged 55-74, and 55% of those aged 75 and above.

Natural teeth prevalence did not differ significantly between men and women under the age of 55. Pronounced differences emerged,

however, at ages 55-64 upwards. For example, 90% of men aged 55-64 and 64% aged 75 and over had natural teeth, whereas prevalence among women in the same age groups was 85% and 49%, respectively. **Table 2.2**

2.4 DENTAL TREATMENT

2.4.1 Trends in last visit to the dentist since 2009

Biennially, adult participants are asked how long it has been since they last visited the dentist, with answer options ranging from 'less than a year ago' to 'never'. Figures for the years 2009, 2011 and 2013 are presented in Table 2.3.

Since 2009, the percentage of adults reporting visiting the dentist 'less than a year' ago has increased significantly from 69% to 74% in 2013. This increase was most pronounced among men, with a six percentage point increase in the percentage reporting that their last visit was within the last 12 months (from 65% in 2009 to 71% in 2013). The increased proportion of adults visiting the dentist was coupled with a decline in the percentage reporting that their last visit had either been more than 5 years ago or that they had never been (13% in 2009 compared with 10% in 2013).

Women remain more likely than men to report visiting the dentist within the last year. However, the gap between the sexes dropped from 8 percentage points in 2011 to 5 percentage points in 2013 (71% of men and 76% of women in 2013).

Dentist visits also varied by age, as shown in Table 2.4. Older people aged 75 and above were least likely to have visited the dentist in the last year (52%, compared with 67% of those aged 65-74 and 75-81% of those aged 16-64). Moreover, around one third (32%) of those aged 75 and over had not visited the dentist in the past 5 years; whereas the figure ranged from 3-17% among younger age groups. Women aged 35-54 were significantly more likely than their male counterparts to have visited the dentist in the past year (82-86%, compared with 68-74%). While men aged 75 and over appear to have been more likely than women of the same age to have visited the dentist in the last year (55% and 49%), this difference was not statistically significant.

Table 2.3, Table 2.4

2.4.2 Dental anxiety in 2013, by age and sex

One factor which could potentially affect a person's willingness to visit a dentist is a feeling of nervousness or anxiety about the visit. All adults, irrespective of when they last visited, were asked how nervous they felt about going to the dentist. Answer options ranged from 'I don't feel nervous at all' to 'I feel very nervous'.

In 2013, four in ten adults reported that they felt nervous about visiting the dentist: around a quarter (23%) reported feeling a bit nervous and

16% felt very nervous. Women were significantly more likely than men to report that visiting the dentist made them feel very nervous (20% compared with 13%). While the pattern with age was less clear, those aged 75 and over were least likely to report feeling very nervous (9%), while those aged 45-54 were most likely to report that visiting the dentist made them feel very nervous (21%). **Table 2.5**

2.4.3 Difficulties experienced when visiting the dentist in 2013, by age and sex

Participants were also presented with a list of potential difficulties a person might experience when planning a visit to the dentist and were asked which, if any, applied to them. In 2013, most adults (72%) did not report any difficulties when planning a visit (71% of men and 73% of women). The most commonly mentioned issues mentioned were difficulties in getting an appointment that suited (10% of all adults) and the cost of treatment (9% of all adults).

While men and women's experiences of planning a visit to the dentist did not differ significantly, there were some significant differences by age. Younger age groups were significantly more likely than others to cite the following difficulties when planning a dentist visit: getting time off work (8-9% of those aged 16-44); problems with getting an appointment that suited (11-17% of those aged 16-44); and, cost of the dental treatment (9-15% of those aged 16-54). **Table 2.6**

References and Notes

[1] 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

[2] Dental Statistics NHS Registration and Participation. Edinburgh: ISD Scotland, 2014. http://www.isdscotland.org/Health-Topics/Dental-Care/Publications/2014-06-24/2014-06-24-Dental-Report.pdf

[3] An Action Plan for Improving Oral Health and Modernising *NHS* Dental Services in Scotland. Edinburgh: Scottish Executive, 2005. www.scotland.gov.uk/Resource/Doc/37428/0012526.pdf

[4] For further information about ChildSmile see: www.child-smile.org.uk/

[5] Scottish Intercollegiate Guidelines Network (SIGN). Dental intervention to prevent caries in children. Edinburgh: SIGN; 2014. (SIGN publication no. 138). [cited 30/09/2014]. Available from URL: http://www.sign.ac.uk

[6] National oral health improvement strategy for priority groups: frail older people, people with special care needs and those who are homeless. Edinburgh: Scottish Government, 2012. Available from: www.scotland.gov.uk/Resource/0039/00394171.pdf

[7] National Oral Health Improvement Strategy for Priority Groups: Frail Older People, People with Special Care Needs and Those Who are Homeless. Edinburgh: Scottish Government, 2012. Available from: www.scotland.gov.uk/Publications/2012/05/7031

[8] www.sps.gov.uk/Publications/Publication-5335.aspx

[9] Oral Health and Nutrition Guidance for Professionals and Quick reference guide. NHS Health Scotland, 2012. Available from: www.healthscotland.com/documents/5885.aspx

[10] Alcohol and oral health: Understanding risk, raising awareness and giving advice. NHS Health Scotland, 2012. Available from: www.healthscotland.com/documents/6124.aspx

[11] Prevention and Treatment of Periodontal Diseases in Primary Care. Scottish Dental Clinical Effectiveness Programme, NHS Scotland, 2014. Available from: *www.sdcep.org.uk/index.aspx?o=2269*

[12] The 2007 Better Health, Better Care action plan for improving health and health care in Scotland set out how NHS Scotland's HEAT performance management system (based around a series of targets against which the performance of its individual Boards are measured) would feed into the Government's overarching objectives. The HEAT targets derive their name from the four strands in the performance framework: the Health of the population; Efficiency and productivity, resources and workforce; Access to services and waiting times; and Treatment and quality of services.

[13] NHS Scotland HEAT Targets Due for Delivery in 2010/11 – summary of Performance. Edinburgh: NHS Scotland Performance and Business Management, 2012. www.scotland.gov.uk/about/scotPerforms/partnerstories/NHSScotlandperformance/HT201011

[14] Dental Statistics Heat Target H9: Fluoride varnishing for 3- and 4-year olds. Edinburgh: ISD Scotland, 2014. http://www.isdscotland.org/Health-Topics/Dental-care/Publications/2013-11-26/2013-11-26-FluorideVarnish-Report.pdf?

[15] www.scotland.gov.uk/scottishhealthsurvey

Table list

Additional tables available on the survey website include:

- Number of natural teeth (including crowns), by age & key demographics
- Happiness with appearance of teeth, by age & key demographics
- Toothache/mouth pain in last month, by age & key demographics
- Problems biting/chewing food, by age & key demographics
- Bleeding gums, by age & key demographics
- Perceived need for dental treatment, by age & key demographics
- Length of time since last visit to dentist, by age & key demographics
- Treatment on the NHS or private, by age & key demographics
- Feelings about visiting the dentist, by age & key demographics
- Difficulties visiting the dentist, by age & key demographics
- Dental and oral health behaviour, by age & key demographics

Table 2.1 Number of natural teeth and % with no natural teeth, 1995 to 2013, by age and sex

Aged 16 and over *1995 to 2013*

False teeth / number of natural teeth	1995	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%	%
Men									
All own teeth									
16 - 64	69	73	76	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
All false teeth									
16 - 64	9	8	5	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
No natural teeth									
16 - 64	n/a	n/a	n/a	4	4	4	3	4	4
16+	n/a	n/a	n/a	9	9	9	9	9	8
Fewer than 10									
16 - 64	n/a	n/a	n/a	4	3	3	3	3	3
16+	n/a	n/a	n/a	6	6	5	5	5	6
Between 10 and 19									
16 - 64	n/a	n/a	n/a	11	11	11	11	12	9
16+	n/a	n/a	n/a	13	12	13	13	13	11
20 or more									
16 - 64	n/a	n/a	n/a	82	82	82	83	82	84
16+	n/a	n/a	n/a	72	72	73	73	72	75
All with teeth									
16 - 64	*n/a*	*n/a*	*n/a*	*96*	*96*	*96*	*97*	*96*	*96*
16+	*n/a*	*n/a*	*n/a*	*91*	*91*	*91*	*91*	*91*	*92*

Continued…

Table 2.1 - *Continued*

Aged 16 and over *1995 to 2013*

False teeth / number of natural teeth	1995	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%	%
Women									
All own teeth									
16 - 64	66	70	75	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
All false teeth									
16 - 64	13	11	7	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
No natural teeth									
16 - 64	n/a	n/a	n/a	5	5	5	4	4	4
16+	n/a	n/a	n/a	14	14	13	11	12	12
Fewer than 10									
16 - 64	n/a	n/a	n/a	3	3	3	3	4	2
16+	n/a	n/a	n/a	5	4	5	6	6	5
Between 10 and 19									
16 - 64	n/a	n/a	n/a	9	10	8	8	7	9
16+	n/a	n/a	n/a	11	12	11	11	10	11
20 or more									
16 - 64	n/a	n/a	n/a	83	82	84	85	85	84
16+	n/a	n/a	n/a	70	70	72	72	73	73
All with teeth									
16 - 64	*n/a*	*n/a*	*n/a*	*95*	*95*	*95*	*96*	*96*	*96*
16+	*n/a*	*n/a*	*n/a*	*86*	*86*	*87*	*89*	*88*	*88*

Continued…

Table 2.1 - *Continued*

Aged 16 and over *1995 to 2013*

False teeth / number of natural teeth	1995	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%	%
All adults									
All own teeth									
16 - 64	68	72	75	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
All false teeth									
16 - 64	11	9	6	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
No natural teeth									
16 - 64	n/a	n/a	n/a	4	5	4	3	4	4
16+	n/a	n/a	n/a	12	12	11	10	10	10
Fewer than 10									
16 - 64	n/a	n/a	n/a	3	3	3	3	3	3
16+	n/a	n/a	n/a	5	5	5	5	6	5
Between 10 and 19									
16 - 64	n/a	n/a	n/a	10	10	10	10	9	9
16+	n/a	n/a	n/a	12	12	12	12	11	11
20 or more									
16 - 64	n/a	n/a	n/a	82	82	83	84	83	84
16+	n/a	n/a	n/a	71	71	72	73	73	74
All with teeth									
16 - 64	*n/a*	*n/a*	*n/a*	*96*	*95*	*96*	*97*	*96*	*96*
16+	*n/a*	*n/a*	*n/a*	*88*	*88*	*89*	*90*	*90*	*90*

Continued…

Table 2.1 - *Continued*

Aged 16 and over *1995 to 2013*

False teeth / number of natural teeth	1995	1998	2003	2008	2009	2010	2011	2012	2013
Bases (weighted):									
Men 16 - 64	*3902*	*3950*	*3169*	*2537*	*2940*	*2824*	*2944*	*1885*	*1892*
Men 16+	*n/a*	*n/a*	*3833*	*3083*	*3585*	*3450*	*3598*	*2309*	*2338*
Women 16 - 64	*3998*	*3989*	*3318*	*2632*	*3060*	*2938*	*3063*	*1950*	*1979*
Women 16+	*n/a*	*n/a*	*4276*	*3362*	*3917*	*3762*	*3924*	*2500*	*2545*
All adults 16 - 64	*7900*	*7939*	*6487*	*5169*	*6001*	*5762*	*6007*	*3836*	*3871*
All 16+	*n/a*	*n/a*	*8109*	*6445*	*7502*	*7212*	*7522*	*4809*	*4883*
Bases (unweighted):									
Men 16 - 64	*3524*	*3364*	*2756*	*2078*	*2398*	*2287*	*2416*	*1517*	*1600*
Men 16+	*n/a*	*n/a*	*3589*	*2835*	*3276*	*3104*	*3270*	*2126*	*2134*
Women 16 - 64	*4408*	*4212*	*3451*	*2687*	*3206*	*3073*	*3172*	*1970*	*2075*
Women 16+	*n/a*	*n/a*	*4522*	*3608*	*4234*	*4114*	*4252*	*2684*	*2752*
All adults 16 - 64	*7932*	*7576*	*6207*	*4765*	*5604*	*5360*	*5588*	*3487*	*3675*
All 16+	*n/a*	*n/a*	*8111*	*6443*	*7510*	*7218*	*7522*	*4810*	*4886*

Table 2.2 Number of natural teeth and % with no natural teeth, 2013, by age and sex

Aged 16 and over *2013*

False teeth / number of natural teeth	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
No natural teeth	-	0	2	6	10	23	36	8
Fewer than 10	0	0	2	4	9	14	21	6
Between 10 and 19	-	3	8	12	20	21	17	11
20 or more	100	97	88	78	61	42	26	75
All with teeth	*100*	*100*	*98*	*94*	*90*	*77*	*64*	*92*
Women								
No natural teeth	-	-	2	5	15	25	51	12
Fewer than 10	-	0	1	3	7	12	15	5
Between 10 and 19	1	2	9	14	17	22	14	11
20 or more	99	98	88	78	61	41	20	72
All with teeth	*100*	*100*	*98*	*95*	*85*	*75*	*49*	*88*
All adults								
No natural teeth	-	0	2	5	13	24	45	10
Fewer than 10	0	0	2	4	8	13	17	5
Between 10 and 19	0	2	8	13	18	22	15	11
20 or more	100	97	88	78	61	41	22	74
All with teeth	*100*	*100*	*98*	*95*	*87*	*76*	*55*	*90*
Bases (weighted):								
Men	*335*	*367*	*387*	*436*	*366*	*269*	*177*	*2338*
Women	*334*	*389*	*412*	*462*	*383*	*301*	*264*	*2545*
All adults	*669*	*756*	*799*	*898*	*749*	*571*	*441*	*4883*
Bases (unweighted):								
Men	*204*	*310*	*339*	*394*	*353*	*318*	*216*	*2134*
Women	*242*	*419*	*432*	*540*	*442*	*372*	*305*	*2752*
All adults	*446*	*729*	*771*	*934*	*795*	*690*	*521*	*4886*

Table 2.3 Length of time since last visit to the dentist since 2009

Aged 16 and over *2009, 2011, 2013*

Length of time since last visit	2009	2011	2013
	%	%	%
Men			
Less than a year ago	65	66	71
More than 1 year, up to 2 years ago	12	12	10
More than 2 years, up to 5 years ago	8	9	7
More than 5 years ago	15	12	11
Never	1	1	1
Women			
Less than a year ago	73	74	76
More than 1 year, up to 2 years ago	9	11	9
More than 2 years, up to 5 years ago	8	6	6
More than 5 years ago	10	9	9
Never	0	1	0
All adults			
Less than a year ago	69	70	74
More than 1 year, up to 2 years ago	10	11	10
More than 2 years, up to 5 years ago	8	7	7
More than 5 years ago	12	11	10
Never	1	1	0
Bases (weighted):			
Men	*1233*	*1171*	*1130*
Women	*1346*	*1276*	*1236*
All adults	*2578*	*2447*	*2367*
Bases (unweighted):			
Men	*1133*	*1073*	*1038*
Women	*1452*	*1375*	*1333*
All adults	*2585*	*2448*	*2371*

Table 2.4 Length of time since last visit to the dentist, 2013, by age and sex

Aged 16 and over *2013*

Length of time since last visit	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Less than a year ago	78	72	68	74	75	68	55	71
More than 1 year, up to 2 years ago	11	14	13	11	6	5	5	10
More than 2 years, up to 5 years ago	4	8	8	7	6	9	11	7
More than 5 years ago	5	5	10	8	13	18	27	11
Never	1	1	1	-	0	-	2	1
Women								
Less than a year ago	83	81	82	86	74	65	49	76
More than 1 year, up to 2 years ago	14	10	10	7	9	8	5	9
More than 2 years, up to 5 years ago	2	7	4	3	7	11	10	6
More than 5 years ago	1	2	4	3	11	15	35	9
Never	-	-	-	1	-	1	1	0
All adults								
Less than a year ago	80	76	75	80	75	67	51	74
More than 1 year, up to 2 years ago	13	12	12	9	7	7	5	10
More than 2 years, up to 5 years ago	3	8	6	5	6	10	10	7
More than 5 years ago	3	3	7	6	12	17	32	10
Never	0	1	0	0	0	0	2	0
Bases (weighted):								
Men	*158*	*178*	*188*	*212*	*178*	*131*	*87*	*1130*
Women	*162*	*189*	*200*	*224*	*186*	*147*	*128*	*1236*
All adults	*320*	*367*	*388*	*436*	*364*	*278*	*215*	*2367*
Bases (unweighted):								
Men	*84*	*157*	*159*	*201*	*171*	*158*	*108*	*1038*
Women	*123*	*218*	*202*	*249*	*201*	*193*	*147*	*1333*
All adults	*207*	*375*	*361*	*450*	*372*	*351*	*255*	*2371*

Table 2.5 Dental anxiety, 2013, by age and sex

Aged 16 and over *2013*

Dental anxiety	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
I don't feel nervous at all	58	66	66	58	74	80	78	67
I feel a bit nervous	26	21	20	22	22	9	16	20
I feel very nervous	16	12	14	20	5	11	6	13
Women								
I don't feel nervous at all	56	56	54	49	51	56	62	54
I feel a bit nervous	29	21	27	29	24	27	26	26
I feel very nervous	15	23	19	22	24	17	12	20
All adults								
I don't feel nervous at all	57	61	60	53	62	67	68	60
I feel a bit nervous	27	21	24	25	23	18	22	23
I feel very nervous	16	18	17	21	15	14	9	16
Bases (weighted):								
Men	*158*	*178*	*188*	*212*	*178*	*131*	*86*	*1130*
Women	*162*	*189*	*200*	*224*	*186*	*147*	*127*	*1235*
All adults	*320*	*367*	*388*	*436*	*364*	*278*	*213*	*2365*
Bases (unweighted):								
Men	*84*	*157*	*159*	*201*	*171*	*158*	*107*	*1037*
Women	*123*	*218*	*202*	*249*	*201*	*193*	*146*	*1332*
All adults	*207*	*375*	*361*	*450*	*372*	*351*	*253*	*2369*

Table 2.6 Difficulties when visiting the dentist, 2013, by age and sex

Aged 16 and over *2013*

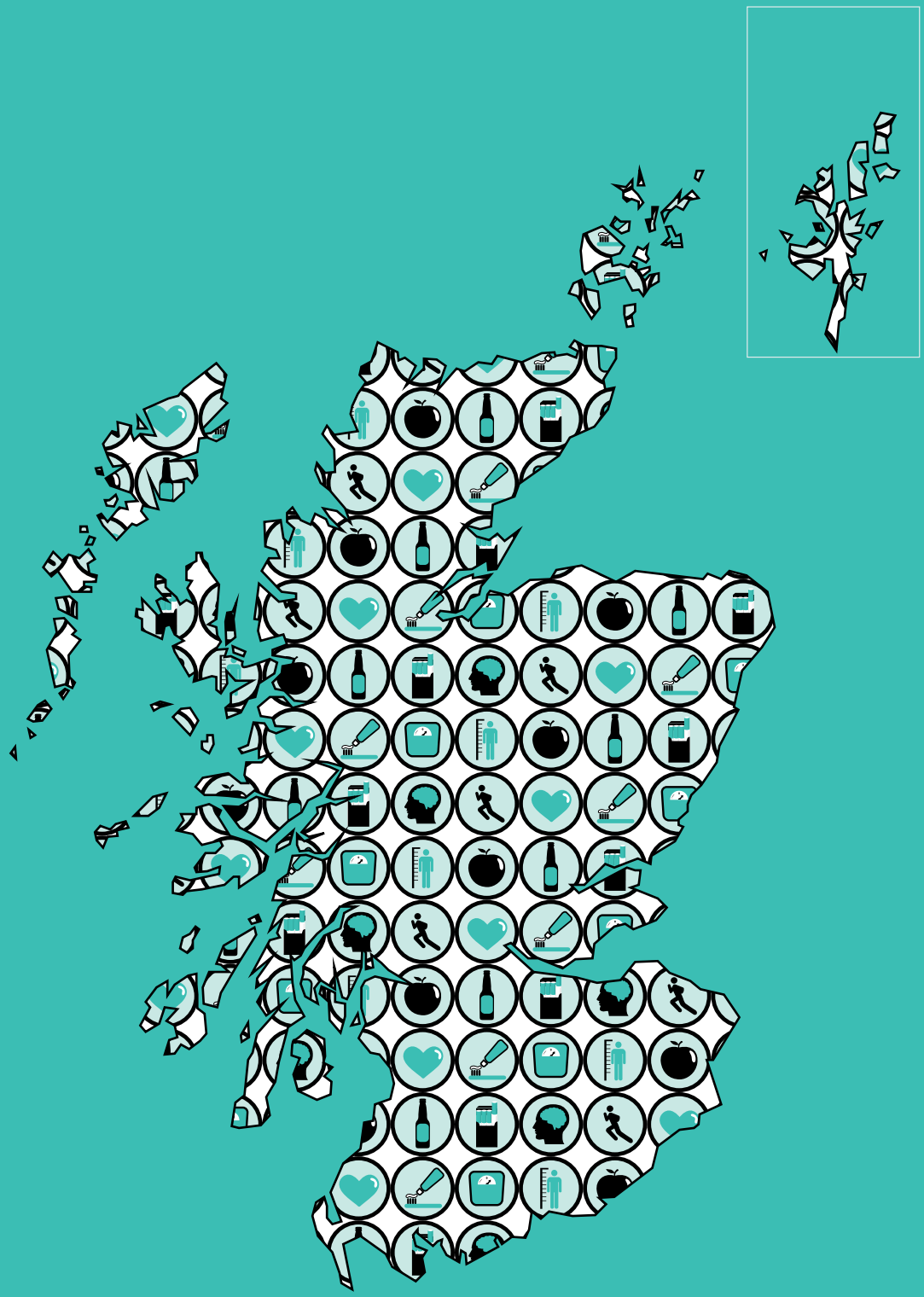
Type of difficulty	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Difficulty in getting time off work	4	11	13	8	4	-	-	7
Difficulty in getting an appointment that suits me	6	19	14	11	8	0	2	10
Dental treatment too expensive	12	8	20	12	6	7	4	10
Long way to go to the dentist	6	5	4	5	2	4	5	4
I have not found a dentist I like	-	7	2	4	1	1	2	3
I cannot get dental treatment under the NHS	4	3	1	3	4	2	2	3
I have difficulty in getting access, e.g. steps, wheelchair access	-	-	-	-	1	1	5	1
Other	3	2	5	2	0	2	2	2
None of these	77	61	57	65	80	86	83	71
Women								
Difficulty in getting time off work	11	6	5	4	1	-	-	4
Difficulty in getting an appointment that suits me	16	16	14	8	5	2	1	9
Dental treatment too expensive	7	9	10	10	7	7	6	8
Long way to go to the dentist	11	7	3	5	7	3	5	6
I have not found a dentist I like	3	5	3	2	2	1	1	2
I cannot get dental treatment under the NHS	2	2	5	4	5	3	2	3
I have difficulty in getting access, e.g. steps, wheelchair access	-	0	1	1	2	4	3	1
Other	3	4	2	2	1	2	-	2
None of these	62	63	71	74	76	81	87	73

Continued…

Table 2.6 - *Continued*

Aged 16 and over *2013*

Type of difficulty	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
Difficulty in getting time off work	8	9	9	6	2	-	-	5
Difficulty in getting an appointment that suits me	11	17	14	9	7	1	1	10
Dental treatment too expensive	10	9	15	11	7	7	5	9
Long way to go to the dentist	8	6	3	5	4	3	5	5
I have not found a dentist I like	1	6	2	3	2	1	1	3
I cannot get dental treatment under the NHS	3	2	3	4	4	2	2	3
I have difficulty in getting access, e.g. steps, wheelchair access	-	0	0	0	1	2	4	1
Other	3	3	3	2	1	2	1	2
None of these	69	62	64	70	78	83	85	72
Bases (weighted):								
Men	*157*	*175*	*187*	*212*	*178*	*131*	*84*	*1123*
Women	*162*	*187*	*200*	*223*	*186*	*145*	*126*	*1229*
All adults	*319*	*362*	*387*	*434*	*364*	*276*	*211*	*2352*
Bases (unweighted):								
Men	*82*	*154*	*158*	*201*	*170*	*158*	*105*	*1028*
Women	*123*	*216*	*202*	*247*	*201*	*191*	*145*	*1325*
All adults	*205*	*370*	*360*	*448*	*371*	*349*	*250*	*2353*



Chapter 3

Alcohol consumption

3 ALCOHOL

Linsay Gray and Alistair H Leyland

SUMMARY

Daily alcohol consumption

- In 2013, men drank an average of 5.2 units on their heaviest drinking day in the previous week; the figure for women was 2.8 units.
- While average unit consumption on the heaviest drinking day in the last week has declined over the years (from 6.5 and 3.6 units for men and women in 2003 to 5.2 units and 2.8 units respectively in 2013), consumption did not change significantly between 2012 and 2013.

Weekly alcohol consumption

- In 2013, one in five women (20%) reported that they did not drink alcohol, a significant increase on previous years (17% in 2012, and 13% in 2003). Twelve percent of men, in 2013, did not drink.
- Adults in Scotland consumed an average of 10.1 units of alcohol per week (13.7 units for men and 6.8 units for women) in 2013.
- Average weekly unit consumption has declined over the years for both men (from 19.8 in 2003 to 13.7 units in 2013) and women (from 9.0 in 2003 to 6.8 units in 2013). The decline in unit consumption between 2012 and 2013 was significant for men (15.2 units to 13.7 units) but not for women.
- Men consumed alcohol on an average of 2.8 days per week in 2013 (a decline from 3.3 days in 2003); for women the equivalent was 2.4 days per week, a decline from 2.7 days in 2003.
- The percentage of adults drinking on more than five days in the previous week declined between 2003 and 2013 (from 20% to 12% for men and from 13% to 9% for women).
- While older drinkers consumed alcohol with greater frequency than younger drinkers, the quantity consumed in each session, and in total, was lower for older drinkers. Over a third of those aged 75 and over described themselves as a non-drinker, with women of this age nearly twice as likely as men to report this (45% and 24%, respectively).

Adherence to government guidelines on alcohol consumption

- The percentage of men exceeding the recommended limit of 3-4 units in any one day fell from 45% in 2003 to 40% in 2013. Over the same period, the percentage of women exceeding their recommended limit of 2-3 units on their heaviest drinking day fell by 7 percentage points (from 37% to 30% in 2012 and 31% in 2013).
- A person is defined as drinking at hazardous or harmful levels if they are a man consuming more than 21 units per week or a woman drinking in excess of 14 units per week. In 2013, just over a fifth of men (22%) and 16% of women drank at hazardous or harmful levels.
- Hazardous or harmful drinking has declined among both men and women since 2003 (from 33% to 22% in men and from 23% to 16% in women) but did not change significantly between 2012 and 2013.
- While men and women with the highest household incomes were most likely to

drink at hazardous or harmful levels (27% and 25%, respectively), average weekly unit consumption among hazardous or harmful drinkers was highest among those with the lowest incomes (58.1 units and 35.1 units for male and female hazardous/harmful drinkers in lowest income quintile, respectively).

- Forty-five percent of men and 35% of women drank outwith the government guidelines for weekly and/or daily drinking, a decrease from 53% and 42% respectively in 2003.
- The percentage of adults drinking outwith government guidelines has fallen significantly over the years. While there has been little change in the percentage of adults adhering to the weekly and/or drinking guidelines (44% in 2013), there has been an increase in the proportion of adults describing themselves as an ex-drinker (5% in 2003 and 9% in 2013).

Alcohol Use Disorder Identification Test (AUDIT)

- An AUDIT score of 8 or more indicates a person is drinking at hazardous or harmful levels or has possible alcohol dependence. Men were twice as likely as women to have a score of 8 or more in 2012/2013 (25% compared with 12% of women).

3.1 INTRODUCTION

The range of physical and mental health problems associated with the misuse of alcohol is wide. Excessive drinking is associated with increased risk 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 the second largest risk factor for ill-health in wealthy countries, behind tobacco use, and ahead of obesity and high blood pressure.[1]

A report published in 2009 attributed 5% of deaths in Scotland to alcohol.[2] More than 94,500 GP consultations and around 36,000 hospital discharges, each year, are for alcohol-related problems.[3,4] 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.[5,6,7]

The implications of alcohol misuse stretch beyond health and it has effects on wider outcomes including social harms, with alcohol misuse the most widely perceived social issue in Scotland.[5] A report published by Alcohol Focus Scotland in 2013 estimated that 1 in 2 people in Scotland are harmed as a result of someone else's drinking.[8] The relationship between alcohol and crime is well documented. In the 2013 Scottish Prisoner Survey, 45% of prisoners reported being drunk at the time of their offence.[9] It is also thought that alcohol is involved in 70% of assaults requiring treatment at A&E.[10]

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.[11,12] 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.[13] In 2007, the total annual cost of excessive alcohol consumption was estimated to stand around £3.6 billion.[13] Recent findings from the 2013 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.[14]

3.1.1 Policy background

One of the 16 **National Outcomes** underpinning the Scottish Government's core purpose is for people living in Scotland to 'live longer, healthier lives'.[15] 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'.[15] Other related indicators include the reduction of premature mortality, reducing reconviction rates and crime victimisation, and reducing deaths on roads.[15]

The Scottish Government published its alcohol strategy **Changing Scotland's Relationship with Alcohol: a framework for action** in 2009.[16] 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. More recent 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 **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.[17] Informed by modelling carried out by the University of Sheffield,[18] Scottish Ministers have indicated their preference for a minimum unit price of 50p for at least the first two years. It is estimated that ten years after implementation of the policy, when it is considered to have reached full effectiveness, there would be at least 300 fewer alcohol-related deaths and 6,500 fewer hospital admissions each year.[19]

Evaluation of Scotland's alcohol strategy lies with NHS Health Scotland, through the Monitoring and Evaluating Scotland's Alcohol Strategy (MESAS) work programme. The third annual MESAS report, published in December 2013, concluded that there has been 'a recent and sustained decline in alcohol-related harm across most measures'.[20] It was also noted, however, that levels 'are higher than a decade ago and remain persistently higher than England & Wales'.[18]

3.1.2 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 often obtain lower consumption

estimates than those implied by alcohol sales data. The disjuncture can largely be explained by participants' under-reporting of consumption, 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.[21,22,23] The most recently available annual estimates of alcohol sales in Scotland show that 10.9 litres (21.0 units per adult per week) of pure alcohol per person aged 16 and over were sold in 2012 (the equivalent figure for England and Wales was 9.2 litres (17.6 units per adult per week)).[24] This volume is sufficient for every adult aged 16 and over in Scotland to drink 21 units, the weekly maximum consumption level recommended for men.

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

3.1.3 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. Levels of alcohol dependency and high risk alcohol use, as measured by the Alcohol Use Disorders Identification Test (AUDIT) are also provided. Supplementary tables on alcohol consumption are available on the survey website.[25]

3.1.4 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 these estimates, along with SHeS estimates are "not comparable."[26] 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.

3.2 METHODS AND DEFINITIONS

3.2.1 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.[27]
In 2013, 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, cider and shandy
- strong beer, lager and cider
- sherry and martini
- spirits and liqueurs
- wine
- alcoholic soft drinks (alcopops).

From these questions, the average number of days a 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.[28]

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.[29] 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 on consumption, four on use of alcohol considered harmful to oneself or others, and three on physical dependency on alcohol. Given the potentially sensitive nature of these questions, they were administered in self-completion format for all participants.

3.2.2 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 3A below outlines how the volumes of alcohol reported on in the survey were converted into units (the 2008 report provides full information about how this process has changed over time).[25] Those who drank bottled or canned beer, lager, stout or cider were asked in detail about what they drank, and this information was used to estimate the amount in pints.

Table 3A 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

3.2.3 Definitions

The recommended sensible drinking guidelines in the UK state that women should not regularly drink more than 2 to 3 units of alcohol per day and men should not regularly exceed 3 to 4 units per day. In addition, the Scottish Government recommends that everyone should aim to have at least two alcohol-free days per week.

It is also recommended that, over the course of a week, women and men should not exceed 14 units and 21 units, respectively. Those who drink within these levels are described as 'moderate' drinkers. Men who consume over 21 and up to 50 units per week and women who consume over 14 and up to 35 units are classed as 'hazardous' drinkers, while those who consume more than 50/35 (men/women) units a week are considered to be drinking at 'harmful' levels.[30]

Hazardous 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 3.2.4 includes a fuller description of the tool.[31]

There is no standard definition of 'binge' drinking in the UK. To aid comparisons between other major surveys of alcohol consumption in Britain, SHeS uses the definition used by the Health Survey for England

and the General Lifestyle Survey. Both these surveys define binge drinking as consuming more than 6 units on one occasion for women and more than 8 units for men.

An additional measure of people's adherence to the daily and weekly drinking advice set out above is also reported in this chapter. The two key groups of interest are:

	Adheres to guidelines	**Does not adhere to guidelines**
Men drinking	no more than 21 units per week AND no more than 4 units on heaviest drinking day	more than 21 units per week AND/OR more than 4 units on heaviest drinking day
Women drinking	no more than 14 units per week AND no more than 3 units on heaviest drinking day	more than 21 units per week AND/OR more than 4 units on heaviest drinking day

3.2.4 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.[32] Scores for the ten questions were summed to form a scale, from 0 to 40, of alcohol use.

The WHO guidelines[31] for interpreting AUDIT scale scores are as follows:

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

3.3 TRENDS IN ESTIMATED CONSUMPTION, FREQUENCY AND ADHERENCE TO DRINKING GUIDELINES

3.3.1 Trends in usual weekly alcohol consumption since 2003

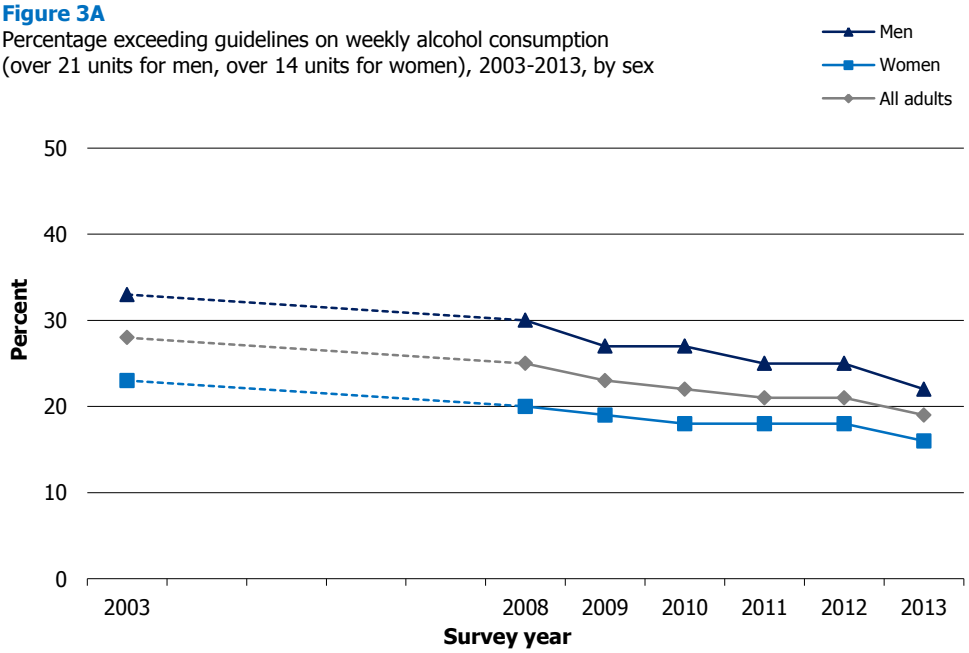
Self-reported weekly alcohol consumption for men, women and all adults is presented in Table 3.1 for the 2003 to 2013 period. The figures show an overall decline in alcohol consumption over this period.

The reported mean number of units of alcohol consumed per adult (aged 16 and above) declined from 14.1 units per week in 2003 to 10.1 units in 2013. Mean weekly unit consumption declined for both men and women over this period (from 19.8 to 13.7 units for men and from 9.0 to 6.8 units for women). Most of the decline in weekly unit consumption occurred between 2003 and 2011. Average weekly unit consumption declined significantly for men between 2012 and 2013 (from 15.2 units per week to 13.7 units) but not for women.

As outlined in Section 3.2.3, moderate weekly alcohol consumption is defined as no more than 21 units for men, and no more than 14 units for women. Those who exceed the guideline on weekly consumption are commonly referred to as hazardous or harmful drinkers. Reported hazardous or harmful drinking declined between 2003 and 2013. In 2003, a third (33%) of men were classified as drinking at hazardous or harmful levels. This fell to a quarter (25%) in 2011 and 2012, and in 2013 just over a fifth (22%) of men fell into the hazardous/ harmful group. Similarly for women, 23% were drinking at hazardous or harmful levels in 2003; by 2010 this had fallen to 18%, and has remained at a similar level since then (16% in 2013). Changes between 2012 and 2013 were not statistically significant for either men or women.

Correspondingly, reported non-drinking increased between 2003 and 2013 for both sexes. In 2003, less than a tenth (8%) of men said that they did not drink alcohol. By 2010, 12% did, and it has remained at this level (11-12%) since then. Similarly, in 2003 and 2008 13% of women reported not drinking, rising to 16-17% between 2009 and 2012 and to 20% in 2013. **Figure 3A, Table 3.1**

Figure 3A
Percentage exceeding guidelines on weekly alcohol consumption
(over 21 units for men, over 14 units for women), 2003-2013, by sex



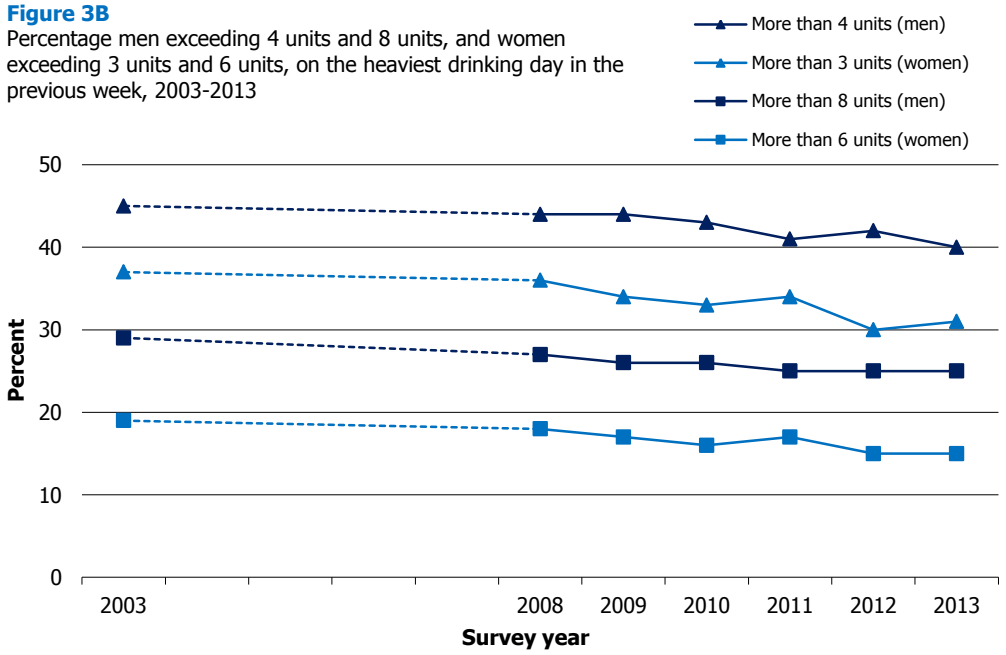
3.3.2 Trends in alcohol consumption on the heaviest drinking day in last week since 2003

Data were collected on the amount of alcohol consumed on the heaviest drinking day in the week prior to interview. This allows estimates for the proportion of the population exceeding recommended daily limits during the last week to be produced, along with the proportion binge drinking during the last week. These data are presented in Table 3.2 for 2003 onwards.

The mean number of units consumed by men on their heaviest drinking day in the previous week fell from 6.5 units in 2003 to 5.2 units in 2013. While these figures represent a decrease over the decade, the most recent figure is still in excess of the recommended daily maximum of 3-4 units for men. For women, daily consumption decreased from an average of 3.6 units in 2003 to 2.8 units in 2012 and 2013 – the latter figure being just under the recommended limit of no more than two to three units per day.

The percentage of men exceeding the recommended daily maximum of 3-4 units in any one day fell from 45% in 2003 to 40% in 2013. Similarly, the percentage of men consuming more than eight units per day (which is classified as binge drinking) declined from 29% in 2003 to 25% from 2011 onwards. Over the same period, the percentage of women exceeding their recommended limit no more than 2-3 units on their heaviest drinking day fell from 37% in 2003 to 30% in 2012 and 31% in 2013. Binge drinking prevalence among women (drinking more than six units a day) followed a similar trend over time falling from 19% in 2003 to 15% in 2012 and 2013. **Figure 3B, Table 3.2**

Figure 3B
Percentage men exceeding 4 units and 8 units, and women exceeding 3 units and 6 units, on the heaviest drinking day in the previous week, 2003-2013



3.3.3 Trends in adherence to weekly and daily drinking guidelines since 2003

In contrast with the results discussed in the previous sections, there has been little change in the proportion of adults adhering to the guidelines on weekly and/or daily drinking. The percentage of men drinking within the government guidelines ranged between 39% and 42% over the 2003-2013 period. Similarly, among women adherence was 45% in both 2003 and 2013, with little variation in the intervening period.

However, the percentage of the men drinking outwith the government guidelines on weekly and/or daily consumption fell significantly from 53% to 45% between 2003 and 2013; the equivalent figures for women were 42% and 35%, respectively.

The mismatch in the magnitude of change between those drinking outwith and within the recommended guidelines was largely explained by a shift in the proportion of adults classifying themselves as ex-drinkers. In 2003, 4% of men said they no longer drank, compared with 7% who reported this in 2013. Over the same period, the corresponding figure for women doubled from 5% to 10%. Prevalence of lifelong abstinence has remained stable over the last decade at around 5% for men and 7-10% for women. **Table 3.3**

3.3.4 Trend in number of days alcohol was consumed in the past week since 2003

The mean number of days on which male and female drinkers consumed alcohol in the previous week has declined since 2003 (Table 3.4). For male drinkers, the average fell from 3.3 days per week in 2003 to 2.8 days by 2013 (the same average number as in 2011 and 2012). The decline was less pronounced for female drinkers (2.7 days per week in 2003, compared with 2.4 days in 2013). The percentage of

male drinkers who drank on more than five days out of the previous seven fell from 20% in 2003 to 13% in 2011, and has remained at this level since then (12% in 2013). The equivalent figure for female drinkers was 13% in 2003, and has been 9-10% since 2008. **Table 3.4**

3.4 ESTIMATED CONSUMPTION, FREQUENCY AND ADHERENCE TO DRINKING GUIDELINES IN 2013, BY AGE AND SEX

3.4.1 Weekly alcohol consumption in 2013, by age and sex

Reported weekly alcohol consumption in 2013 is presented, in Table 3.5, by age and sex. In line with findings from previous years,[25,27] men consumed more units of alcohol per week than women (an average of 13.7 units, compared with 6.8 units), a pattern which was consistent across all age groups. Generally, for both men and women, those in the middle age groups had the highest reported average weekly consumption levels. For example, men aged 45-64 on average consumed between 15.3 and 17.1 units per week, compared with 8.2 to 13.5 units for men in other age groups.

Similar to the pattern for weekly unit consumption, across all age groups, hazardous or harmful drinking (drinking over the recommended weekly limits) was more prevalent among men than women in 2013 (22% and 16% respectively). The oldest age group (those aged 75 and over) were least likely to be hazardous or harmful drinkers (13% of men and 5% of women this age, compared with 19-29% of men under 75, and 13-21% of women under 75).

Correspondingly, in 2013, women were significantly more likely than men to report not drinking any alcohol (20%, compared with 12%); again, this was the case across all age groups. The proportion of adults describing themselves as a non-drinker also varied significantly by age, with those aged 25-44 least likely to do so. Just 7-9% of men aged 25-44 reported being a non-drinker, compared with 12-13% of those aged 45-74, and 24% of those aged 75 and above. The pattern for women was slightly different: 13-16% of those aged 25-64 described themselves as a non-drinker, compared with 27% of those aged 65-74 and 45% of those aged 75 and above. **Table 3.5**

3.4.2 Alcohol consumption on the heaviest drinking day in 2013, by age and sex

Table 3.5 also presents findings, for 2013, on the average number of units of alcohol consumed on the heaviest drinking day in the previous week. As with weekly consumption, men consumed more units of alcohol on their heaviest drinking day than women (an average of 5.2 units, compared with 2.8 units) and this higher level of consumption was true across all age groups.

Men were also more likely than women to exceed the government guideline on daily consumption. While four in ten (40%) men exceeded the recommended maximum of no more than 3-4 four units, just over three in ten (31%) women drank outwith their daily limit. In 2013, a quarter of men and 15% of women binge drank (more than 8 units for men and more than 6 units for women) on their heaviest drinking day.

The oldest men and women (aged 75 and over) were least likely to exceed their recommended daily maximum (13% of men and 6% of women this age did so). The corresponding figures for men and women in other age groups were much higher: 33-51% for men, and 21-40% for women. Binge drinking prevalence also varied significantly by age for both genders (Figure 3C & Figure 3D). Similar to weekly consumption, binge drinking prevalence was lowest among men and women aged 75 and over (3% and 1% respectively). Between 25% and 39% of men aged 16-64 binge drank on their heaviest drinking day, falling to 14% for those aged 65-74. Around a fifth of younger women (16-54) binge drank, dropping to 11% for those aged 55-64 and then to 5% for those aged 65-74. **Figure 3C, Figure 3D, Table 3.5**

Figure 3C

Percentage men who drank more than 4 units and more than 8 units on heaviest drinking day (HDD) in past week, 2013, by age

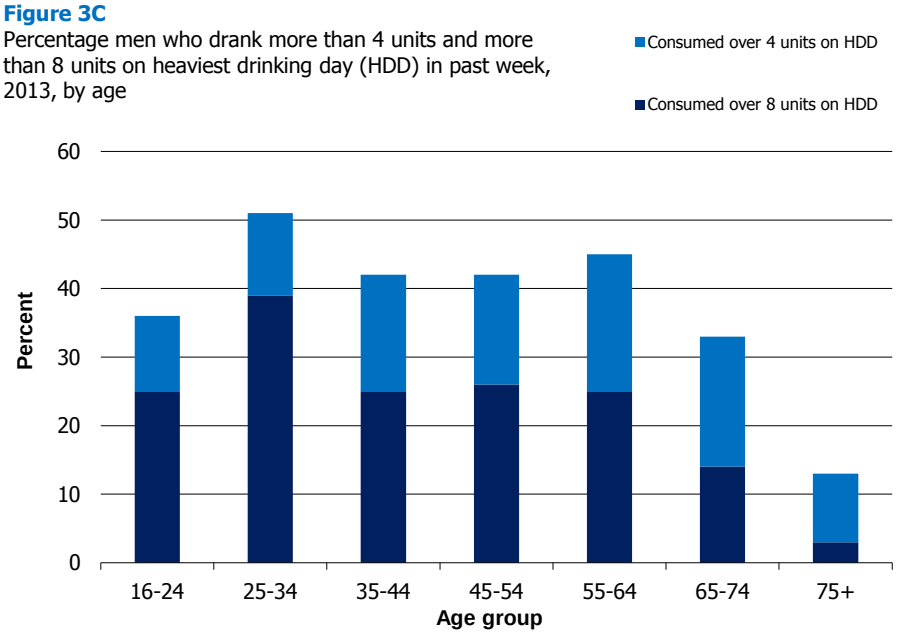
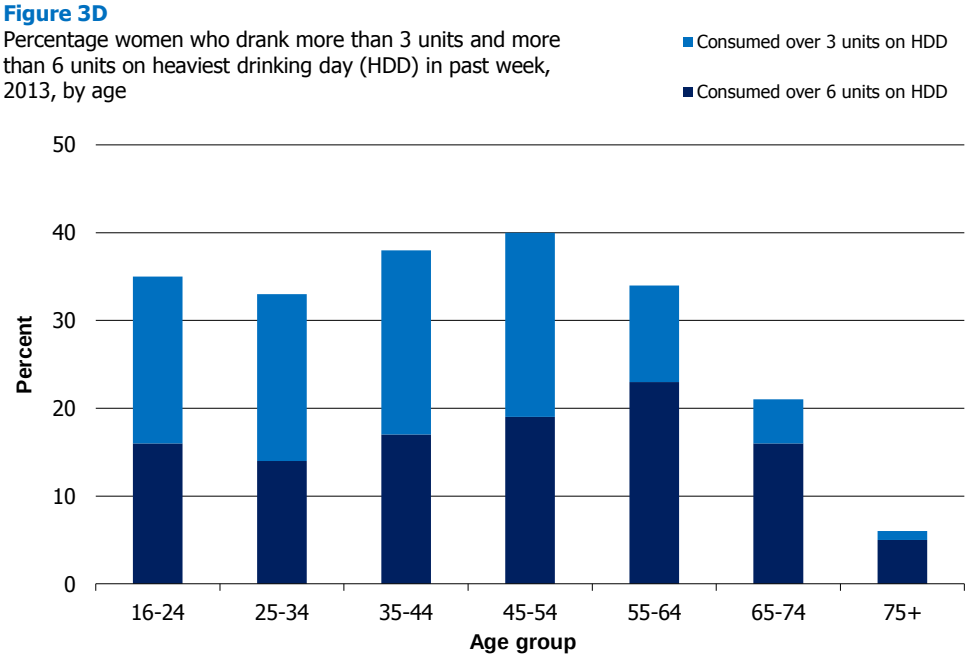


Figure 3D
Percentage women who drank more than 3 units and more than 6 units on heaviest drinking day (HDD) in past week, 2013, by age



3.4.3 Adherence to weekly and daily drinking guidelines in 2013, by age and sex

Concurrent with findings in previous reports,[25] at all ages, men were more likely than women to drink outwith the recommended guidelines on weekly and/or daily drinking (45%, compared with 35%) in 2013. For men, prevalence was greatest among those aged 25-64 (ranging from 47% to 55%), lower among those aged 16-24 (43%) and 65-74 (39%), and lowest for those aged 75 and over (21%). Between 37% and 43% of women aged 16-64 drank outwith the guidelines, compared with 25% of those aged 65-74 and just 9% of those aged 75 and over.

As expected, lifelong abstinence prevalence was high in the youngest age group (those aged 16 to 24) for both men (13%) and women (17%). However, abstinence was most common among women in the oldest age group (24% of those aged 75 and over). **Table 3.5**

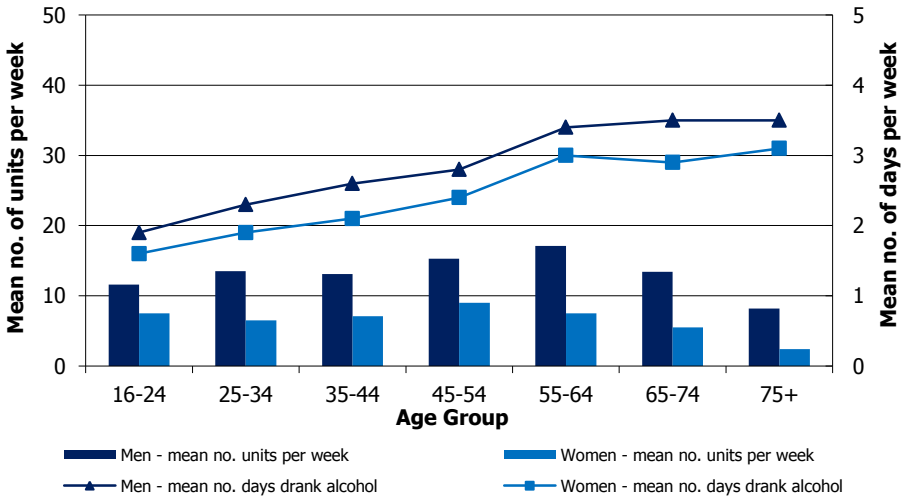
3.4.4 Number of days alcohol was consumed in past week in 2013, by age and sex

The average number of days on which drinkers consumed alcohol in the week prior to interview is also presented in Table 3.5. In 2013, male drinkers drank on an average of 2.8 days per week, significantly more than female drinkers (2.4 days). There was a clear age-related association to the number of days on which alcohol was consumed, with both frequency of drinking days, and the proportion drinking on more than 5 days of the week, increasing in line with age.

As shown in Figure 3E and Table 3.5, this pattern is somewhat at odds with the per capita mean number of alcohol units consumed per week, which was lowest among the oldest age groups. The interpretation is

that older drinkers consume smaller amounts with greater frequency, whereas younger drinkers are more likely to consume larger quantities in fewer drinking sessions. **Figure 3E, Table 3.5**

Figure 3E
Mean number of units of alcohol consumed per week (all adults), and mean number of days on which alcohol was consumed (drinkers only), 2013, by age and sex



3.5 DRINKING CATEGORY AND ESTIMATED WEEKLY ALCOHOL CONSUMPTION BY EQUIVALISED HOUSEHOLD INCOME

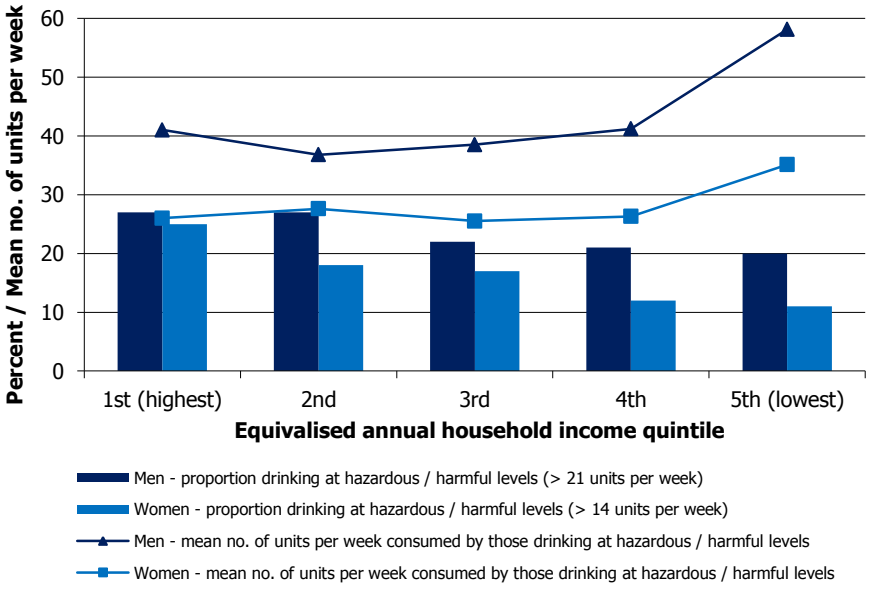
To increase the sample size available for analysis, the data from the 2012 and 2013 surveys have been combined to report weekly alcohol consumption by equivalised household income quintile (Table 3.6). It is, however, important to note that even with this combined sample, the bases for hazardous/harmful drinkers are relatively small so the mean unit estimates for those groups have wide confidence intervals. To ensure that the comparisons presented are not confounded by the different age profiles of the groups 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).

For both men and women, there was a significant and linear association between weekly alcohol consumption and equivalised household income. Those in the highest income households were the most likely to drink at hazardous or harmful levels (27% of men and 25% of women), whereas those on the lowest incomes were least likely to do so (20% of men and 11% of women).

Table 3.6 also presents average weekly unit consumption by drinking category, for each of the household income quintiles. Hazardous or harmful drinkers in the lowest household income quintile drank more, on average (58.1 units for men and 35.1 units for women), than hazardous or harmful drinkers in other income quintiles (whose average weekly consumption ranged from 36.8 to 41.2 units for men and 25.5 to 27.6 units for women). This suggests that while people in the lowest income households are less likely than their higher income counterparts to drink at hazardous or harmful levels, those who do, on average

consume a far higher number of units. This is in line with findings presented in previous reports.[27] **Figure 3F, Table 3.6**

Figure 3F
Percentage drinking at hazardous or harmful levels, and mean number of units of alcohol consumed per week by those drinking at hazardous or harmful levels, 2013, by equivalised annual household income and sex



3.6 AUDIT SCORES IN 2012/2013 COMBINED, BY AGE AND SEX

In addition to measuring daily and weekly alcohol consumption, assessment of hazardous and harmful drinking behaviour can also be determined using scores calculated from responses to the AUDIT questionnaire (see Section 3.2.4 for further details on the tool, including guidance on scoring). To increase the sample size available, the analysis presented in this chapter is based on data from the 2012 and 2013 surveys combined.

One percent of adults aged 16 and above had an AUDIT score of 20 or more in 2012/2013, indicating that they had possible dependence on alcohol (2% for men and 1% for women). Harmful drinking behaviour (an AUDIT score of 16-19) stood at 2% (2% for men and 1% for women), while hazardous drinking behaviour (an AUDIT score of 8-15) was identified in one in six (15%) adults (21% of men, 10% of women).

Two summary figures are also presented in Table 3.7, the first combines all those with an AUDIT score of 16 or above i.e. harmful and possibly dependent drinking behavior (3% of adults, 4% of men, 2% of women). The second presents all those with a score of 8 or above (18% of adults, 25% of men, 12% of women), i.e. hazardous, harmful or possibly dependent drinking behaviour.

Audit scores varied significantly by age for both men and women (Figures 3G and 3H). The proportion of men classified as either abstinent or low-risk drinkers increased from 60% of those aged 16-24 to 96% of those aged 75 or above. The equivalent figures for women were 73% and 100%, respectively. Prevalence of hazardous, harmful or possibly dependent drinking behaviour

was highest for those aged 16-24 (33% of adults) and decreased with age to just 2% for those aged 75 and over. This pattern was seen for both men and women. **Figure 3G, Figure 3H, Table 3.7**

Figure 3G
AUDIT scores for men, 2013, by age

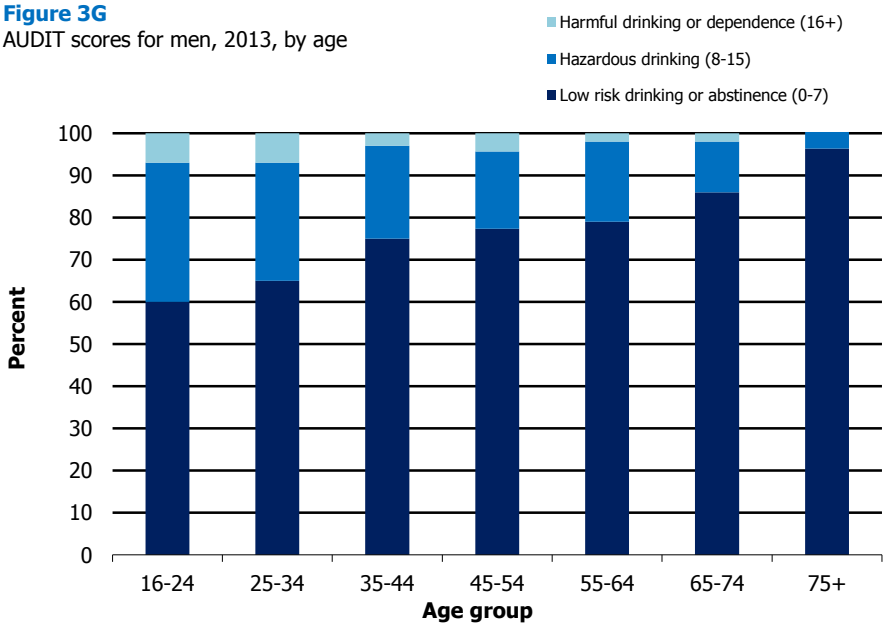
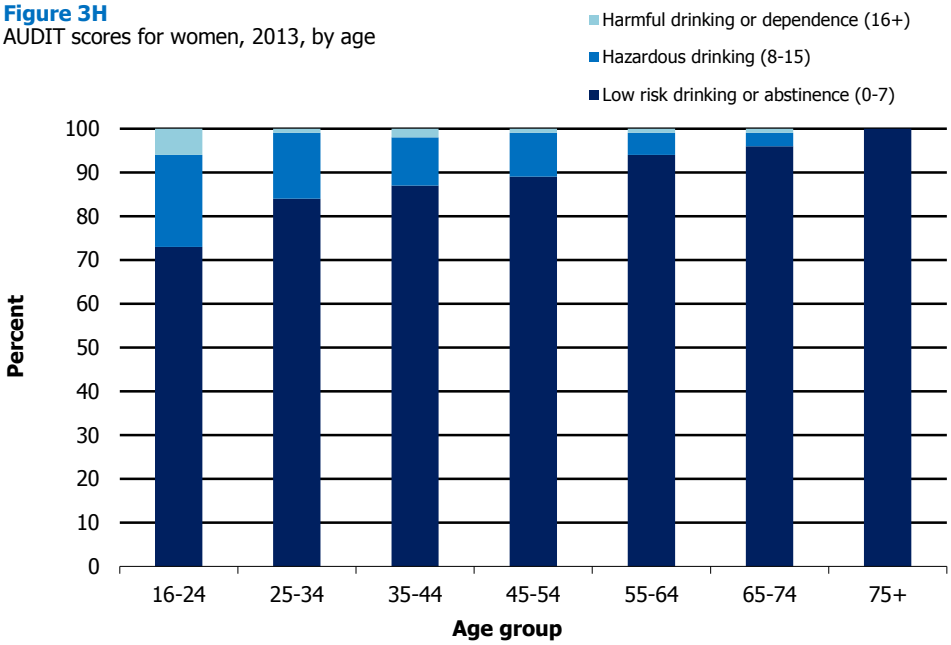


Figure 3H
AUDIT scores for women, 2013, by age



References and notes

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

[2] Grant, I., Springbett, A., and Graham, L. *Alcohol attributable mortality and morbidity: alcohol population attributable fractions for Scotland*, 2009. ISD Scotland/Scottish Public Health Observatory. <www.scotpho.org.uk/downloads/scotphoreports/scotpho090630_alcoholfractions_rep.pdf>

[3] http://www.scotpho.org.uk/behaviour/alcohol/data/health-harm

[4] http://www.isdscotland.org/Health-Topics/Drugs-and-Alcohol-Misuse/Publications/data-tables.asp?id=1203#1203

[5] Beeston C., Robinson M., Craig, N and Graham, L. *Monitoring and Evaluating Scotland's Alcohol Strategy. Setting the Scene: Theory of change and baseline picture*. Edinburgh: NHS Health Scotland; 2011. <www.healthscotland.com/documents/5072.aspx>

[6] Beeston, C., McAuley, A., Robinson, M., Craig, N., and Graham, L (on behalf of the MESAS project team). *Monitoring and Evaluating Scotland's Alcohol Strategy. 2nd Annual Report.* Edinburgh: NHS Health Scotland; 2012. <www.healthscotland.com/documents/6182.aspx>

[7] http://www.healthscotland.com/uploads/documents/22621-MESAS%203rd%20annual%20report%206.12.13.pdf

[8] Hope, A., Curran, J., Bell, G. & Platts, A. (2013). Unrecognised and under-reported: the impact of alcohol on people other than the drinker in Scotland. Glasgow, Scotland: Alcohol Focus Scotland. www.alcohol-focus-scotland.org.uk

[9] http://www.sps.gov.uk/Publications/Publication-5335.aspx

[10] Scottish Emergency Department Alcohol Audit (SEDAA) Group (2006a). *Understanding Alcohol Misuse in Scotland: Harmful Drinking: One: the size of the problem*. NHS Quality Improvement Scotland, Edinburgh.

[11] Changing Scotland's relationship with alcohol use: a discussion paper on our strategic approach. Scottish Government, 2008.

[12] http://www.scotland.gov.uk/Resource/0039/00395549.pdf

[13] York Health Economics Consortium. *The Societal Cost of Alcohol Misuse in Scotland for 2007.* Scottish Government; 2010. <www.scotland.gov.uk/Publications/2009/12/29122804/21>

[14] http://www.scotcen.org.uk/media/338791/ssa-2013-alcohol-report-final.pdf

[15] Further information on Scotland Performs can be found at : www.scotland.gov.uk/About/Performance/scotPerforms

[16] http://www.scotland.gov.uk/Publications/2009/03/04144703/0

[17] Alcohol (Minimum Pricing) (Scotland) Act 2012. See: http://www.legislation.gov.uk/asp/2012/4/pdfs/asp_20120004_en.pdf

[18] Meier, P., Meng, Y., Hill-McManus, D. and Brennan, A. *Model-Based Appraisal Of Alcohol Minimum Pricing And Off-Licensed Trade Discount Bans In Scotland Using The Sheffield Alcohol Policy Model (V 2):- Second Update Based On Newly Available Data*. University of Sheffield; 2012 Available from: <www.shef.ac.uk/polopoly_fs/1.156503!/file/scotlandjan.pdf>

[19] SPICe Briefing 12/34. 17 May 2012. *Alcohol (Minimum Pricing) (Scotland) Bill: Stage 3*. Scottish Parliament Information Centre. Available from: http://www.scottish.parliament.uk/ResearchBriefingsAndFactsheets/S4/SB_12-34.pdf

[20] Beeston C, Reid G, Robinson M, Craig N, McCartney G, Graham L, Grant I. *Monitoring and Evaluating Scotland's Alcohol Strategy*. Third Annual Report. Edinburgh: NHS Health Scotland; 2013.

[21] Maclennan B, Kypri K, Lamgley J, Room R. Non-response bias in a community survey of drinking, alcohol-related experiences and public opinion on alcohol policy. Drug Alcohol Depend 2012; 126 (1-2):189-94

[22] Caetano R. (2001) Non-response in alcohol and drug surveys: a research topic in need of further attention. Addiction 96:1541–5.

[23] Fartein Ask Torvik, Kamilla Rognmo, Kristian Tambs Alcohol use and mental distress as predictors of non-response in a general population health survey: the HUNT study. Soc Psychiatry Psychiatr Epidemiol. 2012 May; 47(5): 805–816. Published online 2011 May 5. doi: 10.1007/s00127-011-0387-3

[24] Robinson, M., Beeston, C.. *Monitoring and Evaluating Scotland's Alcohol Strategy (MESAS) – An update of alcohol sales and price band analyses*. Edinburgh: NHS Health Scotland; 2013. Available from: <www.healthscotland.com/documents/21782.aspx>

[25] www.scotland.gov.uk/scottishhealthsurvey

[26] https://gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf

[27] Reid, S. (2009). Chapter 3: Alcohol consumption. In Bromley, C., Bradshaw, P. and Given, L. [eds.] *The 2008 Scottish Health Survey – Volume 1: Main Report*. Edinburgh: Scottish Government. <www.scotland.gov.uk/Publications/2009/09/28102003/0>

[28] For participants aged 16 and 17, details on alcohol consumption were collected as part of a special smoking and drinking self-completion questionnaire. Some 18 and 19 year olds also completed the self-completion if the interviewer felt it was appropriate. For all other adult participants, the information was collected as part of the face-to-face interview. The method of estimating consumption follows that originally developed for use in the General Household Survey and is also used in the Health Survey for England. For six types of alcoholic drink (normal strength beer/lager/cider/shandy, strong beer/lager/cider, spirits/liqueurs, fortified wines, wine, and alcoholic soft drinks), participants were asked about how often they had drunk each one in the past twelve months, and how much they had usually drunk on any one day. The amount given to the latter question was converted into units of alcohol, with a unit equal to half a pint of normal strength beer/lager/cider/alcoholic soft drink, a single measure of spirits, one glass of wine, or one small glass of fortified wine. A half pint of strong beer/lager/cider was equal to 1.5 units. The number of units was then multiplied by the frequency to give an estimate of weekly consumption of each type of drink. The frequency multipliers were:

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. The results were then banded, using the same bands as the ones used in the 1995 Scottish Health Survey and in all years of the Health Survey for England. The bandings for men are as follows:

1 Under 1 unit (less than or equal to 0.50 units)

2 1-10 units (over 0.50 units, but less than or equal to 10.00 units)

4 Over 21-35 units (over 21.00 units, but less than or equal to 35.00 units)
5 Over 35-50 units (over 35.00 units, but less than or equal to 50.00 units)
6 Over 50 (over 50.00 units)
The bands for women were similar, but with breaks at 7, 14, 21 and 35 units, instead of 10, 21, 35 and 50.

[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] See for example the North West Public Health Observatory's Local Alcohol Profiles for England, which use these definitions - <www.nwph.net/alcohol/lape/>

[31] Babor, T.F., Higgins-Biddle, J.C., Saunders, J.B. and Monteiro, M.G. *AUDIT – The Alcohol Use Disorders Identification Test – Guidelines for Use in Primary Care, Second Edition.* Geneva: World Health Organization; 2001.

[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

Table list

Additional tables available on the survey website include:

- Frequency of drinking any alcoholic drink in the last 12 months, by age & key demographics
- Mean units consumed weekly, by age & key demographics
- Weekly drinking category, by age & key demographics
- Consumed more than 3/4 units on heaviest drinking day, by age & key demographics
- Consumed more than 6/8 units on heaviest drinking day, by age & key demographics
- Mean units consumed on heaviest drinking day, by age & key demographics
- Adherence to both weekly and daily guidelines, by age & key demographics
- Drank on 6 or more days a week, by age & key demographics
- Mean number of days in last week on which drank alcohol, by age & key demographics
- Alcohol Use Disorders Identification Test Score (AUDIT), by age & key demographics
- Alcohol Use Disorders Identification Test indicators (AUDIT), by age & key demographics
- Where drink alcohol most, by age & key demographics
- Who drink alcohol most with, by age & key demographics

Table 3.1 Estimated usual weekly alcohol consumption level, 2003 to 2013

Aged 16 and over *2003 to 2013*

Alcohol units per week	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%
Men							
Estimated usual weekly alcohol consumption level[a]							
Non-drinker	8	10	10	12	11	12	12
Moderate	58	59	63	61	64	63	65
Hazardous/Harmful	33	30	27	27	25	25	22
Mean units per week	19.8	18.0	17.5	16.0	15.0	15.2	13.7
SE of the mean	0.62	0.53	0.75	0.50	0.42	0.59	0.48
Women							
Estimated usual weekly alcohol consumption level[a]							
Non-drinker	13	13	16	17	17	17	20
Moderate	64	67	66	65	65	65	64
Hazardous/Harmful	23	20	19	18	18	18	16
Mean units per week	9.0	8.6	7.8	7.6	7.4	7.6	6.8
SE of the mean	0.31	0.34	0.24	0.24	0.23	0.33	0.25
All adults							
Estimated usual weekly alcohol consumption level[a]							
Non-drinker	11	12	13	15	14	15	16
Moderate	61	63	64	63	64	64	65
Hazardous/Harmful	28	25	23	22	21	21	19
Mean units per week	14.1	13.1	12.4	11.6	11.1	11.3	10.1
SE of the mean	0.36	0.34	0.40	0.29	0.27	0.35	0.29
Bases (weighted):							
Men	*3791*	*3011*	*3576*	*3388*	*3551*	*2253*	*2303*
Women	*4215*	*3319*	*3912*	*3711*	*3874*	*2464*	*2501*
All adults	*8006*	*6330*	*7488*	*7098*	*7425*	*4717*	*4805*
Bases (unweighted):							
Men	*3558*	*2796*	*3276*	*3064*	*3239*	*2095*	*2108*
Women	*4482*	*3579*	*4232*	*4076*	*4220*	*2657*	*2724*
All adults	*8040*	*6375*	*7508*	*7140*	*7459*	*4752*	*4832*

a Non-drinker: no units per week; Moderate: >0 units and up to 21 units for men / 14 units for women; Hazardous/harmful: more than 21 units for men / 14 units for women

Table 3.2 Estimated units consumed on heaviest drinking day, 2003 to 2013

Aged 16 and over *2003 to 2013*

Alcohol units per day	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%
Men							
Units consumed on heaviest drinking day (HDD)							
Consumed over 4 units on HDD	45	44	44	43	41	42	40
Consumed over 8 units on HDD	29	27	26	26	25	25	25
Mean units on HDD	6.5	6.2	5.9	6.0	5.5	5.6	5.2
SE of the mean	0.18	0.19	0.17	0.21	0.15	0.21	0.19
Women							
Units consumed on heaviest drinking day (HDD)							
Consumed over 4 units on HDD	37	36	34	33	34	30	31
Consumed over 8 units on HDD	19	18	17	16	17	15	15
Mean units on HDD	3.6	3.5	3.2	3.1	3.2	2.8	2.8
SE of the mean	0.10	0.14	0.09	0.09	0.09	0.11	0.10
All adults							
Units consumed on heaviest drinking day (HDD)							
Consumed over 4 units on HDD	41	40	39	38	37	36	35
Consumed over 8 units on HDD	24	22	21	21	20	20	19
Mean units on HDD	4.9	4.8	4.5	4.5	4.3	4.1	3.9
SE of the mean	0.12	0.13	0.10	0.12	0.10	0.13	0.12
Bases (weighted):							
Men	*3819*	*3015*	*3521*	*3386*	*3549*	*2264*	*2270*
Women	*4254*	*3320*	*3865*	*3710*	*3860*	*2460*	*2498*
All adults	*8073*	*6335*	*7385*	*7096*	*7409*	*4724*	*4768*
Bases (unweighted):							
Men	*3580*	*2801*	*3244*	*3066*	*3242*	*2104*	*2082*
Women	*4507*	*3579*	*4202*	*4083*	*4217*	*2659*	*2721*
All adults	*8087*	*6380*	*7446*	*7149*	*7459*	*4763*	*4803*

Table 3.3 Adherence to weekly and daily drinking guidelines, 2003 to 2013

Aged 16 and over *2003 to 2013*

Adherence to weekly and daily drinking guidelines[a,b]	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%
Men							
Never drunk alcohol	4	4	4	6	5	5	5
Ex drinker	4	6	6	7	6	7	7
Drinks within government guidelines[a]	39	39	41	39	42	41	42
Drinks outwith government guidelines[b]	53	51	49	49	46	47	45
Women							
Never drunk alcohol	9	7	8	9	9	9	10
Ex drinker	5	6	7	8	9	9	10
Drinks within government guidelines[a]	45	47	47	45	44	47	45
Drinks outwith government guidelines[b]	42	40	38	38	38	35	35
All adults							
Never drunk alcohol	7	6	6	7	7	7	8
Ex drinker	5	6	7	7	8	8	9
Drinks within government guidelines[a]	42	43	44	42	43	44	44
Drinks outwith government guidelines[b]	47	45	43	43	42	41	40
Bases (weighted):							
Men	*3769*	*2981*	*3519*	*3355*	*3520*	*2234*	*2240*
Women	*4203*	*3296*	*3862*	*3675*	*3827*	*2442*	*2469*
All adults	*7972*	*6277*	*7381*	*7030*	*7347*	*4677*	*4709*
Bases (unweighted):							
Men	*3543*	*2778*	*3242*	*3042*	*3222*	*2085*	*2061*
Women	*4469*	*3560*	*4199*	*4055*	*4192*	*2643*	*2702*
All adults	*8012*	*6338*	*7441*	*7097*	*7414*	*4728*	*4763*

a Drank no more than 4 units (men) or 3 units (women) on heaviest drinking day, and drank no more than 21 units (men) or 14 units (women) in usual week

b Drank more than 4 units (men) or 3 units (women) on heaviest drinking day, and/or drank more than 21 units (men) or 14 units (women) in usual week

Table 3.4 Number of days on which drank alcohol in the past week, 2003 to 2013

Aged 16 and over and drank alcohol in past week *2003 to 2013*

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

a Of those who drank alcohol in the last week

Table 3.5 Estimated usual weekly alcohol consumption level, units consumed on heaviest drinking day, adherence to weekly and daily drinking guidelines and number of days on which drank alcohol in the past week, 2013, by age and sex

Aged 16 and over *2013*

Alcohol units per week[a] / alcohol units per day / adherence to weekly and daily drinking guidelines[b,c] / % who drank on >5 days / mean number of days drank alcohol in last week[d]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Estimated usual weekly alcohol consumption level[a]								
Non-drinker	15	7	9	12	13	13	24	12
Moderate	66	68	71	65	58	66	63	65
Hazardous/Harmful	19	24	20	23	29	21	13	22
Mean units per week	11.6	13.5	13.1	15.3	17.1	13.4	8.2	13.7
SE of the mean	1.32	1.05	1.05	1.30	1.29	1.07	0.90	0.48
Units consumed on heaviest drinking day (HDD)								
Consumed over 4 units on HDD	36	51	42	42	45	33	13	40
Consumed over 8 units on HDD	25	39	25	26	25	14	3	25
Mean units on HDD	5.1	7.5	5.4	5.6	5.3	3.6	1.9	5.2
SE of the mean	0.65	0.69	0.40	0.40	0.34	0.26	0.20	0.19
Adherence to weekly and daily drinking guidelines								
Never drunk alcohol	13	4	5	4	3	2	9	5
Ex drinker	2	4	3	8	11	11	15	7
Drinks within government guidelines[b]	42	37	45	40	37	48	55	42
Drinks outwith government guidelines[c]	43	55	47	48	49	39	21	45
Number of days on which drank alcohol in the past week[d]								
Drank on >5 days	3	4	7	11	22	24	29	12
Mean number of days	1.9	2.3	2.6	2.8	3.4	3.5	3.5	2.8
SE of the mean	0.13	0.10	0.12	0.13	0.15	0.17	0.24	0.06

Continued…

Table 3.5 - *Continued*

Aged 16 and over *2013*

Alcohol units per week[a] / alcohol units per day / adherence to weekly and daily drinking guidelines[b,c] / % who drank on >5 days / mean number of days drank alcohol in last week[d]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Women								
Estimated usual weekly alcohol consumption level[a]								
Non-drinker	20	13	14	16	15	27	45	20
Moderate	65	73	69	64	66	59	50	64
Hazardous/Harmful	15	14	18	21	19	13	5	16
Mean units per week	7.5	6.5	7.1	9.0	7.5	5.5	2.4	6.8
SE of the mean	0.97	0.51	0.47	0.76	0.58	0.58	0.34	0.25
Units consumed on heaviest drinking day (HDD)								
Consumed over 4 units on HDD	35	33	38	40	34	21	6	31
Consumed over 8 units on HDD	19	19	21	21	11	5	1	15
Mean units on HDD	3.2	3.3	3.6	3.5	2.6	1.7	0.7	2.8
SE of the mean	0.40	0.30	0.27	0.20	0.18	0.15	0.09	0.10
Adherence to weekly and daily drinking guidelines								
Never drunk alcohol	17	7	7	5	5	12	24	10
Ex drinker	4	6	7	11	11	16	21	10
Drinks within government guidelines[b]	39	49	44	41	47	47	46	45
Drinks outwith government guidelines[c]	40	37	42	43	38	25	9	35
Number of days on which drank alcohol in the past week[d]								
Drank on >5 days	-	2	4	7	17	18	24	9
Mean number of days	1.6	1.9	2.1	2.4	3.0	2.9	3.1	2.4
SE of the mean	0.09	0.10	0.10	0.11	0.15	0.18	0.29	0.05

Continued…

Table 3.5 - *Continued*

Aged 16 and over *2013*

Alcohol units per week[a] / alcohol units per day / adherence to weekly and daily drinking guidelines[b,c] / % who drank on >5 days / mean number of days drank alcohol in last week[d]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
Estimated usual weekly alcohol consumption level[a]								
Non-drinker	18	10	11	14	14	21	36	16
Moderate	65	71	70	64	62	62	55	65
Hazardous/Harmful	17	19	19	22	24	17	8	19
Mean units per week	9.6	9.9	10.0	12.1	12.2	9.3	4.8	10.1
SE of the mean	0.80	0.62	0.58	0.88	0.78	0.67	0.47	0.29
Units consumed on heaviest drinking day (HDD)								
Consumed over 4 units on HDD	35	42	40	41	39	26	9	35
Consumed over 8 units on HDD	22	29	23	23	18	9	2	19
Mean units on HDD	4.1	5.3	4.5	4.5	3.9	2.6	1.2	4.0
SE of the mean	0.39	0.42	0.26	0.25	0.21	0.17	0.11	0.12
Adherence to weekly and daily drinking guidelines								
Never drunk alcohol	15	6	6	4	4	7	18	8
Ex drinker	3	5	5	10	11	14	19	9
Drinks within government guidelines[b]	40	44	44	41	42	47	50	44
Drinks outwith government guidelines[c]	41	46	44	45	43	32	14	40
Number of days on which drank alcohol in the past week[d]								
Drank on >5 days	2	3	5	9	20	21	27	11
Mean number of days	1.8	2.1	2.3	2.6	3.2	3.3	3.3	2.6
SE of the mean	0.08	0.08	0.09	0.09	0.12	0.13	0.19	0.04

Continued…

Table 3.5 - *Continued*

Aged 16 and over *2013*

Alcohol units per week[a] / alcohol units per day / adherence to weekly and daily drinking guidelines[b,c] / % who drank on >5 days / mean number of days drank alcohol in last week[d]	**Age**							**Total**
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men: alcohol units per week	*309*	*362*	*387*	*435*	*365*	*267*	*178*	*2303*
Men: alcohol units per day	*300*	*358*	*383*	*428*	*356*	*266*	*178*	*2270*
Men: adherence to weekly and daily drinking guidelines	*280*	*350*	*383*	*428*	*355*	*265*	*178*	*2240*
Men: number of days drank alcohol in last week	*189*	*263*	*263*	*295*	*256*	*173*	*99*	*1538*
Women: alcohol units per week	*298*	*386*	*412*	*460*	*381*	*303*	*263*	*2501*
Women: alcohol units per day	*308*	*380*	*409*	*456*	*382*	*300*	*263*	*2498*
Women: adherence to weekly and daily drinking guidelines	*286*	*376*	*407*	*455*	*381*	*300*	*263*	*2469*
Women: number of days drank alcohol in last week	*150*	*188*	*243*	*277*	*219*	*130*	*78*	*1285*
All adults: alcohol units per week	*607*	*748*	*798*	*895*	*746*	*570*	*441*	*4805*
All adults: alcohol units per day	*608*	*738*	*792*	*884*	*738*	*567*	*441*	*4768*
All adults: adherence to weekly and daily drinking guidelines	*566*	*726*	*791*	*884*	*736*	*566*	*441*	*4709*
All adults: number of days drank alcohol in last week	*339*	*451*	*506*	*571*	*475*	*303*	*177*	*2823*
Bases (unweighted):								
Men: alcohol units per week	*187*	*305*	*339*	*393*	*351*	*316*	*217*	*2108*
Men: alcohol units per day	*184*	*303*	*335*	*385*	*343*	*315*	*217*	*2082*
Men: adherence to weekly and daily drinking guidelines	*172*	*297*	*335*	*385*	*341*	*314*	*217*	*2061*
Men: number of days drank alcohol in last week	*115*	*214*	*233*	*267*	*245*	*200*	*118*	*1392*
Women: alcohol units per week	*221*	*416*	*431*	*538*	*441*	*373*	*304*	*2724*
Women: alcohol units per day	*228*	*412*	*430*	*535*	*441*	*371*	*304*	*2721*
Women: adherence to weekly and daily drinking guidelines	*216*	*409*	*428*	*534*	*440*	*371*	*304*	*2702*
Women: number of days drank alcohol in last week	*97*	*201*	*248*	*320*	*246*	*153*	*89*	*1354*
All adults: alcohol units per week	*408*	*721*	*770*	*931*	*792*	*689*	*521*	*4832*
All adults: alcohol units per day	*412*	*715*	*765*	*920*	*784*	*686*	*521*	*4803*
All adults: adherence to weekly and daily drinking guidelines	*388*	*706*	*763*	*919*	*781*	*685*	*521*	*4763*
All adults: number of days drank alcohol in last week	*212*	*415*	*481*	*587*	*491*	*353*	*207*	*2746*

a Non-drinker: no units per week; Moderate: >0 units and up to 21 units for men / 14 units for women; Hazardous/harmful: more than 21 units for men / 14 units for women

b Drank no more than 4 units (men) or 3 units (women) on heaviest drinking day, and drank no more than 21 units (men) or 14 units (women) in usual week

c Drank more than 4 units (men) or 3 units (women) on heaviest drinking day, and/or drank more than 21 units (men) or 14 units (women) in usual week

d Of those who drank alcohol in the last week

Table 3.6 Estimated usual weekly alcohol consumption level, 2012/2013 combined, (age-standardised), by equivalised household income quintile and sex, mean units by drinking category, equivalised household income quintile and sex

Aged 16 and over *2012/2013 combined*

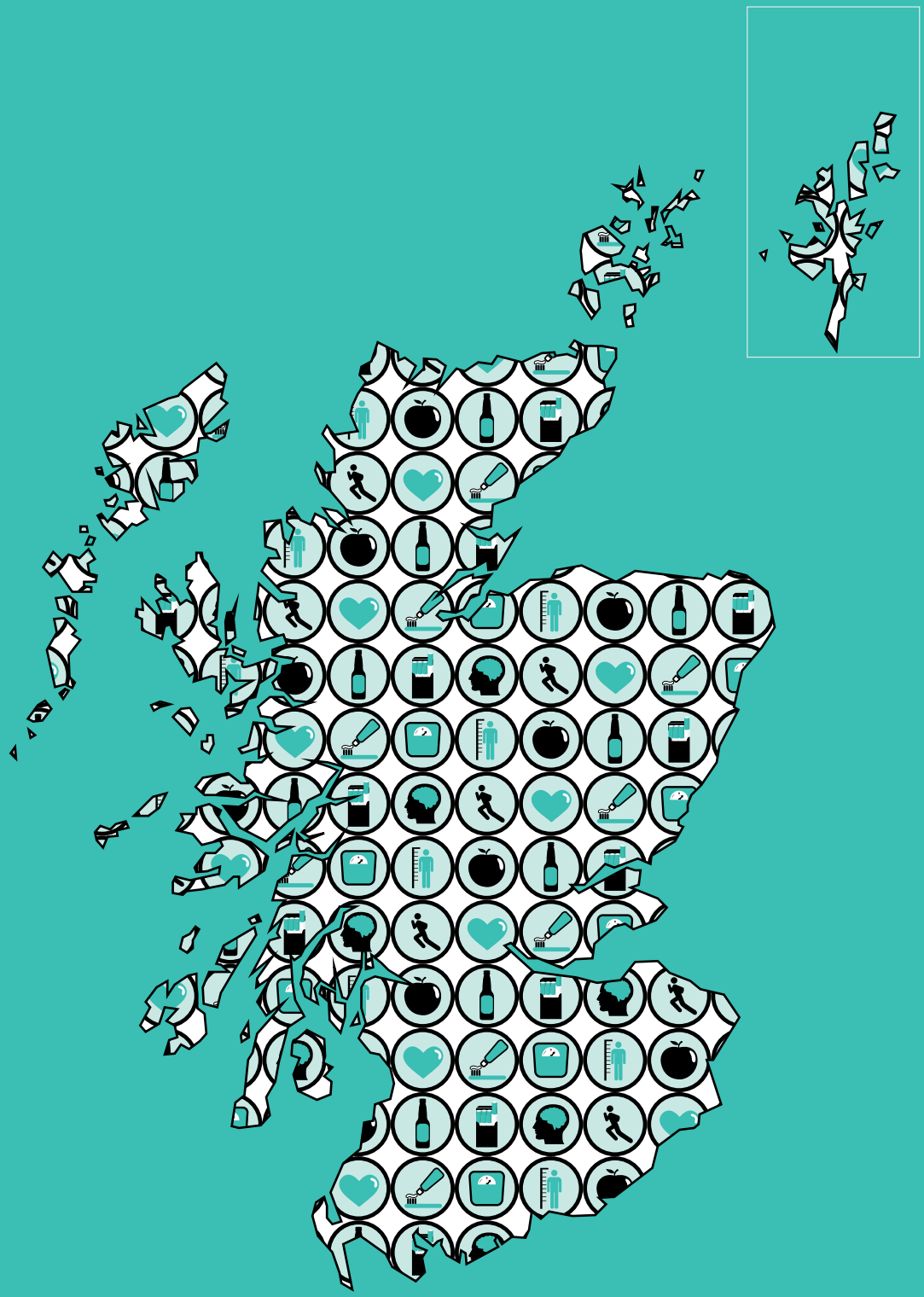
Drinking category[a]/ Units per week	Equivalised annual household income quintile				
	1st (highest)	2nd	3rd	4th	5th (lowest)
	%	%	%	%	%
Men					
Non-drinker	5	7	11	14	24
Moderate	69	65	67	65	56
Hazardous/Harmful	27	27	22	21	20
Mean units					
Moderate	8.6	7.2	7.5	6.7	6.6
Hazardous/Harmful	41.0	36.8	38.5	41.2	58.1
SE of the mean					
Moderate	0.32	0.31	0.38	0.38	0.42
Hazardous/Harmful	1.71	1.10	2.14	2.80	5.01
Women					
Non-drinker	11	12	16	21	27
Moderate	64	70	66	67	62
Hazardous/Harmful	25	18	17	12	11
Mean units					
Moderate	4.8	4.2	4.0	3.8	3.5
Hazardous/Harmful	26.0	27.6	25.5	26.3	35.1
SE of the mean					
Moderate	0.22	0.19	0.18	0.20	0.21
Hazardous/Harmful	1.06	2.06	1.21	1.61	3.01
Bases (weighted):					
Men	*929*	*913*	*704*	*674*	*632*
Men: moderate	*637*	*598*	*472*	*435*	*352*
Men: hazardous/harmful	*250*	*248*	*155*	*145*	*127*
Women	*842*	*826*	*799*	*854*	*810*
Women: moderate	*539*	*577*	*529*	*574*	*501*
Women: hazardous/harmful	*211*	*151*	*138*	*102*	*92*
Bases (unweighted):					
Men	*839*	*824*	*693*	*685*	*589*
Men: moderate	*561*	*544*	*455*	*444*	*329*
Men: hazardous/harmful	*228*	*220*	*150*	*132*	*122*
Women	*900*	*905*	*900*	*982*	*870*
Women: moderate	*578*	*633*	*620*	*636*	*534*
Women: hazardous/harmful	*246*	*173*	*143*	*103*	*101*

a Non-drinker: no units per week; Moderate: >0 but <21 (men) or <14 (women) units; Hazardous: >=21 but <51 (men) or >=14 but <36 (women) units; Harmful: >=51 (men) or >=36 (women) units

Table 3.7 AUDIT scores, 2012/2013 combined, by age and sex

Aged 16 and over *2012/2013 combined*

AUDIT	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Low risk drinking or abstinence (0-7)	60	65	75	77	79	86	96	75
Hazardous drinking (8-15)	33	28	22	18	19	12	4	21
Harmful drinking (16-19)	5	5	2	2	1	1	-	2
Possible alcohol dependence (20+)	2	2	2	2	1	1	0	2
Score of 8 or more	*40*	*35*	*25*	*23*	*21*	*14*	*4*	*25*
Score of 16 or more	*7*	*7*	*3*	*4*	*2*	*2*	*0*	*4*
Women								
Low risk drinking or abstinence (0-7)	73	84	87	89	94	96	100	88
Hazardous drinking (8-15)	21	15	11	10	5	3	0	10
Harmful drinking (16-19)	3	0	1	1	0	0	-	1
Possible alcohol dependence (20+)	3	0	1	0	0	0	-	1
Score of 8 or more	*27*	*16*	*13*	*11*	*6*	*4*	*0*	*12*
Score of 16 or more	*6*	*1*	*2*	*1*	*1*	*1*	*-*	*2*
All adults								
Low risk drinking or abstinence (0-7)	67	75	81	83	87	91	98	82
Hazardous drinking (8-15)	27	21	16	14	12	7	2	15
Harmful drinking (16-19)	4	2	1	1	0	1	-	2
Possible alcohol dependence (20+)	2	1	1	1	1	1	0	1
Score of 8 or more	*33*	*25*	*19*	*17*	*13*	*9*	*2*	*18*
Score of 16 or more	*7*	*4*	*3*	*3*	*1*	*1*	*0*	*3*
Bases (weighted):								
Men	*584*	*656*	*686*	*795*	*653*	*483*	*282*	*4140*
Women	*577*	*715*	*757*	*840*	*700*	*543*	*436*	*4567*
All adults	*1160*	*1371*	*1443*	*1635*	*1354*	*1026*	*718*	*8708*
Bases (unweighted):								
Men	*333*	*483*	*621*	*743*	*643*	*636*	*357*	*3816*
Women	*413*	*696*	*844*	*962*	*815*	*690*	*529*	*4949*
All adults	*746*	*1179*	*1465*	*1705*	*1458*	*1326*	*886*	*8765*



Chapter 4

Smoking

4 SMOKING

Linsay Gray and Alastair H Leyland

SUMMARY

Smoking prevalence

- In 2013 one in five (21%) of adults reported that they smoked cigarettes. Men remain significantly more likely than women to smoke (23%, compared with 20%). Prevalence was highest among those aged 25 to 54 (24-25%).
- The decline in cigarette smoking continued in 2013, with a significant drop in the percentage of adults aged 16 and over reporting that they smoked cigarettes since 2012 (from 25% to 21%). The decline between 2012 and 2013 is not matched by a decline in the figures reported by the Scottish Household Survey (SHS). Future years of data from both surveys will be required to determine whether this reduction is due to sampling variation or represents a true decrease in the last year.
- Smokers, on average, smoked 13.0 cigarettes per day (13.5 for men and 12.4 for women), with those aged 65 to 74 smoking the most per day (average 17.0 cigarettes). The average number of cigarettes smoked per day by smokers aged 16-64 declined from 16.7 cigarettes per day in 1995 to 12.7 in 2013.
- Once an objective measure of smoking (salivary cotinine) was adjusted for, current cigarette smoking prevalence in 2012/2013 was 27%, four percentage points higher than the estimate based on self-report data only (23% in 2012/2013). The adjusted estimate was the same as in 2008-2011.

Children's exposure to tobacco smoke in the home

- A new target has been set to reduce children's reported exposure to second-hand tobacco smoke in the home from 12% (the figure in 2012) to 6% by 2020. The figure for 2013, 11%, was not significantly different to the percentage exposed in 2012 (12%). Exposure levels varied significantly by age in 2013, with lower reported exposure among younger children.

Non-smokers exposure to tobacco smoke

- One in seven (14%) non-smoking adults reported being exposed to second-hand smoke in their own or in someone else's home in 2013, while 17% reported being exposed to smoke in any public place.
- Non-smokers' (aged 16-74) exposure to tobacco smoke in their own or others' homes has declined over the years (from 33% in 1998 to 15% in 2013) but did not change significantly between 2012 and 2013.
- Exposure levels were similar for men and women. Younger non-smokers remain most likely to be exposed to second-hand smoke in their own or someone else's home (31% of non-smokers aged 16-24), and in any public place (35% of non-smokers aged 16-24).
- An objective measure of tobacco exposure is also collected on the survey. The cotinine levels in the saliva samples collected from participants confirmed that there has been a decline in male and female non-smokers exposure to tobacco over the last decade (geometric mean cotinine levels of 0.40ng/ml in 2003 and 0.08ng/ml in 2012/2013). The decline between 2010/2011 and 2012/2013 was also statistically significant.

4.1 INTRODUCTION

4.1.1 Policy background

Reducing smoking is a major priority for improving health in Scotland. Cigarette smoking is the world's leading cause of preventable poor health and premature death.[1] In Scotland, tobacco use is associated with over 13,000 deaths (around a quarter of all deaths) and around 56,000 hospital admissions every year.[2]

Two of the Scottish Government's **National Performance Framework** (NPF) National Indicators are relevant to smoking.[3] There is a specific indicator on reducing the proportion of adults who are current smokers, as well as a more general indicator on reducing premature mortality (deaths from all causes in those aged under 75)[4] for which smoking is a significant contributory factor.

The Scottish Government launched its **Tobacco Control Strategy** in March 2013,[5] outlining the intention to create a 'tobacco-free generation' (defined as 'a smoking prevalence among the adult population of 5% or lower') by 2034. Themes covered in the strategy include health inequalities, prevention, protection and cessation, and a range of actions up until 2018 are set out.

One of the 46 actions in the Strategy was to establish a target to reduce the proportion of children exposed to second-hand smoke in the home. The target, announced in March 2014, is to reduce children's exposure from 12% to 6% by 2020; progress towards it will be monitored using data from the Scottish Health Survey (SHeS). A further action was to develop a new NHS Scotland HEAT target[6] to succeed the target on the provision of smoking cessation services, which ended in March 2014 and saw approximately 125,000 successful 'quits' at one month post quit since April 2011[7], including more than 70,000 in the 40% most deprived areas. The new target is to achieve at least 12,000 successful quits at twelve weeks post quit, in the 40% most deprived areas within each NHS Health Board (60% for island boards) over the one year ending March 2015.

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

Good quality data on smoking behaviour and exposure to second-hand smoke are important for monitoring trends relevant to the Strategy. The SHeS data presented in this chapter complement the data provided by the Scottish Household Survey[8] which is used to measure the current NPF indicator on reducing smoking amongst adults. The chapter presents figures for prevalence of smoking among adults aged 16 and over, and for non-smokers' and children's exposure to second-hand smoke. Two sources of data are used: self-reported information and direct objective assessment of smoking status and second-hand smoke exposure via cotinine in saliva samples.

4.1.3 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 countries within the UK. A Government Statistical Service publication on the comparability of official statistics across the UK advises that the smoking prevalence estimates across these surveys are only partially comparable as they are conducted separately and have different sampling methodologies.[9] Smoking prevalence estimates from UK-wide Integrated Household Survey for Scotland, Wales, England and Northern Ireland have been deemed as fully comparable.

4.2 METHODS AND DEFINITIONS

4.2.1 Questions on smoking

Questions on smoking have been included on SHeS since 1995.[10] Some small changes made to the questions in 2008 and 2012 are outlined in the relevant annual reports.[11,12]

The questions included 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,
- desire to give up smoking, and
- medical advice on giving up smoking.

4.2.2 Methods of data collection

For adults aged 16 and 17 information on cigarette smoking is collected via a paper self-completion questionnaire, offering them privacy to answer without disclosing their smoking behaviour in front of other household members. At the interviewer's discretion, those aged 18 and 19 can either answer the questions in the self-completion booklet or as part of the main interview. For adults aged 20 and over information is collected as part of the main face to face CAPI interview. The questions included in the self-completion questionnaire and the main interview are mostly similar. However, the self-completion questionnaire excludes questions on: past smoking behaviour, desire to give up smoking and medical advice to stop smoking.

4.2.3 Cotinine

Since its inception in 1995, SHeS has been collecting saliva samples to assess people's cotinine levels. Cotinine, a derivative of nicotine, is an objective measure of smoking and exposure to second-hand smoke. Levels above a certain threshold (12ng/ml) indicate that someone has

smoked recently, while levels below the threshold are a measure of exposure to second-hand smoke.

Inclusion of cotinine assessment in the survey allows for an objective cross-check on self-reported smoking behaviour which is known to under-estimate prevalence. Inaccuracies in reporting arise in part from difficulties participants may experience in providing quantitative summaries of variable behaviour patterns, but in some cases arise from a desire to conceal the truth from others, including other household members who may be present during the interview. SHeS is the only data source in Scotland to provide a validated measure of self-reported smoking for the adult population.

All adults aged 16 years and over who took part in the biological module[13] were asked to provide a saliva sample in order to measure cotinine levels. Between 1995 and 2011, saliva samples were collected by a nurse. The change, in 2012, from nurse to interviewer administered sample collection should not affect comparability over time, as the collection and analysis procedures did not change. The protocol for collecting saliva samples is included in Annex B, Volume 2 of this report.

To increase the sample size available for analysis, the figures presented in this chapter are based on data from the 2012 and 2013 surveys combined.

4.2.4 Definitions

The following classifications are used in this chapter:

- Current smoking status based on self-report: current smoker, ex-regular smoker, never regular smoker/never smoked at all.
- Mean number of cigarettes smoked by current smokers: this is measured as number per smoker per day, based on self-report.
- Current smoking status with cotinine adjustment: current smokers, based on self-report, and anyone else with a saliva cotinine level in excess of 12ng/ml are classed as current smokers; non-smokers are those who do not currently smoke, based on self-report, and have a saliva cotinine level below 12ng/ml.

The question on non-smokers' exposure to second-hand smoke was updated in 2012 to include exposure outside buildings (e.g. shops, pubs and hospitals), and in cars. In addition, questions on exposure on public transport and in pubs were dropped in light of the very low level of exposure reported in these places (following the ban on smoking in these locations).

Children’s exposure to second-hand smoke is measured in two ways on the survey:

- Whether there is someone who regularly smokes inside the accommodation where the child lives, as reported in the household questionnaire; and
- Parents' and older children's (aged 13-15) reports of whether the child is exposed to smoke at home.

The second of these measures is being used to monitor progress towards the target to reduce children's exposure to smoke at home to 6% by 2020.

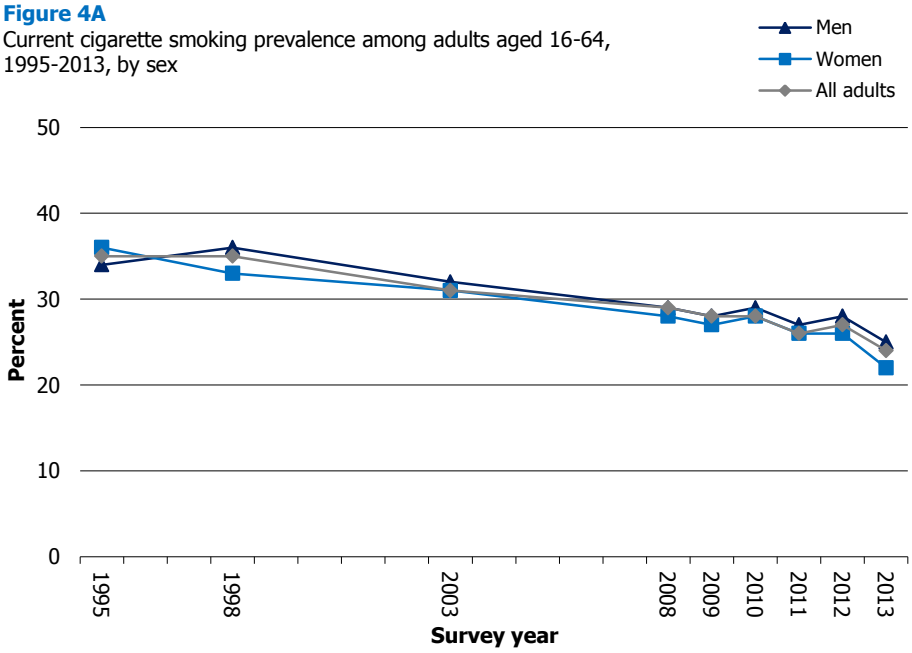
4.3 TRENDS IN SMOKING PREVALENCE SINCE 1995

Data on the self-reported cigarette smoking status of adults aged 16-64, between 1995 and 2013, are presented in Table 4.1, alongside data on the smoking status of all adults aged 16 and over since 2003.

Since 1995, cigarette smoking among adults aged 16-64 has declined significantly (from 35% to 24% in 2013), mainly due to a significant drop in prevalence between 1995 and 2008 (from 35% to 29%) and, then again, between 2012 and 2013 (from 27% to 24%). The decline in cigarette smoking has been apparent for both men and women. For men, prevalence declined by 9 percentage points (from 34% to 25%) between 1995 and 2013. There has been an even more pronounced drop of 14 percentage points for women aged 16-64 over this same period (from 36% to 22%). The drop in prevalence between 2012 and 2013 was statistically significant for women aged 16-64 (26% to 22%) but not for men

The decline, since 1995, in cigarette smoking levels corresponded with an overall increase in the proportion of 16-64 year olds reporting that they had never smoked or had never smoked regularly (49% in 1995 and 56% in 2013). The percentage of adults aged 16-64 describing themselves as ex-regular smokers also significantly increased between 1995 and 2013 (from 17% to 20%), with some minor fluctuation in intervening years. The trends for never smoked, never regularly smoked and ex-regular smoking were similar for men and women over this period. **Figure 4A, Table 4.1**

Figure 4A
Current cigarette smoking prevalence among adults aged 16-64, 1995-2013, by sex



Smoking trends for men and women aged 16 and over since 2003 were similar to those discussed above for 16-64 year olds (Table 4.1). The percentage of all adults reporting that they were current cigarette smokers declined significantly between 2012 and 2013 (from 25% to 21%). Levels also dropped significantly for women over this period (from 24% to 20%) but not for men (from 25% to 23%).

The decline in smoking prevalence between 2012 and 2013 is not matched by a decline in the figures reported by the Scottish Household Survey (SHS), which (as outlined in Section 4.1) is used to monitor the National Performance Framework National indicator "to reduce the percentage of adults who smoke." Future years of data from both surveys will be required to determine whether this reduction is due to sampling variation or represents a true decrease in the last year.

The proportion of adults aged 16 and over who had never smoked or had never smoked regularly increased from 50% in 2003 to 54% in 2013, while the proportion describing themselves as ex-regular smokers changed little between 2003 and 2013 (22-24%). Patterns in cigarette smoking were largely similar for men and women aged 16 and over between 2003 and 2013.

In addition to the decline in smoking prevalence over time, there has also been a steady and significant drop in the mean number of cigarettes smoked by self-reported smokers aged 16-64 (from 16.7 cigarettes per day in 1995 to 12.7 cigarettes per day in 2013). The reduction in mean cigarettes smoked has been more pronounced for men aged 16-64 (from 18.1 cigarettes per day in 1995 to 13.1 cigarettes in 2013) than for women (15.4 and 12.2 cigarettes per day, respectively). The decline observed between 2012 and 2013 was only statistically significant for male smokers aged 16-64 (from 14.7 cigarettes per day to 13.1).

Since 2003, there has also been a significant decline in the mean number of cigarettes smoked per day by all smokers aged 16 and over (from 15.3 cigarettes to 13.0 cigarettes in 2013). **Table 4.1**

4.4 SMOKING PREVALENCE IN 2013

4.4.1 Smoking prevalence in 2013, by age and sex

Data on the self-reported cigarette smoking status of adults aged 16 and over in 2013 are shown, by age and sex, in Table 4.2. In 2013, men were significantly more likely than women to be current cigarette smokers (23% compared with 20%). Around one in four (24% of all adults, 25% of men and 23% of women) reported that they used to smoke cigarettes regularly, while over half (54%) had either never smoked cigarettes at all or used to smoke them, but not regularly. Women were more likely than men to report having never smoked or having never smoked regularly (57%, compared with 51%).

Table 4.2, Figure 4B and Figure 4C highlight the marked variations in cigarette smoking status by age, noted in previous SHeS reports.[11,12] In 2013, cigarette smoking prevalence was highest among those aged 25-54 (24-25%) and lowest among those aged 75 and over (11%). Prevalence estimates for the remaining age groups ranged between 16% and 23%. The overall tendency for lower smoking prevalence among the oldest age group (75 and over) was true for both men (9%) and women (11%).

Figure 4B
Men's cigarette smoking status, 2013, by age

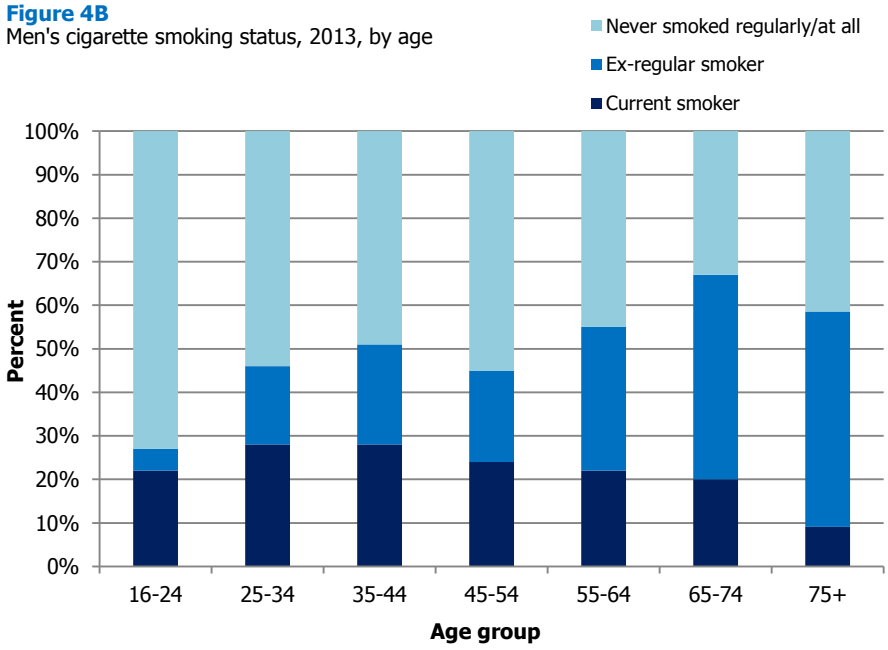
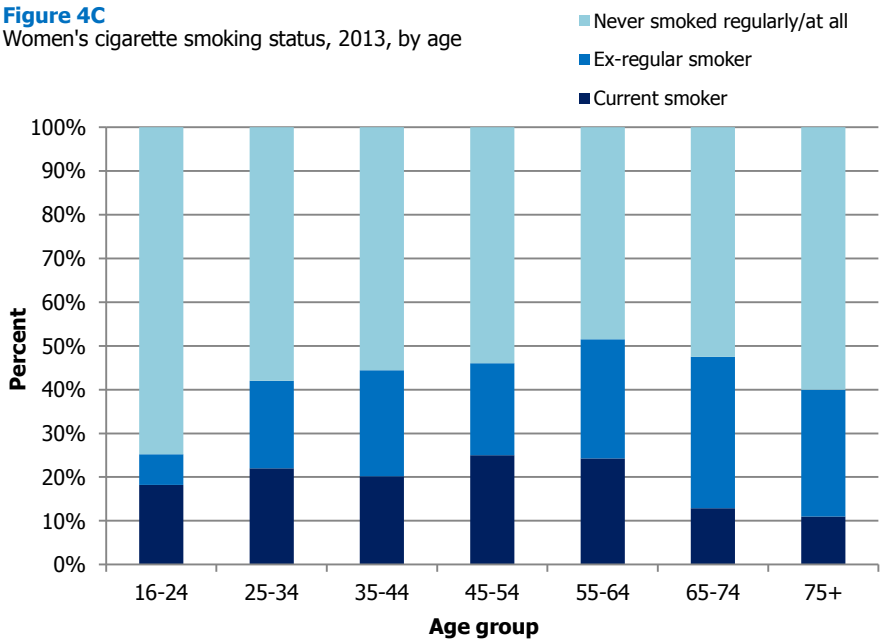


Figure 4C
Women's cigarette smoking status, 2013, by age



Naturally, the proportion describing themselves as ex-regular smokers was lowest among younger people (6% for 16-24 year olds) and highest for older age groups (40% for those aged 65-74 and 37% for those aged 75 and over) (Table 4.2). This concurred with an age-related pattern to the percentage reporting that they had never smoked or had never smoked regularly (74% for those aged 16-24; 43% for those aged 65-74; 52% for those aged 75 and over). Both these age-related patterns were more pronounced for men than for women (Figures 4B and 4C).

As also shown in Table 4.2, the mean number of cigarettes smoked per day per adult smoker aged 16 and over in 2013 was 13.0. The mean number smoked by male and female smokers were not significantly different (13.5 cigarettes per day, compared with 12.4 cigarettes). Smokers aged 16-24 smoked the fewest cigarettes per day (9.2 cigarettes), while those aged 65-74 smoked the most on average (17.0 cigarettes). The age-related pattern to cigarette consumption was very similar for male and female smokers. **Figure 4B, Figure 4C, Table 4.2**

4.4.2 Cotinine-adjusted cigarette smoking status in 2012/2013 combined, by age and sex

Elevated cotinine levels present in some self-reported non-smokers indicate exposure beyond the second-hand degree and suggest misreporting, for whatever reason, of smoking behaviour in the main interview. As discussed in Section 4.2.3, self-reported non-smokers with a cotinine level of 12ng/ml or above are very likely to be recent and/or regular smokers. Adjusted smoking prevalence was calculated by classifying participants as smokers if their cotinine level was 12ng/ml or above, even if they reported being a non-smoker during the interview.

Current smoking prevalence for adults, both before and after adjustment for saliva cotinine level, is presented in Table 4.3. Note that the figures presented in Table 4.3 are based on the sub-sample of participants who participated in the biological module and provided a valid saliva sample.[13] As the sample size is reduced relative to the entire survey sample, the figures presented here are based on data from both the 2012 and 2013 surveys combined, hence why the self-reported estimates differ to those presented in Table 4.2.

In 2012/2013 combined, 23% of adults aged 16 and over included in this analysis - 23% of the men and 23% of the women - self-reported as current cigarette smokers. When adjusted for participant cotinine levels, prevalence was higher, at 27%, for all adults (28% for men and 26% for women). The adjusted estimates in 2012/2013 (for men, women and all adults) were identical to those in the 2008-2011 period. The 4 percentage point gap (5 points for men and 4 for women) between self-reported smoking status and the cotinine-adjusted smoking prevalence is consistent with findings from the 2003,[14] 2009,[15] and 2011[16] reports. In absolute terms, the discrepancy between the self-reported and adjusted smoking estimates was greatest for men aged 16-24 (6 percentage point difference); 55-64 (8 percentage points) and 65-74 (7 percentage points) and among women aged 55-64 (6 percentage point difference).

Table 4.3

4.5 EXPOSURE TO SECOND-HAND SMOKE

4.5.1 Children's exposure to second-hand smoke since 2012, by age and sex

The proportion of children aged 0-15 living in accommodation where someone smoked is presented in Table 4.6. A second measure, reported exposure to smoke in the home, is also presented. The latter of these is the being used to monitor progress towards the target to reduce children's exposure to smoke in the home to 6% by 2020.

In 2013, one in six (16%) children lived in accommodation in which someone smoked (18% of boys and 15% of girls). The three percentage point drop from 2012 (19%) was not statistically significant.

The percentage of children exposed to second-hand smoke in the home was lower than the percentage living in accommodation in which someone smoked (11%, compared with 16%). Children's exposure to second-hand smoke in the home has not changed significantly since 2012 (12%). Levels of second-hand smoke exposure in the home did not vary significantly between boys and girls (11% and 10%, respectively).

The youngest age groups were least likely to live in accommodation where someone smokes (10% of those aged 0-1), and to be exposed to second-hand smoke in the home (5% of those aged 0-1). Whereas

older children (aged 10 and above) were most likely both to live in accommodation in which someone smoked (19-20%) and to be exposed to second-hand smoke in the home (14-15%). **Table 4.4**

4.5.2 Trends in adult non-smokers' self-reported exposure to second-hand smoke since 1998

Since 2008, self-report non-smoking adult participants have been asked if they are regularly exposed to second-hand smoke in a variety of public and private settings. Previous SHeS reports[11,12,15] noted that second-hand smoke exposure had fallen markedly since the introduction of the ban on smoking in public places in 2006. As noted in Section 4.2.4, questionnaire changes introduced in 2012 mean that some trends can no longer be reported across the series (trend figures for the period up to 2011 can be found in Table 4.6 of the 2011[16] report).

Non-smokers' self-reported exposure to smoke in a variety of contexts, since 1998, is presented in Table 4.4. Since the 1998 survey did not include adults aged 75 and over, the following discussion of trends is based on adults aged 16-74 only; figures for all adults aged 16 and over since 2003 are also presented in Table 4.4.

There has been an overall decline in the proportion of non-smokers aged 16-74 reporting being exposed to second-hand smoke in their own or other people's homes (from 33% in 1998 to 15% in 2013). Much of the decline occurred between 1998 and 2010, with little change thereafter (Table 4.4). The three percentage point drop between 2012 and 2013 (from 18% to 15%) was not a statistically significant change.

Due to changes in definitions (see footnotes to Table 4.5), data on second-hand smoke exposure in any public place in 2013 is only comparable with 2012. Under the new definition, the percentage of both male and female non-smokers aged 16 and over exposed in any public place was 17% in 2013, with little change from 2012 (16% for both sexes).

Non-smokers' exposure to second-hand smoke in other public places; at work; and in cars/vans did not change significantly between 2012 and 2013. Similarly, the proportion of male and female non-smokers reporting that they were exposed to second-hand smoke outside buildings (e.g. pubs, shops, hospitals) did not change significantly over this period. **Table 4.5**

4.5.3 Adult non-smokers' exposure to second-hand smoke in 2013, by age and sex

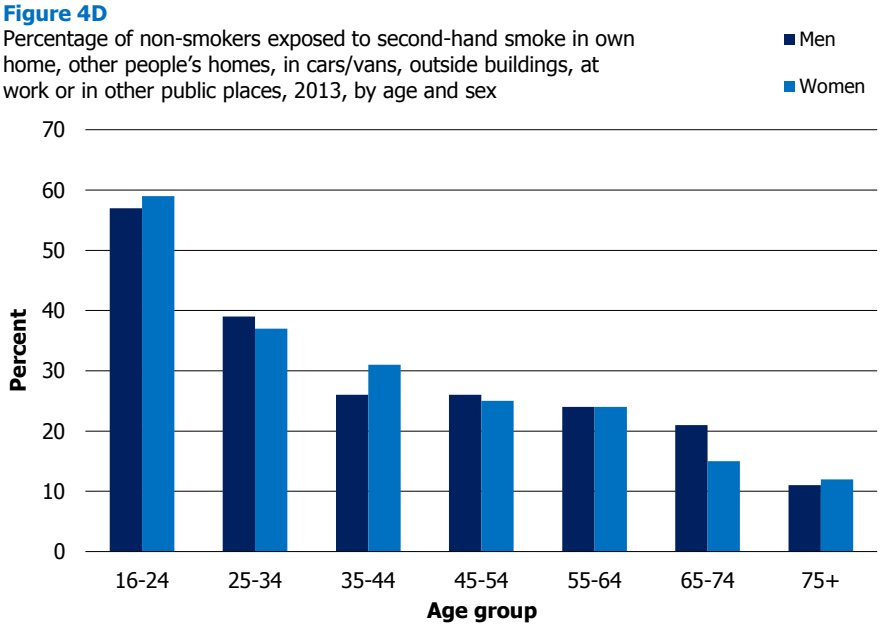
Data on the percentage of non-smokers aged 16 and over exposed to second-hand smoke in their own or other's home; at work; outside buildings; in cars/vans; and in other public places, in 2013, are presented in Table 4.6. One in seven (14%) non-smokers reported being exposed to second-hand smoke in their own or someone else's

home in 2013. Similar proportions reported being exposed to smoke outside public buildings (14%) and in any public place (17%). Seven in 10 non-smokers reported that they were not exposed to second-hand smoke in any of the places asked about.

Rates for male and female non-smokers' exposure to second-hand smoke were very similar in 2013, with the exception that male non-smokers were significantly more likely than females to report second-hand exposure to smoke at work (6% compared with 3%).

The oldest non-smokers (aged 75 and over) were more than twice as likely as the youngest (aged 16-24) to report that they were not exposed to smoke in the places asked about (88% and 42%, respectively) (Figure 4D). Correspondingly, the youngest non-smokers were twice as likely as those aged 25-54 and around three to five times as likely as those aged 55 and over to report that they were exposed to smoke in their own or someone else's home (31%, 13-15% and 6-9%, respectively). Exposure in any public place was also much more common among non-smokers aged 16-24 (35%) and 25-34 (24%) compared with 6-14% for other age groups. **Figure 4D, Table 4.6**

Figure 4D
Percentage of non-smokers exposed to second-hand smoke in own home, other people's homes, in cars/vans, outside buildings, at work or in other public places, 2013, by age and sex



4.5.4 Trends in adult non-smokers' exposure to second-hand smoke since 2003: cotinine levels

The distribution of cotinine level data for non-smokers is typically very skewed and for this reason geometric means[17] (rather than arithmetic means) have been calculated as these take extreme values into account (the Glossary at the end of this volume contains more details on these terms). To be included in the following analysis, self-reported non-smokers had to have cotinine levels below 12ng/ml (as already mentioned, levels of cotinine which exceed this amount are indicative of exposure beyond the second-hand degree and suggest misreporting of smoking behaviour in the main interview). The geometric mean cotinine

levels for validated non-smokers are presented for 2003, 2008/2009, 2010/2011 and 2012/2013 in Table 4.7.

The geometric mean cotinine level for non-smokers reduced significantly between 2003 and 2012/2013 (from 0.40ng/ml to 0.08ng/ml in 2012/2013). The biggest reduction occurred between 2003 and 2008/2009 (from 0.40 to 0.11ng/ml), with a further significant drop between 2010/2011 and 2012/2013 (from 0.11ng/ml to 0.08ng/ml). Mean cotinine levels have declined significantly since 2003 for both male and female non-smokers and levels have been very similar to for both sexes since 2008/2009 (0.09ng/ml for men and 0.08ng/ml for women in 2012/2013). **Table 4.7**

References and notes

[1] Koplan JP, and Mackay J. *Curtailing tobacco use: first we need to know the numbers.* The Lancet 2012; 380 (9842):629-30.

[2] ScotPHO Smoking Ready Reckoner – 2011 Edition. http://www.scotpho.org.uk/publications/reports-and-papers/868-smoking-ready-reckoner

[3] www.scotland.gov.uk/About/Performance/scotPerforms/indicator/mortality

[4] *National Performance Framework: Changes to the National Indicator Set* Edinburgh: Scottish Government, 2012. www.scotland.gov.uk/About/scotPerforms/NIchanges See also: www.scotlandperforms.com

[5] *Creating a Tobacco-free Generation: A Tobacco Control Strategy for Scotland*. Edinburgh: Scottish Government, 2013. http://www.scotland.gov.uk/Resource/0041/00417331.pdf

[6] The 2007 Better Health, Better Care action plan for improving health and health care in Scotland set out how NHS Scotland's HEAT performance management system (based around a series of targets against which the performance of its individual Boards are measured) would feed into the Government's overarching objectives. The HEAT targets derive their name from the four strands in the performance framework: the Health Improvement of the population; Efficiency and Governance Improvements; Access to NHS services and waiting times; and Treatment and quality of services.

[7] http://www.scotland.gov.uk/About/Performance/scotPerforms/partnerstories/NHSScotlandperformance/smokingcessation

[8] http://www.scotland.gov.uk/Topics/Statistics/16002/PublicationAnnual

[9] https://gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf

[10] Statistics on smoking prevalence taken from Scottish Health Survey, Health Survey for England, Welsh Health Survey and Health Survey for Northern Ireland are assessed to be Partially Comparable. See https://gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf for further details.

[11] Gray, L and Leyland, AH. (2009). Chapter 4: Smoking. In Bromley, C, Bradshaw, P and Given, L. (eds.) *The 2008 Scottish Health Survey – Volume 1: Main Report*. Edinburgh: Scottish Government. http://www.scotland.gov.uk/Publications/2009/09/28102003/0

[12] Gray, L and Leyland, AH. (2013). Chapter 4: Smoking. In Rutherford, L, Hinchliffe, S and Sharp, C. (eds.) *The Scottish Health Survey 2012 – Volume 1: Main Report*. Edinburgh: Scottish Government. http://www.scotland.gov.uk/Publications/2013/09/3684

[13] See Volume 2 of this report for a more detailed description of the biological module

[14] MacGregor, A and Wardle, H. Chapter 2: Smoking. In Bromley, C., Shelton, N. and Sproston, K. (eds.) (2005). *The Scottish Health Survey 2003 – Volume 2: Adults.* Edinburgh: Scottish Executive. www.scotland.gov.uk/Publications/2005/12/02160336/03367

[15] Miller, M. (2010). Chapter 4: Smoking. In Bromley, C, Given, L, and Ormston, R. (eds.) *The 2009 Scottish Health Survey – Volume 1: Main Report.* Edinburgh, Scottish Government. www.scotland.gov.uk/Publications/2010/09/23154223/0

[16] Dowling, S (2012). Chapter 4: Smoking. In Rutherford, L, Sharp, C. and Bromley, C. (eds.) *The Scottish Health Survey 2012 – Volume 1: Main Report*. Edinburgh: Scottish Government. http://www.scotland.gov.uk/Publications/2012/09/7854/30

[17] 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

Additional tables available on the survey website include:

- Cigarette smoking status, by age & key demographics
- Smokers: Mean number of cigarettes smoke a day, by age & key demographics
- Smokers: Number of times tried to stop smoking, by age & key demographics
- Smokers: Whether want to give up smoking, by age & key demographics
- Smokers: Longest period ever managed to stop smoking, by age & key demographics
- Past/present smokers: Medical practitioner advised to stop smoking, by age & key demographics
- Past/present smokers: Nicotine replacement used, by age & key demographics
- Persons smoking in accommodation (adults & children), by age & demographics
- Non-smokers (adults & children): Where exposed to smoke, by age & demographics
- Non-smokers (adults): Does passive smoke bother informant by age & demographics
- Smoking rules in households (adults & children), by age & demographics

Table 4.1 Cigarette smoking status, 1995 to 2013

Aged 16 and over *1995 to 2013*

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

Continued…

Table 4.1 - *Continued*

Aged 16 and over *1995 to 2013*

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

Continued…

Table 4.1 - *Continued*

Aged 16 and over *1995 to 2013*

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

Continued…

Table 4.1 - *Continued*

Aged 16 and over *1995 to 2013*

Cigarette smoking status	1995	1998	2003	2008	2009	2010	2011	2012	2013
Bases (weighted):									
Men 16-64	*3901*	*3937*	*3156*	*2520*	*2916*	*2795*	*2926*	*1868*	*1882*
Men 16+	*n/a*	*n/a*	*3819*	*3066*	*3560*	*3422*	*3581*	*2292*	*2330*
Women 16-64	*3994*	*3966*	*3307*	*2618*	*3047*	*2925*	*3045*	*1939*	*1968*
Women 16+	*n/a*	*n/a*	*4267*	*3348*	*3905*	*3750*	*3906*	*2489*	*2534*
All adults 16-64	*7895*	*7903*	*6463*	*5138*	*5962*	*5720*	*5971*	*3807*	*3850*
All adults 16+	*n/a*	*n/a*	*8086*	*6413*	*7465*	*7173*	*7487*	*4780*	*4864*
Bases (unweighted):									
Men 16-64	*3523*	*3356*	*2749*	*2072*	*2387*	*2273*	*2409*	*1510*	*1596*
Men 16+	*n/a*	*n/a*	*3582*	*2829*	*3265*	*3092*	*3263*	*2119*	*2131*
Women 16-64	*4406*	*4194*	*3442*	*2679*	*3198*	*3067*	*3162*	*1963*	*2068*
Women 16+	*n/a*	*n/a*	*4514*	*3600*	*4227*	*4109*	*4243*	*2677*	*2746*
All adults 16-64	*7929*	*7550*	*6191*	*4751*	*5585*	*5340*	*5571*	*3473*	*3664*
All adults 16+	*n/a*	*n/a*	*8096*	*6429*	*7492*	*7201*	*7506*	*4796*	*4877*

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

Table 4.2 Cigarette smoking status, 2013, by age and sex

Aged 16 and over *2013*

Cigarette smoking status	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Current cigarette smoker[a]	22	28	28	24	22	20	9	23
Ex-regular cigarette smoker	5	18	23	21	33	47	49	25
Never regular cigarette smoker / never smoked at all	73	54	49	55	45	33	41	51
Mean per current smoker per day	9.4	10.7	12.2	16.8	16.5	17.7	*	13.5
Standard error of the mean	1.03	0.96	0.80	1.17	1.14	1.65	*	0.49
Women								
Current cigarette smoker[a]	18	22	20	25	24	13	11	20
Ex-regular cigarette smoker	7	20	24	21	27	35	29	23
Never regular cigarette smoker / never smoked at all	74	58	55	54	48	53	60	57
Mean per current smoker per day	[8.9]	9.8	12.3	14.6	13.7	[16.0]	[10.6]	12.4
Standard error of the mean	[0.99]	0.75	0.91	0.84	0.91	[1.34]	[1.08]	0.40

Continued…

Table 4.2 - *Continued*

Aged 16 and over *2013*

Cigarette smoking status	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
Current cigarette smoker[a]	20	25	24	24	23	16	11	21
Ex-regular cigarette smoker	6	19	24	21	30	40	37	24
Never regular cigarette smoker / never smoked at all	74	56	52	55	47	43	52	54
Mean per current smoker per day	9.2	10.3	12.2	15.6	14.9	17.0	11.1	13.0
Standard error of the mean	0.72	0.63	0.65	0.73	0.76	1.22	1.01	0.34
Bases (weighted):								
Men	*325*	*367*	*387*	*436*	*366*	*269*	*178*	*2330*
Male smokers	*73*	*104*	*106*	*97*	*76*	*46*	*14*	*516*
Women	*322*	*389*	*412*	*462*	*383*	*303*	*264*	*2534*
Female smokers	*57*	*84*	*83*	*114*	*90*	*37*	*30*	*495*
All adults	*647*	*756*	*799*	*898*	*749*	*572*	*442*	*4864*
All smokers	*130*	*188*	*189*	*211*	*166*	*83*	*44*	*1011*
Bases (unweighted):								
Men	*200*	*310*	*339*	*394*	*353*	*318*	*217*	*2131*
Male smokers	*50*	*91*	*97*	*92*	*82*	*52*	*20*	*484*
Women	*235*	*419*	*432*	*540*	*442*	*373*	*305*	*2746*
Female smokers	*48*	*99*	*90*	*128*	*104*	*44*	*33*	*546*
All adults	*435*	*729*	*771*	*934*	*795*	*691*	*522*	*4877*
All smokers	*98*	*190*	*187*	*220*	*186*	*96*	*53*	*1030*

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

Table 4.3 Smoking prevalence estimates without and with saliva cotinine adjustment, 2012/2013 combined, by age and sex

Aged 16 and over with valid saliva cotinine measurement *2012/2013 combined*

Smoking prevalence	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Unadjusted self -report: smoke cigarettes	25	33	23	26	23	19	2	23
Adjusted estimate, adding self-reported non-smokers with saliva cotinine of 12ng/ml or over	31	36	27	29	31	26	6	28
Difference[a]	*6*	*3*	*4*	*3*	*8*	*7*	*3*	*5*
Women								
Unadjusted self-report: smoke cigarettes	29	27	21	26	26	13	11	23
Adjusted estimate, adding self-reported non-smokers with saliva cotinine of 12ng/ml or over	31	32	26	29	30	17	13	26
Difference[a]	*2*	*4*	*6*	*3*	*4*	*4*	*2*	*4*
All adults								
Unadjusted self-report: smoke cigarettes	27	30	22	26	24	16	7	23
Adjusted estimate, adding self-reported non-smokers with saliva cotinine of 12ng/ml or over	31	34	26	29	30	22	10	27
Difference[a]	*4*	*4*	*5*	*3*	*6*	*5*	*3*	*4*
Bases (weighted):								
Men	*143*	*152*	*154*	*184*	*152*	*119*	*77*	*981*
Women	*128*	*139*	*169*	*191*	*161*	*128*	*106*	*1020*
All adults	*271*	*291*	*323*	*375*	*313*	*247*	*183*	*2002*
Bases (unweighted):								
Men	*103*	*120*	*137*	*157*	*145*	*160*	*91*	*913*
Women	*89*	*144*	*190*	*206*	*208*	*147*	*126*	*1110*
All adults	*192*	*264*	*327*	*363*	*353*	*307*	*217*	*2023*

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

Tables 4.4 Children's exposure to second-hand smoke, 2012, 2013, by age and sex

Aged 0 - 15 *2012, 2013*

Exposure to second-hand smoke in own home	Age						Total
	0-1	2-3	4-6	7-9	10-12	13-15	
	%	%	%	%	%	%	%
Boys							
Whether anyone smokes in accommodation							
2012	9	23	18	23	21	17	19
2013	8	15	18	22	18	22	18
Reported exposure to second-hand smoke in own home							
2012	3	9	8	17	17	13	12
2013	4	9	9	10	15	16	11
Girls							
Whether anyone smokes in accommodation							
2012	7	16	17	13	26	27	18
2013	12	13	14	11	19	18	15
Reported exposure to second-hand smoke in own home							
2012	3	8	11	7	17	20	12
2013	7	6	12	7	14	14	10
All children							
Whether anyone smokes in accommodation							
2012	8	19	18	18	24	21	19
2013	10	14	16	17	19	20	16
Reported exposure to second-hand smoke in own home							
2012	3	8	9	12	17	16	12
2013	5	8	10	9	14	15	11

Continued…

Tables 4.4 - *Continued*

Aged 0 - 15 *2012, 2013*

Exposure to second-hand smoke in own home	Age						Total
	0-1	2-3	4-6	7-9	10-12	13-15	
Bases (weighted):							
Boys 2012	*111*	*125*	*171*	*164*	*165*	*178*	*914*
Boys 2013	*110*	*129*	*179*	*169*	*184*	*169*	*941*
Girls 2012	*113*	*123*	*162*	*148*	*178*	*149*	*873*
Girls 2013	*110*	*112*	*184*	*154*	*185*	*152*	*898*
All children 2012	*224*	*248*	*333*	*312*	*342*	*327*	*1787*
All children 2013	*221*	*242*	*363*	*323*	*369*	*321*	*1839*
Bases (unweighted):							
Boys 2012	*115*	*119*	*169*	*159*	*151*	*166*	*879*
Boys 2013	*129*	*139*	*191*	*177*	*155*	*157*	*948*
Girls 2012	*123*	*132*	*171*	*159*	*169*	*154*	*908*
Girls 2013	*128*	*135*	*189*	*156*	*151*	*132*	*891*
All children 2012	*238*	*251*	*340*	*318*	*320*	*320*	*1787*
All children 2013	*257*	*274*	*380*	*333*	*306*	*289*	*1839*

Table 4.5 Non-smokers' exposure to second-hand smoke, 1998 to 2013

Non-smokers aged 16 and over *1998 to 2013*

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

Continued…

Table 4.5 - *Continued*

Non-smokers aged 16 and over *1998 to 2013*

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

Continued…

Table 4.5 - *Continued*

Non-smokers aged 16 and over *1998 to 2013*

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

a Percentages add to more than 100% as the categories are not mutually exclusive
b Since 2012 any public place has been 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 in 2012

Table 4.6 Non-smokers' exposure to second-hand smoke, 2013, by age and sex

Non-smokers aged 16 and over *2013*

Exposure to second-hand smoke[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
In own home	18	6	2	4	4	5	4	6
In other people's home	23	9	10	7	4	7	1	9
At work	7	13	7	7	4	1	-	6
Outside buildings (e.g. pubs, shops, hospitals)	25	19	12	13	11	10	3	14
In cars/vans etc	4	4	1	1	1	2	-	2
In other public places	16	10	5	6	6	4	3	7
In own or other's home	37	13	11	10	8	10	6	14
In any public place[b]	32	23	14	16	14	12	6	17
Not exposed to smoke in these places[c]	43	61	74	74	76	79	89	70
Women								
In own home	11	4	6	5	7	4	5	6
In other people's home	19	15	15	11	5	4	3	10
At work	11	3	4	3	2	-	-	3
Outside buildings (e.g. pubs, shops, hospitals)	31	22	13	11	12	6	4	14
In cars/vans etc	4	2	1	1	2	-	1	1
In other public places	18	9	3	4	4	3	2	6
In own or other's home	26	17	19	15	11	7	6	15
In any public place[b]	38	25	15	12	13	8	6	17
Not exposed to smoke in these places[c]	41	63	69	75	75	85	88	71

Continued…

Table 4.6 - *Continued*

Non-smokers aged 16 and over *2013*

Exposure to second-hand smoke[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
In own home	15	5	4	5	6	4	5	6
In other people's home	21	12	13	9	5	6	2	10
At work	9	8	5	5	3	1	-	5
Outside buildings (e.g. pubs, shops, hospitals)	28	21	13	12	12	8	4	14
In cars/vans etc	4	3	1	1	2	1	0	2
In other public places	17	9	4	5	5	3	2	7
In own or other's home	31	15	15	13	9	9	6	14
In any public place[b]	35	24	14	14	14	10	6	17
Not exposed to smoke in these places[c]	42	62	72	75	75	82	88	70
Bases (weighted):								
Men	*253*	*263*	*277*	*332*	*286*	*215*	*162*	*1786*
Women	*263*	*305*	*329*	*348*	*290*	*265*	*234*	*2033*
All adults	*515*	*568*	*606*	*680*	*575*	*479*	*395*	*3819*
Bases (unweighted):								
Men	*150*	*218*	*238*	*292*	*264*	*255*	*194*	*1611*
Women	*185*	*319*	*342*	*412*	*335*	*328*	*272*	*2193*
All adults	*335*	*537*	*580*	*704*	*599*	*583*	*466*	*3804*

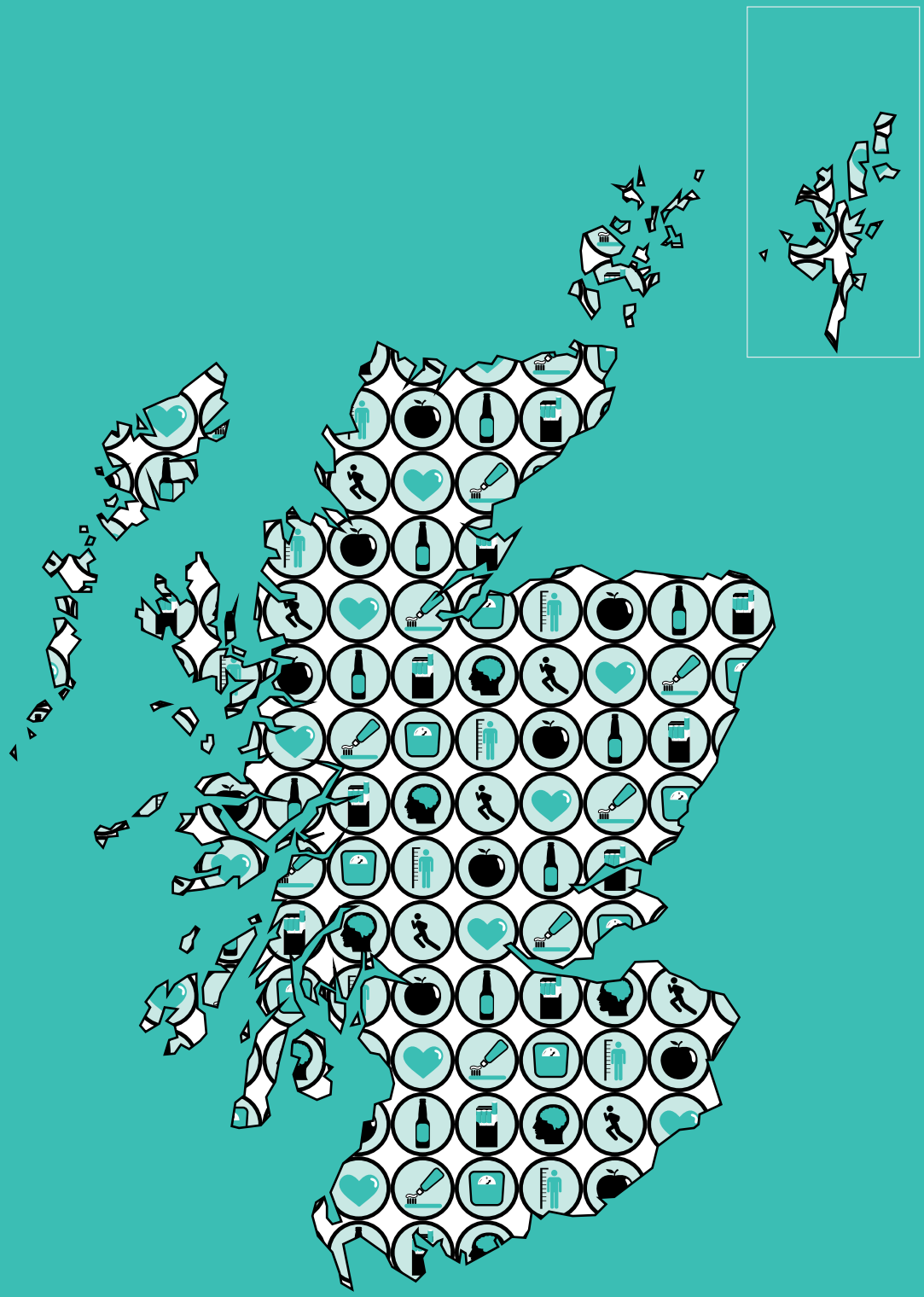
a Percentages add to more than 100% as the categories are not mutually exclusive
b Any public place defined as outside buildings, or other public places
c In own home, other people's homes, in cars/vans, outside buildings, at work, or in other public places

Table 4.7 Saliva cotinine levels among self-reported cotinine validated non-smokers, 2003 to 2012/2013 combined

Self-reported non smokers aged 16 and over with valid saliva cotinine measurement[a]			*2003 to 2012/2013 combined*	
Saliva cotinine level (ng/ml)	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined
	%	%	%	%
Men				
Geometric mean saliva cotinine[b]	0.44	0.11	0.11	0.09
Confidence interval	(0.40-0.47)	(0.10-0.13)	(0.10-0.13)	(0.08-0.10)
Women				
Geometric mean saliva cotinine[b]	0.37	0.10	0.11	0.08
Confidence interval	(0.34-0.40)	(0.09-0.11)	(0.10-0.12)	(0.07-0.08)
All adults				
Geometric mean saliva cotinine[b]	0.40	0.11	0.11	0.08
Confidence interval	(0.38-0.43)	(0.10-0.12)	(0.10-0.12)	(0.08-0.09)
Bases (weighted):				
Men	*1513*	*681*	*642*	*708*
Women	*1583*	*694*	*700*	*755*
All adults	*3096*	*1462*	*1342*	*1463*
Bases (unweighted):				
Men	*1472*	*632*	*598*	*659*
Women	*1746*	*767*	*781*	*824*
All adults	*3218*	*1493*	*1379*	*1483*

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 i



Chapter 5

Diet

5 DIET

Tracey Hughes and Geraldine McNeill

SUMMARY

Fruit and vegetable consumption in adults

- Adults consumed a mean of 3.2 portions of fruit and vegetables per day in 2013.
- Only 22% consumed the recommended 5 portions per day, with no evidence of a change since 2003 (21%).
- Consumption levels remain similar for men and women (mean of 3.2 portions per day for men and 3.3 portions for women).
- Consumption was lowest among those aged 16-24 (3.0 portions) and highest among those aged 65-75 (3.5 portions).

Fruit and vegetable consumption in children

- Children aged 2-15 consumed a mean of 2.7 portions of fruit per day in 2013.
- Just 13% consumed 5 portions per day, with no evidence of change since 2008.
- There remains no difference in the fruit and vegetables consumption of boys and girls (average of 2.7 portions and 2.8 portions per day, respectively).
- Consumption was highest among 2-4 year olds (3.0 portions) and lowest among those aged 13-15 (2.5 portions).

Consumption of other foods in children

- In 2012/2013, 53% of children aged 2-15 consumed white fish once a week or more, while 16% consumed oily fish at least once a week, and 28% consumed tuna with the same frequency. While frequency of consumption of white fish and oily fish has gradually increased since 2003, the percentage eating tuna fish once a week or more has seen a small decline over the same period (from 33% to 28% in 2012/2013).
- Half (51%) of children consumed sweets or chocolate at least once a day or more in 2012/2013. Four in ten drank non-diet soft-drinks at least once a day and around a third (35%) ate biscuits with the same frequency.
- The frequency with which children consume sugary foods and snacks declined between 2003 and 2012/2013. While most of the change occurred earlier in the series, the percentage eating biscuits once a day or more continued to decline in 2012/2013 (40% in 2010/2011 and 35% in 2012/2013). The exception is cakes, with a small increase observed in the percentage of children eating cake at least twice a week (from 30% in 2003 to 34% in 2010/2011 and 2012/2013.
- In 2012/2013, a third (32%) of children ate 2-3 slices of high fibre bread each day. Consumption has not changed significantly since 2008/2009. While the frequency with which children eat chips has declined since 2003 (54% at least twice a week), there has been no change since 2008/2009 (40% in 2012/2013).

Urinary sodium and potassium in adults

- Urinary sodium concentration in spot urine samples was 113.8 mmol/l in men and 95.1 mmol/l in women.
- Urinary potassium concentration in spot urine samples was 58.5 mmol/l in men and 53.1 mmol/l in women.

- While concentrations of both sodium and potassium have generally fallen since 2003 in both men and women, creatinine concentrations in the samples have also fallen and Na/Cre and K/Cre ratios have risen. As a result the changes in sodium and potassium concentrations over time cannot be assumed to reflect changes in dietary intake.

Vitamin and mineral supplement use in adults

- Just over a quarter (27%) of adults took some kind of vitamin or mineral supplement in 2012/2013.
- Women remain more likely than men to use vitamin or mineral supplements (31%, compared with 24%). Use was lowest among those aged 16-24 year olds (21%).
- Among women, folic acid supplements were taken by 4% of 16-24 year olds, 10% of 25-34 year olds, 5% of 35-44 year olds and 3% if 45-49 year olds.
- Only 31% of those aged 65 and over took any vitamin or mineral supplement, suggesting a low level of compliance with advice to take supplements of Vitamin D in this age group.

5.1 INTRODUCTION

5.1.1 Diet and health

In recent decades evidence has been accumulating on the influence of diet on the incidence of a wide range of health conditions, particularly cardiovascular disease and other non-communicable diseases such as type II diabetes and certain types of cancer. Estimates from international comparisons have suggested that around 30% of cases of cancer[1] and cardiovascular disease[2] worldwide could be prevented by prudent dietary habits, though confounding of these observations by other lifestyle factors is difficult to exclude. For many common cancers the influence of overweight and obesity as a result of poor diet may be as important as the influence of specific nutrients or foods.[3]

Early research on diet and chronic diseases focussed on the possible role of fat, particularly saturated fat, and fruit and vegetable intake. In recent decades other aspects of diet, notably fibre and wholegrains, salt, oily fish intake and trans fatty acid intake have been studied in relation to cardiovascular disease and cognitive decline in later life. Other more established roles for diet components are folate in the prevention of neural tube defects;[4] vitamin D and calcium for bone health;[5] sugar intake in relation to dental decay[6] and salt intake in the development of hypertension.[7] More recently a link between consumption of red and processed meats in bowel disease has been proposed,[8,9] while it has been suggested that added sugars, particularly those consumed in drinks, may have a particular role in development of obesity and type 2 diabetes.[10]

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. Another area in which a small effect of good nutrition could lead to significant benefits to health is in the preservation of cognitive function in the aging population but at present further evidence for beneficial effects of e.g. antioxidant vitamins is still needed.[11]

In recent years the wider environmental cost of a diet high in red meat and a food system which involves significant food waste has been recognised,[12] adding to the need for long-term, comprehensive food strategies at national and local level.

The most widely promoted diet and health message has been the World Health Organisation (WHO) 'five a day' advice for adults to consume five varied portions of 80g of fruit and vegetables per day. A target to reduce salt intake from around 9g to 6g per day for adults has been set by the Food Standards Agency.[13] Advice on fruit and vegetables and salt intake are included in the Food Standards Agency's 'Eight tips for Eating Well, while the 'Eatwell Plate' model describes the proportions of 5 main food groups which would constitute a balanced diet.[14] More recently the WHO and Public Health England have proposed that added sugars should be reduced by more than half, to provide 5% of energy in the diet.[15,16]

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.[17,18,19]

5.1.2 Policy background

In Scotland the poor record on diet was first highlighted in 1993 with the publication of the Scottish Diet report and associated **Action Plan**.[20,21] The **Action Plan** included specific **Scottish Dietary Targets** for eight nutrients and food groups which were replaced in 2013 by the **Scottish Dietary Goals**.[22] These include the fruit and vegetable and salt advice as well as a reduction in 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.

To tackle the poor diet in children in Scotland, the main target has been food in schools with **Hungry for Success** guidance on the nutrient content of school meals[23] and the **Schools Food and Nutrition** legislation which prohibits the sale of foods and drinks high in fat, sugar and/or salt in schools.[24] 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.[25] Most recently the Scottish Government has outlined specific measures which could be taken by retailers and caterers which would affect the wider population in its '**Supporting Healthy Choices'** framework.[26] 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

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

This chapter provides information on fruit and vegetable consumption in adults and children from 2003-2013, along with data on consumption of selected foods and drinks by children over the same period. Urinary sodium, potassium and creatinine in adults are presented as an indicator of trends in salt intake from 2003 – 2012/2013. Information on vitamin and mineral supplement use by adults in 2012/2013 is also provided. Supplementary tables on diet, including analysis by socio-economic classification, household income and area deprivation (SIMD) will be published on the Scottish Health Survey website.[27]

5.2 METHODS AND DEFINITIONS

5.2.1 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. This module has 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 determine the total number of portions consumed in the 24 hours preceding the interview, the fruit and vegetable module includes questions about 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; and fruit in composites (e.g. apple pie). A portion is defined as the conventional 80g of a fruit or vegetable. As 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:

Food item	Portion size
Vegetables (fresh, frozen or canned)	3 tablespoons
Pulses (dried)	3 tablespoons
Salad	1 cereal bowlful
Vegetables in composites, such as vegetable chilli	3 tablespoons
Very large fruit, such as melon	1 average slice
Large fruit, such as grapefruit	Half a fruit
Medium fruit, such as apples	1 fruit
Small fruit, such as plum	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 policy 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.

5.2.2 Measuring consumption of other foods and drinks

The eating habits module of the interview was developed from the Dietary Instrument of Nutrition Education (DINE) questionnaire and is similar to that used in the Health Survey for England (HSE). The DINE questionnaire was developed by the Imperial Cancer Research Fund's General Practice Research Group to assess usual intake of a wide range of nutrients, including protein, starch, fat and fibre.[28] The module asks about the frequency of consumption for categories of food, but does not ask about the amount consumed or specific types of food. It cannot be used to estimate daily nutrient intake but can reflect differences in consumption of the specified foods between population and sub-groups or within a population over time. These questions are asked of all children aged 2-15 annually, and a sub-sample of adults biennially.

5.2.3 Measuring urinary sodium and potassium

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 normal 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.

The concentration of sodium and potassium in spot urine samples cannot be used to estimate 24-hour excretion and hence intake, but it has been suggested that the values can provide information on differences between subgroups within a population and on trends over time.

Since 2003 a spot urine sample has been collected in the survey from adults and analysed for Na, K and Cre. Details of the sample collection and analysis are given in Volume 2 of this report.

5.2.4 Measuring vitamin and mineral supplement use

The following question, designed to measure self-administered supplement use, is included in the core interview:[29]

> 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?

In addition, women aged 16-49 are also asked:

> 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?

Women, pregnant and taking folic acid at the time of interview, are asked if they started taking supplements before they became pregnant, and whether they had taken them for the first 12 weeks of pregnancy. Those women who are not pregnant at the time of interview but who are taking folic acid are asked if they are taking it because they hope to become pregnant.

5.3 FRUIT AND VEGETABLE CONSUMPTION

5.3.1 Trends in adult fruit and vegetable consumption since 2003

Trends in fruit and vegetable consumption for men, women and all adults aged 16 and over are presented in Table 5.1 for the period 2003 to 2013. In addition to the mean and median number of portions consumed, the proportions meeting, exceeding and falling short of the 5-a-day recommendation are also presented.

In 2013, adults consumed a mean of 3.2 portions of fruit and vegetables (median of 3.0) per day. Average consumption has fluctuated a little since 2003 (3.1-3.3 mean, 2.7-3.0 median portions) but with no obvious pattern. Trends in average consumption were very similar for men and women, with some fluctuation for both but with no observable changes in overall.

The percentage of adults meeting the 5-a-day recommendation was similarly stable over this period: 21% met the target in 2003, as did 22% in 2013. The percentage of men consuming at least 5-a-day ranged between 19% and 22% in the decade 2003-2013 but in no clear direction. Over this same period, the figure for women meeting the target ranged between 21% and 25%, with a slight increase detectable up until 2009, followed by a small decrease thereafter.

The percentage of adults reporting that they did not eat any fruit and vegetables in the 24 hours prior to interview has been very stable over time (9-10%). **Table 5.1**

5.3.2 Adult fruit and vegetable consumption in 2013, by age and sex

More detailed figures on adult (aged 16 and over) fruit and vegetable consumption in 2013 are presented in Table 5.2. As seen in previous years, in 2013, the average portions consumed per day by men and women were very similar (means of 3.2 and 3.3, respectively).

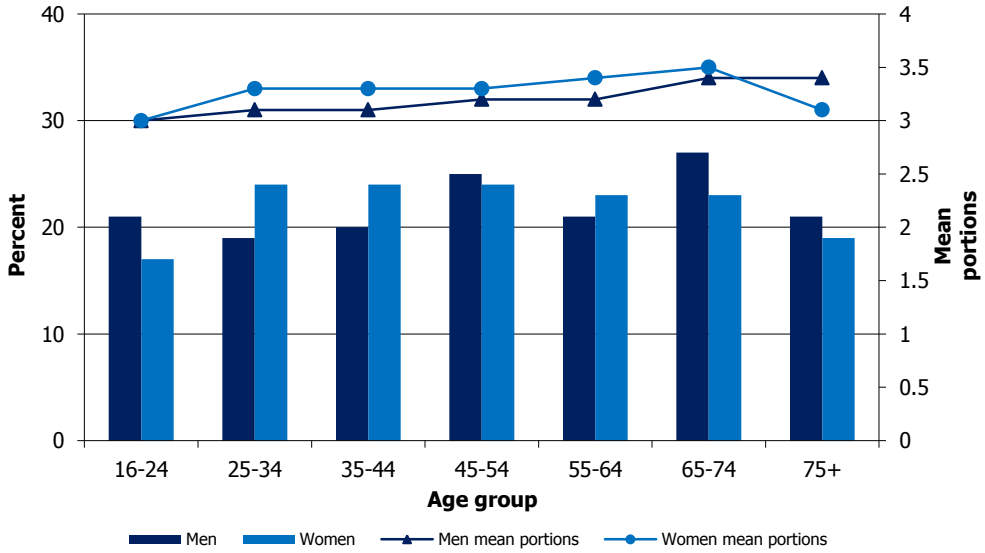
Consumption remains lowest for the youngest age group (those aged 16-24) who, on average, ate 3.0 portions of fruit and vegetables per day. Those aged 65-74 consumed an average of 3.5 portions per day, while the equivalent figure for those aged 75 and over was 3.2 portions per day.

Figure 5A illustrates the way in which the pattern in consumption differs by age for men and women. Mean consumption was broadly similar (3.0-3.2 portions) among men aged 16-64 and increased to an average of 3.4 portions per day for those aged 65 and over. In contrast, women's consumption more closely resembled the pattern for all adults – with the youngest and oldest women consuming fewest portions on average (3.0-3.1 portions per day, compared with 3.3-3.5 for those aged 25-74).

Just over one in five adults (22%) met the 5-a-day recommendation in 2013. Adherence did not differ by sex but, as would be expected given the patterns in mean consumption, there was some variation by age. Again, adults aged 25-74 were most likely to eat at least five portions a day (22-25%). The pattern in adherence levels by age was clearer for women than men. The percentage of men eating at least 5-a-day peaked among those aged 45-54 (25%) and 65-74 (27%), and ranged between 19% and 21% for remaining age groups.

Supplementary tables on adult fruit and vegetables consumption in 2013, including analysis by socio-economic classification, household income and area deprivation (SIMD), will be published on the Scottish Health Survey website.[30] **Figure 5A, Table 5.2**

Figure 5A
Percentage meeting/ exceeding recommended daily fruit and vegetable consumption (5 portions), and mean portions consumed per day, 2013, by age and sex



5.3.3 Trends in child fruit and vegetable consumption since 2003

No information on the fruit and vegetable consumption of children under the age of five was collected on the survey prior to 2008. Therefore, two sets of trends are presented in Table 5.3: one for children aged 5-15 from 2003 to 2013, and one for children aged 2 to 15 from 2008 to 2013.

Over the last decade (2003-2013) there has been very little change in the average number of portions of fruit and vegetables consumed daily by children aged 5-15 (2.6 mean portions in 2003 and 2.7 in 2013). The separate figures for boys and girls show some small fluctuations across the period, but as with adults, the overall picture suggests that consumption levels have been relatively stable since 2003. A similar trend has been observed for children aged 2-15 since 2008, with average portion consumption varying between 2.6 and 2.8 portions per day over this period, and, with one exception (2010), there has been no variation in the median number of portions consumed (2.5).

The proportion of children aged 5-15 who met the 5-a-day recommendation was identical in 2003 and 2013: 12%. The 2008 and 2013 figures for children aged 2-15 were also identical (13%). The separate trends for boys and girls show small fluctuations of 2-3 percentage points over time for boys and 4 points for girls, but with no consistent patterns for either. **Table 5.3**

5.3.4 Child fruit and vegetable consumption in 2013, by age and sex

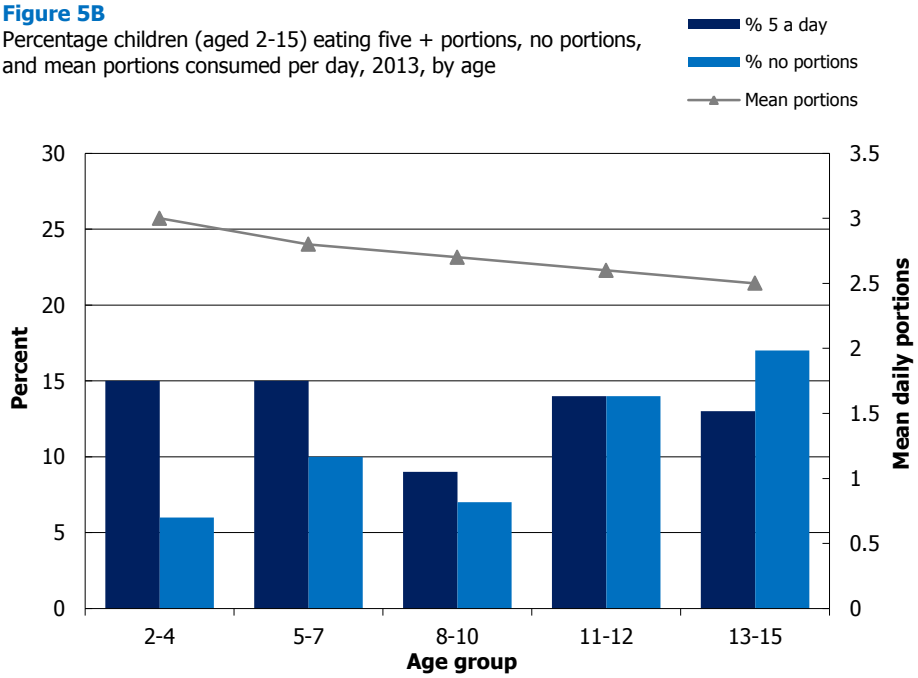
The mean portions of fruit and vegetables consumed by children aged 2-15 in 2013 (2.7 portions) did not differ significantly between boys (2.7) and girls (2.8), and was well below the recommended 5 portions a day.

While it appears that mean portions consumed decreased with increased age for children, the relationship was not statistically significant. Children aged 2-4 consumed an average of 3.0 portions per day (2.9 portions for boys 3.0 portions for girls). The equivalent figure for those aged 13-15 was 2.5 portions (2.7 portions for boys and 2.8 portions for girls).

In 2013 13% of children aged 2-15 met the 5-a-day recommendation. With the exception of a drop at age 8-10 (9%), adherence was broadly similar across age groups (13-15%). Boys and girls were equally likely to meet the recommendation, and the lower adherence among those aged 8-10 was observed for both boys and girls (8% and 9%, respectively).

One in ten children reported not eating any fruit or vegetables (10%) in the day prior to interview. There was a notable difference between children aged 2-4 (6% of whom ate 0 portions) and those aged 13-15, who have more control over their diets, 17% of whom ate 0 portions. These patterns were true for both boys and girls. **Figure 5B, Table 5.4**

Figure 5B
Percentage children (aged 2-15) eating five + portions, no portions, and mean portions consumed per day, 2013, by age



5.4 CONSUMPTION OF OTHER FOODS IN CHILDREN

5.4.1 Trends in consumption of other foods since 2003

Trends in consumption of a number of food and drink items are presented in Table 5.5 for all children aged 2-15 and for boys and girls separately. To increase the sample sizes, figures for the 2008-2013 period are based on data from three sets of combined years (2008/2009, 2010/20011 and 2012/2013).

Sugary foods and snacks

The previously reported[31] reduction in children's consumption of many sugary foods and snacks since 2003 has largely been maintained in the most recent years of the survey (2012/2013). The proportions reporting at least daily consumption of sweets or chocolates (51%), non-diet soft drinks (40%), crisps (37%) and biscuits (35%), and weekly (or more) consumption of ice-cream (51%), were all statistically significantly lower than those observed in 2003.

For most of these food types, the largest reduction in consumption occurred between 2003 and 2008/2009, with the trend either levelling off, or continuing, albeit more gradually since then. The exception was daily consumption of biscuits for which there has been similarly large declines between 2003 (48%) and 2008/2009 (42%), and between 2010/2011 (40%) and 2012/2013 (35%).

In contrast, the past 10 years has seen a gradual increase in the proportion of children eating cakes at least twice a week (from 30% in 2003 to 34% in 2010/2011 and 2012/2013).

The patterns in consumption of sugary foods and snacks were broadly similar for boys and girls, with the only significant difference being that boys were more likely than girls to eat biscuits at least once a day (38% and 32% respectively, in 2012/2013).

Fibre and starch

The proportion of children eating a high fibre and low sugar cereal at least 5-6 times a week has remained stable since 2008/2009 (ranging between 27% and 28% over this period).

In 2012/2013, around a third (32%) of children aged 2-15 reported eating 2 to 3 slices of high fibre bread a day and, again, this figure has been broadly stable in recent years (35% in 2008/2009 and 34% in 2010/2011).

The previously reported[32] decline in the percentage of children eating chips two or more times a week, from 54% in 2003 to 40% in 2008/2009, was a maintained in 2012/2013 (40%).

Half of children ate potatoes, pasta or rice five or more times a week in 2003, as did 53-54% in more recent years.

Some small differences in fibre and starch consumption were apparent by gender. While the percentage of boys consuming 2-3 slices of high fibre bread daily has remained stable over time, the fall observed for girls in 2010/2011 was maintained in 2012/2013 resulting in a gap of 4 percentage points in the consumption rates of boys and girls. Conversely, in 2012/2013, girls were significantly more likely than boys to consume potatoes, pasta and rice five or more times a week (56%, compared with 51% for boys), despite there being no clear gap between the genders prior to this.

Meat and fish

The proportion of children consuming oily fish once a week or more doubled between 2003 and 2012/2013 (from 8% to 16%, respectively), though much of the increase occurred between 2003 and 2008/2009. There has been a somewhat more sustained increase in the consumption of white fish once a week or more (from 42% in 2003 to 53% in 2012/2013). In contrast, between 2003 and 2012/2013 there was a decline in the percentage of children consuming tuna fish at least once a week, from 33% to 28%.

Consumption of red meat at least twice a week increased between 2003 and 2008/2009 (from 53% to 57%) and remained at a similar level to this in 2012/2013 (58%). While the proportion of children eating meat products (such as pies, sausages) twice a week or more was lower in 2012/2013 (40%) than in 2003 (43%), the observed difference was not statistically significant.

Girls were more likely than boys to eat tuna fish once a week or more often (31%, compared with 24%), while the reverse was true of white fish (56% of boys, compared with 49% of girls). The frequency with which boys and girls consumed oily fish was broadly similar (17% and 15%, respectively). Boys have, however, consistently been more likely than girls to eat meat products at least twice weekly. For example, in 2012/2013 45% of boys reported this, compared with 33% of girls. Frequency of red meat consumption was similar for boys and girls (59% and 58%, respectively).

Dairy products

Between 2003 and 2008/2009 there was a statistically significant increase in the proportion of children drinking skimmed or semi-skimmed milk (from 51% to 57%). It has remained around this level since then (57-58%). The frequency with which boys and girls drank skimmed or semi-skimmed milk was similar in 2012/2013 (57% and 58%, respectively). **Table 5.5**

5.5 URINARY SODIUM AND POTASSIUM IN ADULTS

5.5.1 Trends in urinary sodium and potassium in adults since 2003

Sodium (Na), potassium (K) and creatinine (Cre) levels from spot urine samples are presented in Table 5.6, alongside the Na/Cre ratio and K/Cre ratio for 2003, 2008/2009, 2010/2011 and 2012/2013. In addition to mean and median levels, levels for the 5^{th}, 10^{th}, 90^{th} and 95^{th} percentiles are also presented for all adults aged 16 and over as well as for men and women separately.

Since 2003 there has been a statistically significant drop in the mean urinary sodium level for adults, although there appears to have been a levelling-off in more recent years. In 2003 the mean level of sodium for

adults was 116.1mmol/l, falling to 109.0mmol/l in 2008/2009, and to 104.3mmol/l and 104.1mmol/l in 2010/2011 and 2012/2013, respectively. There was no significant change in the mean level between 2010/2011 and 2012/2013.

This decline in urinary sodium has been evident for both men and women, though in absolute terms it has been larger for men: between 2003 and 2012/2013, the mean urinary sodium level for men fell from 129.3mmol/l to 113.8mmol/l, while for women the corresponding figures were 104.3mmol/l and 95.1mmol/l, respectively. For women, the slight increase between the two most recent time periods was not statistically significant.

In contrast, mean urinary potassium levels were broadly stable in the earlier part of the time series (62.5mmol/l and 63.9mmol/l), but have since fallen to 55.7mmol/l (2012/2013). This decline is reflected in the fact that the mean levels at the upper end of the distribution (the 95th percentile) reduced significantly from 2010/2011 onwards. Again, while mean potassium levels have declined for both men and women, the absolute decline has been larger for men.

Creatinine levels in adults follow a similar trend to urinary sodium, with a decrease in the mean from 12.2mmol/l in 2003 to 10.9mmol/l in 2008/2009, and to 10.1mmol/l from 2010/2011 onwards. As with the sodium levels, average creatinine levels have declined for both men and women.

In line with the figures presented above, the ratios of sodium to creatinine (Na/Cre) and potassium to creatinine (K/Cre) have both increased since 2003, though with slightly different patterns. The Na/Cre ratio increased from 12.2 in 2003 to 13.3 in 2010/2011, and was 13.1 in 2012/2013. The ratio for K/Cre increased from 5.9 in 2003 to 6.7 in 2008/2009, and has been at a similar or identical level since then (6.7 in 2012/2013). The changes in the creatinine concentrations and Na/Cre and K/Cre ratios mean that the changes in Na and K concentrations cannot be assumed to reflect changes in intake.

Table 5.6

5.5.2 Urinary sodium and potassium in adults in 2012/2013 combined, by age and sex

Urinary sodium, potassium and creatinine levels for adults in 2012/2013 are presented for by age group and sex in Table 5.7. Women had lower mean urinary sodium levels (95.1mmol/l) than men (113.8mmol/l) – and this pattern was true across all age groups. It should be noted, however, that urinary sodium levels varied markedly by age group for both sexes. Younger men (16-44), for example, had notably higher levels of urinary sodium (121.4mmol/l) than older men (98.8-112.0mmol/l).

Women also had a lower mean potassium level (53.1mmol/l) than men (58.5mmol/l) in 2012/2013, however, in contrast with the results above

for sodium, potassium levels did not significantly decline with increased age.

Creatinine levels, in 2012/2013, followed similar patterns to urinary sodium levels, with women (8.7mmol/l) having a lower mean than men (11.5mmol/l) at all ages. For both men and women average creatinine levels declined with increased age.

The Na/Cre and K/Cre ratios followed the expected patterns: ratios were higher in women than men, and increased with age, for both sexes. **Table 5.7**

5.6 VITAMIN AND MINERAL SUPPLEMENT USE IN ADULTS

5.6.1 Vitamin and mineral supplement use in adults in 2012/2013 combined, by age and sex

The percentage of adults using vitamin and mineral supplements, in the years 2012/2013 combined, are presented in Table 5.8, by age and sex. In 2012/2013, just over a quarter (27%) of adults aged 16 and over reported taking any supplements. Women were more likely than men to report supplement use (31%, compared with 24%); and with the exception of those aged 75 and over, this difference was apparent across all age groups.

For both men and women, supplement use was lowest among those aged 16-24 (17% and 24%, respectively), though the patterns in use among remaining age groups differed somewhat for men and women. Among women, supplement use ranged from 31-33% for those aged 25 and over. In contrast, usage was more varied for men – ranging between 20% and 25% for those aged 25-64, and between 29-30% for the two oldest age groups.

While these figures highlight a general pattern of increasing supplement use with age, they do not to tell us which types of vitamins and minerals people take. The figures in Table 5.8 show that the majority (69%) of all adults aged 65 and over do not take any supplements, indicating low adherence to the recommendation that people of this age should take a Vitamin D supplement. **Table 5.8**

5.6.2 Folic acid supplement use in women in 2012/2013 combined

Vitamin use for women aged 16-49 in 2012/2013 combined is presented in Table 5.9. This table also displays folic acid supplement use among this same age group.

Almost three in ten (29%) women aged 16-49 reported taking any vitamin or mineral supplement in 2012/2013, with the youngest group (aged 16-24) least likely to do so (24%). Just 6% of women aged 16-49 reported taking a folic acid supplement at the time of interview. Women aged 25-34 were most likely to report taking folic acid (10%) and were twice as likely as those aged 16-24 and 35-44 to do so (4% and 5%,

respectively). Just 3% of women aged 45-49 took a folic acid supplement.

With the average age of women giving birth now around 30 years,[33] the increased usage of folic acid supplements among the 25-34 age group likely reflects adherence to advice that folic acid supplements should be taken both, before, and during the first 12 weeks of pregnancy. To assess if this was the case, women who reported taking folic acid were asked if they were doing so because they hoped to become pregnant.

Fifty-five percent of non-pregnant women who were taking folic acid at the time for interview were doing so because they hoped to become pregnant. A similar proportion (57%) of those who were pregnant and taking folic acid at the time of interview reported that they started taking the supplement before becoming pregnant. Note, however, the small sample sizes for these groups.

Table 5.9

References and notes

[1] Doll R. An overview of the epidemiological evidence linking diet and cancer. Proc Nutr Soc 1990;49:119-31.

[2] Iqbal R, Anand S, Ounpuu S, Islam S, Zhang X, Rangarajan S et al. Dietary patterns and the risk of acute myocardial infarction in 52 countries: results of the INTERHEART study. Circulation 2008;118:1929-37.

[3] World Cancer Research Fund/American Institute for Cancer Research (2007) Food, Nutrition and Physical Activity and the Prevention of Cancer: a Global Perspective. Washington DC: AICR.

[4] Smithells RW, Sheppard S, Schorah CJ, Seller MJ, Nevin NC, Harris R et al. Apparent prevention of neural-tube defects by periconceptional vitamin supplementation. Arch Dis Child 1981;56:911-8.

[5] Cashman KD. Diet, nutrition and bone health. J Nutr 2007;137:2507S-2512S.

[6] Moynihan PJ, Kelly SA. Effect on caries of reducing sugar intake: systematic review to inform WHO guidelines. J Dent Res 2014;93:8-18.

[7] Law M. Salt, blood pressure and cardiovascular diseases. J Cardiovasc Risk 2000;7;5-8.

[8] Sinha R, Cross AJ, Graubard BI, Leitzmann MF, Schatzkin A. Meat intake and mortality: a prospective study of over half a million people. Arch Intern Med 2009;169:562-71.

[9] Norat T, Bingham S, Ferrari P, Slimani N, Jenab M, Mazuir M et al. Meat, Fish and colorectal cancer risk: the European Prospective Investigation into Cancer and nutrition. J Natl Cancer Inst 2005;97:906-16

[10] Bray GA, Popkin BM. Dietary sugar and body weight: have we reached a crisis in the epidemic of obesity and diabetes?: health be damned! Pour on the sugar. Diabetes Care 2014;37; 950-6.

[11] Rafnsson SB, Dilis V, Trichopolou A. Antioxidant nutrients and age-related cognitive decline: a systematic review ofbpopulation-based cohort studies. Eur J Nutr 2013;52:15453-67.

[12] Garnett T. Cooking up a Storm. 2008, University of Surrey, Food Climate Reasearch Network.

[13] Scientific Advisory Committee on Nutrition. Salt and Health. 2003, Norwich. The Stationery Office.

[14] Food Standards Agency Scotland. The Eatwell Plate. http://www.eatwellscotland.org

[15] WHO opens public consultation on draft sugars guideline. Geneva, WHO, 2014. http://www.who.int/mediacentre/news/notes/2014/consultation-sugar-guideline/en/

[16] Scientific Advisory Committee on Nutrition. Scientific Consultation: Draft SACN Carbohydrates and Health Report June 2014 London, Department of Health, 2014

[17] Barton KL, Wrieden WL. Estimation of food and nutrient intakes from food survey data in Scotland. 2013, Food Standards Agency Scotland (Project FS424018).

[18] Sheehy C, McNeill G, Masson L, Craig L, Macdiarmid J, Holmes B et al. Survey of sugar intake among children in Scotland. Aberdeen, Food Standards Agency Scotland, 2008. http://www.foodase.org.uk/results.php?f_report_id=607

[19] Masson LF, Bromley C, Macdiarmid JI, Craig LCA, Wills W, Tipping S, et al. Survey of diet among children in Scotland (2010). Aberdeen, Food Standards Agency, 2012. Scotland. http://www.foodbase.org.uk/results.php?f_report_id=777

[20] James WPT. The Scottish Diet. 1993, Edinburgh, The Scottish Office

[21] Scottish Office. Eating for Health – A Diet Action Plan for Scotland. 1996, Edinburgh, Scottish Office

[22] Scottish Government. Revised Dietary Goals for Scotland. 2013. www.scotland.gov.uk/Resource/0042/00421385.pdf

[23] Scottish Government. Hungry for Success: A Whole School Approach to School Meals in Scotland. 2002.

[24] Schools (Health Promotion and Nutrition) (Scotland) Act 2007

[25] Scottish Government. Beyond the School Gate. 2014, Edinburgh, Scottish Government.

[26] Scottish Government. Supporting Healthy Choices: A Framework for Voluntary Action. 2014, Edinburgh, Scottish Government.

[27] www.scotland.gov.uk/scottishhealthsurvey

[28] Roe, L., Strong, C., Whiteside, C., Neil, A. and Mant, D. (1994). Dietary intervention in primary care: Validity of the DINE method for assessment. Family Practice 11: 375-81.

[29] The question was also included in the 2003 and 2008-11 surveys, as part of the nurse visit, and was followed up with an additional question about the type of supplement taken. The follow-up question was dropped in 2012.

[30] www.scotland.gov.uk/scottishhealthsurvey

[31] Gray, L. and Leyland, A. (2012). Chapter 3: Diet. In Rutherford, L., Sharp, C. and Bromley, C. [Eds]. The Scottish Health Survey 2011 – Volume 2: Children. Edinburgh: Scottish Government.

[32] Gray, L. and Leyland, A. (2010). Chapter 5: Diet. In Bromley,C., Given, L. and Ormston, R. [Eds]. The Scottish Health Survey 2009 – Volume 1. Edinburgh: Scottish Government.

[33] In 2012, the average age of all women giving birth was 29.7. Source: GRO Scotland. 2013. Scotland's Population 2012 – The Registrar General's Annual Review of Demographic Trends. www.gro-scotland.gov.uk/statistics/at-a-glance/annrev/2012/index.html

Table list

Additional tables available on the survey website include:

- Times in the last week people in household ate main meal together, by age & key demographics
- Portions of fruit and vegetables consumed, by age & key demographics
- Summary fruit and vegetable serving type, by age & key demographics
- Adult use of vitamin or mineral supplements, by age & key demographics
- Child: Summary diet, by age & key demographics
- Child: Frequency and type of bread & cereal, by age & key demographics
- Child: How often eat chips & potatoes, by age & key demographics
- Child: How often eat meat & meat products, by age & key demographics
- Child: How often eat tinned tuna fish, white fish & oily fish, by key demographics
- Child: How often eat cheese, by age & key demographics
- Child: How often eat sweets or chocolates, ice cream, crisps, by age & key demographics
- Child: How often drink milk, & soft drinks, diet/low calorie soft drinks, by age & key demographics
- Child: How often eat cakes, scones or pastries, & biscuits, by age & key demographics

Table 5.1 Adult fruit and vegetable consumption, 2003 to 2013

Aged 16 and over *2003 to 2013*

Portions per day	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%
Men							
None	11	10	11	12	10	11	11
5 portions or more	20	20	22	20	20	19	22
Mean	3.0	3.1	3.1	3.1	3.1	3.0	3.2
Standard error of the mean	0.06	0.07	0.05	0.06	0.05	0.08	0.07
Median	2.7	2.7	2.8	2.7	2.7	2.7	3.0
Women							
None	8	7	7	9	8	9	8
5 portions or more	22	24	25	23	23	21	22
Mean	3.2	3.4	3.4	3.3	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
Median	3.0	3.0	3.0	3.0	3.0	2.8	3.0
All adults							
None	9	9	9	10	9	10	9
5 portions or more	21	22	23	22	22	20	22
Mean	3.1	3.3	3.3	3.2	3.2	3.1	3.2
Standard error of the mean	0.05	0.05	0.04	0.04	0.04	0.05	0.05
Median	2.7	3.0	3.0	3.0	3.0	2.7	3.0

Continued…

Table 5.1 - *Continued*

Aged 16 and over *2003 to 2013*

Portions per day	2003	2008	2009	2010	2011	2012	2013
Bases (weighted):							
Men	*3834*	*3087*	*3594*	*3465*	*3606*	*2309*	*2343*
Women	*4281*	*3375*	*3926*	*3775*	*3931*	*2502*	*2547*
All adults	*8115*	*6462*	*7520*	*7239*	*7537*	*4811*	*4890*
Bases (unweighted):							
Men	*3590*	*2840*	*3283*	*3112*	*3275*	*2126*	*2138*
Women	*4526*	*3621*	*4241*	*4127*	*4260*	*2686*	*2754*
All adults	*8116*	*6461*	*7524*	*7239*	*7535*	*4812*	*4892*

Table 5.2 Adult fruit and vegetable consumption, 2013, by age and sex

Aged 16 and over *2013*

Portions per day	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
None	15	13	12	13	9	6	5	11
Less than 1 portion	4	3	3	3	4	5	5	4
1 portion or more but less than 2	17	20	17	19	19	18	15	18
2 portions or more but less than 3	15	19	18	16	19	17	16	17
3 portions or more but less than 4	18	15	17	14	15	13	22	16
4 portions or more but less than 5	10	12	14	10	13	14	15	12
5 portions or more	21	19	20	25	21	27	21	22
Mean	3.0	3.1	3.1	3.2	3.2	3.4	3.4	3.2
Standard error of the mean	0.23	0.14	0.15	0.14	0.15	0.14	0.17	0.07
Median	2.5	2.7	2.7	2.7	2.8	3.0	3.2	3.0
Women								
None	13	11	7	11	5	2	5	8
Less than 1 portion	2	3	6	5	7	4	5	5
1 portion or more but less than 2	18	15	16	16	17	15	22	17
2 portions or more but less than 3	24	17	20	15	18	21	18	19
3 portions or more but less than 4	17	18	16	17	16	20	20	17
4 portions or more but less than 5	9	12	11	13	14	14	11	12
5 portions or more	17	24	24	24	23	23	19	22
Mean	3.0	3.3	3.3	3.3	3.4	3.5	3.1	3.3
Standard error of the mean	0.19	0.13	0.14	0.12	0.13	0.13	0.13	0.06
Median	2.3	3.0	3.0	3.0	3.0	3.2	3.0	3.0

Continued…

Table 5.2 - *Continued*

Aged 16 and over *2013*

Portions per day	**Age**							**Total**
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
None	14	12	9	12	7	4	5	9
Less than 1 portion	3	3	4	4	5	4	5	4
1 portion or more but less than 2	18	17	17	17	18	16	19	17
2 portions or more but less than 3	19	18	19	16	19	19	17	18
3 portions or more but less than 4	17	16	17	16	16	17	21	17
4 portions or more but less than 5	9	12	13	12	14	14	13	12
5 portions or more	19	22	22	24	22	25	20	22
Mean	3.0	3.2	3.2	3.2	3.3	3.5	3.2	3.2
Standard error of the mean	0.17	0.11	0.11	0.10	0.11	0.11	0.12	0.05
Median	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Bases (weighted):								
Men	*338*	*367*	*387*	*438*	*366*	*269*	*178*	*2343*
Women	*334*	*389*	*412*	*462*	*383*	*303*	*265*	*2547*
All adults	*671*	*756*	*799*	*900*	*749*	*572*	*443*	*4890*
Bases (unweighted):								
Men	*206*	*310*	*339*	*395*	*353*	*318*	*217*	*2138*
Women	*242*	*419*	*432*	*540*	*442*	*373*	*306*	*2754*
All adults	*448*	*729*	*771*	*935*	*795*	*691*	*523*	*4892*

Table 5.3 Child fruit and vegetable consumption, 2003 to 2013

Aged 2-15 *2003 to 2013*

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

Continued…

Table 5.3 - *Continued*

Aged 2-15 *2003 to 2013*

Portions per day	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%
All children							
Total 5 - 15							
None	12	11	10	12	10	12	12
5 portions or more	12	14	14	12	12	11	12
Mean	2.6	2.7	2.7	2.6	2.6	2.6	2.7
Standard error of the mean	0.05	0.08	0.06	0.07	0.07	0.08	0.08
Median	2.0	2.3	2.3	2.3	2.3	2.3	2.5
Total 2 - 15							
None	n/a	10	9	11	9	11	10
5 portions or more	n/a	13	15	12	13	13	13
Mean	n/a	2.8	2.8	2.6	2.7	2.7	2.7
Standard error of the mean	n/a	0.07	0.05	0.07	0.06	0.07	0.07
Median	n/a	2.5	2.5	2.3	2.5	2.5	2.5
Bases (weighted):							
Boys 5 - 15	*1225*	*618*	*910*	*621*	*686*	*614*	*637*
Boys 2 - 15	*n/a*	*791*	*1153*	*792*	*881*	*800*	*830*
Girls 5 - 15	*1166*	*591*	*867*	*591*	*652*	*588*	*607*
Girls 2 - 15	*n/a*	*736*	*1108*	*759*	*835*	*759*	*787*
All children 5 - 15	*2391*	*1209*	*1777*	*1212*	*1338*	*1202*	*1243*
All children 2 - 15	*n/a*	*1527*	*2261*	*1551*	*1716*	*1559*	*1616*
Bases (unweighted):							
Boys 5 - 15	*1152*	*591*	*923*	*629*	*649*	*580*	*608*
Boys 2 - 15	*n/a*	*764*	*1153*	*821*	*855*	*761*	*819*
Girls 5 - 15	*1170*	*597*	*837*	*532*	*619*	*602*	*554*
Girls 2 - 15	*n/a*	*752*	*1100*	*708*	*833*	*784*	*761*
All children 5 - 15	*2322*	*1188*	*1760*	*1161*	*1268*	*1182*	*1162*
All children 2 - 15	*n/a*	*1516*	*2253*	*1529*	*1688*	*1545*	*1580*

Table 5.4 Child fruit and vegetable consumption, 2013, by age and sex

Aged 2-15 *2013*

Portions per day	Age					Total
	2-4	5-7	8-10	11-12	13-15	
	%	%	%	%	%	%
Boys						
None	6	11	8	16	16	11
Less than 1 portion	4	4	8	8	5	6
1 portion or more but less than 2	21	19	20	24	23	21
2 portions or more but less than 3	25	20	24	15	17	21
3 portions or more but less than 4	18	19	17	17	15	17
4 portions or more but less than 5	11	12	15	7	9	11
5 portions or more	15	15	8	12	16	13
Mean	2.9	2.8	2.5	2.3	2.7	2.7
Standard error of the mean	0.14	0.18	0.12	0.24	0.23	0.09
Median	2.7	2.5	2.3	2.0	2.0	2.3
Girls						
None	6	8	6	13	17	10
Less than 1 portion	5	4	5	3	5	4
1 portion or more but less than 2	17	24	19	16	21	20
2 portions or more but less than 3	27	19	20	15	19	21
3 portions or more but less than 4	21	18	28	22	17	21
4 portions or more but less than 5	9	11	12	17	10	11
5 portions or more	15	16	9	15	11	13
Mean	3.0	2.8	2.8	2.8	2.4	2.8
Standard error of the mean	0.21	0.16	0.16	0.20	0.18	0.09
Median	2.7	2.7	2.7	3.0	2.3	2.7
All children						
None	6	10	7	14	17	10
Less than 1 portion	4	4	6	5	5	5
1 portion or more but less than 2	19	21	20	20	22	21
2 portions or more but less than 3	26	20	22	15	18	21
3 portions or more but less than 4	20	19	22	20	16	19
4 portions or more but less than 5	10	11	14	12	9	11
5 portions or more	15	15	9	14	13	13
Mean	3.0	2.8	2.7	2.6	2.5	2.7
Standard error of the mean	0.13	0.12	0.10	0.17	0.15	0.07
Median	2.7	2.7	2.7	2.5	2.0	2.5

Continued…

Table 5.4 - *Continued*

Aged 2-15 *2013*

Portions per day	**Age**					**Total**
	2-4	5-7	8-10	11-12	13-15	
Bases (weighted):						
Boys	*193*	*169*	*197*	*101*	*169*	*830*
Girls	*180*	*170*	*178*	*107*	*152*	*787*
All children	*373*	*339*	*375*	*208*	*321*	*1616*
Bases (unweighted):						
Boys	*211*	*174*	*191*	*86*	*157*	*819*
Girls	*207*	*173*	*160*	*89*	*132*	*761*
All children	*418*	*347*	*351*	*175*	*289*	*1580*

Table 5.5 Summary of child eating habits, 2003 to 2012/2013 combined

Aged 2-15 *2003 to 2012/2013 combined*

Food type and frequency of consumption	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined
	%	%	%	%
Boys				
Eats oily fish once a week or more	8	12	13	17
Eats white fish once a week or more	45	51	50	56
Eats tuna fish once a week or more	29	28	25	24
Eats red meat 2+ times a week	55	59	59	59
Eats meat products 2+ times a week	48	43	43	45
Drinks skimmed/semi-skimmed milk	51	55	56	57
Sweets or chocolates once a day or more	57	53	50	53
Biscuits once a day or more	51	44	44	38
Cakes 2+ times a week	31	33	35	35
Ice-cream once a week or more	58	53	53	50
Non-diet soft drinks once a day or more	46	39	39	41
Crisps once a day or more	50	36	38	38
Eats chips 2+ times a week	55	41	43	41
Eats potatoes, pasta, rice 5+ times a week	48	54	52	51
Eats at least 2-3 slices of high fibre bread a day	n/a	35	36	34
Eats high fibre/low sugar cereal at least 5-6 times a week	n/a	28	30	30
Girls				
Eats oily fish once a week or more	8	13	15	15
Eats white fish once a week or more	39	45	47	49
Eats tuna fish once a week or more	37	36	33	31
Eats red meat 2+ times a week	52	56	57	58
Eats meat products 2+ times a week	39	32	35	33
Drinks skimmed/semi-skimmed milk	50	59	60	58
Sweets or chocolates once a day or more	60	52	48	50
Biscuits once a day or more	45	41	36	32
Cakes 2+ times a week	28	31	34	32
Ice-cream once a week or more	57	54	51	53
Non-diet soft drinks once a day or more	43	36	38	39
Crisps once a day or more	53	35	39	36
Eats chips 2+ times a week	53	39	41	38
Eats potatoes, pasta, rice 5+ times a week	51	54	53	56
Eats at least 2-3 slices of high fibre bread a day	n/a	34	32	30
Eats high fibre/low sugar cereal at least 5-6 times a week	n/a	26	27	25

Continued…

Table 5.5 - *Continued*

Aged 2-15 *2003 to 2012/2013 combined*

Food type and frequency of consumption	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined
	%	%	%	%
All children				
Eats oily fish once a week or more	8	13	14	16
Eats white fish once a week or more	42	48	49	53
Eats tuna fish once a week or more	33	32	29	28
Eats red meat 2+ times a week	53	57	58	58
Eats meat products 2+ times a week	43	38	39	40
Drinks skimmed/semi-skimmed milk	51	57	58	57
Sweets or chocolates once a day or more	59	53	49	51
Biscuits once a day or more	48	42	40	35
Cakes 2+ times a week	30	32	34	34
Ice-cream once a week or more	58	53	52	51
Non-diet soft drinks once a day or more	44	38	38	40
Crisps once a day or more	52	36	38	37
Eats chips 2+ times a week	54	40	42	40
Eats potatoes, pasta, rice 5+ times a week	50	54	53	53
Eats at least 2-3 slices of high fibre bread a day	n/a	35	34	32
Eats high fibre/low sugar cereal at least 5-6 times a week	n/a	27	28	27
Bases (weighted):[a]				
Boys	*1511*	*1942*	*1673*	*1630*
Girls	*1440*	*1845*	*1597*	*1548*
All children	*2957*	*3789*	*3270*	*3178*
Bases (unweighted):				
Boys	*1459*	*1917*	*1677*	*1580*
Girls	*1461*	*1852*	*1544*	*1545*
All children	*2924*	*3771*	*3221*	*3125*

a Bases vary: the smallest of the range is presented and may be marginally higher for some food items

Table 5.6 Urinary sodium (Na), potassium (K) and creatinine (Cre), Na/Cre ratio, K/Cre ratio, 2003 to 2012/2013 combined

Aged 16 and over with a valid urine sample *2003 to 2012/2013 combined*

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

Continued…

Table 5.6 - *Continued*

Aged 16 and over with a valid urine sample — *2003 to 2012/2013 combined*

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

Continued…

Table 5.6 - *Continued*

Aged 16 and over with a valid urine sample *2003 to 2012/2013 combined*

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

Continued…

Table 5.6 - *Continued*

Aged 16 and over with a valid urine sample — *2003 to 2012/2013 combined*

Urinary sodium, potassium, creatinine (mmol/l)	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined
Creatinine (mmol/l)				
Mean	12.2	10.9	10.1	10.1
Standard error of the mean	0.25	0.17	0.19	0.21
5th percentile	2.4	2.2	1.9	2.1
10th percentile	3.6	3.2	2.5	2.8
Median	11.4	10.1	9.2	9.0
90th percentile	22.0	19.3	18.6	18.5
95th percentile	25.0	22.1	22.3	22.0
Na/Cre ratio				
Mean	12.2	12.5	13.3	13.1
Standard error of the mean	0.32	0.21	0.23	0.25
5th percentile	3.5	3.5	3.5	3.5
10th percentile	4.7	4.8	4.8	5.0
Median	10.4	10.9	11.5	11.6
90th percentile	20.2	21.4	23.7	22.7
95th percentile	25.4	26.4	29.5	26.8
K/Cre ratio				
Mean	5.9	6.7	6.9	6.7
Standard error of the mean	0.11	0.09	0.10	0.11
5th percentile	2.3	2.6	2.6	2.7
10th percentile	2.9	3.3	3.2	3.2
Median	5.3	6.1	6.3	5.9
90th percentile	9.6	10.9	11.3	10.6
95th percentile	11.3	12.7	13.6	12.9
Bases (weighted):				
Men	*535*	*998*	*885*	*896*
Women	*594*	*1075*	*915*	*974*
All adults	*1129*	*2074*	*1800*	*1870*
Bases (unweighted):				
Men	*508*	*921*	*793*	*846*
Women	*640*	*1165*	*1004*	*1026*
All adults	*1148*	*2086*	*1797*	*1872*

Table 5.7 Urinary sodium (Na), potassium (K) and creatinine (Cre), Na/Cre ratio, K/Cre ratio, 2012/2013 combined, by age and sex

Aged 16 and over with a valid urine sample *2012/2013 combined*

Urinary sodium, potassium, creatinine (mmol/l)	Age			Total
	16-44	45-64	65+	
	%	%	%	%
Men				
Sodium (mmol/l)				
Mean	121.4	112.0	98.8	113.8
Standard error of the mean	4.16	3.75	3.48	2.35
5th percentile	33	23	34	29
10th percentile	45	38	45	43
Median	114	111	95	108
90th percentile	201	184	159	190
95th percentile	224	206	179	210
Potassium (mmol/l)				
Mean	59.0	59.9	55.1	58.5
Standard error of the mean	1.85	2.04	1.80	1.29
5th percentile	15	15	20	15
10th percentile	20	24	23	22
Median	59	58	53	57
90th percentile	101	101	88	101
95th percentile	101	101	101	101
Creatinine (mmol/l)				
Mean	12.9	10.9	9.4	11.5
Standard error of the mean	0.54	0.44	0.42	0.32
5th percentile	2.6	2.3	2.9	2.5
10th percentile	4.0	2.9	3.3	3.7
Median	11.5	10.7	8.4	10.6
90th percentile	23.7	17.9	16.5	20.2
95th percentile	27.6	20.9	18.1	24.3
Na/Cre ratio				
Mean	12.0	11.8	13.8	12.3
Standard error of the mean	0.51	0.37	0.75	0.32
5th percentile	3.1	4.1	3.3	3.3
10th percentile	4.8	5.6	4.5	5.0
Median	10.5	11.3	12.0	11.1
90th percentile	20.4	19.3	23.8	20.5
95th percentile	25.5	22.0	27.7	25.4

Continued…

Table 5.7 - *Continued*

Aged 16 and over with a valid urine sample *2012/2013 combined*

Urinary sodium, potassium, creatinine (mmol/l)	Age			Total
	16-44	45-64	65+	
	%	%	%	%
K/Cre ratio				
Mean	5.4	6.2	6.7	5.9
Standard error of the mean	0.20	0.18	0.24	0.13
5th percentile	2.0	2.7	3.3	2.3
10th percentile	2.4	3.2	3.7	2.9
Median	4.9	5.9	6.2	5.5
90th percentile	8.3	9.4	10.4	9.3
95th percentile	9.6	10.5	12.6	10.5
Women				
Sodium (mmol/l)				
Mean	109.9	85.7	79.6	95.1
Standard error of the mean	3.78	2.87	3.04	2.10
5th percentile	29	21	25	23
10th percentile	36	26	31	31
Median	107	78	70	85
90th percentile	193	162	150	176
95th percentile	214	188	177	202
Potassium (mmol/l)				
Mean	55.7	50.9	51.1	53.1
Standard error of the mean	1.76	1.64	1.79	1.00
5th percentile	13	15	17	14
10th percentile	19	19	21	19
Median	52	46	48	49
90th percentile	101	90	89	97
95th percentile	101	101	98	101
Creatinine (mmol/l)				
Mean	10.1	8.0	7.1	8.7
Standard error of the mean	0.38	0.31	0.26	0.22
5th percentile	2.1	1.5	1.7	1.7
10th percentile	2.9	2.1	2.3	2.4
Median	9.3	6.7	6.4	7.5
90th percentile	18.7	15.5	12.5	17.0
95th percentile	21.3	18.9	14.3	19.6

Continued…

Table 5.7 - *Continued*

Aged 16 and over with a valid urine sample *2012/2013 combined*

Urinary sodium, potassium, creatinine (mmol/l)	Age			Total
	16-44	45-64	65+	
	%	%	%	%
Na/Cre ratio				
Mean	13.3	13.7	15.4	13.9
Standard error of the mean	0.46	0.49	1.09	0.35
5th percentile	4.2	2.9	3.2	3.7
10th percentile	5.3	5.2	5.0	5.2
Median	12.6	11.7	12.0	12.1
90th percentile	22.7	25.1	24.6	24.5
95th percentile	27.1	30.0	30.3	28.0
K/Cre ratio				
Mean	6.4	7.8	8.5	7.4
Standard error of the mean	0.20	0.22	0.30	0.15
5th percentile	2.8	3.1	4.2	3.0
10th percentile	3.0	3.8	4.7	3.6
Median	5.6	6.9	7.5	6.6
90th percentile	10.3	12.9	13.2	11.9
95th percentile	12.5	15.8	17.3	14.2
All adults				
Sodium (mmol/l)				
Mean	115.5	98.5	88.1	104.1
Standard error of the mean	3.04	2.69	2.58	1.75
5th percentile	31	21	27	25
10th percentile	42	29	34	35
Median	109	93	82	97
90th percentile	199	176	155	185
95th percentile	218	201	179	206
Potassium (mmol/l)				
Mean	57.3	55.3	52.9	55.7
Standard error of the mean	1.39	1.31	1.36	0.88
5th percentile	14	15	17	15
10th percentile	19	21	22	21
Median	55	54	49	53
90th percentile	101	98	89	100
95th percentile	101	101	101	101

Continued…

Table 5.7 - *Continued*

Aged 16 and over with a valid urine sample *2012/2013 combined*

Urinary sodium, potassium, creatinine (mmol/l)	Age			Total
	16-44	45-64	65+	
	%	%	%	%
Creatinine (mmol/l)				
Mean	11.5	9.4	8.1	10.1
Standard error of the mean	0.34	0.29	0.26	0.21
5th percentile	2.4	1.8	1.9	2.1
10th percentile	3.3	2.4	2.6	2.8
Median	10.3	8.7	7.4	9.0
90th percentile	21.1	17.1	13.9	18.5
95th percentile	24.7	19.7	17.7	22.0
Na/Cre ratio				
Mean	12.7	12.8	14.7	13.1
Standard error of the mean	0.37	0.32	0.72	0.25
5th percentile	3.7	3.8	3.2	3.5
10th percentile	5.0	5.2	4.8	5.0
Median	11.5	11.3	12.0	11.6
90th percentile	22.3	22.5	24.3	22.7
95th percentile	26.4	25.9	30.3	26.8
K/Cre ratio				
Mean	5.9	7.0	7.7	6.7
Standard error of the mean	0.15	0.16	0.21	0.11
5th percentile	2.3	2.9	3.6	2.7
10th percentile	2.8	3.5	4.2	3.2
Median	5.2	6.3	6.9	5.9
90th percentile	9.5	11.1	12.3	10.6
95th percentile	11.3	13.3	13.8	12.9
Bases (weighted):				
Men	*415*	*309*	*171*	*896*
Women	*433*	*323*	*218*	*974*
All adults	*849*	*632*	*389*	*1870*
Bases (unweighted):				
Men	*328*	*287*	*231*	*846*
Women	*378*	*392*	*256*	*1026*
All adults	*706*	*679*	*487*	*1872*

Table 5.8 Vitamin or mineral supplements use, 2012/2013 combined, by age and sex

Aged 16 and over *2012/2013 combined*

Use of vitamin or mineral supplements	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Taking any supplement	17	24	23	20	25	29	30	24
No supplements taken	83	76	77	80	75	71	70	76
Women								
Taking any supplement	24	31	31	31	32	33	31	31
No supplements taken	76	69	69	69	68	67	69	69
All adults								
Taking any supplement	21	28	27	26	29	31	31	27
No supplements taken	79	72	73	74	71	69	69	73
Bases (weighted):								
Men	*671*	*731*	*768*	*869*	*726*	*534*	*354*	*4653*
Women	*660*	*772*	*817*	*915*	*760*	*600*	*525*	*5048*
All adults	*1331*	*1503*	*1584*	*1783*	*1487*	*1134*	*879*	*9701*
Bases (unweighted):								
Men	*376*	*538*	*685*	*804*	*717*	*703*	*442*	*4265*
Women	*469*	*748*	*906*	*1039*	*885*	*761*	*632*	*5440*
All adults	*845*	*1286*	*1591*	*1843*	*1602*	*1464*	*1074*	*9705*

Table 5.9 Folic acid supplement use, 2012/2013 combined

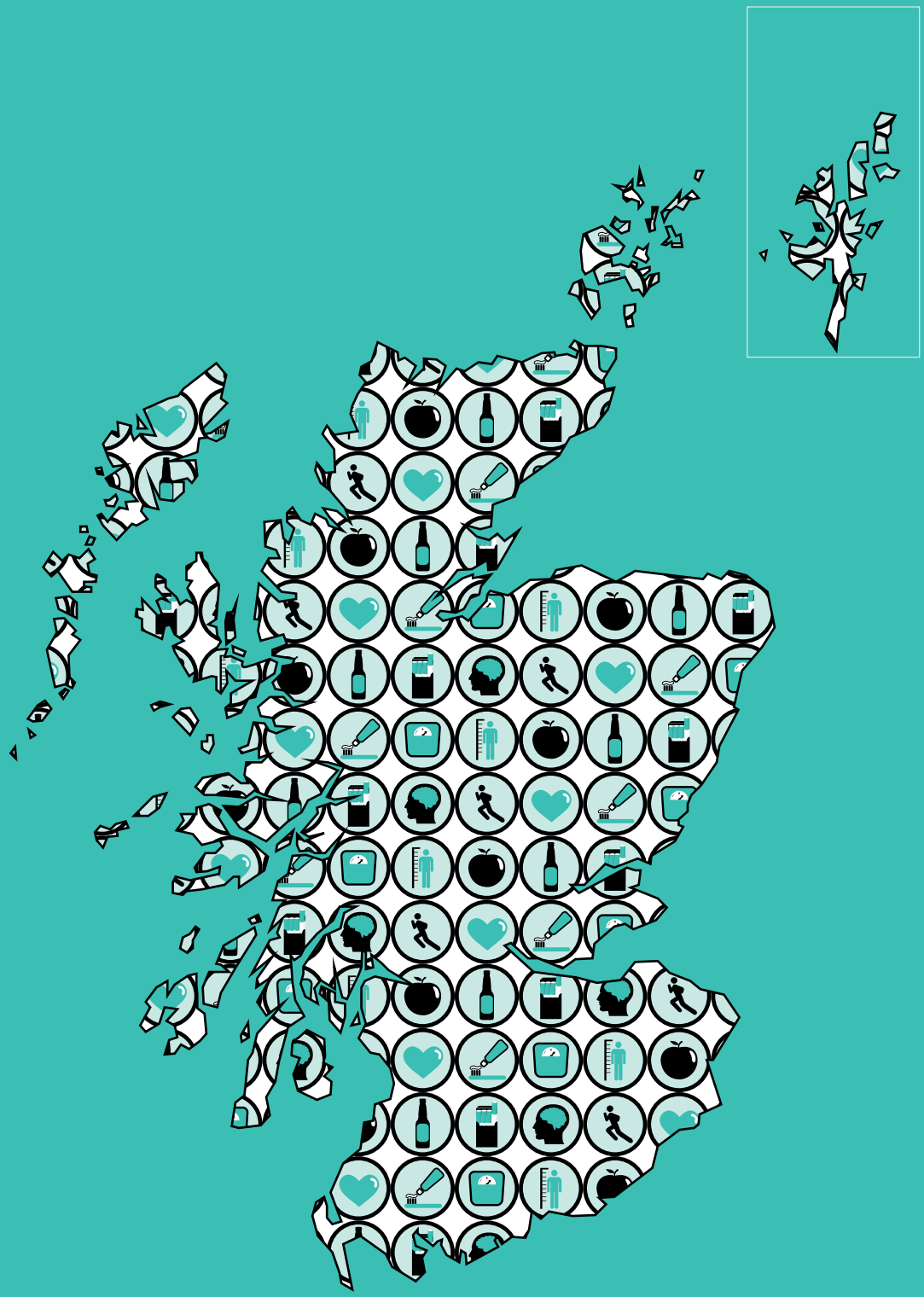
Women aged 16-49 — *2012/2013 combined*

Vitamin and folic acid supplement use; Reason for folic acid supplement use	Yes	No	*Weighted Bases*	*Unweighted Bases*
	%	%		
Vitamin supplement use				
Taking any supplement				
16-24	24	76	*660*	*469*
25-34	31	69	*772*	*748*
35-44	31	69	*817*	*906*
45-49	30	70	*475*	*545*
Total	29	71	*2723*	*2668*
Taking any folic acid supplements				
16-24	4	96	*660*	*469*
25-34	10	90	*770*	*746*
35-44	5	95	*816*	*905*
45-49	3	97	*475*	*545*
Total	6	94	*2721*	*2665*
Reason for taking folic acid supplement				
Taking folic acid supplements because hope to become pregnant[a]	55	45	*94*	*87*
Start taking folic acid supplements before becoming pregnant[b]	57	43	*63*	*60*
Taking folic acid supplements for the first 12 weeks of pregnancy[c]	[100]	[-]	*36*	*30*

a Base is those who were taking folic acid but were not pregnant at the time of interview

b Base is those who were taking folic acid and were pregnant at the time of interview

c Base is those who said they were taking folic acid before becoming pregnant



Chapter 6

Physical activity

6 PHYSICAL ACTIVITY

Stephen Hinchliffe

SUMMARY

Child activity levels

- In 2013, when school-based activities were accounted for, 75% of children were active at the recommended level of at least 60 minutes a day every day.
- Boys (78%) remain more likely than girls (72%) to meet the guideline.
- With the exception of 2012, the 2008-2013 period saw a steady increase (from 71% to 75%), in the percentage of children meeting the guideline when school-based activities were included. The longer-term trend excluding school-based activities and dating back to 1998 has seen more fluctuation.
- The decline in activity levels with increased age remains more pronounced for girls than boys. 81% of girls aged 5-7 met the guideline, compared with 51% of those aged 13-15. The equivalent figures for boys were 86% and 68%, respectively.
- In 2013, two-thirds (67%) of children aged 2-15 participated in sport or exercise in the week prior to interview (71% of boys and 63% of girls). For boys, this marked a halt to the recent decline in participation. For girls, the downward trend, evident since 2009 (70%), continued in 2013 (63%).

Adult activity levels

- In 2013, 64% of adults met the guideline to do at least 150 minutes moderate or 75 minutes vigorous activity over a week. One in five (21%) did fewer than 30 minutes of moderate or 15 minutes vigorous activity per week.
- Men remain significantly more likely than women to meet the guideline on aerobic activity (71%, compared with 58% of women). Between 2012 and 2013 the proportion of men meeting the guideline increased significantly from 67% to 71%. Adherence among women was 58% in both years.
- As seen in earlier years, activity levels are significantly associated with age, with older people least likely to meet the guideline on aerobic activity .Twenty-six percent of those aged 75 and over were active at the recommended level, compared with 79% of those aged 16-34 and 71% of those aged 35-54.
- Around a quarter (27%) of adults (31% of men and 23% of women) performed muscle-strengthening activities on at least two days a week in 2013. This declined with age, from 47% of those aged 16-24 to 6% of those aged 75 or above.

Knowledge of guidelines on adult and child activity

- In 2013, just 4% of adults knew that the government advised at least 150 minutes of moderate physical activity each week. Most (77%) overestimated what was advised, while 19% underestimated the guidance.
- Adults with very low activity levels (less than half an hour a week of moderate physical activity, or equivalent) were more likely than those with higher activity levels to underestimate the guideline (29%, compared with 16-19%).
- Knowledge of the children's guideline (at least 60 minutes every day) was higher. Around a quarter (26%) of parents of children aged 5-12 knew the recommended level of activity for children, as did a similar proportion (24%) of children aged 13-15. Most who did not know the guideline overestimated it.

6.1 INTRODUCTION

The health benefits of a physically active lifestyle are well documented. A person who is active on a regular basis is at reduced risk of chronic conditions of particular concern in Scotland, including cardiovascular disease, obesity, and type 2 diabetes.[1] The benefits of being regularly active extend beyond physical health, with evidence that increased activity can also improve mental wellbeing, another key health priority in Scotland.[2] Exercise is now recommended by The Royal College of Psychiatrists as a treatment for depression in adults,[3] and the Scottish Intercollegiate Guidelines Network (SIGN) national clinical guideline for non-pharmaceutical management of depression states that structured exercise programmes may be an option for depressed people.[4] Among older people, physical activity is associated with better health and cognitive function and can reduce the risk of falls in those with mobility problems.[5,6]

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.[7]

The World Health Organisation (WHO) estimated, in 2008, that 3.2 million deaths per year could be attributed to low physical activity levels.[8] It is estimated that in Scotland low activity contributes to around 2,500 deaths per year and costs the National Health Service £94 million annually.[9]

6.1.1 Policy background

Helping more people be more active, more often is an over-arching policy objective of the Scottish Government. This commitment is reflected in the addition of a National Indicator to 'increase physical activity' to the **National Performance Framework** in 2012.[10] Data from the Scottish Health Survey (SHeS) is used to monitor indicator performance. An **Active Scotland Outcomes Framework** is being collaboratively developed through the National Strategic Group for Sport and Physical Activity. The framework, which will be published as a web resource imminently, relies on the Scottish Health Survey for many of its indicators.

In addition, information on physical and sedentary activity collected during the survey interview is used to inform some of the intermediate-term indicators used to monitor the progress of the **Obesity Route Map**.[11]

The Scottish Government have committed an annual investment of £3 million to increase the activity levels of those furthest away from meeting the guidelines – teenage girls and older adults. While the **Active Scotland** web portal**,** developed by NHS Health Scotland, helps physical activity staff and health professionals signpost the public to physical activity opportunities.[12]

In addition to the annual funding to boost teenage girls' activity, other key initiatives to tackle inactivity among children and young people

include the **Active Schools** network which aims to increase the number of sporting opportunities available to children and young people.[13] 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.[14]

Several programmes to increase physical activity have been designed to capitalise on the opportunities presented by the 2014 Commonwealth Games in Glasgow, as part of the **Legacy 2014** initiative.[15] Progress on legacy outcomes is being tracked via **Assessing Legacy 2014.**[16] A prospective assessment on the potential for the Games and related legacy programmes for physical activity is set out in the Legacy Evaluation **Pre Games Report.**[17] Again, Scottish Health Survey data is being used to monitor several of the Active Outcome Indicators on activity levels and awareness of the recommendations on physical activity.

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.[18] The PAIP is a new 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.[19] The Toronto charter was developed following extensive worldwide expert consultation and makes the case for increased action and greater investment on physical activity for health, environmental, economic and other wider outcomes.

The Plan represents Scotland's long term physical activity implementation policy. It adapts the Toronto Charter's seven best investments that work to promote physical activity and presents these in the Scottish context under five delivery themes: environment, workplace settings, healthcare settings, education settings and sport and active recreation. The data presented below demonstrate the importance of walking for physical activity, and one of the first milestones of the PAIP is the recent **National Walking Strategy**.[20]

6.1.2 Guidelines on physical activity

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

Table 6A UK CMOs' physical activity guidelines

Age group	Guidelines
Early years – children under 5 years	○ Physical activity should be encouraged from birth, particularly through floor-based play and water-based activities in safe environments. ○ Children capable of walking unaided should be physically active daily for at least 180 minutes (3 hours), spread throughout the day. ○ Minimise amount of time spent being sedentary (being restrained or sitting) for extended periods (except time spent sleeping).
Children and young people aged 5 to 18	○ Should engage in moderate to vigorous activity for at least 60 minutes and up to several hours every day. ○ Vigorous activities, including those that strengthen muscles and bones, should be carried out on at least 3 days a week. ○ Extended periods of sedentary activities should be limited. ○ Should be active daily.
Adults aged 19-64	○ 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. ○ 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). ○ Activities that strengthen muscles should be carried out on at least two days a week. ○ Extended periods of sedentary activities should be limited.
Adults aged 65 and over	○ 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. ○ Older adults at risk of falls should incorporate activities to improve balance and coordination on at least two days a week.

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

Adult adherence to the new guideline on moderate/ vigorous physical activity (MVPA) in 2013 is presented in this chapter along with the adherence to the guidance on doing muscle-strengthening activities at least two days a week. Trends in child physical activity, both including and excluding school-based activities are also presented and the trend in child participation in sports and exercise has also been updated. New questions designed to assess awareness of the new guidelines were introduced to the survey in 2013 and the findings are presented here. Knowledge of the guidelines by self-reported activity levels is also explored in this chapter. Supplementary tables on physical activity are available on the survey website.[21]

6.2 METHODS AND DEFINITIONS

6.2.1 Adult physical activity questionnaire

The SHeS questionnaire[22] 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.

6.2.2 Adherence to adult physical activity guidelines

Monitoring adherence to the revised guidelines (discussed in Section 6.1.2) required several changes to be made to the SHeS physical activity questions in 2012. Details of the exact amendments made to the module, and fuller details of the information collected about physical activity, are outlined in the 2012 SHeS annual report.[23]

The current activity guidelines advise adults to accumulate 150 minutes of moderate activity or 75 minutes of vigorous activity per week in bouts of 10 minutes or more. This guideline is referred to throughout this chapter as the MVPA guideline (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.[23]

Table 6B Adult summary activity levels[a]

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

[a] 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 guideline 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.

6.2.3 Child physical activity questionnaire

The questions on child physical activity are slightly less detailed than those for adults.[24] 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).

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.[23]

6.2.4 Adherence to child physical activity guideline

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. A child's level of physical activity was assigned to one of three categories:

Table 6C Child summary activity levels

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

6.2.5 Knowledge of the physical activity guidelines

As part of the paper self-completion questionnaire administered at the end of the survey interview, all participants aged 20 and above were asked:

> "The government advises people to spend a certain amount of time doing moderate physical activity to help them stay healthy. This includes brisk walking, heavy gardening or any other activity that makes you breathe slightly faster than usual.
>
> How much time **per week** do you **think** people **your age** are advised to spend doing this?"

Those aged 13 to 19 were asked: [25]

> "How much time **per day** do you **think** people **your age** are advised to spend doing this?"

Parents of children aged 4-12 were also asked a similar question about the guideline for children aged 5-18, and if they had a child aged under 5, about the guideline for pre-school children.[26]

Four measures of knowledge of the guidelines were constructed, one for parents' knowledge of the pre-school guidance (not reported here due to small sample sizes), one for parents' knowledge of the child guidance, one for those aged 13 to 18, and one for those aged 19 and above.[25]

These questions are not comparable with those included in the survey between 2008 and 2011 since both the wording used and the mode of administration differed.

6.3 CHILD PHYSICAL ACTIVITY LEVELS

6.3.1 Trends in summary physical activity levels for children since 1998

Information on children's physical activity has been collected in SHeS since 1998, with data on activity done while at school included since 2008. Trends for the proportion of children aged 2-15 meeting the government guideline of at least 60 minutes of activity every day of the week, including and excluding activity at school, are presented in Table 6.1 and Figure 6A.

When school-based activity was excluded, the percentage of children active at the recommended level ranged from 62% to 69% between 1998 and 2013, with the 2012 figure a possible outlier within the overall trend. While the increase in activity levels observed between 2012 and 2013 (from 62% to 67%) was statistically significant, the longer term trend has been relatively stable (65% in 1998 and 67% in 2013).

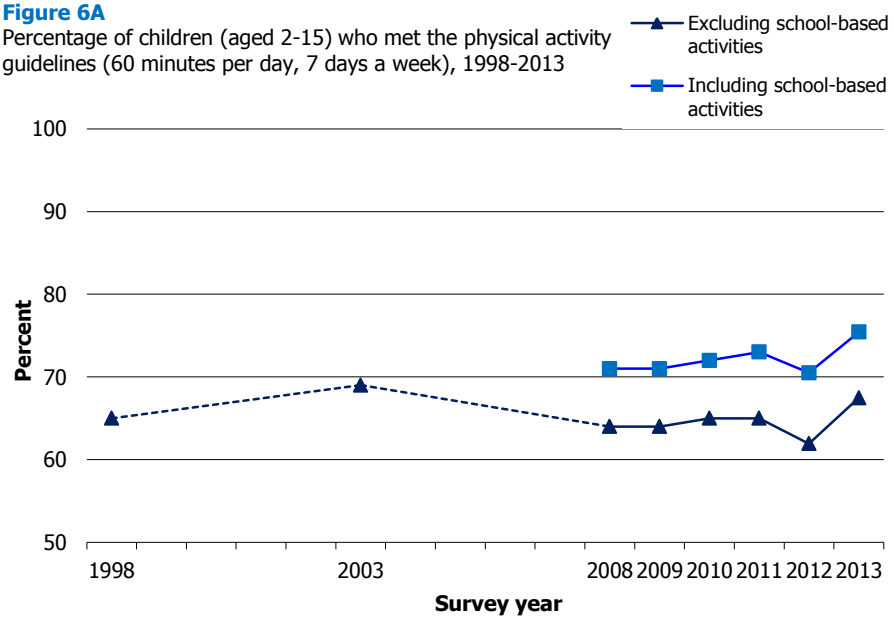
Since 2008, the percentage of children meeting the guideline has always been 7 or 8 percentage points higher when activity at school is taken into account. In 2013, when school-based activity was included, three quarters (75%) of children were active for at least 60 minutes each day of the week, a significant increase on the figure for 2008 and 2009 (71%). As with the trends that exclude school-based activity, 2012 appears to be an outlier. The 2014 figures will help to assess if this is the case.

The percentage of boys aged 2-15 active at the recommended level, excluding school-based activities, has fluctuated between 66% and 72% with no obvious pattern since 2008. A similar trend was observed when school-based activities were included, with the percentage active at the recommended level similar in 2008 and 2013 (77% and 78%, respectively).

Trends in girls' activity levels have been somewhat clearer, particularly when school-based activities are included. Between 2008 and 2013, the percentage of girls aged 2-15 active for at least 60 minutes each day, including school activities, increased by 8 percentage points, from 64% to 72% (its highest level). Girls' activity levels were subject to more fluctuation when school-based activity was excluded, particularly in the earlier years of the series. Since 2008, however, and with the exception of the possible outlier in 2012, adherence to the guideline when school activities were excluded also steadily increased (to 64% in 2013). Though note that this latest increase returns girls' activity to 2003 levels (63%).

These differing trends have resulted in a narrowing of the gap between activity levels for boys and girls, from 13 percentage points in 2008 to between 5 and 6 percentage points since 2010 (78% of boys and 72% of girls met the guideline in 2013 when school-based activity was included). **Figure 6A, Table 6.1**

Figure 6A
Percentage of children (aged 2-15) who met the physical activity guidelines (60 minutes per day, 7 days a week), 1998-2013



6.3.2 Physical activity levels in children in 2013, by age and sex

Boys were significantly more likely than girls to meet the guideline in 2013 irrespective of whether or not school-based activities were included in the estimate. Seventy-eight percent of boys were active for at least 60 minutes each day, including school activities, compared with 72% of girls. Activity levels varied significantly by age, for both boys and girls. For example, when school-based activity was included, the proportion of boys meeting the physical activity guideline was highest for those aged 5-7 (86%), adherence then declined steadily with increased age, to 68% for boys aged 13-15.

The difference between the activity levels of boys and girls was largely explained by significantly lower levels among girls aged 2-4 and 13-15 compared with boys of the same ages. Only 51% of girls aged 13-15 were active for at least 60 minutes each day of the week (including school activities), compared with 68% of boys of the same age, a gap of seventeen percentage points. A similar gap was observed when school-based activity was excluded. Hence it is activity outside of school which is significantly lower for girls than boys of this age.

As illustrated in Figure 6C, and discussed in previous SHeS reports,[23] activity levels outwith school declined with increased age for girls. Around three quarters (77%) of girls aged 5-7 met the guideline, but by age 13-15 adherence had declined to 38%. However, when school-based activity is included, adherence to the guideline was at above 73% for all girls except those aged 13-15. These associations with age highlight the importance of school-based activity for girls, but also demonstrate that it cannot fully compensate for the lower activity levels among older girls. **Figure 6B, Figure 6C, Table 6.2**

Figure 6B
Percentage of boys meeting the physical activity guideline of at least 60 minutes every day of the week, 2013, by age

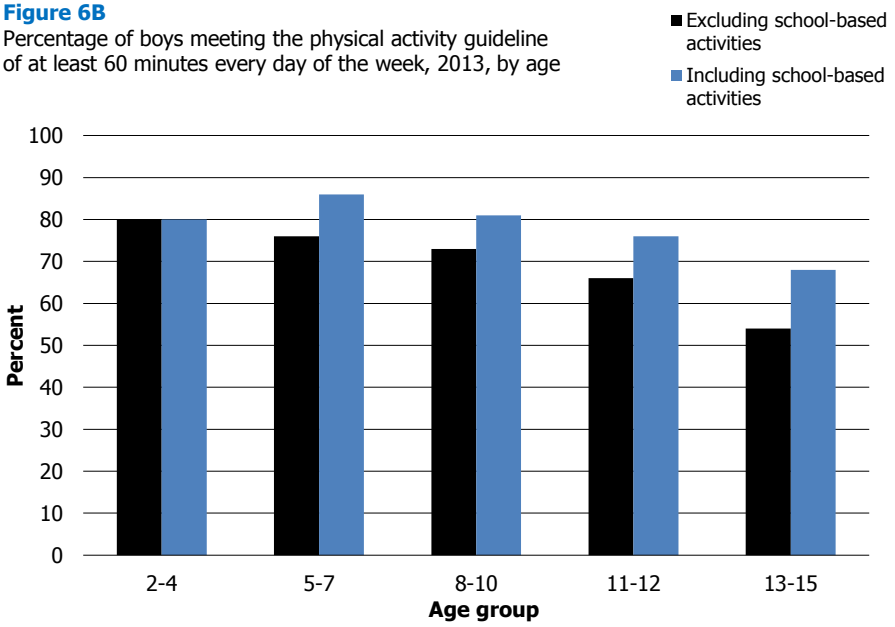
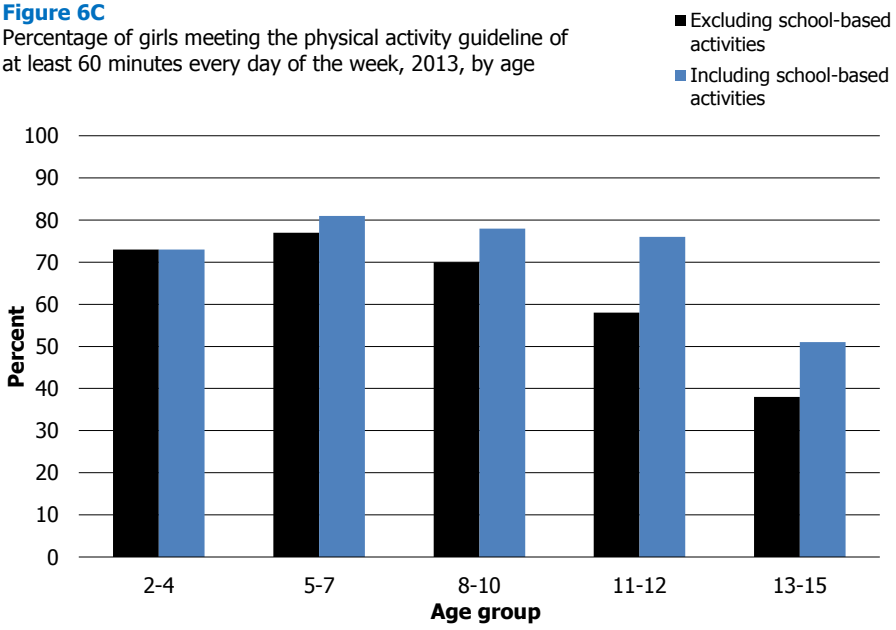


Figure 6C
Percentage of girls meeting the physical activity guideline of at least 60 minutes every day of the week, 2013, by age



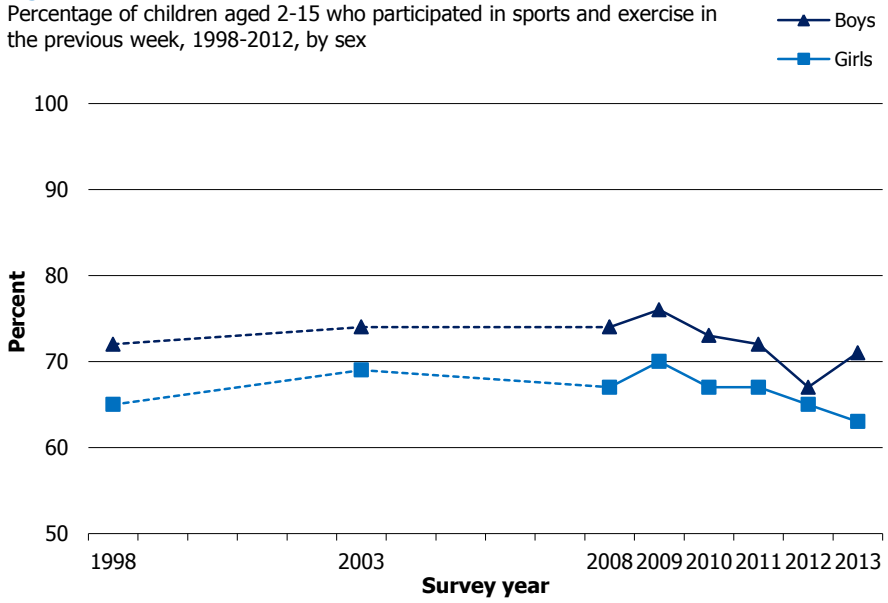
6.3.3 Trends in sports and exercise participation among children since 1998

In the 2012 report it was noted that the proportion of children aged 2-15 participating in sports and exercise had declined in recent years, from 73% in 2009 to 66% in 2012.[23] In 2013, 67% of children participated in sport in the week prior to interview, significantly lower than in 2009, but similar to participation levels in 2012.

In 2013 the decline in sports and exercise participation continued for girls but not for boys. Seventy-one percent of boys participated in the previous week in 2013, similar to the level in 1998 (72%). The four percentage point increase in participation between 2012 and 2013, from 67% to 71%, was not statistically significant.
Girls' participation in sport and exercise was at its highest level in 2009 (70%), and has gradually declined since then to 63% in 2013. While

participation was at its lowest in 2013, levels were not significantly different to those seen in 1998 (65%). The decline in sports and exercise participation is in contrast to the finding, discussed in Section 6.3.1, that girls' adherence to the physical activity guideline was at its highest level in 2013, suggesting that the increased activity levels among girls has not been driven by increased participation in sports and exercise. **Figure 6D, Table 6.3**

Figure 6D
Percentage of children aged 2-15 who participated in sports and exercise in the previous week, 1998-2012, by sex



6.4 ADULT PHYSICAL ACTIVITY LEVELS

6.4.1 Summary adult physical activity levels, and adherence to the aerobic activity guideline in 2013, by age and sex

In 2013, nearly two thirds (64%) of adults met the guideline on moderate or vigorous physical activity (MVPA) of at least 150 minutes of moderate, or 75 minutes of vigorous physical activity a week, or an equivalent combination of the two.

Men were significantly more likely than women to meet this guideline in 2013 (71% and 58%, respectively). Between 2012 and 2013, the proportion of men meeting the guideline increased significantly from 67% to 71%. Since 2013 was only the second year that adherence to the revised guidelines was monitored, future years of data will be required to determine whether this is the beginning of a trend in increased activity levels for men. Adherence to the MVPA guideline did not change for women between 2012 and 2013 (58% in both years).

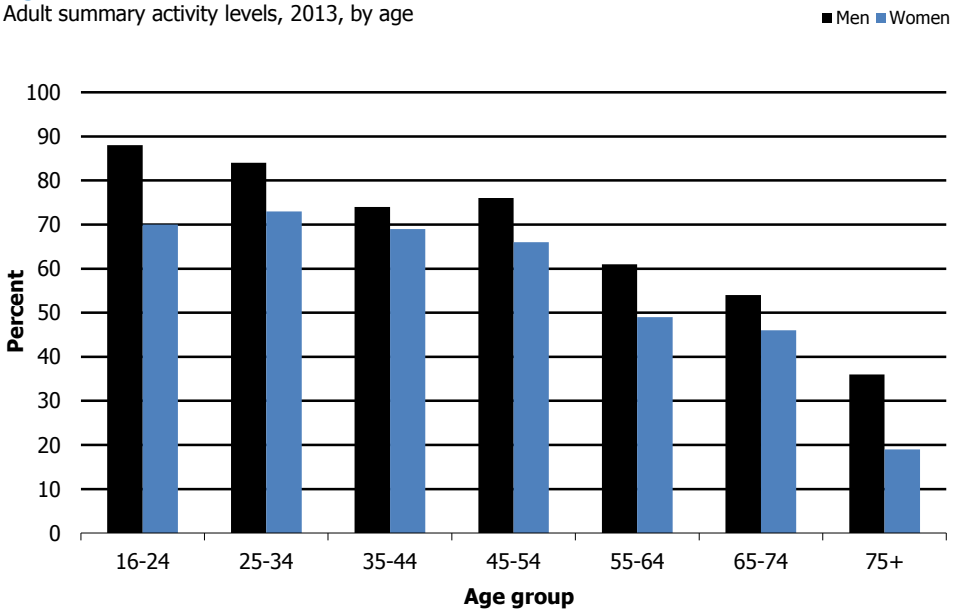
Table 6D Adherence to the MVPA[a] guideline,

	Men	Women	All
	%	%	%
2012	67	58	62
2013	71	58	64

[a] Meets moderate/vigorous physical activity guideline of 150 minutes of moderate, 75 minutes vigorous, or combination of both each week

Activity levels were significantly associated with age for both men and women, with younger adults more likely than those in older age groups to meet the MVPA guidelines. For example, 79% of those aged 16-34 and 71% of those aged 35-54 were active at the recommended level, compared with 26% of those aged 75 and above. Across all age groups, men were more likely than women to meet the guideline and this was most apparent among the youngest and oldest age groups: 88% of men aged 16-24 met the guidelines, compared with 70% of women of the same age; and 36% of men aged 75 or above met the guidelines, compared with 19% of women of that age.

Figure 6E
Adult summary activity levels, 2013, by age



In 2013, around one in ten (11%) adults did some activity, defined as between 60 and 149 minutes of moderate activity or between 30 and 74 minutes of vigorous activity over seven days, while 4% had low activity levels. One in five (21%) adults had very low activity levels in 2013, doing less than half an hour a week of moderate activity or the equivalent level of vigorous activity. Women were more likely than men to have very low activity levels (23% and 18% respectively) and the percentage active at only very low levels increased with age for both sexes. For example, more than half (57%) of those aged 75 or above did less than 30 minutes of moderate activity or 15 minutes of vigorous activity over a week, compared with one in ten (10%) of those aged 16-24. **Figure 6E, Table 6.4**

6.4.2 Adherence to the muscle strengthening guideline in 2013, by age and sex

In addition to the guideline on moderate or vigorous physical activity (MVPA), the government also advises that adults should perform muscle strengthening activities on at least two days over the course of a week. At 27% in 2013, adherence to this guideline was much lower than adherence to the guideline on moderate or vigorous activity.

As with the MVPA guideline, men were more likely than women to perform muscle strengthening activities at the recommended level (31% and 23%, respectively). Adherence also declined with age for both men and women, from 47% of those aged 16-24, to just 6% of those aged 75 and above. The gap between men and women's adherence was most evident among younger people, with 55% of men aged 16-24 meeting the guidelines, compared with 39% of women of the same age.

Table 6.5

6.4.3 Adherence to the aerobic activity and muscle strengthening guidelines in 2013, by age and sex

It is also possible, from Table 6.5, to identify those adults following both the MVPA guideline and the muscle-strengthening guideline, those who followed just one of the guidelines, and those that followed neither. As was the case in 2012, most people who met the muscle strengthening guideline also met the MVPA guideline (26% met both while just 1% met the muscle strengthening guideline only). A further 39% met the MVPA guideline but not the muscle strengthening guideline while just over a third (35%) of adults met neither guideline in 2013. **Table 6.5**

6.5 KNOWLEDGE OF PHYSICAL ACTIVITY GUIDELINES

6.5.1 Adults' knowledge of physical activity guideline in 2013, by age and sex

New questions designed to measure knowledge of the revised physical activity guidelines were introduced to the survey in 2013. Just 4% of adults aged 19 or above knew that the government recommended that they carry out at least 150 minutes of moderate physical activity each week. By comparison, in the years 2008-2011 combined, 10% of adults were aware of the guideline in place at the time to do at least 30 minutes of moderate exercise a day on five days a week (data not shown).[27] It is important, however, to note that both the question wording and the mode of administration changed in 2013 so these results are not directly comparable.

The majority (77%) of adults overestimated the amount of moderate activity advised by the government, while one in five (19%) underestimated what is recommended. While not directly comparable, it is worth noting that the proportions underestimating and overestimating the old guideline in 2008-2011 were roughly the same (data not shown).[27]

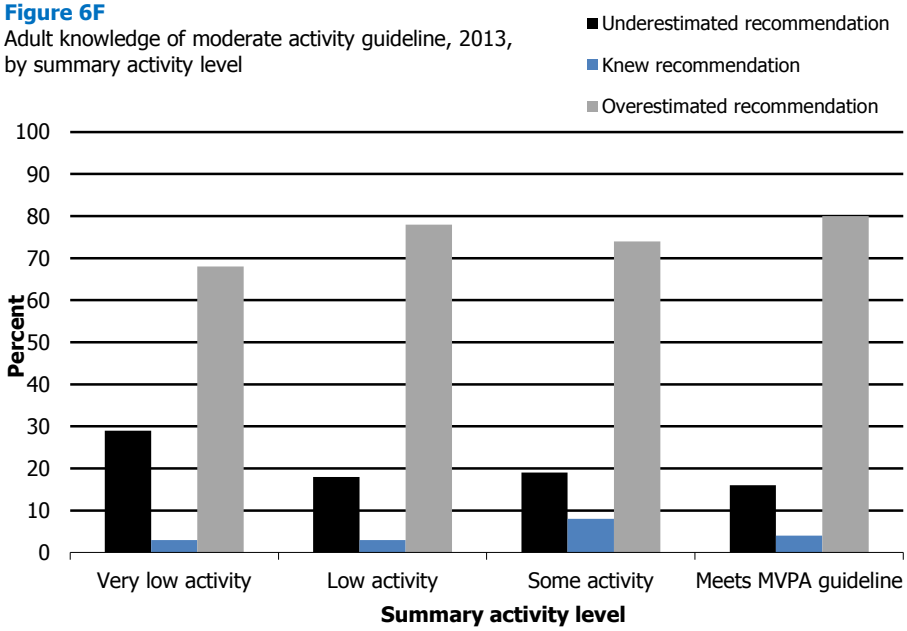
Knowledge of the moderate physical activity guideline did not vary significantly between men and women (4% of men and 5% of women correctly identified the guideline) or by age (varying between 2% and 6%). Older people were, however, most likely to underestimate the recommended level of moderate activity. For example, 25% of those aged 65-74, and 31% of those aged 75 and above underestimated the level of activity advised, compared with 14-19% of those aged under 65. In contrast, those aged 19-24 were the most likely to overestimate the guideline (84% of those aged 19-24, compared with 70% and 65% for those aged 65-75, and 75 and over, respectively). **Table 6.6**

6.5.2 Adults' knowledge of physical activity guidelines in 2013, by adult physical activity levels and sex

It is also possible to examine knowledge of the physical activity guideline by people's self-reported activity level (Table 6.7). Those with the lowest activity levels were most likely to underestimate the amount of moderate activity advised (29%). In contrast, between 16% and 19% of those who did more than half an hour of moderate physical activity a week underestimated the guideline. This is perhaps not surprising, given that older people were most likely to underestimate the guideline and were also least active (see Sections 6.4.1 and 6.5.1).

Those who did at least an hour's moderate physical activity a week, but not enough to meet the recommendations, were most likely to provide a correct estimate of the recommendations. Eight percent of this group correctly estimated 150 minutes a week, compared with 4% of those who met the recommendations, and 3% of those who did less than an hour a week. **Figure 6F, Table 6.7**

Figure 6F
Adult knowledge of moderate activity guideline, 2013, by summary activity level



6.5.3 Parents' and children's knowledge of physical activity guidelines in 2013, by age and sex

Parents of children aged between 5 and 12 were asked what they thought the recommended amount of daily activity was for their child. Children and young adults aged between 13 and 18 were asked directly to estimate what level of activity was recommended for someone of their age. Both questions were included in the paper self-completion part of the interview.

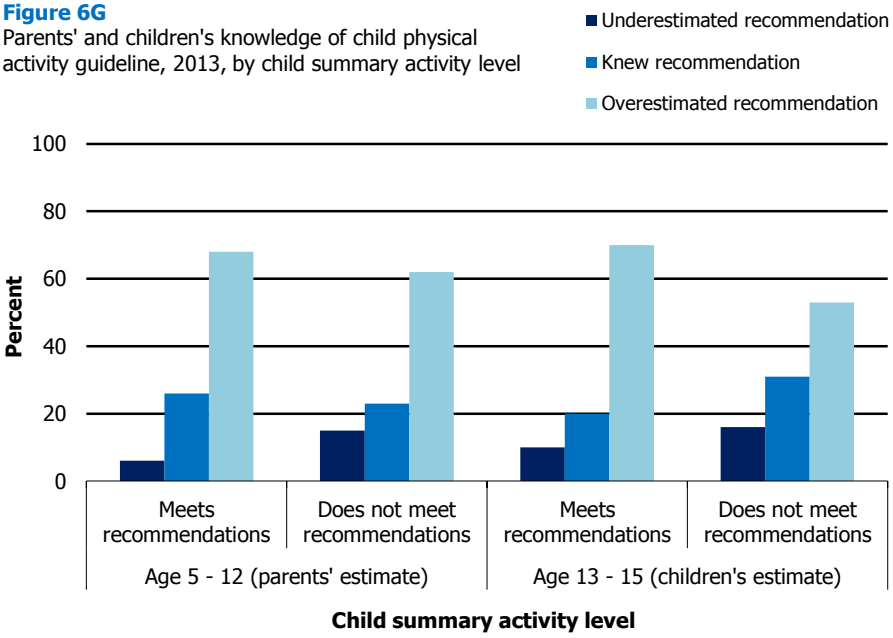
Around a quarter (26%) of parents of children aged between 5 and 12 knew that their child should do at least 60 minutes of activity each day of the week. A similar proportion (24%) of children aged 13-15 knew the level of activity they were advised to do. Knowledge of the guideline was slightly higher among those aged 16-18, with 34% correctly estimating their recommended level of activity. The most common response across all age categories was to over-estimate the level of activity recommended. Differences according to the sex of the child or young adult were not significant. **Table 6.8**

6.5.4 Parents' and children's knowledge of physical activity guidelines in 2013, by children's physical activity levels and sex

Table 6.9 shows that parents of children aged between 5 and 12 who met the guideline were more likely than parents whose children did not meet the guideline to overestimate the level of activity recommended (68% and 62%, respectively). In contrast, those with a child who fell short of the guideline were more likely to underestimate what was advised (15% compared with 6% of those with a child that met the guideline).

Although knowledge of the guideline among those aged 13-15 did not differ significantly from the parental estimates for younger children, knowledge varied by older children's own activity levels. Those who were active for at least 60 minutes each day of the week were significantly more likely than those who were less active than this to overestimate the recommended level of activity for their age group (70% and 53%, respectively). **Figure 6G, Table 6.9**

Figure 6G
Parents' and children's knowledge of child physical activity guideline, 2013, by child summary activity level



References and notes

[1] Fogelholm, M. (2010). “Physical activity, fitness and fatness: relations to mortality, morbidity and disease risk factors. A systematic review”. Obesity Reviews, 11(3): 202–221.

[2] Penedo, F.J. and Dahn, J.R. (2005). "Exercise and well-being: a review of mental and physical health benefits associated with physical activity." Current opinion in psychiatry, 18(2): 189-193.

[3] Royal College of Psychiatrists. (2012). Physical Activity and Mental Health. Online. Available at: www.rcpsych.ac.uk/expertadvice/treatmentswellbeing/physicalactivity.aspx

[4] Scottish Intercollegiate Guidelines Network. Non-pharmaceutical management of depression. A national clinical guideline. SIGN guideline no. 114. Edinburgh: SIGN, 2010.

[5] Windle, G., Hughes, D., Linck, P., Russell, I. and Woods, B. (2010). “Is exercise effective in promoting mental well-being in older age? A systematic review”. Aging & Mental Health. 14(6), DOI:10.1080/13607861003713232

[6] Global Recommendations on Physical Activity for Health. Geneva: World Health Organisation, 2010. www.who.int/dietphysicalactivity/factsheet_recommendations/en/index.html

[7] Start Active, Stay Active – A report on physical activity for health from the four home countries’ Chief Medical Officers. (web only). UK Department of Health, July 2011. https://www.gov.uk/government/publications/start-active-stay-active-a-report-on-physical-activity-from-the-four-home-countries-chief-medical-officers

[8] See: www.who.int/dietphysicalactivity/factsheet_inactivity/en/index.html

[9] Foster, C and Allender, S. 2012. Costing the burden of ill health related to physical inactivity for Scotland. British Heart Foundation Research Group report for SPARColl. NHS Health Scotland. www.healthscotland.com/uploads/documents/20437-D1physicalinactivityscotland12final.pdf

[10] See: www.scotland.gov.uk/About/scotPerforms/indicator/physicalactivity

[11] Health Analytical Services Scottish Government and Information and Statistics Division, NHS National Services Scotland. Indicators to Monitor Progress of the Obesity Route Map. Edinburgh: Scottish Government, 2011 www.scotland.gov.uk/Resource/Doc/346011/0115167.pdf

[12] www.activescotland.org.uk/

[13] http://www.sportscotland.org.uk/schools/active-schools/

[14] Giving Children and Young People a Sporting Chance, Scottish Government, June 2014. www.scotland.gov.uk/Publications/2014/06/7317

[15] See: www.legacy2014.co.uk/

[16] See: www.scotland.gov.uk/Topics/ArtsCultureSport/Sport/MajorEvents/Glasgow-2014/Commonwealth-games/Indicators

[17] An Evaluation of Legacy from the Glasgow 2014 Commonwealth Games: Pre-Games Report, Scottish Government and Games Legacy Evaluation Working Group, April 2014 www.scotland.gov.uk/Publications/2014/04/4572

[18] A More Active Scotland - Building a Legacy from the Commonwealth Games. Scottish Government, February 2014. < www.scotland.gov.uk/Publications/2014/02/8239/0>

[19] www.interamericanheart.org/images/PHYSICALACTIVITY/TorontoCharterPhysicalActivityENG.pdf

[20] Let's Get Scotland Walking – the National Walking Strategy. Scottish Government, June 2014. www.scotland.gov.uk/Publications/2014/06/5743

[21] www.scotland.gov.uk/scottishhealthsurvey

[22] The questions used in the survey since 1998 are based on the Allied Dunbar National Fitness Survey, a major study of physical activity among the adult population in England carried out in 1990. For further details see: Health Education Authority. Allied Dunbar National Fitness Survey. Health Education Authority and Sports Council, London, 1992

[23] Bromley, C. (2013). Chapter 6: Physical Activity. In Rutherford, L., Hinchliffe, S. and Sharp, C. (eds.) Scottish Health Survey 2012 – Volume 1: Main Report. Edinburgh: Scottish Government. http://www.scotland.gov.uk/Publications/2013/09/3684

[24] 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.

[25] These knowledge questions were included in the self-completion questionnaire. One version of the self-completion is designed for 16-17 year olds, and another is designed for those aged 20 and over. Some 18 and 19 year olds complete the adult (20+) version, whereas some complete the one for 16-17 year olds. The physical activity guidelines define adults as 19 and over, so the older adult version of the self-completion asked about knowledge of the weekly recommended activity levels for adults, while younger adults were asked about daily recommended levels for 5-18 year olds. 18 year olds who were asked about weekly hours have been excluded from the measures presented. Similarly, 19 year olds who were asked about daily hours are not included.

[26] Full question text is available in Volume 2 Annex A.

[27] This differs from the figure published in the Scottish Health Survey report: Rutherford, L. and Reid, S. (2013). Knowledge, attitudes and motivations to health, 2008-11. Edinburgh: NHS Health Scotland. The 24% who knew the recommendation according to that publication was based on a more generous understanding of knowing the recommendation, rather than an exact 30 minutes and 5 days used to calculate the 10% noted here.

Table list

Additional tables available on the survey website include:

- Physical activity at work, by age & key demographics
- Adult summary activity levels, by age & key demographics
- Adult adherence to guidelines on aerobic & muscle strengthening activities, by age & key demographics
- Adult sport participation, by age & key demographics
- Adult weekday & weekend sedentary leisure time, by age & key demographics
- Reasons for exercise (adults), by age & key demographics
- Reasons for not exercising, not exercising more (adults), by age & key demographics
- Child sport participation, by age & key demographics
- Child activity: days last week 15+min brisk walk, by age & key demographics
- Child activity: days last week 15+min housework/gardening, by age & key demographics
- Child activity: days last week 15+min and 30+min active play or sport, by age & key demographics
- Child activity: days last week any physical activities, by age & key demographics
- Child activity: days last week 15+ total activities, by age & key demographics
- Child activity: minutes/day and mean minutes/day spent on all activities (no lower limit), by age & key demographics
- Child activity: minutes/day and mean minutes/day spent on all activities (no lower limit) including school (grouped), by age & key demographics
- Child activity: summary classification 15+min activity levels, by age & key demographics
- Child activity: summary classification 15+min activity levels, by age & key demographics
- Child activity: summary classification activity levels - all activities (no lower limits) excluding & including school, by age & key demographics

Table 6.1 Proportion of children meeting physical activity guideline, (including and excluding school), 1998 to 2013

Aged 2 - 15 *1998 to 2013*

Proportion meeting guideline[a]	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%
Boys								
Excluding activity at school	72	74	72	69	68	69	66	70
Including activity at school	n/a	n/a	77	75	75	76	73	78
Girls								
Excluding activity at school	59	63	56	58	62	62	58	64
Including activity at school	n/a	n/a	64	66	70	70	68	72
All Children								
Excluding activity at school	65	69	64	64	65	65	62	67
Including activity at school	n/a	n/a	71	71	72	73	70	75
Bases (weighted):								
Boys	*1088*	*1478*	*776*	*1142*	*784*	*867*	*791*	*825*
Girls	*1032*	*1424*	*721*	*1096*	*743*	*830*	*748*	*777*
All children	*2120*	*2903*	*1497*	*2237*	*1527*	*1697*	*1539*	*1602*
Bases (unweighted):								
Boys	*1972*	*1428*	*750*	*1142*	*811*	*841*	*753*	*815*
Girls	*1881*	*1444*	*737*	*1085*	*694*	*826*	*774*	753
All children	*3853*	*2872*	*1487*	*2227*	*1505*	*1667*	*1527*	*1568*

a Physically active for at least 60 minutes on all 7 days per week

Table 6.2 Proportion of children meeting physical activity guideline, (including and excluding school), 2013, by age and sex

Aged 2 - 15 *2013*

Proportion meeting guideline[a]	Age					Total
	2-4	5-7	8-10	11-12	13-15	
	%	%	%	%	%	%
Boys						
Excluding activity at school	80	76	73	66	54	70
Including activity at school	80	86	81	76	68	78
Girls						
Excluding activity at school	73	77	70	58	38	64
Including activity at school	73	81	78	76	51	72
All Children						
Excluding activity at school	77	76	72	62	46	67
Including activity at school	77	83	79	76	60	75
Bases (weighted):						
Boys	*191*	*169*	*197*	*100*	*168*	*825*
Girls	*178*	*169*	*175*	*104*	*151*	*777*
All children	*369*	*338*	*372*	*204*	*319*	*1602*
Bases (unweighted):						
Boys	*209*	*174*	*191*	*85*	*156*	*815*
Girls	*205*	*172*	*158*	*87*	*131*	*753*
All children	*414*	*346*	*349*	*172*	*287*	*1568*

a Physically active for at least 60 minutes on all 7 days per week

Table 6.3 Proportion of children participating in sport, 1998 to 2013

Aged 2 - 15 *1998 to 2013*

Participation in any sport during last week	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%
Boys								
Yes	72	74	74	76	73	72	67	71
No	28	26	26	24	27	28	33	29
Girls								
Yes	65	69	67	70	67	67	65	63
No	35	31	33	30	33	33	35	37
All Children								
Yes	69	72	71	73	70	69	66	67
No	31	28	29	27	30	31	34	33
Bases (weighted):								
Boys	*1096*	*1514*	*790*	*1155*	*794*	*878*	*802*	*830*
Girls	*1046*	*1448*	*736*	*1110*	*763*	*838*	*759*	*788*
All children	*2142*	*2961*	*1526*	*2265*	*1556*	*1716*	*1561*	*1617*
Bases (unweighted):								
Boys	*1987*	*1462*	*763*	*1156*	*823*	*853*	*763*	*819*
Girls	*1905*	*1467*	*752*	*1102*	*711*	*835*	*784*	*762*
All children	*3892*	*2929*	*1515*	*2258*	*1534*	*1688*	*1547*	*1581*

Table 6.4 Adult summary activity levels, 2013, by age and sex

Aged 16 and over *2013*

Summary activity level[a]	Age							Total
	16-24[b]	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Meets MVPA guidelines	88	84	74	76	61	54	36	71
Some activity	4	8	9	6	8	12	11	8
Low activity	1	2	3	5	6	3	3	3
Very low activity	7	6	14	13	25	31	50	18
Women								
Meets MVPA guidelines	70	73	69	66	49	46	19	58
Some activity	14	12	14	12	16	16	12	14
Low activity	3	4	4	3	6	6	7	5
Very low activity	13	10	14	18	28	32	62	23
All Adults								
Meets MVPA guidelines	79	79	71	71	55	50	26	64
Some activity	9	10	12	9	12	14	12	11
Low activity	2	3	3	4	6	5	5	4
Very low activity	10	8	14	16	27	32	57	21
Bases (weighted):								
Men	*338*	*367*	*386*	*435*	*366*	*268*	*176*	*2336*
Women	*333*	*388*	*410*	*462*	*380*	*303*	*265*	*2542*
All adults	*671*	*756*	*796*	*897*	*747*	*571*	*441*	*4878*
Bases (unweighted):								
Men	*206*	*310*	*337*	*392*	*353*	*317*	*214*	*2129*
Women	*241*	*417*	*431*	*539*	*440*	*373*	*306*	*2747*
All adults	*447*	*727*	*768*	*931*	*793*	*690*	*520*	*4876*

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

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 6.5 Adult adherence to muscle strengthening and MVPA guidelines, 2013, by age and sex

Aged 16 and over *2013*

Proportion meeting guidelines[a]	Age							Total
	16-24[b]	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Meets MVPA & muscle guidelines	54	46	32	28	17	13	7	30
Meets MVPA guidelines only	34	38	42	48	44	41	29	41
Meets muscle guideline only	1	0	0	0	1	0	1	1
Meets neither guideline	11	15	26	23	38	45	63	29
Total meeting muscle guideline	*55*	*46*	*32*	*28*	*18*	*13*	*8*	*31*
Women								
Meets MVPA & muscle guidelines	36	34	25	19	14	12	4	21
Meets MVPA guidelines only	34	39	44	47	35	34	16	37
Meets muscle guideline only	2	1	2	1	1	1	1	1
Meets neither guideline	27	26	29	33	50	53	80	40
Total meeting muscle guideline	*39*	*35*	*27*	*20*	*15*	*13*	*5*	*23*
All Adults								
Meets MVPA & muscle guidelines	45	40	28	24	16	12	5	26
Meets MVPA guidelines only	34	39	43	48	39	38	21	39
Meets muscle guideline only	2	0	1	1	1	1	1	1
Meets neither guideline	19	21	28	28	44	49	73	35
Total meeting muscle guideline	*47*	*40*	*29*	*24*	*17*	*13*	*6*	*27*

Continued…

Table 6.5 - *Continued*

Aged 16 and over *2013*

Proportion meeting guidelines[a]	**Age**							**Total**
	16-24[b]	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men	*338*	*367*	*386*	*435*	*366*	*268*	*176*	*2336*
Women	*333*	*388*	*410*	*462*	*380*	*303*	*265*	*2542*
All adults	*671*	*756*	*796*	*897*	*747*	*571*	*441*	*4878*
Bases (unweighted):								
Men	*206*	*310*	*337*	*392*	*353*	*317*	*214*	*2129*
Women	*241*	*417*	*431*	*539*	*440*	*373*	*306*	*2747*
All adults	*447*	*727*	*768*	*931*	*793*	*690*	*520*	*4876*

a Meets moderate/vigorous physical activity (MVPA) guidelines: At least 150 minutes of moderate activity or at least 75 minutes of vigorous activity per week or an equivalent combination of these. 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 6.6 Adults' knowledge of aerobic physical activity guideline, 2013, by age and sex

Aged 19 and over *2013*

Knowledge of aerobic activity guideline[a]	Age							Total
	19-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Underestimated guideline	14	19	20	18	17	26	29	19
Knew guideline	2	3	5	3	4	4	2	4
Overestimated guideline	84	79	74	79	79	70	69	77
Women								
Underestimated guideline	14	15	17	16	19	24	33	18
Knew guideline	2	6	7	4	4	6	4	5
Overestimated guideline	84	80	76	80	77	70	63	77
All Adults								
Underestimated guideline	14	17	19	17	18	25	31	19
Knew guideline	2	4	6	4	4	5	3	4
Overestimated guideline	84	79	75	79	78	70	65	77
Bases (weighted):								
Men	*163*	*324*	*333*	*370*	*291*	*202*	*107*	*1791*
Women	*198*	*348*	*376*	*401*	*320*	*217*	*148*	*2007*
All adults	*361*	*672*	*709*	*770*	*612*	*420*	*254*	*3798*
Bases (unweighted):								
Men	*107*	*276*	*292*	*336*	*279*	*238*	*134*	*1662*
Women	*152*	*377*	*395*	*471*	*371*	*271*	*170*	*2207*
All adults	*259*	*653*	*687*	*807*	*650*	*509*	*304*	*3869*

a The guideline is for adults to do at least 150 minutes of moderately intensive activity or at least 75 minute of vigorous activity per week, or an equivalent combination of these. The question asked respondents if they knew how much moderate intensity activity was recommended

Table 6.7 Adults' knowledge of moderate physical activity guideline, 2013, by summary activity level

Aged 19 and over *2013*

Knowledge of aerobic activity guideline[a]	Summary activity level[b]				
	Very low activity	Low activity	Some activity	Meets guideline	Total
	%	%	%	%	%
Men					
Underestimated guideline	27	19	25	17	19
Knew guideline	3	4	7	3	4
Overestimated guideline	70	77	68	79	77
Women					
Underestimated guideline	30	18	16	15	18
Knew guideline	4	3	8	5	5
Overestimated guideline	66	79	77	80	77
All Adults					
Underestimated guideline	29	18	19	16	19
Knew guideline	3	3	8	4	4
Overestimated guideline	68	78	74	80	77
Bases (weighted):					
Men	*275*	*64*	*141*	*1306*	*1791*
Women	*390*	*92*	*278*	*1244*	*2007*
All adults	*665*	*156*	*419*	*2550*	*3798*
Bases (unweighted):					
Men	*274*	*63*	*140*	*1180*	*1662*
Women	*446*	*102*	*305*	*1348*	*2207*
All adults	*720*	*165*	*445*	*2528*	*3869*

a The guideline is for adults to do at least 150 minutes of moderately intensive activity or at least 75 minute of vigorous activity per week, or an equivalent combination of these. The question asked respondents if they knew how much moderate intensity activity was recommended
b 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 6.8 Parents' and children's knowledge of child physical activity guideline, 2013, by age

Aged 5 - 18 *2013*

Knowledge of physical activity guideline for children[a]	Age					
	5-7[b]	8-10[b]	11-12[b]	Total 5-12[b]	13 – 15[c]	16-18[c]
	%	%	%	%	%	%
Boys						
Underestimated guideline	10	8	7	8	10	[3]
Knew guideline	26	23	22	24	21	[39]
Overestimated guideline	64	69	71	68	69	[58]
Girls						
Underestimated guideline	8	7	5	7	15	[0]
Knew guideline	29	31	21	28	28	[29]
Overestimated guideline	63	62	74	65	57	[70]
All children						
Underestimated guideline	9	7	6	8	12	2
Knew guideline	28	27	21	26	24	34
Overestimated guideline	63	66	73	67	63	64
Bases (weighted):						
Boys	*146*	*178*	*86*	*411*	*151*	*70*
Girls	*148*	*161*	*101*	*410*	*129*	*74*
All children	*294*	*340*	*187*	*821*	*279*	*144*
Bases (unweighted):						
Boys	*151*	*173*	*73*	*397*	*140*	*44*
Girls	*152*	*145*	*84*	*381*	*111*	*47*
All children	*303*	*318*	*157*	*778*	*251*	*91*

a Physically active for at least 60 minutes on all 7 days per week

b For children in this age group a parent answered questions on behalf of the child

c Child / young adult in age group answered questions themselves

Table 6.9 Parents' and children's knowledge of physical activity guideline, 2013, by child summary activity levels and age

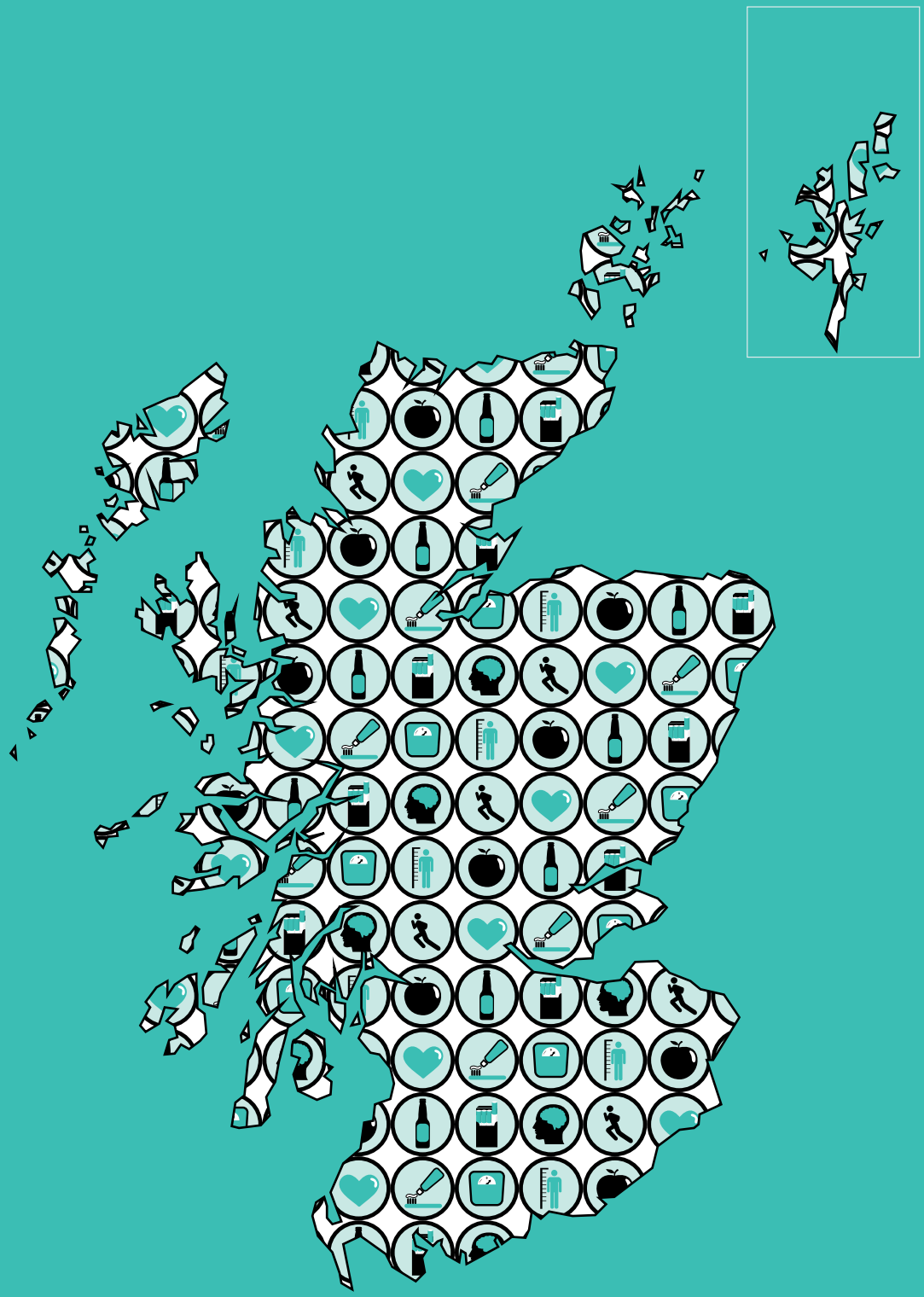
Aged 5 - 15 *2013*

Knowledge of physical activity guideline for children[a]	Age					Total
	5-7[b]	8-10[b]	11-12[b]	Total 5-12[b]	13 – 15[c]	
	%	%	%	%	%	%
Meets guideline including activity at school						
Underestimated guideline	8	5	4	6	10	7
Knew guideline	27	28	21	26	20	25
Overestimated guideline	65	67	75	68	70	69
Does not meet guideline including activity at school						
Underestimated guideline	14	18	[12]	15	16	16
Knew guideline	30	20	[21]	23	31	26
Overestimated guideline	57	62	[67]	62	53	58
Bases (weighted):						
Meets guideline	*243*	*268*	*142*	*653*	*169*	*822*
Does not meet guideline	*49*	*68*	*41*	*158*	*111*	*269*
Bases (unweighted):						
Meets guideline	*252*	*252*	*120*	*624*	*155*	*779*
Does not meet guideline	*50*	*63*	*34*	*147*	*96*	*243*

a Physically active for at least 60 minutes on all 7 days per week

b Response from parent of child in age group

c Response from child in age group



Chapter 7

Obesity

7 OBESITY

Shanna Dowling

SUMMARY

Adult obesity

- Over one quarter of adults (27.1%) were obese (BMI of 30 kg/m^2 or above) in 2013, while 64.6% were overweight including obese (BMI 25 kg/m^2 or more).
- Obesity prevalence remained higher among women than men (29.3% compared with 24.9%) in 2013, whereas men were more likely to be overweight including obese (68.3%, compared with 61.0% of women).
- As seen in previous years, both obesity and overweight prevalence remain significantly associated with age, with levels generally higher among older people. For example, around three quarters of those aged 45-74 were overweight including obese in 2013, and over a third of those aged 55-74 were obese.

Adult waist circumference

- In 2012/2013 the mean waist measurement for men was 98.1cm and for women was 93.1cm.
- The mean waist circumference for men aged 16-64 increased significantly between 1995 (90.2cm) and 2008/2009 (95.3cm) but has been relatively stable since then (adjusted figure of 96.2cm in 2012/2013). There has been a larger increase in the mean for women over this same period (from 78.5cm in 1995 to 88.7cm (adjusted figure) in 2012/2013.
- Half of women (50.4%) and a third of men (32.7%) had a raised waist circumference in 2012/2013, indicating an increase in the risk of obesity related diseases. The proportion of men aged 16-64 with a raised waist circumference has not changed significantly since 2008/2009 (28.9% in 2012/2013). Whereas for women of the same age, prevalence has continued to rise, albeit at a slower pace than previously (47.0% in 2012/2013).
- BMI and waist measurements can be combined to provide a better indication of risk of disease from obesity related illness. In 2012/2013, women remained significantly more likely than men to be at high risk (including very and extremely high risk) of obesity-related disease (52.6% compared with 35.9%).
- As for previous years, the proportion at high risk (or above) according to their BMI and waist circumference increased with age for both men and women.

Child healthy weight, overweight and obesity

- Seven in 10 children (69.6%) aged 2-15 were within the healthy weight range in 2013, this was not significantly different from the 2012 level (67.5%). Among girls, 72.1% fall within the healthy range; the equivalent figure for boys was 67.3%.
- Three in ten children (28.8%) were at risk of overweight or obesity in 2013. Prevalence was greatest for those aged 12-15 (30.8%).
- 16.0% of children aged 2-15 were at risk of obesity in 2013. The percentage of boys at risk increased between 1998 and 2008 (from 14.5% to 18.7%) and has fluctuated around this level since then (17.2% in 2013). The rate has remained relatively stable for girls ranging between 13.7% and 15.9% since 1998.

7.1 INTRODUCTION

Overweight and obesity have been defined as abnormal or excessive fat accumulation that may impair health.[1,2] Obesity is associated with an increased risk of a number of common causes of disease and death. 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.[3,4] 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.[5,6,7] There is also evidence suggesting a link between overweight and obesity in midlife and dementia in old age.[8,9,10]

Scotland has one of the worst obesity records among OECD countries.[11] It is predicted that by 2030 adult obesity in Scotland could reach over 40%.[11] The estimated cost of obesity and related illnesses to the NHS in Scotland was in excess of £175 million in 2007/2008 with costs expected to almost double by 2030.[11] The latest estimate of the total (direct and indirect) cost of obesity to Scottish society is between £0.9 billion-£3 billion.[11] The health and economic consequences of obesity mean that tackling it remains a key priority for government and public health professionals.

7.1.1 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.[11] The long-term goals of the route map are to have the majority of Scotland's adult population in normal weight throughout life and to have fewer overweight or obese children in Scotland.[12] 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)**.[13]

The NPF indicator is underpinned by an NHS **HEAT target**[14] for the provision of child healthy weight interventions. The child healthy weight programme incorporates diet, physical activity and behaviour change components. A target of 14,910 interventions over the three year period ending in March 2014 was set, with at least 40% required to be delivered to children living in the two most deprived SIMD quintiles.[15] 16,820 interventions had been carried out by the target date.[16]

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.[12] Scotland's children and young people's mental health indicators set also includes an indicator on child obesity prevalence.[17]

Take Life On was the primary public information campaign delivering the message on the benefits of having a healthy weight.[18] The emphasis of **Take Life On** was on encouraging people to make small, achievable lifestyle changes, including increasing daily physical activity and eating healthier, to help them feel better and improve their health.

Regular physical activity helps people maintain a healthy weight. One of the themes of **Legacy 2014** programmes centres around using the opportunities presented by the Games to help people be more physically active.[19] The **Physical Activity Implementation Plan** is one of the many legacy programmes developed under the 'active' theme to meet this desired outcome.[20] The 10 year plan, launched in 2014, links directly to the Scottish Government's legacy ambitions for the Commonwealth Games.

7.1.2 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.[21,22] Height and weight are used to calculate Body Mass Index (BMI), the primary measure of obesity used in the SHeS series. Adult and child trends in BMI are examined in this chapter along with trends in adult waist circumference. Updated analysis of health risks from obesity, using a measure endorsed in Scotland by SIGN that takes into account both BMI and waist circumference, is also presented. Supplementary tables are also available on the Scottish Government SHeS website.[23]

7.1.3 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.

A Government Statistical Service publication on the comparability of official statistics across the UK advises that adult obesity figures taken from Scottish Health Survey, Health Survey for England, Welsh Health Survey and Health Survey Northern Ireland are not comparable.[24] Of the four UK health surveys, the Scottish Health Survey and Health Survey for England are the most closely aligned.

7.2 METHODS AND DEFINITIONS

7.2.1 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 briefly summarised here.

Height

Height was measured using a portable stadiometer with a sliding head plate, base plate and three 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.[25] The reading 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 Soehnle and Tanita electronic scales with 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 aged under 2 years, women who were pregnant or those who were chairbound, or unsteady on their feet. Those who weighed more than 130 kg were asked for an estimate of their weight because the scales are inaccurate above this level. 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

Prior to 2012, waist and hip measurements were collected during the nurse interview that followed the main interviewer visit. During this period, the waist was defined as the midpoint between the lower rib and the upper margin of the iliac crest. The nurse interview was discontinued in 2012. Waist measurement collection now sits within the biological module of the main interview and is administered by a sub-group of specially trained interviewers.

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 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.

7.2.2 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^2). This has been used as a measure of obesity in the 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:[26]

BMI (kg/m^2)	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.[27,28] 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 identify those with a health risk from being overweight than BMI.[2,29,30]

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.[31] Following the new protocol introduced to SHeS in 2012, and described in Section 7.2.1, the equivalent cut-offs on SHeS, since 2012, are 102.75cm or above for men and 91.35cm or above for women.[32]

These thresholds help identify people at risk of metabolic syndrome. Abdominal obesity is reported as more highly correlated with metabolic risk factors (high levels of triglycerides, low HDL-cholesterol) than elevated BMI. It has recently been shown that these levels correspond fairly closely to the 95th centile of waist circumference for healthy people, indicating that few healthy people have a waist circumference above these thresholds.[33]

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).[6]

The classification categories suggested by SIGN[6] are set out in the table below. 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 below 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 classified people with normal weight and a very high WC as at increased risk of disease.

Assessment of health risk from obesity

BMI Classification	**'High' WC Men WC 94-102cm Women WC 80-88cm**	**'Very high' WC Men WC >102cm Women WC >88cm**
Normal weight (BMI 18.5 - <25(kg/m2))	-	-
Overweight (BMI 25 - <30(kg/m2))	Increased	High
Obese		
I - Mild (BMI 30 - <35(kg/m2))	High	Very high
II - Moderate (BMI 35 - <40(kg/m2)_	Very high	Very high
III - Extreme (BMI 40+(kg/m2))	Extremely high	Extremely high

Source: based on Table 3, P11, in SIGN 115.[6]

Child BMI classification

BMI is defined for children in the same way as it is for adults: weight (kg)/square of height (m^2). The International Obesity Task Force concluded that BMI is a reasonable measure of adiposity in children[34] 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.[35]

The classification of children's BMI used in this chapter, set out below, has been derived from BMI percentiles of the UK 1990 reference curves[36,37] (referred to as the national BMI percentiles classification); these have been used in each SHeS to date. The national BMI percentiles classification has been shown to be reasonably sensitive (i.e. not classifying obese children as non-obese) and specific (i.e. not classifying non-obese children as obese).[38,39] SIGN recommends that these reference curves and thresholds should be used for population surveillance in Scotland.[6] 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.[40,41,42,43]

Percentile cut-off	Description
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

SHeS uses a method developed by ISD Scotland to plot the exact ages of the children in the sample against the reference population data.[44] 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.[45] 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.[46]

7.3 ADULT OVERWEIGHT AND OBESITY PREVALENCE AND MEAN BMI

7.3.1 Trends in overweight including obesity prevalence since 1995

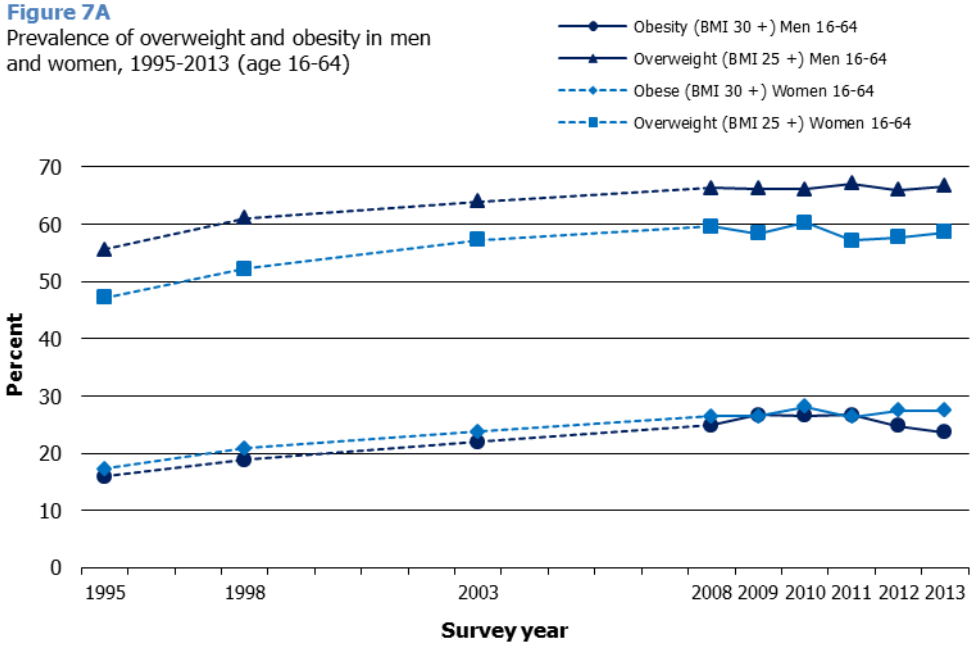
Trends in overweight including obesity prevalence (BMI of 25 kg/m2 or above) are presented in Table 7.1. Prior to 2003 adults aged 65 and over were not eligible to participate in the survey therefore trends for

adults aged 16-64 are presented from 1995 onwards. Trends for all adults aged 16 and over from 2003 are also presented.

Table 7.1 illustrates that overweight including obesity levels among adults aged 16-64 rose significantly between 1995 (52.4%) and 2008 (62.9%) with little change since then (ranging between 61.9% and 63.3%, 62.6% in 2013).

While overweight including obesity prevalence has been consistently higher for men than for women, the trends for both sexes have been similar over time. The proportion of men aged 16-64 overweight or obese increased by over 10 percentage points between 1995 and 2008 (from 55.6% to 66.3%) but has not changed significantly since then (66.7% in 2013). The equivalent figures for women were 47.2%, 59.6% and 58.6% respectively.

Figure 7A
Prevalence of overweight and obesity in men and women, 1995-2013 (age 16-64)



For all adults aged 16 and over, overweight and obesity prevalence rose significantly between 2003 and 2008 (from 62.4% to 65.1%), but has not changed significantly since then (64.6% in 2013).

Figure 7A, Table 7.1

7.3.2 Trends in obesity and morbid obesity prevalence since 1995

Obesity prevalence increased significantly between 1995 and 2008. One in 6 (17.2%) adults aged 16-64 were obese in 1995, compared with 1 in 4 (25.7%) in 2008. Prevalence has remained relatively stable since 2008 (25.6% in 2013). The trend in obesity for all adults aged 16 and over followed a similar pattern, again remaining stable since 2008 (27.1% in 2013).

Obesity trends have followed different patterns for men and women over time. For women, obesity prevalence has followed a similar pattern

to that discussed above for all adults: a rise among those aged 16-64 from 17.3% in 1995 to 26.5% in 2008, with little change since then (27.5% in 2013). Obesity prevalence rose from 15.9% to 26.7% for men aged 16-64 between 1995 and 2009 and then remained stable until 2011. The decline in prevalence between 2011 and 2013 (from 26.7% and 23.7%) was marginally insignificant. The decline between 2012 and 2013 was not statistically significant. There is also some emerging evidence of a similar decline among all men aged 16 and over. However, the three percentage point drop (from 27.7% in 2011 to 24.9% in 2013) was not statistically significant.

Morbid obesity prevalence for adults aged 16-64 has doubled since 1995 (from 1.2% to 2.5%). However, much of the increase occurred between 1995 and 2003, with very little change in the last decade (ranging between 2.2% and 3.0% since 2003). Similar trends were observed for men and women separately, with higher prevalence for women than for men across the years. Morbid obesity prevalence for all adults aged 16 and over has not changed significantly since 2003, ranging from between 2.2% and 2.9% over this period (2.4% in 2013).

Figure 7A, Table 7.1

7.3.3 Trends in mean BMI since 1995

The mean BMI for adults aged 16-64 increased significantly between 1995 (26.0kg/m^2 for men and 25.7kg/m^2 for women) and 2013 (27.1kg/m^2 for men and 27.3kg/m^2 for women). Similar to the patterns discussed above for overweight, obesity and morbid obesity prevalence, mean BMI has not, however, changed significantly since 2008. The mean BMI for all adults aged 16 and over has fluctuated between 27.1kg/m^2 and 27.5kg/m^2 since 2003 (27.4kg/m^2 in 2013).

Table 7.1

7.3.4 Adult BMI in 2013, by age and sex

Adult BMI in 2013 is presented by age and sex in Table 7.2. Just under two thirds of adults (aged 16 and over) (64.6%) were overweight including obese (BMI of 25 kg/m^2 or above) in 2013, while over one quarter (27.1%) were obese (BMI of 30 kg/m^2 or above). At 27.4 kg/m^2, the mean BMI was higher than the recommended normal range of 18 kg/m^2 to less than 25 kg/m^2.

Both overweight (including obesity) rates and obesity rates were significantly different for men and women, in 2013. Men were more likely than women to be overweight including obese (68.3% compared with 61.0%), whereas obesity prevalence was higher among women than men (29.3% versus 24.9%). So while women were less likely to be overweight including obese, if they were, they were more likely than men to fall into the obese category. Mean BMI was similar for men and women (27.3 kg/m^2 for men and 27.5 kg/m^2 for women) in 2013. Three in ten (30.4%) men and 37.1% of women had a BMI within the normal range in 2013.

BMI remained significantly associated with age in 2013. Mean BMI, for example, increased with age up until age 55-64 (65-74 for women) before dropping among the oldest age groups. The drop in mean BMI was particularly pronounced for older men (mean of 29.1kg/m^2 at age 55-64, compared with 27.8kg/m^2 at age 75 and over. Overweight including obesity prevalence was lowest among young people aged 16-24 (35.7%) and increased steadily to approximately three quarters (74.8-76.8%) for those aged 45-74. Seven in ten (70.7%) of those in the oldest age group were overweight including obese. Obesity rates increased from 1 in 10 (10.9%) for those in the youngest age group (aged 16-24) to more than 3 in 10 (35.9-36.7%) of those aged 55-74. Again, prevalence for those aged 75 and over (29.6%) was slightly lower than those in middle-age groups.

Figure 7B, Figure 7C, Table 7.2

Figure 7B
Prevalence of overweight and obesity, by age, 2013 (Men)

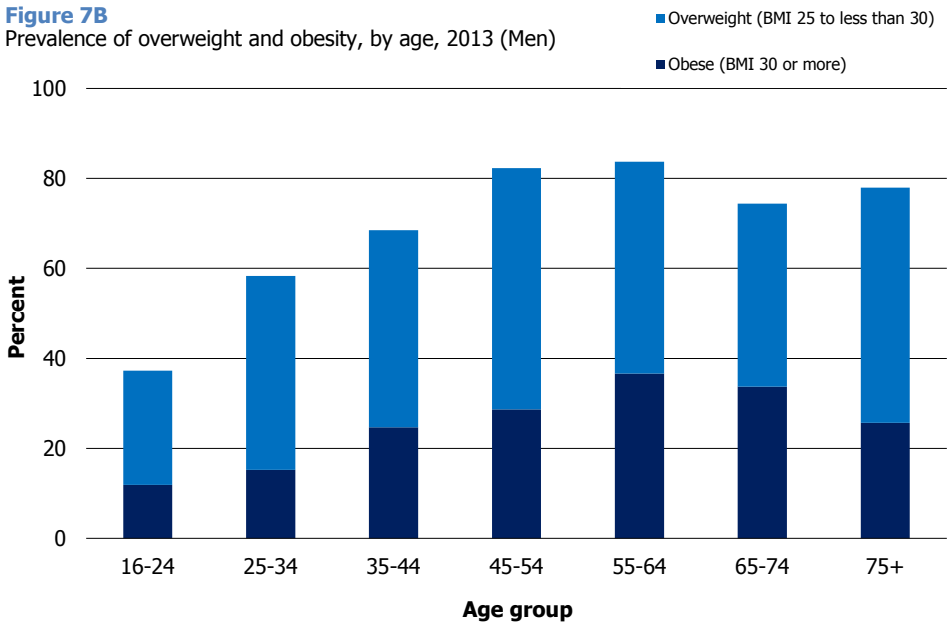
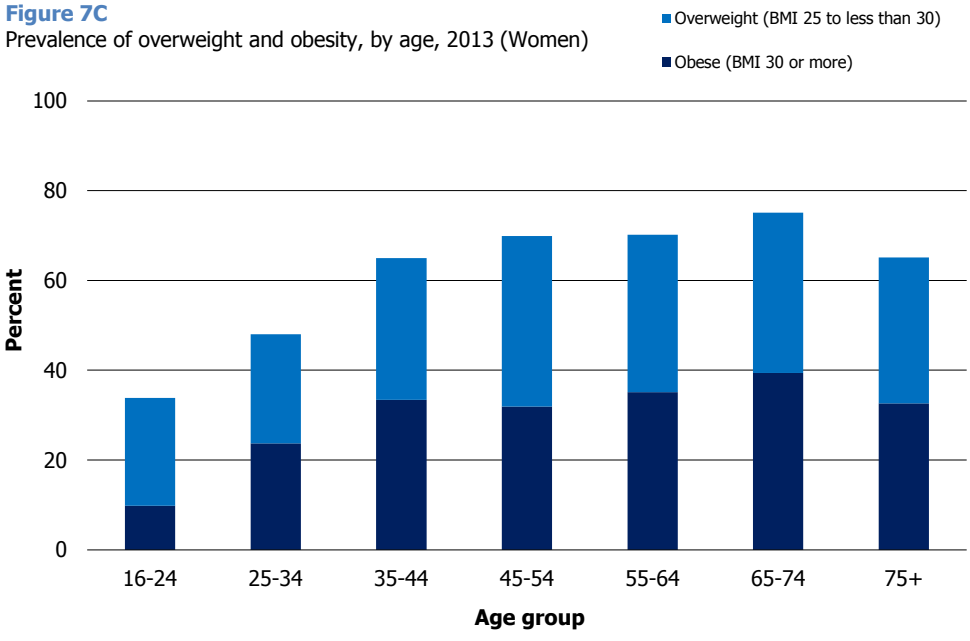


Figure 7C
Prevalence of overweight and obesity, by age, 2013 (Women)



7.4 ADULT WAIST CIRCUMFERENCE

The mean waist circumference trend for men and women aged 16-64 since 1995 is presented in Table 7.3 alongside the trend for those aged 16 and over since 2003. Trends for raised waist circumference are also presented.

The protocol for taking waist measurement changed in 2012, when the nurse interview was discontinued and trained interviewers started taking the measurement instead (see Section 7.2.1). Consequently, trend tables include two sets of waist circumference data for 2012/2013; adjusted and unadjusted figures. Adjusted figures take account of the switch in protocol and should be used when examining trends in waist circumference. A full description of the calibration equation used to make adjustments is available in Section 1.8.3 of Volume 2 of this report. Unadjusted figures are those data collected by the interviewer during the interview.

7.4.1 Trends in mean waist circumference since 1995

Mean waist circumference for men aged 16-64 increased significantly from 90.2cm in 1995 to 95.3cm in 2008/2009, but has changed little since then (adjusted figure of 96.2cm in 2012/2013). There has been a much larger increase in women's mean waist circumference over this same period, increasing by 8.7cm between 1995 (78.5cm) and 2008/2009 (87.2cm). The 1.5cm increase in the mean waist circumference for women between 2008/2009 and 2012/2013 (adjusted figure was 88.7cm) was not statistically significant.

In the last decade there has also been a similar upward trend in the mean waist circumference for men and women aged 16 and over. Average waist circumference increased by just over 2cm for men over this period (from 95.3cm in 2003 to 97.4cm (adjusted figure) in 2012/2013 and by 3.3cm for women (from 86.3cm in 2003 to 89.6cm (adjusted figure) in 2012/2013). Waist circumference did not change significantly for men or women, (aged 16 and over) between 2010/2011 and 2012/2013.

Table 7.3

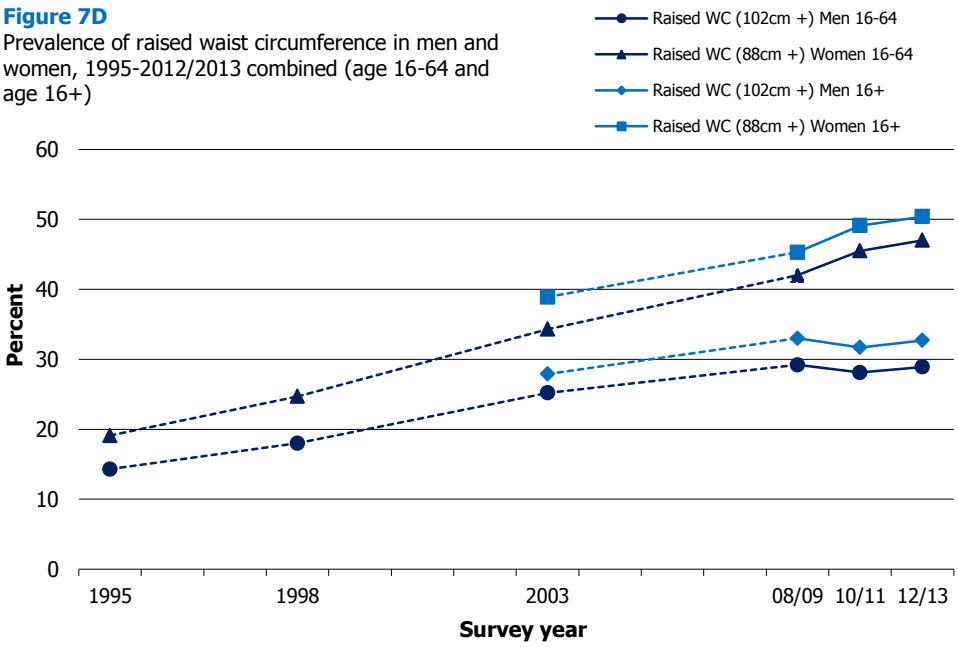
7.4.2 Trends in raised waist circumference since 1995

The proportion of men aged 16-64 with a raised waist circumference (greater then 102cm) increased by nearly 15 percentage points between 1995 (14.3%) and 2008/2009 (29.2%) and has remained relatively stable since then (28.9% in 2012/2013 based on adjusted estimate). For women, prevalence has continued to rise, albeit at a slower pace than in earlier years (increased from 42.0% in 2008/2009 to 47.0% in 2012/2013 (based on adjusted estimate).

Trends in raised waist circumference for adults aged 16 and over since 2003 have followed a similar pattern to that discussed above for those aged 16-64. The percentage of men with a raised waist circumference increased from 27.9% in 2003 to 33.0% in 2008/2009, and has remained around this level since then (32.7% in 2012/2013 based on adjusted estimate). The proportion of women with a raised waist

circumference increased from 38.9% in 2003 to 50.4% in 2012/2013 (based on adjusted estimate). **Figure 7D, Table 7.3**

Figure 7D
Prevalence of raised waist circumference in men and women, 1995-2012/2013 combined (age 16-64 and age 16+)



7.4.3 Adult waist circumference in 2012/2013 combined, by sex

In 2012/2013, the unadjusted (interviewer-obtained) mean waist circumference for men was 98.1cm and for women 93.1cm. As seen in previous years, average waist circumference is significantly higher for men than women. Whereas, the proportion with a raised waist circumference in 2012/2013 was significantly higher for women than for men (50.4%, compared with 32.7%). **Table 7.3**

7.5 ADULT DISEASE RISK BASED ON BMI AND WAIST CIRCUMFERENCE

7.5.1 Disease risk in 2012/2013 combined, by age and sex

Section 7.2.2 describes how BMI and waist measurements have been combined to provide a better indication of risk of disease from obesity related illness. In Table 7.4, the suggested categories provided by SIGN (set out in Section 7.2.2) are presented by age and sex for the years 2012 and 2013 combined. Unadjusted waist circumference figures were used in this analysis.

Women were significantly more likely than men to be at high risk (including very and extremely high risk) of obesity-related disease (52.6%, compared with 35.9%). The proportion at high risk or greater according to their BMI and WC measurements increased with age for both men and women. Among men, the level at high risk increased from 11.9% of those aged 16-24 to 58.8% of those aged 65-74, before declining slightly to 47.5% among those aged 75 and over. There was a

similar increase for women between the ages of 16-24 and 65-74 (25.8% and 65.6%, respectively).

The percentages of men and women categorised as being at very high or extremely high risk of disease in 2012/2013 were 23.2% and 29.2% respectively. Prevalence increased sharply between the ages of 25-34 and 35-44 for men, and between the ages of 16-24 and 35-44 for women. The proportion of men at very high or extremely high risk increased from 11.1% aged 16-24 to a peak of 36.1% aged 65-74. For women, the percentage at very high or extremely high risk of obesity related diseases increased from 14.9% aged 16-24 to a peak of 37.1% at age 55-64.

One percent of men and 4% of women were at extremely high risk of disease from obesity related illnesses in 2012/2013. Prevalence was highest among women aged 55-64, with 1 in 12 (8.2%) women in this age group at extremely high disease risk.

Figure 7E, Figure 7F, Table 7.4

Figure 7E
Health risk category (based on waist circumference and BMI) by age, 2012/2013 combined (Men)

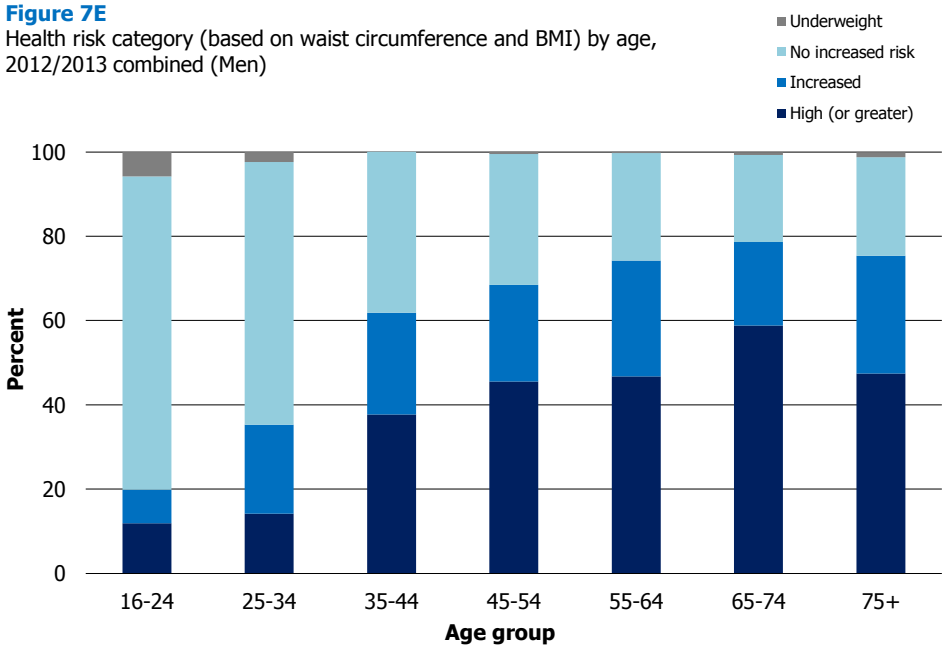
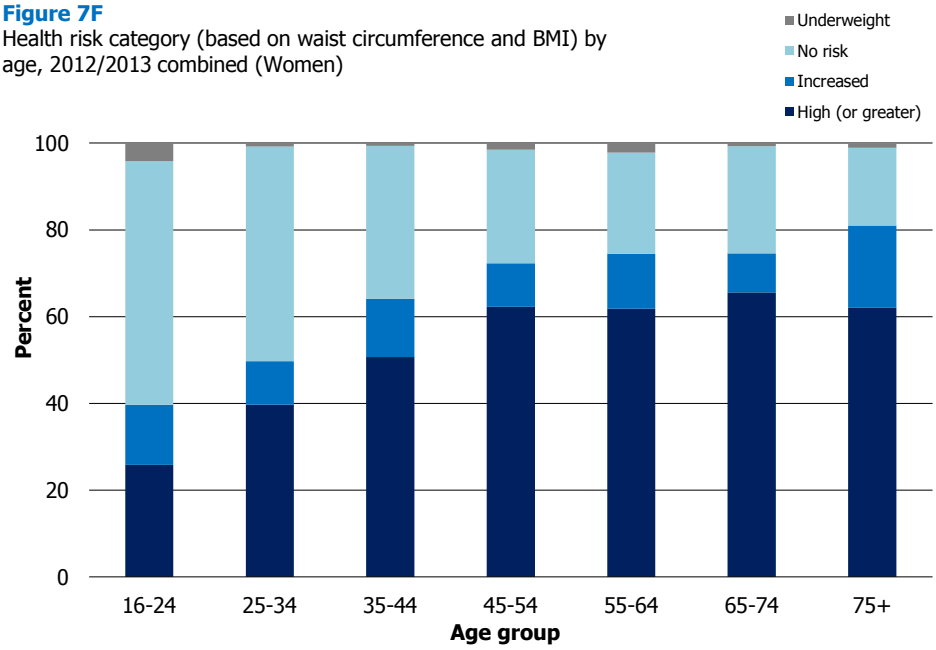


Figure 7F
Health risk category (based on waist circumference and BMI) by age, 2012/2013 combined (Women)



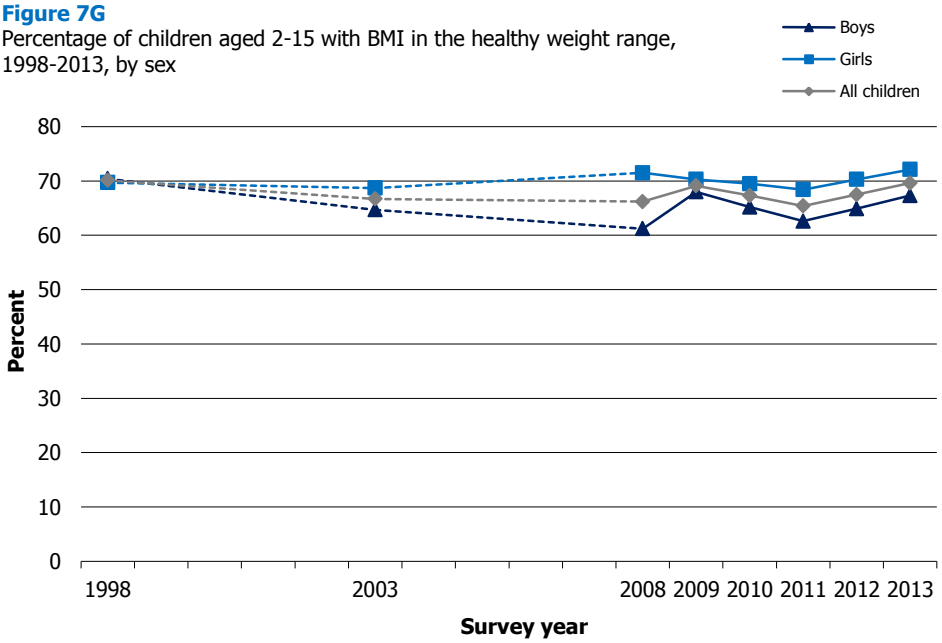
7.6 CHILD HEALTHY WEIGHT, OVERWEIGHT AND OBESITY

7.6.1 Trends in child healthy weight, overweight and obesity prevalence since 1998

The prevalence of healthy weight, overweight and obesity among children aged 2-15 since 1998 is shown in Table 7.5. A child is a healthy weight if their BMI falls above the 2nd percentile and below the 85th percentile. In 1998, 70.1% of children were within the healthy weight range, the equivalent figure in 2013 was 69.6%. The increase observed between 2011 and 2013 (from 65.4% to 69.6%) was not statistically significant.

Trends in healthy weight prevalence followed different patterns for boys and girls. For boys, prevalence fluctuated by almost ten percentage points between 1998 and 2013. Similar to the pattern discussed in relation to all children, the increase in healthy weight prevalence for boys between 2011 and 2013 (62.6% and 67.3%) was not statistically significant. There has been less variation in healthy weight prevalence among girls over time, fluctuating between 68.4% and 72.1% since 1998. **Figure 7G, Table 7.5**

Figure 7G
Percentage of children aged 2-15 with BMI in the healthy weight range, 1998-2013, by sex



The proportion of children at risk of overweight including obesity has also fluctuated over the years. Prevalence was highest in 2008 (32.8%) and 2011 (32.7%) and lowest in 2013 (28.8%). The decrease in prevalence between 2011 and 2013 was not, however, statistically significant.

Trends for at risk of overweight including obesity have been different for boys and girls. The trend for boys has followed a similar pattern to that discussed above for all children. The decline in prevalence, between 2011 and 2013, from 36.2% to 30.9% was not statistically significant. Prevalence has fluctuated to a lesser extent for girls, between 26.6% (2013) and 30.2% (2003), over the years and the decline observed between 2010 and 2013 was not significant.

The percentage of children at risk of obesity increased significantly in the decade 1998 to 2008 (from 14.3% to 16.6%) but has not changed significantly since then (16.0% in 2013). The trend for boys was similar, with the percentage at risk of obesity increasing from 14.5% in 1998 to 18.7% in 2008, and fluctuating between 17.0% (2009) and 19.7% (2011 and 2012) since then (17.2% in 2013). Prevalence has been more stable for girls, ranging between 13.7% and 15.9% between 1998 and 2013, with no obvious pattern (14.8% in 2013). **Table 7.5**

7.6.2 Child BMI categories in 2013, by age and sex

The BMI status of children aged 2-15 in 2013 is presented, by age and sex, in Table 7.6. Seven in 10 (69.6%) children had a BMI within the healthy weight range in 2013, while almost 3 in 10 (28.8%) were at risk of overweight or obesity and 1.5% were at risk of underweight.

While girls appeared more likely than boys to have a healthy weight (72.1% compared with 67.3%) this difference was not statistically significant. Healthy weight prevalence did not vary significantly by age for boys or girls. Among girls, healthy weight prevalence ranged from 70.0% to 74.7%). Around seven in ten (71.7%) boys aged 2-6 were a healthy weight. The equivalent figures for boys aged 7-11 and 12-15 were 64.9% and 65.0%, respectively.

Overweight (including obesity) prevalence did not vary significantly by gender or age in 2013 (30.9% and 26.6% for boys and girls, respectively). A third (34.0%) of boys aged 7-11 were at risk of overweight including obesity. The equivalent figure for girls of the same age was 24.8%. Similarly, the percentage of boys and girls at risk of obesity did not vary significantly from each other (17.2% and 14.8%, respectively). One in five (19.1%) boys aged 7-11 and 14.6% of girls of the same age were at risk of obesity. Just 1.8% of boys and 1.2% of girls were at risk of underweight.

Table 7.6

References and notes

[1] World Health Organisation. Fact Sheet No 311 Obesity and Overweight. WHO, Geneva, 2012. www.who.int/mediacentre/factsheets/fs311/en/index.html

[2] Moody A. Adult anthropemetric measures, overweight and obesity. Chapter 10 in Craig R, Mindell J (eds). Health Survey for England 2012. Volume 1: Health, social care and lifestyles. Health and Social Care Information Centre, Leeds, 2013.

[3] Oude Luttikhuis, H. et al. (2009). Interventions for treating obesity in children. Cochrane Database of Systematic Reviews 1, CD001872.

[4] Summerbell, C. D. et al. (2005). Interventions for preventing obesity in children. Cochrane Database of Systematic Reviews 3, CD001871.

[5] Nathan, B. M. and Moran, A. (2008). Metabolic complications of obesity in childhood and adolescence: more than just diabetes. Current Opinion in Endocrinology Diabetes and Obesity. 15(1): 21-29.

[6] Scottish Intercollegiate Guidelines Network Management of Obesity – A National Clinical Guideline. SIGN guideline no. 115. Edinburgh: SIGN, 2010. http://www.sign.ac.uk/guidelines/fulltext/115/index.html

[7] Grant, I., Fischbacher, C., and Whyte, B. (2007). Obesity in Scotland – An Epidemiology Briefing. Edinburgh: NHS National Services Scotland/Scottish Public Health Observatory. www.scotpho.org.uk/home/Publications/scotphoreports/pub_obesityinscotland.asp

[8] Anstey, K. J., Cherbuin, N., Budge, M., and Young, J. (2011). Body mass index in midlife and late-life as a risk factor for dementia: a meta-analysis of prospective studies. Obesity Reviews 12(5): e426-37.

[9] Xu, W. L., Atti, A. R., Gatz, M., Pedersen, N. L., Johansson, B., and Fratiglioni, L. (2011). Midlife overweight and obesity increase late-life dementia risk: a population-based twin study. Neurology 76(18): 1568-74.

[10] Loef, M. and Walach, H. (2013). Midlife obesity and dementia: meta-analysis and adjusted forecast of dementia prevalence in the United States and China. Obesity 21(1): e51-5.

[11] Preventing Overweight and Obesity in Scotland: A Route Map Towards Healthy Weight Edinburgh: the Scottish Government, 2010. http://www.scotland.gov.uk/Publications/2010/02/17140721/0

[12] Health Analytical Services Scottish Government and Information and Statistics Division, NHS National Services Scotland (2011). Indicators to Monitor Progress of the Obesity Route Map. Edinburgh: Scottish Government. www.scotland.gov.uk/Resource/Doc/346011/0115167.pdf

[13] Available from: www.scotland.gov.uk/About/scotPerforms/indicator/healthyweight

[14] The HEAT targets derive their name from the four strands in the performance framework: the Health of the population; Efficiency and productivity, resources and workforce; Access to services and waiting times; and Treatment and quality of services.

[15] See: www.scotland.gov.uk/About/scotPerforms/partnerstories/NHSScotlandperformance/childhealthyweight

[16] https://isdscotland.scot.nhs.uk/Health-Topics/Child-Health/Publications/2014-07-29/2014-07-29-ChildHealthyWeight-Summary.pdf?34925478697

[17] Parkinson, J. (2012). Establishing a Core Set of National, Sustainable Mental Health Indicators for Children and Young People in Scotland: Final Report. Glasgow: NHS Health Scotland. http://www.healthscotland.com/documents/5878.aspx

[18] See: www.takelifeon.co.uk

[19] See: www.legacy2014.co.uk/what-is-legacy/legacy-programmes

[20] See: www.scotland.gov.uk/Topics/ArtsCultureSport/Sport/MajorEvents/Glasgow-2014/Commonwealth-games/Indicators/PAIP

[21] Keith, SW, Fontaine KR, Pajewski NM, Metha, T, Allison D. Use of self-reported height and weight biases the body mass index-mortality association. International Journal of Obesity. 2011; 35:401-8.

[22] Merrill RM, Richardson JS. Validity of Self-Reported Height, Weight and Body Mass Index: Findings from the National Health and Nutrition Examination Survey, 2001-2006. Preventing Chronic Disease, 2009; 61-10.

[23] www.scotland.gov.uk/scottishhealthsurvey

[24] https://gss.civilservice.gov.uk/wp-content/uploads/2014/02/Comparability-Report-Final.pdf

[25] 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. Participants' 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.

[26] These cut-offs differ to those used in the previous surveys. In 1995 and 1998 the normal weight range was defined as 20-25 kg/m^2, in 2003 it was changed to 18.5-25 kg/m^2. From 2008 onwards the ranges are defined as set out below. This brings the definition in line with WHO recommendations. The impact of the change of definition is very marginal as very few people have a BMI measurement that is exactly 18.5, 25, 30 or 40 kg/m^2.

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

[27] For a full review of obesity measures see: National Institute of Health and Clinical Excellence (2006). CG43 Obesity: Full Guideline, Section 2: Identification and Classification. See: www.nice.org.uk/guidance/index.jsp?action=download&o=38295

[28] Romero-Corral, A. et al (2008). Accuracy of body mass index in diagnosing obesity in the adult general population. International Journal of Obesity 32: 959–966.

[29] Lean M, Han T, Morrison C. Waist circumference as a measure for indicating need for weight management. BMJ 1995; 311:158-61.

[30] Schneider HJ, Friedrich N, Klotsche J et al. The predictive value of different measures of obesity for incident cardiovascular events and mortality. The Journal of Clinical Endocrinology & Metabolism 201; 95(4):1777-1785.

[31] National Institutes of Health. Third report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III). Bethesda, Md: National Institutes of Health 2001. NIH Publication 01-3670.

[32] A high waist circumference of 94 cm for men is equivalent to one of 94.6cm following the interviewer protocol. A very high waist circumference of 102 cm is equivalent to one of 102.75cm. A high waist circumference of 80cm for women is equivalent to one of 82.4cm following the interviewer protocol. A very high waist circumference of 88cm is equivalent to one of 91.35cm.

[33] Flegal KM. Waist circumference of healthy men and women in the United States. Int J Obes. 2007;31:1134-9.

[34] Bellizzi MC, Dietz WH. Workshop on childhood obesity: summary of the discussion. American Journal of Clinical Nutrition 1999; 70:173S-175

[35] Daniels, S. R., Khoury, P. R. and Morrison, J. A. (1997). The utility of body mass index as a measure of body fatness in children and adolescents: Differences by race and gender. Pediatrics 99: 804-807.

[36] Cole, T., Freeman, J.V. and Preece, M.A. (1990). Body mass index reference curves for the UK. Archives of Disease in Childhood. 73, 25-29.

[37] Cole, T., Freeman, J.V. and Preece, M.A. (1998). British 1990 growth reference centiles for weight, height, body mass index and head circumference fitted by maximum penalised likelihood. Statistics in Medicine. 17, 407-429.

[38] Reilly, J. J. (2002). Assessment of childhood obesity: National reference data or international approach? Obesity Research 10: 838-840.

[39] Reilly, J. J., Wilson, M. L., Summerbell, C. D., and Wilson, D. C. (2002). Obesity: diagnosis, prevention, and treatment; evidence based answers to common questions. Archives of Disease in Childhood 86: 392-395.

[40] Jotangia, D., Moody, A., Stamatakis, E., et al. (2005). Obesity Among Children Under 11. London: Department of Health in collaboration with the Health and Social Care Information Centre. See: http://dera.ioe.ac.uk/5841/1/dh_065358.pdf

[41] Reilly, J., Dorosty, A., and Emmett, P. (1999). Prevalence of overweight and obesity in British children: cohort study. British Medical Journal. 319: 1039.

[42] Bundred, P., Kitciner, D. and Buchan, I. (2001). Prevalence of overweight and obese children between 1989 and 1998: population based series of cross sectional studies. British Medical Journal 322: 1-4.

[43] Rudolf, M. C. J., Sahota, P., Barth, J. H., and Walker, J. (2001). Increasing prevalence of obesity in primary school children: cohort study. British Medical Journal 322: 1094-1095.

[44] This method has been developed by ISD Scotland, full details of the procedure are available on request from the Scottish Government Scottish Health Survey Team.

[45] See: www.scotland.gov.uk/About/scotPerforms/indicator/healthyweight

[46] Gray, Linsay., and Leyland, H.Alastair (2013) Chapter 7: Obesity in Scottish Health Survey 2012: Volume 1. See: http://www.scotland.gov.uk/Resource/0043/00434590.pdf

Table list

Additional tables available on the survey website include:

- Adult: BMI (grouped), by age & key demographics
- Adult: BMI 25 and over, by age & key demographics
- Adult: BMI 30 and over, by age & key demographics
- Adult: BMI 40 and over, by age & key demographics
- Adult: Mean BMI, by age & key demographics
- Adult: Mean height, by age & key demographics
- Adult: Mean weight, by age & key demographics
- Child: BMI (grouped), by age & key demographics
- Child: Outwith healthy weight range, by age & key demographics
- Child: At risk of overweight (including obese), by age & key demographics

Table 7.1 Mean adult BMI, prevalence of overweight and obesity, 1995 to 2013

Aged 16 and over with valid height and weight measurements *1995 to 2013*

BMI (kg/m^2)	1995	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%	%
Men									
25 and over[a]									
16-64	55.6	61.0	64.0	66.3	66.2	66.1	67.1	66.0	66.7
16+	n/a	n/a	65.4	68.5	67.9	67.8	69.2	68.2	68.3
30 and over[b]									
16-64	15.9	18.8	22.0	24.9	26.7	26.6	26.7	24.8	23.7
16+	n/a	n/a	22.4	26.0	26.9	27.4	27.7	26.6	24.9
40 and over[c]									
16-64	0.5	0.9	1.8	1.4	1.0	1.7	1.8	2.0	1.0
16+	n/a	n/a	1.6	1.4	1.0	1.6	1.7	2.0	0.9
Mean									
16-64	26.0	26.4	26.9	27.2	27.4	27.3	27.4	27.1	27.1
16+	n/a	n/a	27.0	27.4	27.5	27.5	27.6	27.3	27.3
SE of the mean									
16-64	0.07	0.07	0.12	0.13	0.13	0.15	0.14	0.16	0.14
16+	n/a	n/a	0.12	0.12	0.12	0.13	0.12	0.14	0.13
Women									
25 and over[a]									
16-64	47.2	52.2	57.3	59.6	58.4	60.3	57.1	57.7	58.6
16+	n/a	n/a	59.7	61.8	61.0	62.4	59.6	60.4	61.0
30 and over[b]									
16-64	17.3	20.9	23.8	26.5	26.4	28.1	26.3	27.4	27.5
16+	n/a	n/a	26.0	27.5	27.6	28.9	27.6	27.5	29.3
40 and over[c]									
16-64	1.3	2.0	3.6	3.5	3.5	3.7	4.2	3.5	4.0
16+	n/a	n/a	3.4	3.4	3.5	3.2	4.1	3.2	3.7
Mean									
16-64	25.7	26.3	26.9	27.3	27.2	27.4	27.3	27.2	27.3
16+	n/a	n/a	27.2	27.4	27.4	27.6	27.5	27.3	27.5
SE of the mean									
16-64	0.08	0.09	0.14	0.15	0.14	0.14	0.14	0.16	0.19
16+	n/a	n/a	0.14	0.13	0.12	0.12	0.12	0.14	0.16

Continued…

Table 7.1 - *Continued*

Aged 16 and over with valid height and weight measurements *1995 to 2013*

BMI (kg/m2)	1995	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%	%
All adults									
25 and over[a]									
16-64	52.4	56.7	60.6	62.9	62.4	63.3	62.2	61.9	62.6
16+	n/a	n/a	62.4	65.1	64.4	65.1	64.3	64.3	64.6
30 and over[b]									
16-64	17.2	19.8	23.0	25.7	26.5	27.4	26.5	26.1	25.6
16+	n/a	n/a	24.2	26.8	27.2	28.2	27.7	27.1	27.1
40 and over[c]									
16-64	1.2	1.4	2.7	2.5	2.2	2.7	3.0	2.7	2.5
16+	n/a	n/a	2.5	2.4	2.2	2.4	2.9	2.6	2.4
Mean									
16-64	25.8	26.4	26.9	27.2	27.3	27.4	27.3	27.1	27.2
16+	n/a	n/a	27.1	27.4	27.4	27.5	27.5	27.3	27.4
SE of the mean									
16-64	0.05	0.06	0.10	0.11	0.10	0.11	0.11	0.12	0.13
16+	n/a	n/a	0.09	0.10	0.09	0.10	0.10	0.11	0.12
Bases (weighted):									
Men 16-64	*3672*	*3673*	*2702*	*2238*	*2598*	*2487*	*2513*	*1706*	*1650*
Men 16+	n/a	n/a	*3217*	*2689*	*3129*	*2992*	*3003*	*2048*	*2005*
Women 16-64	*3632*	*3572*	*2776*	*2257*	*2553*	*2435*	*2478*	*1640*	*1685*
Women 16+	*n/a*	*n/a*	*3458*	*2828*	*3208*	*3046*	*3100*	*2063*	*2095*
All adults 16-64	*7757*	*7245*	*5478*	*4495*	*5151*	*4922*	*4991*	*3346*	*3336*
All adults 16+	*n/a*	*n/a*	*6675*	*5517*	*6336*	*6038*	*6103*	*4110*	*4099*
Bases (unweighted):									
Men 16-64	*3303*	*3110*	*2368*	*1822*	*2107*	*2020*	*2092*	*1381*	*1399*
Men 16+	*n/a*	*n/a*	*3016*	*2454*	*2817*	*2674*	*2745*	*1876*	*1827*
Women 16-64	*4005*	*3783*	*2908*	*2293*	*2678*	*2553*	*2596*	*1676*	*1783*
Women 16+	*n/a*	*n/a*	*3684*	*3019*	*3449*	*3327*	*3389*	*2221*	*2280*
All adults 16-64	*7776*	*6893*	*5276*	*4115*	*4785*	4573	*4688*	*3057*	*3182*
All adults 16+	*n/a*	*n/a*	*6700*	*5473*	*6266*	*6001*	*6134*	*4097*	*4107*

a 25 and over = overweight / obese / morbidly obese

b 30 and over = obese / morbidly obese

c 40 and over = morbidly obese

Table 7.2 Adult BMI, 2013, by age and sex

Aged 16 and over with valid height and weight measurements *2013*

BMI (kg/m^2)	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Less than 18.5	4.9	1.0	0.3	0.4	0.4	1.3	1.3	1.3
18.5 to less than 25	57.7	40.7	31.3	17.3	15.8	24.2	20.9	30.4
25 to less than 30	25.4	43.1	43.8	53.6	47.1	40.7	52.2	43.4
30 to less than 40	11.7	15.0	24.3	27.3	33.8	32.8	25.6	24.0
40+	0.2	0.2	0.4	1.3	2.9	0.9	0.1	0.9
All 25 and over[a]	*37.3*	*58.4*	*68.5*	*82.3*	*83.7*	*74.5*	*77.8*	*68.3*
All 30 and over[b]	*11.9*	*15.2*	*24.7*	*28.7*	*36.6*	*33.7*	*25.7*	*24.9*
Mean	24.3	26.0	27.3	28.4	29.1	28.3	27.8	27.3
Standard error of the mean	0.33	0.27	0.27	0.24	0.29	0.30	0.34	0.13
Women								
Less than 18.5	5.9	1.0	1.1	1.7	1.8	0.4	1.2	1.9
18.5 to less than 25	60.3	51.0	33.9	28.5	28.0	24.5	33.7	37.1
25 to less than 30	24.0	24.3	31.6	38.0	35.1	35.7	32.5	31.7
30 to less than 40	7.8	19.4	27.6	28.6	30.6	36.8	30.1	25.5
40+	2.0	4.3	5.8	3.3	4.6	2.6	2.4	3.7
All 25 and over[a]	*33.8*	*48.0*	*65.0*	*69.8*	*70.2*	*75.1*	*65.1*	*61.0*
All 30 and over[b]	*9.8*	*23.7*	*33.4*	*31.9*	*35.1*	*39.4*	*32.6*	*29.3*
Mean	24.6	26.5	28.3	28.1	28.6	28.8	27.7	27.5
Standard error of the mean	0.42	0.36	0.38	0.27	0.35	0.34	0.44	0.16

Continued…

Table 7.2 - *Continued*

Aged 16 and over with valid height and weight measurements *2013*

BMI (kg/m^2)	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
All 25 and over[a]	*35.7*	*53.0*	*66.7*	*75.9*	*76.8*	*74.8*	*70.7*	*64.6*
All 30 and over[b]	*10.9*	*19.6*	*29.1*	*30.3*	*35.9*	*36.7*	*29.6*	*27.1*
Mean	24.5	26.2	27.8	28.2	28.8	28.6	27.8	27.4
Standard error of the mean	0.26	0.26	0.25	0.19	0.24	0.23	0.30	0.12
Bases (weighted):								
Men	*311*	*306*	*350*	*377*	*307*	*223*	*131*	*2005*
Women	*287*	*326*	*354*	*394*	*325*	*241*	*168*	*2095*
All adults	*598*	*632*	*704*	*770*	*632*	*464*	*300*	*4099*
Bases (unweighted):								
Men	*189*	*265*	*305*	*344*	*296*	*267*	*161*	*1827*
Women	*209*	*354*	*375*	*468*	*377*	*299*	*198*	*2280*
All adults	*398*	*619*	*680*	*812*	*673*	*566*	*359*	*4107*

a 25 and over = overweight (including obese)

b 30 and over = obese

Table 7.3 Mean and raised waist circumference (WC), 1995 to 2012/2013 combined

Aged 16 and over with valid waist measurements *1995 to 2012/2013 combined*

WC	1995	1998	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined
	%	%	%	%	%	%
Men						
Mean WC						
16-64 (nurse / nurse equivalent)	90.2	91.8	94.2	95.3	95.1	96.2
16+ (nurse / nurse equivalent)	n/a	n/a	95.3	96.5	96.3	97.4
16+ (interviewer)	n/a	n/a	n/a	n/a	n/a	98.1
SE of the mean						
16-64 (nurse / nurse equivalent)	0.19	0.21	0.43	0.67	0.67	0.57
16+ (nurse / nurse equivalent)	n/a	n/a	0.38	0.58	0.59	0.51
16+ (interviewer)	n/a	n/a	n/a	n/a	n/a	0.52
% with raised WC[a]						
16-64	14.3	18.0	25.2	29.2	28.1	28.9
16+	n/a	n/a	27.9	33.0	31.7	32.7
Women						
Mean WC						
16-64 (nurse / nurse equivalent)	78.5	80.9	84.9	87.2	87.9	88.7
16+ (nurse / nurse equivalent)	n/a	n/a	86.3	88.3	89.0	89.6
16+ (interviewer)	n/a	n/a	n/a	n/a	n/a	93.1
SE of the mean						
16-64 (nurse / nurse equivalent)	0.21	0.22	0.4	0.6	0.6	0.60
16+ (nurse / nurse equivalent)	n/a	n/a	0.35	0.48	0.47	0.50
16+ (interviewer)	n/a	n/a	n/a	n/a	n/a	0.56
% with raised WC[a]						
16-64	19.1	24.7	34.3	42.0	45.5	47.0
16+	n/a	n/a	38.9	45.3	49.1	50.4

Continued…

Table 7.3 - *Continued*

Aged 16 and over with valid waist measurements *1995 to 2012/2013 combined*

WC	1995	1998	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined
Bases (weighted):						
Men 16-64	*3426*	*3240*	*2099*	*875*	*787*	*855*
Men 16+	*n/a*	*n/a*	*2532*	*1061*	*962*	*1054*
Women 16-64	*3329*	*3150*	*2077*	*888*	*785*	*848*
Women 16+	*n/a*	*n/a*	*2679*	*1134*	*1010*	*1092*
Bases (unweighted):						
Men 16-64	*3061*	*2761*	*1765*	*699*	*636*	*714*
Men 16+	*n/a*	*n/a*	*2356*	*970*	*865*	*970*
Women 16-64	*3661*	*3340*	*2179*	*919*	*830*	*895*
Women 16+	*n/a*	*n/a*	*2850*	*1224*	*1107*	*1177*

a A raised WC is more than 102 cm for men and more than 88 cm for women
These are equivalent to 102.75cm and 91.35 cm using the interviewer measures

Table 7.4 Health risk category associated with overweight and obesity based on Body Mass Index (BMI) and waist circumference, 2012/2013 combined, by age and sex

Aged 16 and over with valid height, weight and waist measurements[a] *2012/2013 combined*

Waist circumference[b] & BMI classification [c]	Health risk category [d]	Age							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
Men									
Underweight									
Low WC	Not applicable	5.8	2.4	-	0.6	0.4	0.6	1.1	1.6
High WC	Not applicable	-	-	-	-	-	-	-	-
Very high WC	Not applicable	-	-	-	-	-	-	-	-
All underweight		*5.8*	*2.4*	*-*	*0.6*	*0.4*	*0.6*	*1.1*	*1.6*
Normal									
Low WC	No increased risk	57.6	39.7	23.1	17.0	14.6	12.4	15.6	26.9
High WC	No increased risk	-	0.7	6.2	5.0	2.8	6.3	4.4	3.5
Very high WC	Increased	-	-	-	0.5	0.7	0.8	2.7	0.5
All normal		*57.6*	*40.4*	*29.2*	*22.4*	*18.1*	*19.6*	*22.8*	*30.9*
Overweight									
Low WC	No increased risk	16.7	21.9	9.0	9.0	8.1	1.9	3.4	10.9
High WC	Increased	8.0	19.8	23.8	22.4	26.7	19.1	25.2	20.5
Very high WC	High	-	3.1	9.6	13.2	14.5	20.1	19.9	10.4
All overweight		*24.6*	*44.9*	*42.4*	*44.7*	*49.3*	*41.0*	*48.5*	*41.8*
Obesity I									
Low WC	Increased	-	1.2	0.3	-	0.1	-	-	0.3
High WC	High	0.8	-	4.1	4.3	1.9	2.7	1.0	2.3
Very high WC	Very high	10.0	5.8	14.9	22.5	23.0	26.1	23.3	17.2
All obese I		*10.8*	*7.0*	*19.3*	*26.8*	*25.0*	*28.7*	*24.3*	*19.8*
Obesity II									
Low WC	Very high	-	-	-	-	-	-	-	-
High WC	Very high	-	-	-	-	-	-	-	-
Very high WC	Very high	1.1	5.4	7.0	4.1	5.3	8.9	3.3	5.0
All obese II	*Very high*	*1.1*	*5.4*	*7.0*	*4.1*	*5.3*	*8.9*	*3.3*	*5.0*
Obesity III									
Low WC	Extremely high	-	-	-	-	-	-	-	-
High WC	Extremely high	-	-	-	-	-	-	-	-
Very high WC	Extremely high	-	-	2.1	1.3	1.9	1.1	-	1.0
All obese III	*Extremely high*	*-*	*-*	*2.1*	*1.3*	*1.9*	*1.1*	*-*	*1.0*

Continued…

Table 7.4 - *Continued*

Aged 16 and over with valid height, weight and waist measurements[a] *2012/2013 combined*

Waist circumference[b] & BMI classification [c]	Health risk category [d]	Age							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
Men – Overall risk[d]									
	Not applicable	5.8	2.4	-	0.6	0.4	0.6	1.1	1.6
	No increased	74.3	62.3	38.2	31.0	25.5	20.6	23.4	41.2
	Increased	8.0	21.1	24.1	23.0	27.5	19.9	27.9	21.2
	High	0.8	3.1	13.7	17.6	16.4	22.8	20.9	12.7
	Very high	11.1	11.2	21.9	26.6	28.3	35.0	26.6	22.2
	Extremely high	-	-	2.1	1.3	1.9	1.1	-	1.0
	High risk or above	*11.9*	*14.2*	*37.7*	*45.5*	*46.7*	*58.8*	*47.5*	*35.9*
	Very/extremely high risk	*11.1*	*11.2*	*24.0*	*27.9*	*30.2*	*36.1*	*26.6*	*23.2*
Women									
Underweight									
Low WC	Not applicable	4.2	0.8	0.6	1.5	2.2	0.7	-	1.5
High WC	Not applicable	-	-	-	-	-	-	1.0	0.1
Very high WC	Not applicable	-	-	-	-	-	-	-	-
All underweight		*4.2*	*0.8*	*0.6*	*1.5*	*2.2*	*0.7*	*1.0*	*1.6*
Normal									
Low WC	No increased risk	39.2	29.9	17.9	10.3	12.9	10.2	7.4	18.3
High WC	No increased risk	15.0	16.3	15.7	14.1	9.6	13.5	10.5	13.7
Very high WC	Increased	8.5	4.2	5.8	3.3	4.5	3.4	13.5	5.6
All normal		*62.7*	*50.4*	*39.4*	*27.7*	*27.0*	*27.1*	*31.4*	*37.6*
Overweight									
Low WC	No increased	2.0	3.4	1.7	1.8	0.8	1.0	-	1.6
High WC	Increased	5.4	5.8	7.6	6.7	8.2	5.6	5.4	6.5
Very high WC	High	10.9	14.7	17.0	31.2	24.7	33.0	36.0	23.4
All overweight		*18.2*	*23.8*	*26.3*	*39.7*	*33.8*	*39.6*	*41.4*	*31.5*
Obesity I									
Low WC	Increased	-	-	-	-	-	-	-	-
High WC	High	-	0.6	-	-	-	-	-	0.1
Very high WC	Very high	9.0	8.9	20.5	20.4	18.9	19.3	17.1	16.6
All obese I		*9.0*	*9.5*	*20.5*	*20.4*	*18.9*	*19.3*	*17.1*	*16.7*

Continued…

Table 7.4 - *Continued*

Aged 16 and over with valid height, weight and waist measurements[a] *2012/2013 combined*

Waist circumference[b] & BMI classification [c]	Health risk category [d]	Age							Total
		16-24	25-34	35-44	45-54	55-64	65-74	75+	
		%	%	%	%	%	%	%	%
Obesity II									
Low WC	Very high	-	-	-	-	-	-	-	-
High WC	Very high	-	-	-	-	-	-	-	-
Very high WC	Very high	2.8	11.7	9.0	8.6	10.0	9.0	7.5	8.5
All obese II	*Very high*	*2.8*	*11.7*	*9.0*	*8.6*	*10.0*	*9.0*	*7.5*	*8.5*
Obesity III									
Low WC	Extremely high	-	-	-	-	-	-	-	-
High WC	Extremely high	-	-	-	-	-	-	-	-
Very high WC	Extremely high	3.0	3.8	4.2	2.2	8.2	4.3	1.5	4.0
All obese III	*Extremely high*	*3.0*	*3.8*	*4.2*	*2.2*	*8.2*	*4.3*	*1.5*	*4.0*
Women – Overall risk[d]									
	Not applicable	4.2	0.8	0.6	1.5	2.2	0.7	1.0	1.6
	No increased	56.1	49.5	35.3	26.2	23.3	24.7	17.9	33.7
	Increased	13.9	10.0	13.4	10.0	12.7	9.0	18.9	12.2
	High	10.9	15.3	17.0	31.2	24.7	33.0	36.0	23.5
	Very high	11.9	20.6	29.5	29.0	28.9	28.3	24.6	25.1
	Extremely high	3.0	3.8	4.2	2.2	8.2	4.3	1.5	4.0
	High risk or above	*25.8*	*39.7*	*50.7*	*62.3*	*61.8*	*65.6*	*62.1*	*52.6*
	Very/extremely high risk	*14.9*	*24.4*	*33.7*	*31.2*	*37.1*	*32.6*	*26.1*	*29.2*
Bases (weighted):									
Men		*156*	*159*	*167*	*190*	*150*	*116*	*72*	*1010*
Women		*135*	*149*	*173*	*195*	*165*	*130*	*87*	*1034*
Bases (unweighted):									
Men		*111*	*121*	*149*	*162*	*141*	*158*	*84*	*926*
Women		*94*	*153*	*194*	*207*	*215*	*148*	*103*	*1114*

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 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/m2, Normal: 18.5 to less than 25kg/m2, Overweight: 25 to less than 30kg/m2, Obesity I: 30 to less than 35kg/m2, Obesity II: 35 to less than 40kg/m2, Obesity III: 40kg/m2 or more

d Health risk category according to SIGN guidelines (115)

Table 7.5 Proportion of children with BMI within the healthy range, at risk of overweight and at risk of obesity, 1998 to 2013

Aged 2-15 with valid height and weight measurements[a] *1998 to 2013*

BMI status (National BMI percentiles)	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%
Boys								
Within healthy range[b]	70.4	64.7	61.2	68.0	65.2	62.6	64.9	67.3
Outwith healthy range[c]	29.6	35.3	38.8	32.0	34.8	37.4	35.1	32.7
At risk of overweight (including obesity)[d]	29.0	34.2	37.5	31.3	32.9	36.2	33.6	30.9
At risk of obesity[e]	14.5	17.6	18.7	17.0	17.8	19.7	19.7	17.2
Girls								
Within healthy range[b]	69.7	68.7	71.5	70.3	69.5	68.4	70.3	72.1
Outwith healthy range[c]	30.3	31.3	28.5	29.7	30.5	31.6	29.7	27.9
At risk of overweight (including obesity)[d]	29.1	30.2	27.8	28.9	29.6	29.1	27.4	26.6
At risk of obesity[e]	14.2	13.9	14.4	15.9	14.3	14.5	13.7	14.8
All children								
Within healthy range[b]	70.1	66.7	66.2	69.1	67.3	65.4	67.5	69.6
Outwith healthy range[c]	29.9	33.3	33.8	30.9	32.7	34.6	32.5	30.4
At risk of overweight (including obesity)[d]	29.1	32.3	32.8	30.2	31.3	32.7	30.6	28.8
At risk of obesity[e]	14.3	15.8	16.6	16.4	16.1	17.2	16.8	16.0
Bases (weighted):								
Boys	*985*	*1243*	*669*	*958*	*641*	*655*	*663*	*687*
Girls	*931*	*1182*	*621*	*924*	*612*	*621*	*620*	*660*
All children	*1916*	*2425*	*1290*	*1882*	*1253*	*1276*	*1283*	*1347*
Bases (unweighted):								
Boys	*1780*	*1208*	*652*	*967*	*662*	*643*	*630*	*678*
Girls	*1704*	*1215*	*640*	*914*	*569*	*626*	*644*	*630*
All children	*3484*	*2423*	*1292*	*1881*	*1231*	*1269*	*1274*	*1308*

a Children whose BMI was more than 7 standard deviations above or below the norm for their age were excluded from the table. The 1998 to 2011 figures have been revised as prior to 2012 cases which were more than 3 standard deviations above or below the mean for all children were excluded

b BMI above 2nd percentile, below 85th percentile. The 1998 to 2011 figures have been revised as prior to 2012 the range was above 5th percentile and 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 7.6 Children's BMI, 2013, by age and sex

Aged 2-15 with valid height and weight measurements[a] *2013*

BMI status (National BMI percentiles)	Age			Total
	2-6	7-11	12-15	
	%	%	%	%
Boys				
At risk of underweight[b]	1.0	1.1	3.5	1.8
Healthy weight[c]	71.7	64.9	65.0	67.3
At risk of overweight[d]	13.4	14.9	12.8	13.8
At risk of obesity[e]	13.9	19.1	18.7	17.2
Outwith healthy range[f]	*28.3*	*35.1*	*35.0*	*32.7*
At risk of overweight (including obese)[g]	*27.3*	*34.0*	*31.5*	*30.9*
Girls				
At risk of underweight[b]	3.0	0.5	-	1.2
Healthy weight[c]	71.2	74.7	70.0	72.1
At risk of overweight[d]	10.5	10.2	15.8	11.8
At risk of obesity[e]	15.3	14.6	14.2	14.8
Outwith healthy range[f]	*28.8*	*25.3*	*30.0*	*27.9*
At risk of overweight (including obese)[g]	*25.8*	*24.8*	*30.0*	*26.6*
All children				
At risk of underweight[b]	2.0	0.8	1.8	1.5
Healthy weight[c]	71.5	69.7	67.4	69.6
At risk of overweight[d]	11.9	12.6	14.2	12.8
At risk of obesity[e]	14.6	16.9	16.5	16.0
Outwith healthy range[f]	*28.6*	*30.3*	*32.6*	*30.4*
At risk of overweight (including obese)[g]	*26.5*	*29.5*	*30.8*	*28.8*
Bases (weighted):				
Boys	*237*	*247*	*203*	*687*
Girls	*237*	*238*	*185*	*660*
All children	*474*	*485*	*388*	*1347*
Bases (unweighted):				
Boys	*257*	*238*	*183*	*678*
Girls	*254*	*217*	*159*	*630*
All children	*511*	*455*	*342*	*1308*

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

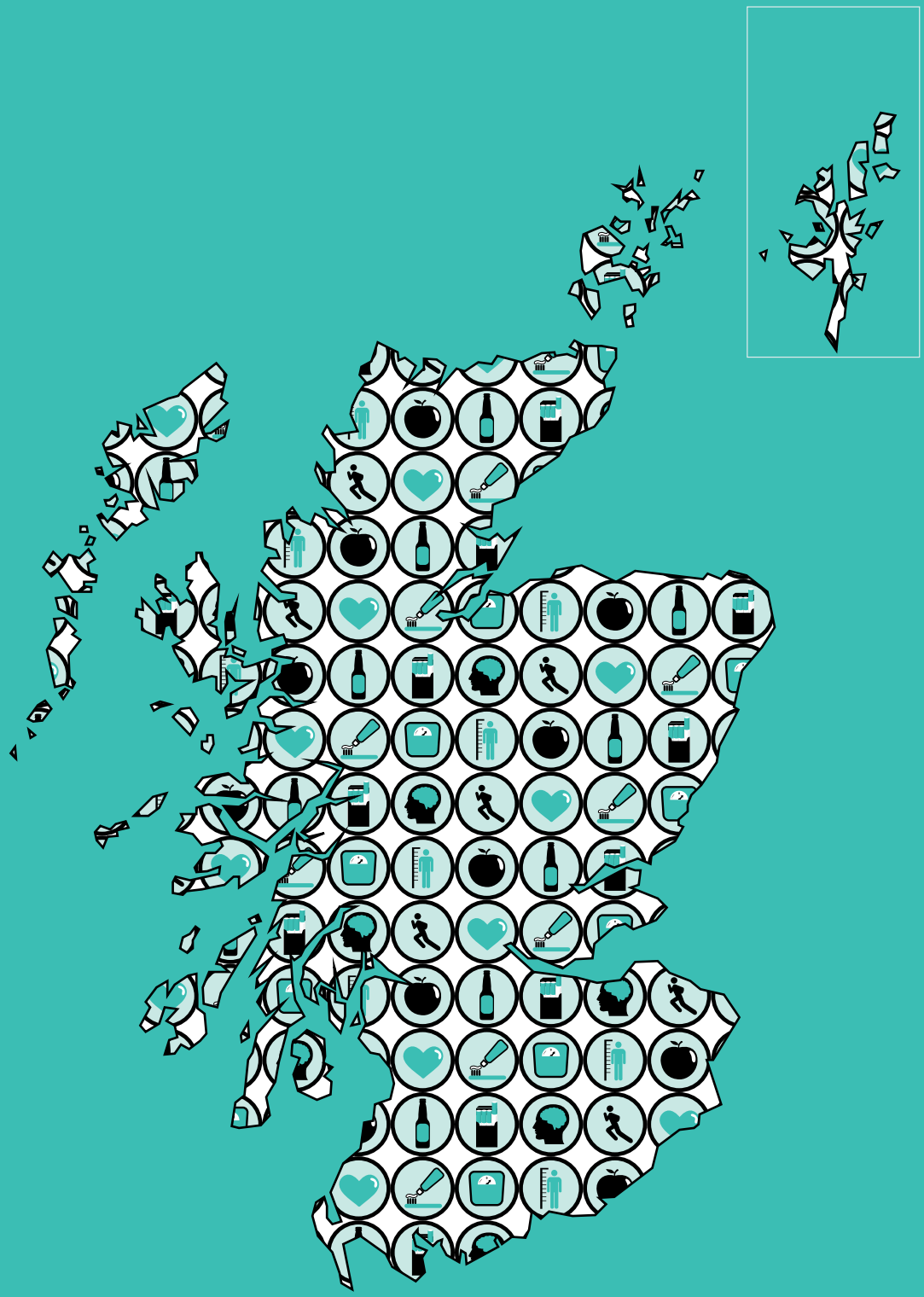
c BMI above 2nd percentile, below 85th percentile

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



Chapter 8

Long-term conditions

8 LONG-TERM CONDITIONS

Lisa Rutherford

SUMMARY

Long-term conditions

- Prevalence did not change significantly for adults between 2012 and 2013. Forty-four percent of adults had a long-term condition in 2013, with one in three (31%) reporting that they had a condition that limited their daily activities in some way.
- Women remain significantly more likely than men to have a long-term condition (46% compared with 41%).
- Around one in six (17%) children aged 0-15 had a long-term condition in 2013 (19% of boys and 15% of girls) and for 9% their condition limited their daily activities in some way.
- The proportion of boys reporting that they had a long-term condition increased significantly between 2008 and 2013 (from 15% to 19%) but did not change between 2012 and 2013.

Asthma

- Asthma prevalence did not change significantly in 2013. Sixteen percent of adults and 13% of children reported that they had been diagnosed with asthma by a doctor.
- Levels of doctor-diagnosed asthma did not vary significantly between boys and girls in 2013 (15% and 12%, respectively).

Chronic Obstructive Pulmonary Disease (COPD)

- In 2013, 4% of adults reported that they had been diagnosed with Chronic Obstructive Pulmonary Disease (COPD) by a doctor. COPD prevalence has not changed significantly since 2008.

Cardiovascular disease (CVD)

- One in six (15.5%) adults, in 2013, reported that they had been diagnosed with a cardio-vascular disease (CVD) condition by a doctor, while 18.9% reported being diagnosed with any CVD condition including diabetes.
- Doctor-diagnosed diabetes prevalence was 5.6% for adults (6.1% for men and 5.1% for women) in 2013.
- One in twelve (8.3%) adults, in 2013, reported that a doctor had diagnosed them with Ischaemic Heart Disease (IHD) or stroke (9.5% of men and 7.2% of women).

Hypertension

- Hypertension levels in 2012/2013 were not significantly different from those recorded in 1998. One in three (29.1%) adults aged 16 and over had survey-defined hypertension in the years 2012/2013 combined.
- Increasing age was a risk factor for hypertension, with prevalence ranging from 10.4% and 1.6% for men and women aged 16-24 to 54.4% for men aged 64-74 and 71.8% for women aged 75 and over.
- With the exception of those aged 65 and over, more than half of cases of

survey-defined hypertension in men were untreated.

- Hypertension treatment rates increased with age for both men and women.
- Where hypertension was treated, in more than half of cases it was not controlled.
- In 2012/2013, 22.8% adults had doctor-diagnosed hypertension, compared with 29.1% that had survey-defined hypertension. The difference been doctor-diagnosed and survey-defined hypertension was slightly largely for men than for women (7.4 percentage points, compared with 5.3 for women).
- The level of survey defined hypertension remained stable between 2003 and 2010/2011 for adults aged 16 and over (32.5-32.9%), before dropping significantly to 28.4% in 2012/2013 (2012/2013 figure is based on adjusted estimates).

8.1 INTRODUCTION

In the Scottish Government's **National Action Plan** on long-term conditions,[1] long-term conditions are defined 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, inflammatory bowel disease.

Long-term conditions account for 80% of all GP consultations and for 60% of all deaths in Scotland.[1] People with a condition are twice as likely as those without to be admitted to hospital and stay in hospital disproportionately longer.[2] It is estimated that by 2031, there will be a 60% increase in the number of people aged 75 and over in Scotland.[3] Given Scotland's ageing population, the established links between age and long-term conditions are significant.[1] The link with deprivation, lifestyle factors and wider health determinants is also of importance in Scotland given its persistent health inequalities.[1] Long-term conditions therefore represent personal, social and economic costs both to individuals and their families and to Scottish society more widely.

8.1.1 Common long-term conditions included in the Scottish Health Survey (SHeS)

Respiratory diseases and metabolic disorders including cardiovascular disease (CVD), diabetes and hypertension are prominent physical long-term conditions. Together, they represent a significant health burden in Scotland, and globally.[4]

Asthma and chronic obstructive pulmonary disease (COPD) are common long-term respiratory diseases. Asthma is characterised by variable and recurring symptoms of breathlessness, wheezing, coughing and chest tightness. It is estimated that 385,000 people in Scotland are currently receiving treatment for asthma, 296,000 of which are children.[5]

COPD is a chronic lung condition caused by restricted airways resulting in breathing difficulties, persistent coughing and abnormal sputum production.[6] The breathing restrictions associated with COPD are a major cause of repeated hospital admissions in Scotland.[7] Estimates

suggest that treating COPD costs the NHS in Scotland around £100 million a year.[7]

CVD is one of the leading contributors to the global disease burden.[4] 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.[8] IHD is the second most common cause of death in Scotland after cancer, accounting for 13% of deaths in 2013, with a further 8% caused by stroke.[9] 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.[8]

The increasing prevalence 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 rising levels of type 2 diabetes – linked to obesity, physical inactivity and ageing – which are driving the increased prevalence and causing concern.[10] Diabetes is a risk factor in premature mortality, although there have been improvements in recent years.[10]

Hypertension, the presence of persistently raised blood pressure,[11] is the second most important preventable risk factor for premature death.[12] SIGN guidance acknowledges the link between elevated blood pressure (BP) and increased risk of CHD, heart failure, stroke and renal failure.[13] Guidelines from The British Hypertension Society[14] indicate that various lifestyle activities are associated with a potential reduction in blood pressure including: weight reduction, increased physical activity, limited alcohol consumption, and a balanced diet high in fruit and vegetable consumption and low in total and saturated fat and salt.

8.1.2 Policy background

One of the Scottish Government's 15 **National Performance Framework National Outcomes** is for people in Scotland to 'live longer, healthier lives'.[15] There is also a National Performance indicator to 'reduce premature mortality' (deaths from all causes in those aged under 75).[16] CVD is described as one of the key 'big killer' diseases around which action must be taken if this target is to be met. COPD is another major cause of death in Scotland, hence COPD prevention and symptom management will also contribute to reducing premature mortality.[7] In addition, a number of the national indicators[17] are linked to key CVD and respiratory disease risk factors, most notably smoking,[18] but also physical activity[19] and obesity.[20]

In recognition of the challenges posed by long-term 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. Delivering on a commitment made in the earlier **Better Health, Better Care: Action Plan**,[21] 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 experience of two or more long-term conditions.

8.1.3 Reporting on long-term conditions in SHeS

SHeS is an important source of information on the prevalence of long-term conditions in Scotland. It also offers valuable information on the patterning of conditions across different groups in society. In this chapter trends in self-reported long-term conditions prevalence for adults and children are updated. Prevalence of specific long-term conditions including: respiratory conditions (asthma and COPD); CVD; diabetes; and hypertension are also reported. Updated trends in adult hypertension are presented and the extent of diagnosis, treatment and control of hypertension are also explored. Supplementary tables will also be available on the Scottish Government SHeS website.[22]

8.2 METHODS AND DEFINITIONS

8.2.1 Methods

Self-reported 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 more details about it. Answers were recorded verbatim and then coded in the office. Those reporting a condition were also asked if it limited their daily activities a lot, a little, or not at all. This enabled conditions to be classified as either 'limiting' or 'non-limiting'. These questions did not specify that conditions had to be doctor-diagnosed; responses were thus based on individuals' perceptions. As the question wording differs slightly from that used in the 2008 to 2011 surveys, time series data should be interpreted with caution.

Asthma and COPD

Participants were asked if a doctor had ever told them they had asthma. Participants were also asked if they had ever had COPD, chronic bronchitis or emphysema, and if so, whether a doctor had told them they had one of these conditions. No objective measures were used to confirm these self-reported diagnoses.

Self-reported doctor-diagnosed disease

Participants were asked whether they had ever suffered from any of the following conditions: diabetes, angina, heart attack, stroke, heart murmur, irregular heart rhythm, 'other heart trouble'. If they responded affirmatively, participants were asked whether they had ever been told they had the condition by a doctor. 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. Participants were also asked if symptoms of the condition had occurred within the past 12 months. No distinction was made between type 1 and type 2 diabetes in the interview. Women whose diabetes occurred only during pregnancy were excluded from the analysis.

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) the diagnosis made by their doctor.

Blood pressure

Blood pressure was measured during the biological module,[23] using the Omron HEM207 device. This equipment has been used on SHeS since 2003. Prior to 2012, blood pressure was collected in a follow-up interview conducted by the 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.[24]

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 whom three readings were successful 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 are 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 use of these drugs.

8.2.2 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'.[25]

Any CVD condition or diabetes

A second category of the above conditions and diabetes is also 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 the condition.

Ischaemic heart disease (IHD) or stoke

Participants were classified as having IHD or stroke if they reported **ever** having angina, or a heart attack, or a stroke, confirmed by a doctor.

Blood pressure levels classification

In accordance with guidelines on hypertension management[14] 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 diagnosis of hypertension are based on sustained levels of high blood pressure rather than a single measurement.

8.3 LONG-TERM CONDITIONS

8.3.1 Trends in long-term conditions prevalence in adults since 2008

In 2013, 44% of adults reported having a long-term condition. Around one in three (31%) had a condition that limited their daily activities in some way, while 13% reported that they had a condition that was non-limiting. As seen in previous years, women were more likely than men to report having a long-term condition (46% compared with 41%). The difference between the sexes is explained by a higher prevalence of limiting conditions among women (34% compared with 28% in men), whereas the proportion with a non-limiting condition was the same for men and women (13%).

It was noted in the 2012 annual report that the proportion of adults with a long-term condition had increased significantly since 2008 (from 41% to 46%).[26] There was, however, no significant change in prevalence between 2012 and 2013 (46% and 44% respectively). The trend for limiting conditions has been similar to that observed for long-term conditions more generally, while prevalence of non-limiting conditions has remained relatively stable since 2008 (15% in 2008 and 13% in 2013).

For women, long-term conditions trends have been similar to those observed for all adults. Both the percentage with a long-term condition, and the percentage with a limiting condition, increased between 2008 and 2012 (in 2008, 42% had a long-term condition and 28% had a limiting condition; by 2012 these had increased to 49% and 35% respectively), with no significant change since then (in 2013 46% had a long-term condition and 34% had a limiting condition). For men, there

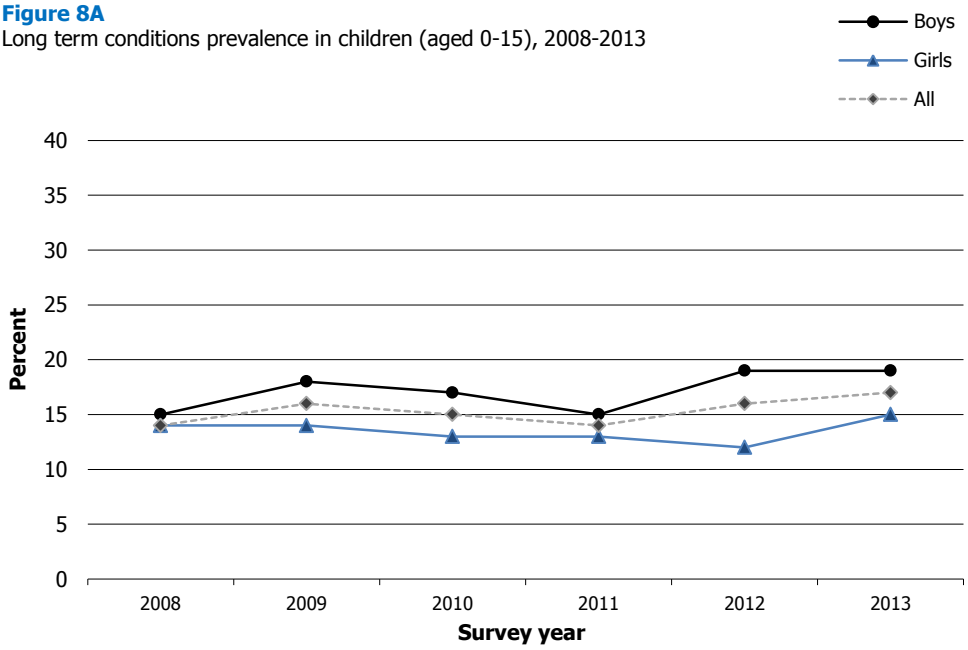
has been a smaller increase in long-term condition prevalence over the years (38% in 2008 and 42% in 2012) with no significant changes observed between 2012 and 2013 (42% and 41%). **Table 8.1**

8.3.2 Trends in long-term conditions prevalence in children since 2008

In 2013, around one in six (17%) children aged 0-15 had a long-term condition. Nine percent had a long-term condition that limited their activities in some way, while 8% reported having a non-limiting condition. In line with findings from previous years, boys were significantly more likely than girls to have a long-term condition (19% compared with 15%).

The proportion of children with a long-term condition has fluctuated between 14% and 17% since 2008, with no significant change in more recent years (16% in 2012 and 17% in 2013). Similar patterns were observed for trends in both limiting and non-limiting conditions prevalence in children.

Figure 8A
Long term conditions prevalence in children (aged 0-15), 2008-2013



Since 2008 there has been a statistically significant increase in the proportion of boys reporting a long-term condition (from 15% to 19%). The increase has largely been driven by an increase in the percentage reporting the presence of limiting condition (from 7% to 11% in 2013). Long-term condition prevalence has not changed significantly for girls over the years (14% in 2008 and 15% in 2013) and the change observed between 2012 and 2013 (12% in 2012 and 15% in 2013) was not statistically significant. **Figure 8A, Table 8.2**

8.4 ASTHMA

8.4.1 Trends in asthma prevalence in adults since 1998

In 2013, around one in six (16%) adults aged 16 and above reported that they had been diagnosed with asthma by a doctor, either recently or in the past. A similar percentage (18%) reported that they had experienced wheezing in the 12 months prior to interview. Neither doctor-diagnosed asthma nor wheezing prevalence varied significantly by sex in 2013 (16% of men and 17% of women had asthma that had been diagnosed by a doctor; and 17% of men and 19% of women reported wheezing in the previous 12 months).

In the 2012 annual report it was noted that there had been a steady increase in doctor-diagnosed asthma among those aged 16-74 since 1998 (from 11% to 17%).[26] In 2013, asthma prevalence was at the same level as in 2012 (17%).

Reported wheezing among adults aged 16-74 has changed little since 1998 (16% in 1998 and 18% in 2013). While prevalence for men aged 16-74 has followed a similar pattern to that observed for all adults, there has been a gradual statistically significant increase in the percentage of women aged 16-74 reporting that they experienced wheezing in the 12 months prior to interview (15% in 1998 and 20% in 2013).

Trends are also available for all adults aged 16 and above from 2003 onwards. The patterns observed here were largely similar to those discussed above for those aged 16-74. In the last decade there has been a gradual increase in doctor-diagnosed asthma in adults aged 16 and above (from 13% in 2003 to 16% in 2013) but no significant change in more recent years. While reported wheezing has not changed significantly since 2003 for either all adults or just men, there has been a statistically significant increase in the percentage of women reporting experiencing wheezing in the 12 months prior to interview (from 16% in 2003 to 19% in 2013). **Table 8.3**

8.4.2 Trends in asthma prevalence in children since 1998

In 2013, 13% of children aged 0-15 had been diagnosed with asthma by a doctor. A similar percentage (14%) reported experiencing wheezing in the 12 months prior to interview. While it appears that a higher proportion of boys than girls had been diagnosed with asthma (15% compared with 12%), this difference was not statistically significant. Boys were, however, significantly more likely than girls to have experienced wheezing in the previous year (17% compared with 12%).

In the 2012 report it was noted that between 1998 and 2012 there had been a decrease in doctor-diagnosed asthma among children aged 2-15 (from 18% to 13%).[26] The two percentage point increase in prevalence between 2012 and 2013 was not a statistically significant change. Similarly, the observed increase in prevalence among girls aged 2-15, between 2012 and 2013 (from 10% to 13%), did not

represent a statistically significant change. Among boys of the same age, asthma prevalence has not changed significantly since 2008/2010 combined (15% in 2008/2010 and 16% in 2013).

There was some evidence of a small decline, since 1998 (16%), in the proportion of children aged 2-15 experiencing wheezing in the year prior to interview, but with little change in more recent years (13% in both 2012 and 2013). **Table 8.3**

8.5 CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

8.5.1 Trends in COPD prevalence since 2008

In 2013, 4% of adults aged 16 and above reported that they had been diagnosed with COPD by a doctor. Reported diagnosis was similar for men and women (3% and 4%, respectively). COPD prevalence has not changed significantly since the questions were introduced to the survey in 2008 (3% for men in both 2008 and 2013, and 4% for women in these same years). **Table 8.4**

8.6 CARDIOVASCULAR CONDITIONS AND DIABETES

8.6.1 Trends in any CVD, and CVD or diabetes prevalence since 1995

Any CVD

In 2013, 15.5% of adults aged 16 and above reported being diagnosed with any CVD condition by a doctor. Reported diagnosis levels did not vary significantly between men and women (15.7% and 15.3% respectively). In the 2012 annual report it was noted that there had been a small gradual increase in the proportion of men and women aged 16-64 with any CVD condition since 1995.[26] This trend was less apparent when 2013 data were included. Prevalence in 2013 was not significantly different from that in either 1995 or in 2012, for either men (8.4% in 1995, 10.3% in 2012 and 9.3% in 2013) or women (8.9% in 1995, 11.3% in 2012 and 10.6% in 2013) aged 16-64.

While prevalence levels were higher for all those aged 16 and above, reflecting the higher prevalence at older ages, the trend since 2003 has been similar to that discussed above for those aged 16-64. **Table 8.5**

Any CVD or diabetes

In 2013, 18.9% of adults aged 16 and above had any CVD condition or diabetes (19.2% of men and 18.6% of women). The trend in any CVD or diabetes prevalence for those aged 16-64 has been very similar to that discussed above for any CVD, a small increase since 1995 with no significant change between 2012 and 2013 for either men or women. Figures for 2013 remain significantly higher than those for 1995, due to changes in diabetes prevalence discussed below. A similar pattern was observed for all adults aged 16 and above since 2003. **Table 8.5**

Doctor-diagnosed diabetes prevalence

In 2013, 5.6% of adults aged 16 and above reported that they had been diagnosed with diabetes by a doctor (6.1% of men and 5.1% of women). The percentage of adults aged 16-64 with a diagnosis doubled between 1995 and 2013 (1.5% and 3.1% respectively), although levels in 2013 were no different from those in 2008. Prevalence declined, but not significantly, between 2012 and 2013 for both men and women. In 2013, the percentage of men and women aged 16-64 with a diabetes diagnosis (3.4% and 2.9%, respectively) was similar to the 2008 levels for both sexes (3.3% and 2.8%, respectively). There has been a small steady increase in the percentage of all adults aged 16 and above reporting that a doctor diagnosed them with diabetes (3.7% in 2003 to 5.6% in 2013). **Table 8.5**

8.6.2 Trends in IHD, stroke, and IHD or stroke prevalence since 1995

IHD

In 2013, 6.1% of adults aged 16 and above had IHD, with reported diagnosis higher for men than for women (7.1% compared with 5.3%). In 1995, 4.0% of men and 2.9% of women aged 16-64 had IHD, the equivalent figures in 2013 were 2.8% and 1.8% respectively. There has also been a very small decrease in the proportion of adults aged 16 and above with IHD since 2003 (from 7.3% to 6.1% in 2013).

Stroke

In 2013, 2.9% of adults aged 16 and above reported having had a stroke. Prevalence did not vary significantly between men and women (3.2% and 2.7%). The proportion of adults aged 16-64 reporting having had a stroke was at its highest level in 2013 (1.6% compared with 0.8% in 1995 and 0.6% in 1998), with a three-fold increase in prevalence among women this age since 1995 (0.5% compared with 1.5% in 2013). Since 2003 the percentage of all adults aged 16 and above reporting a doctor-diagnosed stroke has increased by 0.7 percentage points (from 2.2% to 2.9%).

IHD or stroke

Around one in twelve (8.3%) adults aged 16 and above reported that they had ever had IHD or a stroke in 2013 (9.5% of men and 7.2% of women). As reported in the 2012 annual report, since 1995 there has been very little change in IHD or stroke prevalence among 16-64 year olds (3.9% in 1995 and 3.7% in 2013).[26] A similar pattern was observed for adults aged 16 and above since 2003 (8.8% in 2003 and 8.4% in 2013). **Table 8.5**

8.7 HYPERTENSION

8.7.1 Blood pressure levels in 2012/2013 combined, by age and sex

Four categories have been used to classify hypertension in Table 8.6, drawing a distinction between those with normal blood pressure who

are or are not receiving any treatment for hypertension and those with raised blood pressure (survey defined high blood pressure) who are or are not receiving treatment. These latter two groups are important target groups in the population. The first (those with raised blood pressure who are receiving treatment) includes people with potentially poorly managed hypertension, while the second provides an estimate of the prevalence of potentially undiagnosed cases of this condition. It should be noted, when considering this last category, that not everyone with a one-off raised blood pressure measurement actually has hypertension on repeated measurement; the definition of hypertension is 'sustained raised BP'. Nor does everyone with a blood pressure of 140-159/90-99mmHg warrant treatment, which is indicated for people aged under 80 with existing CVD, diabetes, damage from raised blood pressure (e.g. kidney disease) or at high risk of developing CVD.

The prevalence of survey-defined hypertension (blood pressure of >140/90 mmHg and/or taking anti-hypertensive medication) in 2012/2013 was 29.1%. Increasing age was a major risk factor for hypertension, with prevalence ranging from 10.4% of men and 1.6% of women aged 16-24, up to 51.3% of men and 71.8% of women aged 75 and over. For those aged under 35, survey-defined hypertension was significantly higher among men than women, whereas the opposite was true for those aged 65 and over.

With the exception of those aged 65 and above, more than half the cases of survey-defined hypertension in men were untreated. For women, more than half the cases in those aged under 55 were untreated. No survey participants under the age of 35 were being treated for hypertension. For both men and women, treated hypertension (both controlled and uncontrolled) increased with age up to age 55-64. While treatment rates did not continue to increase significantly above this age for men (27% of men aged 75 and above received treatment), they did so for women (41% of women aged 65-74 and 42% of women aged 75 and above). Where hypertension was treated, it remained uncontrolled in more than half of cases for both men and women. **Figure 8B, Figure 8C, Table 8.6**

Figure 8B
Prevalence of survey-defined hypertension, 2012/2013 combined, by age (Men)

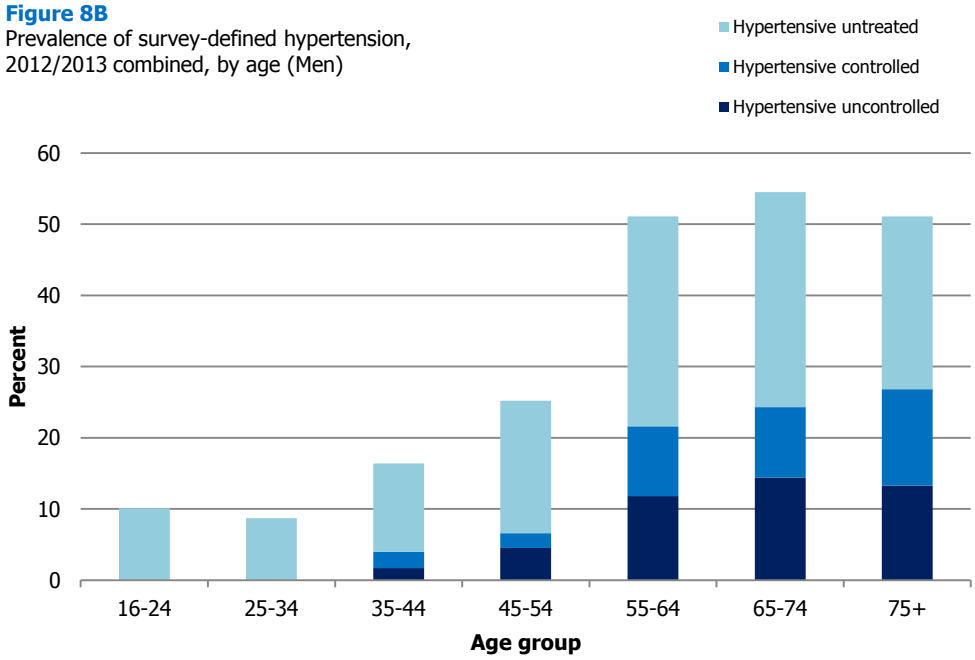
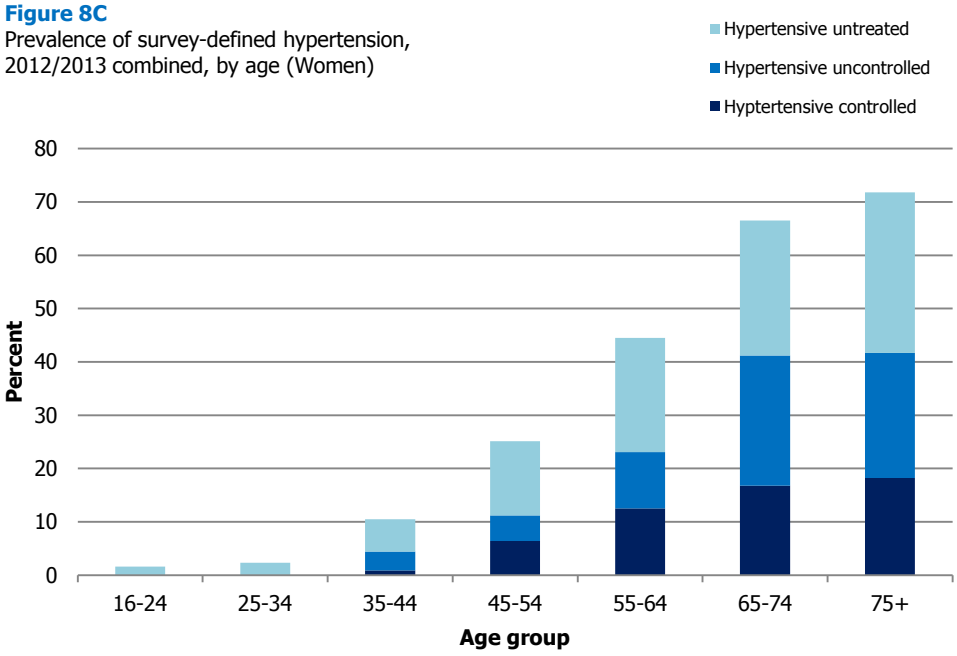


Figure 8C
Prevalence of survey-defined hypertension, 2012/2013 combined, by age (Women)



8.7.2 Trends in blood pressure levels since 1998

Blood pressure readings have been collected in SHeS since 1995. However, since information on medications to treat high blood pressure has only been collected in the interview since 1998, the 1995 trend data is not presented here. Trends in blood pressure should be interpreted with caution for two reasons. In 2003 the equipment used to take blood pressure changed for both SHeS and the Health Survey for England (HSE). A small calibration exercise was carried out by the HSE at the time to determine the impact of the equipment change. In addition, since 2012 blood pressure readings have been taken by specially trained interviewers. Prior to this survey nurses collected blood

pressure as part of the follow-up nurse interview. Again, a calibration study was carried out to determine the impact of the switch from survey nurses to interviewers (see Section 8.2.1 for further details). Calibrated estimates for 1998 and 2012/2013 are presented in Table 8.7. For 2012/2013, the unadjusted measurements collected by interviewers are also presented. Adjusted estimates should be used for 2012/2013 when interpreting trend data.

Participants were recorded as having 'survey-defined hypertension' in SHeS if they had either high blood pressure readings or were on medication to control blood pressure (see Section 8.2.2). The proportion of adults aged 16-74 with survey-defined hypertension increased significantly between 1998 and 2003 and then remained relatively stable until 2012/2013 when it dropped, although not significantly, to 24.9% (based on adjusted estimates). As a result, in 2012/2013 hypertension levels among 16-74 year olds were not significantly different from those observed in 1998. While trends for men and women followed a similar pattern, the changes were slightly more pronounced for men. Although the decline between 2010/2011 and 2012/2013 was not statistically significant for either men or women aged 16-74.

Survey-defined hypertension remained stable for adults aged 16 and over between 2003 and 2010/2011 (32.5-32.9%), before a statistically significant decline to 28.4% (based on adjusted estimates) in 2012/2013. Similar patterns were observed for men and women separately. **Table 8.7**

8.7.3 Comparison of doctor-diagnosed hypertension with survey-defined hypertension in 2012/2013 combined, by age and sex

Participants were asked if they have, or ever had, high blood pressure. Those who said "yes" were asked whether they were told by a doctor or nurse that they had high blood pressure. Those who said "yes" to this question were recorded as having "doctor-diagnosed" hypertension (unless they only had high blood pressure while pregnant).

In 2012/2013, there was a significant difference between doctor-diagnosed hypertension for adults and survey-defined hypertension: 22.8% reported having been told by a doctor they had hypertension (either recently, or in the past), compared with 29.1% with survey-defined hypertension. The difference between doctor-diagnosed and survey-defined hypertension was slighter larger for men than women (difference of 7.4 percentage points, compared with 5.3 points for women).

Across age groups it was generally, although not exclusively, the case that the prevalence of doctor-diagnosed hypertension was lower than that of survey-defined hypertension. The difference was particularly apparent among women aged 55 and over and men aged 55-74. For example, there was a 15 percentage point difference between doctor-diagnosed hypertension and survey defined hypertension for men aged 55-64 and a 17 percentage point difference for women aged 75 and

over. Interestingly, there was no difference between doctor-diagnosed and survey defined hypertension for men aged 75 and over. At the other end of the age spectrum for men, just 0.5% aged 16-24 reported doctor-diagnosed hypertension, yet one in ten (10.4%) had survey-defined hypertension. The exception was among women aged 16-44, for whom survey-defined hypertension was slightly lower than doctor-diagnosed levels. **Figure 8D, Figure 8E, Table 8.8**

Figure 8D
Comparison of self-reported with survey-defined hypertension, 2012/2013 combined, by age (Men)

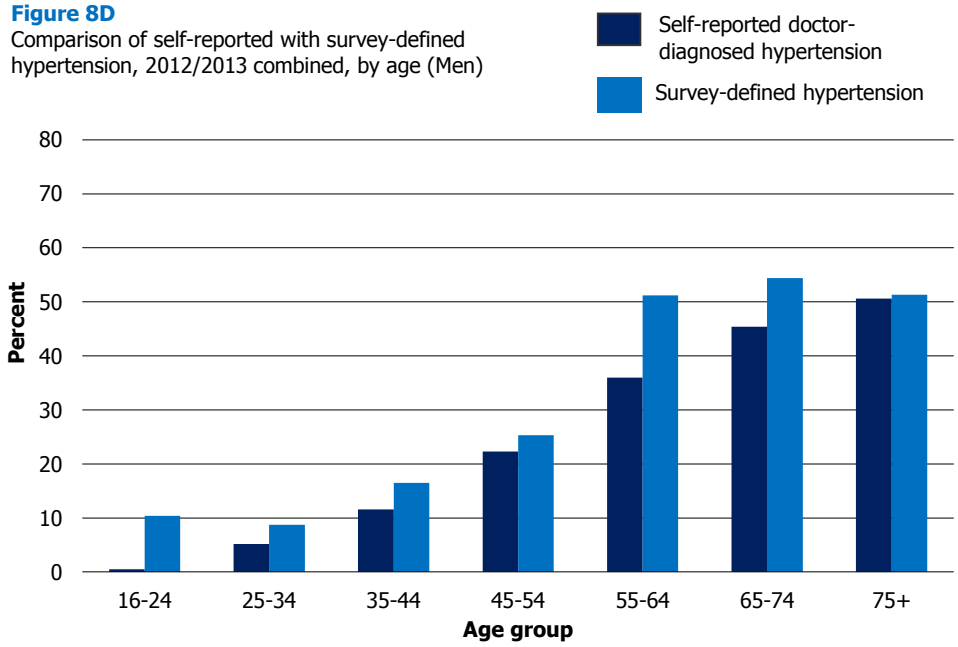
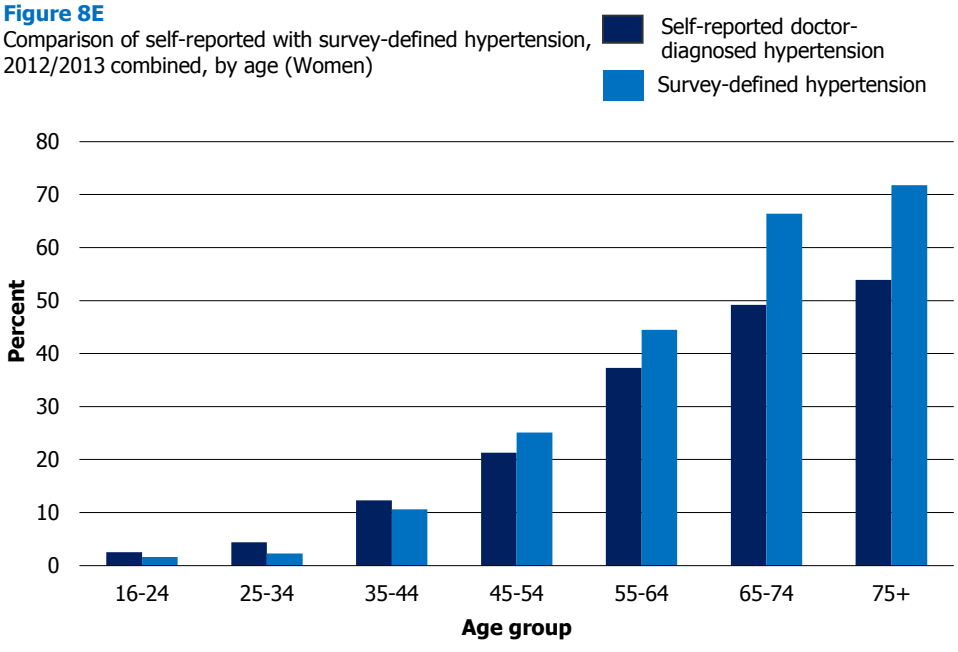


Figure 8E
Comparison of self-reported with survey-defined hypertension, 2012/2013 combined, by age (Women)



8.7.4 Detection and treatment of hypertension in 2012/2013 combined, by age and sex

The hypertension detection and treatment rates for 2012/2013 are shown in Table 8.9. The detection rate is defined as the proportion of participants with survey-defined hypertension who also had self-

reported doctor-diagnosed hypertension. Two treatment rates are presented, 'hypertension treated but not controlled' is defined as the proportion of participants with survey-defined hypertension who also reported being on treatment for their blood pressure. Whereas, 'hypertension treated and controlled' is the proportion of participants with survey-defined hypertension who did not have survey-defined high blood pressure. Detection and treatment rates for those aged 16-34 are not shown due to the low prevalence of hypertension in this age group.

The detection rate for adults aged 16 and above in 2012/2013 was 58%, with a significantly higher detection rate for women than for men (65% compared with 50%). While detection rates appeared to vary with age, these differences were not significant due to the small sample sizes. Further years of data will be required to establish if detection rates do vary significantly by age in the population.

In 2012/2013, a quarter (25%) of those with survey-defined hypertension were receiving treatment for hypertension, but had high blood pressure according to their survey readings (uncontrolled hypertension). One in five (20%) of those with survey-defined hypertension were receiving treatment which maintained their blood pressure readings below the levels defined as high (controlled hypertension). Controlled and uncontrolled treatment rates did not vary significantly for men or women due to the small sample sizes.

Table 8.9

References and notes

[1] *Improving the Health and Wellbeing of People with Long Term Conditions in Scotland: A National Action Plan*. Edinburgh: Scottish Government, 2009. www.scotland.gov.uk/Publications/2009/12/03112054/11

[2] http://www.scotland.gov.uk/Topics/Health/Services/Long-Term-Conditions

[3] *Managing Long-Term conditions.* Audit Scotland, 2007. Available from: http://www.audit-scotland.gov.uk/docs/health/2007/nr_070816_managing_long_term.pdf

[4] Lozano, R. et al. (2012). 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* Vol 380. Issue 9859: 2095-128.

[5] http://www.asthma.org.uk/scotland-our-work-in-asthma-uk-scotland

[6] *Chronic Obstructive Pulmonary Disease (COPD).* Factsheet No.315. World Health Organization, 2012. : http://www.who.int/mediacentre/factsheets/fs315/en/

[7] *Clinical Standards for Chronic Obstructive Pulmonary Disease Services*. Edinburgh: NHS Quality Improvement Scotland, 2010. http://www.healthcareimprovementscotland.org/our_work/long_term_conditions/copd_implementation/copd_clinical_standards.aspx

[8] *Better Heart Disease and Stroke Care Action Plan*. Edinburgh, Scottish Government, 2009 http://www.scotland.gov.uk/Resource/Doc/277650/0083350.pdf

[9] Available from: http://www.gro-scotland.gov.uk/files2/stats/high-level-summary/j11198/j1119814.htm

[10] *Diabetes Action Plan 2010: Quality Care for Diabetes in Scotland*. Edinburgh, Scottish Government, 2010

[11] HSE World Health Organisation. *The World Health Report 2002: Reducing risks, promoting healthy life*. WHO, Geneva, 2002. www.who.int/whr/2002/en/

[12] He FJ, MacGregor G. *Blood pressure is the most important cause of death and disability in the world*. EurHeart J Suppl. 2007;**9**:23–8

[13] Scottish Intercollegiate Guidelines Network (SIGN). *Risk Estimation And The Prevention Of Cardiovascular Disease*. Edinburgh: SIGN ; 2007. (SIGN publication no. 97). Available from URL: http://www.sign.ac.uk

[14] 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.

[15] http://www.scotland.gov.uk/About/Performance/scotPerforms/outcome

[16] See: www.scotland.gov.uk/About/Performance/scotPerforms/indicator/mortality

[17] *Scottish Budget Spending Review 2007*. Edinburgh: Scottish Government, 2007. <www.scotland.gov.uk/Publications/2007/11/13092240/0> See also: www.scotlandperforms.com

[18] See: www.scotland.gov.uk/About/Performance/scotPerforms/indicator/smoking

[19] See: www.scotland.gov.uk/About/scotPerforms/indicator/physicalactivity

[20] See: www.scotland.gov.uk/About/scotPerforms/indicator/healthyweight

[21] *Better Health, Better Care Action Plan*. Edinburgh: Scottish Government, 2007 http://www.scotland.gov.uk/Publications/2007/12/11103453/0

[22] www.scotland.gov.uk/scottishhealthsurvey

[23] For a detailed description of the biological module see Volume 2 of this report

[24] 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

[25] Diabetes and high blood pressure are not included in the definition of 'any CVD condition' as they are risk factors for CVD

[26] Gray, L and Leyland, AH. Chapter 8: *Long-Term Conditions* in Rutherford, L, Hinchliffe, S and Sharp, C. The Scottish Health Survey: Volume 1. Edinburgh: Scottish Government, 2013 http://www.scotland.gov.uk/Publications/2013/09/3684/12

Table list

Additional tables available on the survey website include:

- High blood pressure, angina, heart attack, heart murmur, abnormal heart rhythm or other heart trouble, by age & key demographics
- Any CVD, CVD or diabetes, diabetes, IHD, stroke, IHD or stroke, by age & key demographics
- High blood pressure & doctor diagnosed high blood pressure, by age & key demographics
- Angina & doctor diagnosed angina, by age & key demographics
- Heart attack & doctor diagnosed heart attack, by age & key demographics
- Heart murmur & doctor diagnosed heart murmur, by age & key demographics
- Abnormal heart rhythm & doctor diagnosed abnormal heart rhythm, by age & key demographics
- Any other heart trouble & doctor diagnosed other heart condition, by age & key demographics
- Stroke & doctor diagnosed stroke, by age & key demographics
- Diabetes & doctor diagnosed diabetes (excluding pregnant), by age & key demographics
- COPD & doctor diagnosed COPD, by age & key demographics
- Medication for heart or stroke, & high blood pressure by age & key demographics
- Talked to doctor in last two weeks (adults with/without CVD), by age & key demographics
- Last time talked to a doctor (adults with/without CVD), by age & key demographics
- Attended hospital in past year as outpatient (adults with/without CVD), by age & key demographics
- Hospital inpatient in last 12 months (adults with/without CVD), by age & key demographics
- Longstanding illness, type and severity, by age & key demographics
- Wheezing or whistling in the chest ever/in last 12 months, by age & key demographics
- Doctor diagnosed asthma, by age & key demographics

Table 8.1 Prevalence of long-term conditions in adults, 2008 to 2013

Aged 16 and over *2008 to 2013*

Long-term conditions and limiting long-term conditions	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%
Men						
No long-term conditions	62	63	59	57	58	59
Limiting long-term conditions	23	23	25	26	28	28
Non-limiting long-term conditions	15	14	16	17	14	13
Total with conditions	*38*	*37*	*41*	*43*	*42*	*41*
Women						
No long-term conditions	58	58	55	54	51	54
Limiting long-term conditions	28	27	30	30	35	34
Non-limiting long-term conditions	15	15	15	16	14	13
Total with conditions	*42*	*42*	*45*	*46*	*49*	*46*
All adults						
No long-term conditions	59	60	57	56	54	56
Limiting long-term conditions	26	25	28	28	32	31
Non-limiting long-term conditions	15	14	16	16	14	13
Total with conditions	*41*	*40*	*43*	*44*	*46*	*44*
Bases (weighted):						
Men	*3087*	*3597*	*3465*	*3610*	*2306*	*2345*
Women	*3377*	*3926*	*3777*	*3932*	*2505*	*2545*
All adults	*6464*	*7523*	*7242*	*7542*	*4811*	*4889*
Bases (unweighted):						
Men	*2840*	*3283*	*3112*	*3280*	*2125*	*2139*
Women	*3623*	*4241*	*4129*	*4262*	*2686*	*2752*
All adults	*6463*	*7524*	*7241*	*7542*	*4811*	*4891*

Table 8.2 Prevalence of long-term conditions in children, 2008 to 2013

Aged 0 - 15 *2008 to 2013*

Long-term conditions and limiting long-term conditions	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%
Boys						
No long-term conditions	85	82	83	85	81	81
Limiting long-term conditions	7	7	9	7	11	11
Non-limiting long-term conditions	8	11	8	9	8	9
Total with conditions	*15*	*18*	*17*	*15*	*19*	*19*
Girls						
No long-term conditions	86	86	87	87	88	85
Limiting long-term conditions	6	6	7	5	6	8
Non-limiting long-term conditions	8	8	6	9	6	8
Total with conditions	*14*	*14*	*13*	*13*	*12*	*15*
All children						
No long-term conditions	86	84	85	86	84	83
Limiting long-term conditions	6	6	8	6	9	9
Non-limiting long-term conditions	8	9	7	9	7	8
Total with conditions	*14*	*16*	*15*	*14*	*16*	*17*
Bases (weighted):						
Boys	*896*	*1333*	*916*	*1012*	*912*	*940*
Girls	*854*	*1273*	*875*	*969*	*873*	*897*
All children	*1750*	*2606*	*1791*	*1981*	*1786*	*1837*
Bases (unweighted):						
Boys	*872*	*1333*	*960*	*995*	*878*	*948*
Girls	*878*	*1272*	*831*	*986*	*908*	*889*
All children	*1750*	*2605*	*1791*	*1981*	*1786*	*1837*

Table 8.3 Doctor-diagnosed asthma, 1998 to 2013, by age and sex

All persons *1998 to 2013*

Respiratory symptoms and asthma	1998	2003	2008/2010 combined	2012	2013
	%	%	%	%	%
Males					
Wheezed in last 12 months[a]					
0-15	n/a	16	14	15	17
2-15	16	16	14	15	16
16-74	16	16	14	17	16
16+	n/a	16	14	17	17
Doctor-diagnosed asthma					
0-15	n/a	20	14	15	15
2-15	19	21	15	17	16
16-74	11	13	13	16	16
16+	n/a	13	13	16	16
Females					
Wheezed in last 12 months[a]					
0-15	n/a	12	11	11	12
2-15	14	11	10	11	11
16-74	15	16	16	18	20
16+	n/a	16	16	18	19
Doctor-diagnosed asthma					
0-15	n/a	12	12	9	12
2-15	16	14	14	10	13
16-74	12	14	16	17	18
16+	n/a	14	15	17	17
All					
Wheezed in last 12 months[a]					
0-15	n/a	14	12	13	14
2-15	16	13	12	13	13
16-74	16	16	15	18	18
16+	n/a	16	15	18	18
Doctor-diagnosed asthma					
0-15	n/a	16	13	12	13
2-15	18	18	14	13	15
16-74	11	13	14	17	17
16+	n/a	13	14	16	16

Continued…

Table 8.3 - *Continued*

All persons *1998 to 2013*

Respiratory symptoms and asthma	1998	2003	2008/2010 combined	2012	2013
Bases (weighted):					
Males 0-15	*n/a*	*1701*	*960*	*914*	*939*
Males 2-15	*1096*	*1516*	*841*	*803*	*830*
Males 16-74	*4423*	*3588*	*2068*	*2136*	*2164*
Males 16+	*n/a*	*3847*	*2228*	*2309*	*2343*
Females 0-15	*n/a*	*1623*	*917*	*873*	*899*
Females 2-15	*1046*	*1449*	*786*	*760*	*788*
Females 16-74	*4577*	*3821*	*2178*	*2243*	*2282*
Females 16+	*n/a*	*4290*	*2432*	*2506*	*2546*
All 0-15	*n/a*	*3322*	*1877*	*1786*	*1838*
All 2-15	*2142*	*2963*	*1627*	*1563*	*1618*
All adults 16-74	*8996*	*7409*	*4247*	*4380*	*4446*
All adults 16+	*n/a*	*8137*	*4660*	*4815*	*4889*
Bases (unweighted):					
Males 0-15	*n/a*	*1656*	*994*	*879*	*947*
Males 2-15	*1987*	*1465*	*867*	*764*	*819*
Males 16-74	*3941*	*3277*	*1801*	*1902*	*1920*
Males 16+	*n/a*	*3603*	*1999*	*2127*	*2137*
Females 0-15	*n/a*	*1668*	*883*	*907*	*891*
Females 2-15	*1905*	*1468*	*746*	*785*	*763*
Females 16-74	*5106*	*4043*	*2360*	*2362*	*2446*
Females 16+	*n/a*	*4536*	*2659*	*2688*	*2752*
All 0-15	*n/a*	*3322*	*1877*	*1786*	*1838*
All 2-15	*3892*	*2931*	*1613*	*1549*	*1582*
All adults 16-74	*9042*	*7320*	*4161*	*4264*	*4366*
All adults 16+	*n/a*	*8139*	*4658*	*4815*	*4889*

a Wheezing or whistling in the chest

Table 8.4 Doctor-diagnosed COPD, 2008 to 2013

Aged 16 and over *2008 to 2013*

Doctor-diagnosed COPD	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%
Men						
Yes	3	3	4	3	4	3
No	97	97	96	97	96	97
Women						
Yes	4	4	5	4	4	4
No	96	96	95	96	96	96
All adults						
Yes	4	3	5	4	4	4
No	96	97	95	96	96	96
Bases (weighted):						
Men	*3088*	*3601*	*3468*	*3609*	*2309*	*2347*
Women	*3377*	*3929*	*3777*	*3931*	*2506*	*2547*
All adults	*6465*	*7530*	*7245*	*7540*	*4815*	*4894*
Bases (unweighted):						
Men	*2842*	*3288*	*3115*	*3279*	*2127*	*2140*
Women	*3623*	*4242*	*4130*	*4261*	*2688*	*2754*
All adults	*6465*	*7530*	*7245*	*7540*	*4815*	*4894*

Table 8.5 Any CVD, any CVD or diabetes, doctor-diagnosed diabetes, IHD, stroke, IHD or stroke, 1995 to 2013

Aged 16 and over *1995 to 2013*

Any CVD[a] / any CVD or diabetes / doctor-diagnosed diabetes[b] / IHD[c] / stroke / IHD or stroke	1995	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%	%
Men									
Any CVD									
16-64	8.4	8.1	9.7	9.9	9.5	10.5	9.8	10.3	9.3
16+	n/a	n/a	14.9	15.1	15.2	16.3	15.6	16.6	15.7
Any CVD or diabetes									
16-64	9.4	9.7	11.1	12.2	12.7	13.6	12.7	13.0	12.0
16+	n/a	n/a	16.8	18.2	19.0	20.1	19.2	20.1	19.2
Doctor-diagnosed diabetes									
16-64	1.5	2.2	2.4	3.3	4.7	4.5	4.0	4.1	3.4
16+	n/a	n/a	3.8	5.3	6.2	6.3	6.1	6.2	6.1
IHD									
16-64	4.0	4.0	4.1	3.2	3.6	3.4	3.4	3.3	2.8
16+	n/a	n/a	8.2	6.9	7.4	7.5	7.5	7.3	7.1
Stroke									
16-64	1.0	0.7	1.2	1.1	1.1	1.8	1.3	1.0	1.7
16+	n/a	n/a	2.4	2.5	2.7	3.3	2.9	2.8	3.2
IHD or stroke									
16-64	4.6	4.4	5.0	4.2	4.4	4.8	4.3	4.0	4.3
16+	n/a	n/a	9.6	8.7	9.4	9.8	9.4	9.2	9.5

Continued…

Table 8.5 - *Continued*

Aged 16 and over *1995 to 2013*

Any CVD[a] / any CVD or diabetes / doctor-diagnosed diabetes[b] / IHD[c] / stroke / IHD or stroke	1995	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%	%
Women									
Any CVD									
16-64	8.9	8.5	8.9	10.7	9.0	9.3	8.4	11.3	10.6
16+	n/a	n/a	14.5	15.5	13.7	14.0	13.8	15.9	15.3
Any CVD or diabetes									
16-64	10.1	9.6	10.2	12.8	11.2	11.3	10.8	13.9	13.0
16+	n/a	n/a	16.4	18.2	16.5	16.7	17.0	19.3	18.6
Doctor-diagnosed diabetes									
16-64	1.5	1.8	2.0	2.8	2.9	2.8	3.2	3.4	2.9
16+	n/a	n/a	3.7	4.1	4.5	4.4	4.9	4.9	5.1
IHD[b]									
16-64	2.9	2.7	2.6	2.2	1.9	2.2	1.8	2.3	1.8
16+	n/a	n/a	6.5	5.6	5.2	5.2	4.9	5.7	5.3
Stroke									
16-64	0.5	0.6	0.7	1.2	0.9	1.1	1.0	1.5	1.5
16+	n/a	n/a	2.1	2.8	2.2	2.5	2.7	2.8	2.7
IHD or stroke									
16-64	3.2	3.0	3.2	3.1	2.4	3.1	2.6	3.5	3.1
16+	n/a	n/a	8.0	7.5	6.7	7.0	6.7	7.7	7.2

Continued…

Table 8.5 - *Continued*

Aged 16 and over *1995 to 2013*

Any CVD[a] / any CVD or diabetes / doctor-diagnosed diabetes[b] / IHD[c] / stroke / IHD or stroke	1995	1998	2003	2008	2009	2010	2011	2012	2013
	%	%	%	%	%	%	%	%	%
All adults									
Any CVD									
16-64	8.7	8.4	9.3	10.3	9.3	9.9	9.1	10.8	10.0
16+	n/a	n/a	14.7	15.3	14.4	15.1	14.6	16.2	15.5
Any CVD or diabetes									
16-64	9.8	9.7	10.6	12.5	11.9	12.4	11.8	13.5	12.5
16+	n/a	n/a	16.6	18.2	17.7	18.3	18.1	19.7	18.9
Doctor-diagnosed diabetes									
16-64	1.5	1.8	2.2	3.1	3.8	3.7	3.6	3.7	3.1
16+	n/a	n/a	3.7	4.6	5.3	5.3	5.5	5.5	5.6
IHD[b]									
16-64	3.5	3.3	3.3	2.7	2.7	2.8	2.6	2.8	2.3
16+	n/a	n/a	7.3	6.2	6.2	6.3	6.2	6.5	6.1
Stroke									
16-64	0.8	0.6	1.0	2.6	1.0	1.5	1.2	1.3	1.6
16+	n/a	n/a	2.2	2.6	2.5	2.9	2.8	2.8	2.9
IHD or stroke									
16-64	3.9	3.7	4.0	3.6	3.4	3.9	3.5	3.7	3.7
16+	n/a	n/a	8.8	8.1	8.0	8.3	8.0	8.4	8.3

Continued…

Table 8.5 - *Continued*

Aged 16 and over *1995 to 2013*

Any CVD[a] / any CVD or diabetes / doctor-diagnosed diabetes[b] / IHD[c] / stroke / IHD or stroke	1995	1998	2003	2008	2009	2010	2011	2012	2013
Bases (weighted):									
Men 16-64	*3898*	*3953*	*3188*	*2542*	*2955*	*2837*	*2953*	*1885*	*1900*
Men 16+	*n/a*	*n/a*	*3857*	*3086*	*3601*	*3465*	*3608*	*2308*	*2347*
Women 16-64	*3988*	*3989*	*3327*	*2640*	*3068*	*2947*	*3069*	*1956*	*1978*
Women 16+	*n/a*	*n/a*	*4291*	*3372*	*3926*	*3774*	*3931*	*2506*	*2545*
All adults 16-64	*7886*	*7946*	*6517*	*5182*	*6023*	*5784*	*6023*	*3841*	*3878*
All adults 16+	*n/a*	*n/a*	*8142*	*6459*	*7526*	*7240*	*7539*	*4814*	*4892*
Bases (unweighted):									
Men 16-64	*3520*	*3367*	*2771*	*2084*	*2408*	*2293*	*2423*	*1517*	*1605*
Men 16+	*n/a*	*n/a*	*3610*	*2840*	*3287*	*3112*	*3277*	*2125*	*2140*
Women 16-64	*4397*	*4212*	*3461*	*2694*	*3211*	*3083*	*3178*	*1974*	*2073*
Women 16+	*n/a*	*n/a*	*4538*	*3618*	*4239*	*4127*	*4261*	*2688*	*2752*
All adults 16-64	*7917*	*7583*	*6233*	*4778*	*5619*	*5376*	*5601*	*3491*	*3678*
All adults 16+	*n/a*	*n/a*	*8142*	*6458*	*7526*	*7239*	*7538*	*4813*	*4892*

a Any cardiovascular condition, excluding diabetes or high blood pressure

b Excludes diabetes diagnosed during pregnancy

c Heart attack or angina

Table 8.6 Blood pressure level, 2012/2013 combined, by age and sex

Aged 16 and over and with a valid blood pressure reading and data on medication *2012/2013 combined*

Blood pressure level	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Normotensive	89.6	91.3	83.5	74.7	48.8	45.6	48.7	71.0
Hypertensive controlled	-	-	2.3	2.2	9.8	9.9	13.3	4.6
Hypertensive uncontrolled	-	-	1.7	4.5	11.8	14.4	13.4	5.8
Hypertensive untreated	10.4	8.7	12.5	18.6	29.6	30.1	24.6	18.6
Total with hypertension	10.4	8.7	16.5	25.3	51.2	54.4	51.3	29.0
Women								
Normotensive	98.4	97.7	89.4	74.9	55.5	33.6	28.2	70.8
Hypertensive controlled	-	-	0.9	6.4	12.5	16.8	18.2	7.2
Hypertensive uncontrolled	-	-	3.5	4.8	10.6	24.4	23.5	8.5
Hypertensive untreated	1.6	2.3	6.1	13.9	21.4	25.3	30.1	13.6
Total with hypertension	1.6	2.3	10.6	25.1	44.5	66.4	71.8	29.2
All adults								
Normotensive	94.2	94.5	86.5	74.8	52.3	39.3	37.0	70.9
Hypertensive controlled	-	-	1.6	4.3	11.2	13.5	16.1	5.9
Hypertensive uncontrolled	-	-	2.6	4.6	11.2	19.6	19.2	7.2
Hypertensive untreated	5.8	5.5	9.3	16.2	25.3	27.6	27.8	16.0
Total with hypertension	5.8	5.5	13.5	25.2	47.7	60.7	63.0	29.1

Continued…

Table 8.6 - *Continued*

Aged 16 and over and with a valid blood pressure reading and data on medication *2012/2013 combined*

Blood pressure level	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):								
Men	*116*	*130*	*149*	*169*	*136*	*106*	*72*	*879*
Women	*129*	*130*	*155*	*174*	*147*	*115*	*97*	*949*
All adults	*245*	*261*	*304*	*343*	*283*	*221*	*170*	*1828*
Bases (unweighted):								
Men	*88*	*105*	*132*	*146*	*130*	*143*	*84*	*828*
Women	*85*	*135*	*176*	*195*	*198*	*138*	*110*	*1037*
All adults	*173*	*240*	*308*	*341*	*328*	*281*	*194*	*1865*

Table 8.7 Blood pressure level, 1998 to 2012/2013 combined

Aged 16 and over and with a valid blood pressure reading and data on medication — *1998 to 2012/2013 combined*

Blood pressure level	1998	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined
	%	%	%	%	%
Men					
Normotensive					
16-74 (nurse / nurse equivalent)	77.7	70.6	68.1	70.1	73.8
16+ (nurse / nurse equivalent)	n/a	67.0	65.5	67.0	71.7
16-74 (interviewer)	n/a	n/a	n/a	n/a	72.9
16+ (interviewer)	n/a	n/a	n/a	n/a	71.0
Hypertensive controlled					
16-74 (nurse / nurse equivalent)	3.0	5.3	7.6	6.0	3.8
16+ (nurse / nurse equivalent)	n/a	5.9	8.4	7.8	4.6
16-74 (interviewer)	n/a	n/a	n/a	n/a	3.8
16+ (interviewer)	n/a	n/a	n/a	n/a	4.6
Hypertensive uncontrolled					
16-74 (nurse / nurse equivalent)	3.7	4.5	5.9	5.7	5.1
16+ (nurse / nurse equivalent)	n/a	6.3	6.9	6.7	5.8
16-74 (interviewer)	n/a	n/a	n/a	n/a	5.1
16+ (interviewer)	n/a	n/a	n/a	n/a	5.8
Hypertensive untreated					
16-74 (nurse / nurse equivalent)	15.6	19.6	18.4	18.2	17.2
16+ (nurse / nurse equivalent)	n/a	20.7	19.2	18.5	17.8
16-74 (interviewer)	n/a	n/a	n/a	n/a	18.1
16+ (interviewer)	n/a	n/a	n/a	n/a	18.6
Total with hypertension					
16-74 (nurse / nurse equivalent)	22.3	29.5	31.9	29.9	26.2
16+ (nurse / nurse equivalent)	n/a	33.0	34.5	33.0	28.3
16-74 (interviewer)	n/a	n/a	n/a	n/a	27.1
16+ (interviewer)	n/a	n/a	n/a	n/a	29.0

Continued…

Table 8.7 - *Continued*

Aged 16 and over and with a valid blood pressure reading and data on medication — *1998 to 2012/2013 combined*

Blood pressure level	1998	2003	2008/2010 combined	2010/2011 combined	2012/2013 combined
	%	%	%	%	%
Women					
Normotensive					
16-74 (nurse / nurse equivalent)	78.8	73.3	73.5	73.4	76.4
16+ (nurse / nurse equivalent)	n/a	67.3	68.6	68.0	71.4
16-74 (interviewer)	n/a	n/a	n/a	n/a	75.7
16+ (interviewer)	n/a	n/a	n/a	n/a	70.8
Hypertensive controlled					
16-74 (nurse / nurse equivalent)	4.4	6.0	7.0	6.1	6.1
16+ (nurse / nurse equivalent)	n/a	7.2	8.6	7.8	7.3
16-74 (interviewer)	n/a	n/a	n/a	n/a	5.9
16+ (interviewer)	n/a	n/a	n/a	n/a	7.2
Hypertensive uncontrolled					
16-74 (nurse / nurse equivalent)	4.0	5.9	5.6	5.8	6.6
16+ (nurse / nurse equivalent)	n/a	9.0	8.2	8.6	8.3
16-74 (interviewer)	n/a	n/a	n/a	n/a	6.7
16+ (interviewer)	n/a	n/a	n/a	n/a	8.5
Hypertensive untreated					
16-74 (nurse / nurse equivalent)	12.8	14.8	14.0	14.8	11.0
16+ (nurse / nurse equivalent)	n/a	16.6	14.7	15.7	12.9
16-74 (interviewer)	n/a	n/a	n/a	n/a	11.7
16+ (interviewer)	n/a	n/a	n/a	n/a	13.6
Total with hypertension					
16-74 (nurse / nurse equivalent)	21.2	26.7	26.5	26.6	23.6
16+ (nurse / nurse equivalent)	n/a	32.7	31.4	32.0	28.6
16-74 (interviewer)	n/a	n/a	n/a	n/a	24.3
16+ (interviewer)	n/a	n/a	n/a	n/a	29.2

Continued…

Table 8.7 - *Continued*

Aged 16 and over and with a valid blood pressure reading and data on medication — *1998 to 2012/2013 combined*

Blood pressure level	1998	2003	2008/2010 combined	2010/2011 combined	2012/2013 combined
	%	%	%	%	%
All adults					
Normotensive					
16-74 (nurse / nurse equivalent)	78.2	72.0	70.9	71.8	75.1
16+ (nurse / nurse equivalent)	n/a	67.2	67.1	67.5	71.6
16-74 (interviewer)	n/a	n/a	n/a	n/a	74.3
16+ (interviewer)	n/a	n/a	n/a	n/a	70.9
Hypertensive controlled					
16-74 (nurse / nurse equivalent)	3.7	5.7	7.3	6.0	5.0
16+ (nurse / nurse equivalent)	n/a	6.6	8.5	7.8	6.0
16-74 (interviewer)	n/a	n/a	n/a	n/a	4.9
16+ (interviewer)	n/a	n/a	n/a	n/a	5.9
Hypertensive uncontrolled					
16-74 (nurse / nurse equivalent)	3.8	7.8	5.7	5.7	5.9
16+ (nurse / nurse equivalent)	n/a	5.3	7.6	7.7	7.1
16-74 (interviewer)	n/a	n/a	n/a	n/a	6.0
16+ (interviewer)	n/a	n/a	n/a	n/a	7.2
Hypertensive untreated					
16-74 (nurse / nurse equivalent)	14.2	17.1	16.1	16.5	14.0
16+ (nurse / nurse equivalent)	n/a	18.5	16.8	17.0	15.3
16-74 (interviewer)	n/a	n/a	n/a	n/a	14.8
16+ (interviewer)	n/a	n/a	n/a	n/a	16.0
Total with hypertension					
16-74 (nurse / nurse equivalent)	21.8	28.0	29.1	28.2	24.9
16+ (nurse / nurse equivalent)	n/a	32.8	32.9	32.5	28.4
16-74 (interviewer)	n/a	n/a	n/a	n/a	25.7
16+ (interviewer)	n/a	n/a	n/a	n/a	29.1

Continued…

Table 8.7 - *Continued*

Aged 16 and over and with a valid blood pressure reading and data on medication — *1998 to 2012/2013 combined*

Blood pressure level	1998	2003	2008/2009 combined	2010/2011 combined	2012/2013 combined
Bases (weighted):					
Men 16-74	*3356*	*1883*	*831*	*751*	*807*
Men 16+	*n/a*	*2032*	*899*	*815*	*879*
Women 16-74	*3329*	*2101*	*889*	*785*	*851*
Women 16+	*n/a*	*2383*	*998*	*879*	*949*
All adults 16-74	*3343*	*3985*	*1720*	*1536*	*1658*
All adults 16+	*n/a*	*4415*	*1897*	*1694*	*1828*
Bases (unweighted):					
Men 16-74	*3018*	*1726*	*748*	*653*	*744*
Men 16+	*n/a*	*1933*	*839*	*736*	*828*
Women 16-74	*3709*	*2256*	*970*	*869*	*927*
Women 16+	*n/a*	*2538*	*1084*	*978*	*1037*
All adults 16-74	*3364*	*3982*	*1718*	*1522*	*1671*
All adults 16+	*n/a*	*4471*	*1923*	*1714*	*1865*

a Measurements were taken by an interviewer in 2012/13 and converted to an equivalent of the nurse measure

Table 8.8 Comparison of doctor-diagnosed with survey-defined hypertension, 2012/2013 combined, by age and sex

Aged 16 and over *2012/2013 combined*

Hypertension	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Self-reported doctor-diagnosed hypertension[a]	0.5	5.2	11.6	22.3	36.0	45.4	50.6	21.6
Survey-defined hypertension	10.4	8.7	16.5	25.3	51.2	54.4	51.3	29.0
Women								
Self-reported doctor-diagnosed hypertension[a]	2.5	4.4	12.3	21.3	37.3	49.2	53.9	23.9
Survey-defined hypertension	1.6	2.3	10.6	25.1	44.5	66.4	71.8	29.2
All adults								
Self-reported doctor-diagnosed hypertension[a]	1.5	4.8	12.0	21.8	36.7	47.4	52.5	22.8
Survey-defined hypertension	5.8	5.5	13.5	25.2	47.7	60.7	63.0	29.1

Continued…

Table 8.8 - *Continued*

Aged 16 and over *2012/2013 combined*

Hypertension	**Age**							**Total**
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
Bases (weighted):[b,c]								
Men, self-reported doctor-diagnosed hypertension	*157*	*172*	*180*	*203*	*170*	*125*	*83*	*1091*
Men, survey-defined hypertension	*116*	*130*	*149*	*169*	*136*	*106*	*72*	*879*
Women, self-reported doctor-diagnosed hypertension	*155*	*180*	*191*	*215*	*177*	*141*	*123*	*1182*
Women, survey-defined hypertension	*129*	*130*	*155*	*174*	*147*	*115*	*97*	*949*
All adults, self-reported doctor-diagnosed hypertension	*313*	*352*	*371*	*418*	*347*	*266*	*206*	*2273*
All adults, survey-defined hypertension	*245*	*261*	*304*	*343*	*283*	*221*	*170*	*1828*
Bases (unweighted):[b,c]								
Men, self-reported doctor-diagnosed hypertension	*112*	*133*	*159*	*173*	*160*	*170*	*97*	*1004*
Men, survey-defined hypertension	*88*	*105*	*132*	*146*	*130*	*143*	*84*	*828*
Women, self-reported doctor-diagnosed hypertension	*103*	*180*	*212*	*233*	*233*	*164*	*143*	*1268*
Women, survey-defined hypertension	*85*	*135*	*176*	*195*	*198*	*138*	*110*	*1037*
All adults, self-reported doctor-diagnosed hypertension	*215*	*313*	*371*	*406*	*393*	*334*	*240*	*2272*
All adults, survey-defined hypertension	*173*	*240*	*308*	*341*	*328*	*281*	*194*	*1865*

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 8.9 Detection and treatment of hypertension, 2012/2013 combined, by age and sex

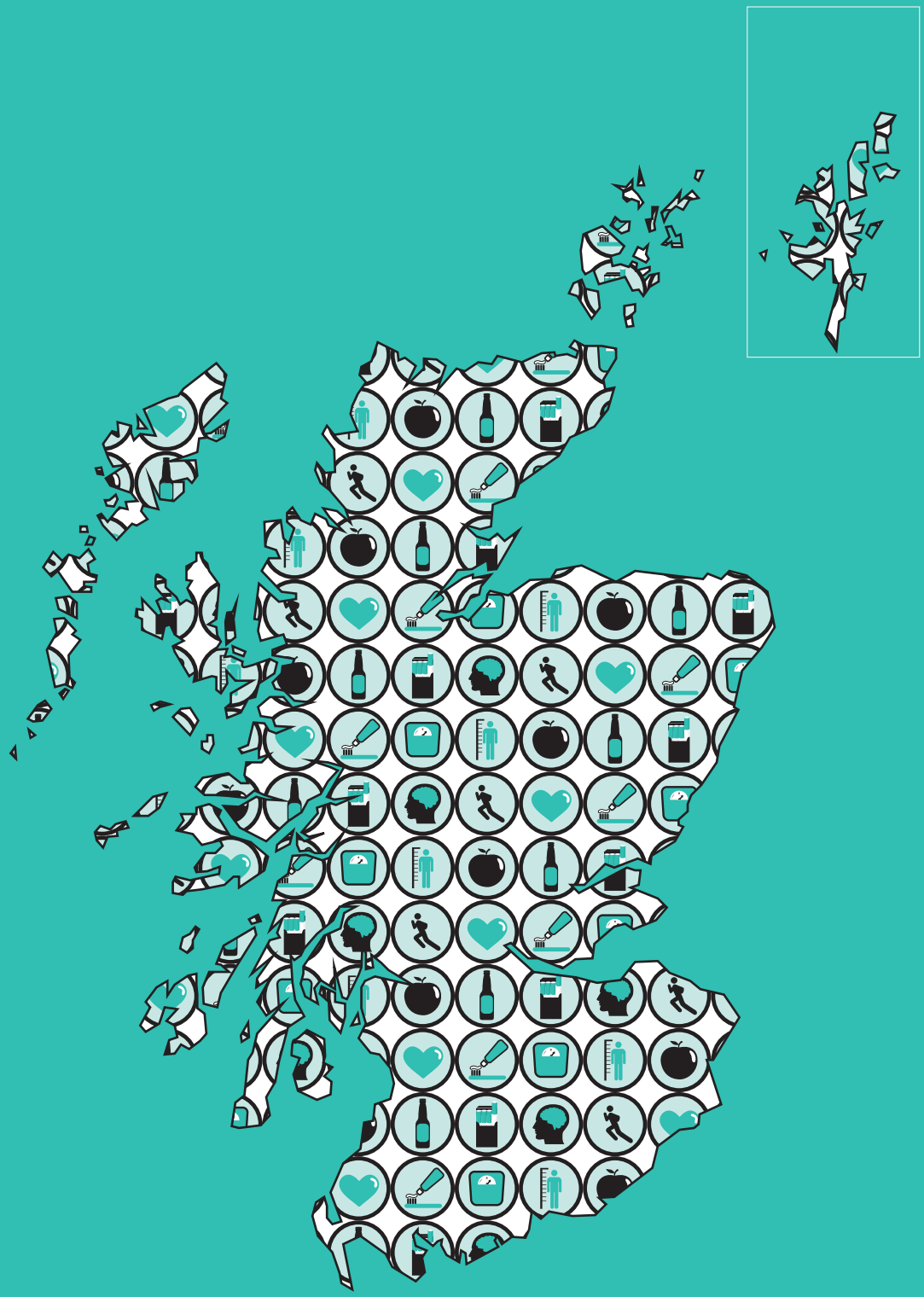
Aged 16 and over *2012/2013 combined*

Detection and treatment levels	Age					Total
	16-34	35-54	55-64	65-74	75+	
	%	%	%	%	%	%
Men						
Hypertension detection rate[a]	*	48	55	55	[64]	50
Hypertension treated, but not controlled[b]	*	15	23	26	26	20
Hypertension treated and controlled[c]	*	11	19	18	26	16
Women						
Hypertension detection rate[a]	*	59	68	66	72	65
Hypertension treated, but not controlled[b]	*	23	24	37	33	29
Hypertension treated and controlled[c]	*	21	28	25	25	25
All adults						
Hypertension detection rate[a]	*	53	61	62	69	58
Hypertension treated, but not controlled[b]	*	19	23	32	30	25
Hypertension treated and controlled[c]	*	15	24	22	26	20
Bases (weighted):						
Men	*23*	*67*	*70*	*58*	*37*	*255*
Women	*5*	*60*	*66*	*76*	*70*	*277*
All adults	*29*	*128*	*135*	*134*	*107*	*532*
Bases (unweighted):						
Men	*15*	*62*	*71*	*77*	*43*	*268*
Women	*4*	*62*	*86*	*89*	*81*	*322*
All adults	*19*	*124*	*157*	*166*	*124*	*590*

a Detection rate is the proportion of those with survey defined high blood pressure, or who are on medication for high blood pressure, who say they have been told by a doctor they have high blood pressure

b Of those with survey-defined high blood pressure, or who are on medication for high blood pressure, the proportion who are on medication for high blood pressure and also have survey-defined high blood pressure

c Of those with survey-defined high blood pressure, or who are on medication for high blood pressure, the proportion who are on medication for high blood pressure and do not have survey-defined high blood pressure



Chapter 9

Multiple risks and vulnerabilities

9 MULTIPLE RISKS AND VULNERABILITIES

Catherine Bromley

SUMMARY

Constructing a risk index

- A risk index for poor health in adults was created, based on 21 measures of risks and vulnerabilities included in the survey in 2012 and 2013. These spanned current chronic disease risk factors, family or historic risks, current morbidities, low wellbeing, and socio-economic disadvantage.
- Index scores were grouped to identify those with the least (0-3) and most (8 or more) risks.
- Based on their combinations of risks, six distinct groups of people were identified. Groups differed in average age, the extent of socio-economic disadvantage, and whether members had multiple long-term conditions (multimorbidity) or not.

Risks profile

- The overall distribution of scores ranged from 0 to 18, where a score of 0 indicated that someone had none of the risks included in the index.
- The median number of risks (risk score) for adults aged 16 and over in 2012/2013 was 5.
- Around a third (32%) of adults had between 0 and 3 of the selected risks in 2012/2013, while 19% had 8 or more.
- Overall, risk scores for men and women were almost identical, however young men (aged 16-24) were significantly more likely than young women to be in the lowest risk group (62% and 49%, respectively).
- The presence of multiple risks increased with age: just 3% of those aged 16-24 were in the highest risk group compared with 40% of those aged 75 and over.
- People living in areas with high levels of multiple deprivation were most likely to have a high number of individual risks. Among the 45-64 age group, 48% of those living in the 20% most deprived areas of Scotland had 8 or more risks, compared with 9% of those living in the least deprived SIMD quintile.

Risk groups

- Multimorbidity, poor self-reported health, low wellbeing and below average life-satisfaction were more likely to co-exist if people were also very socio-economically disadvantaged.
- Younger, deprived multimorbid people were more likely to drink heavily and smoke, whereas older deprived multimorbid people were more likely to be overweight/obese and physically inactive.
- The younger group of deprived people who did not have multimorbidity had high levels of psychosocial distress and low wellbeing, along with other notable risks such as very poor diets and high smoking rates.

Risk groups and self-reported general health

- Those risk groups with high levels of multimorbidity were most likely to report fair to very bad health in general.
- Those with multimorbidity, high levels of socio-economic disadvantage and

low wellbeing (groups 5 and 6) had much worse self-rated general health than those who were multimorbid but not deprived (group 2).

Risk groups and recent health service use

- Recent health service use was greatest among multimorbid and deprived groups (groups 5 and 6).
- While 36% of group 4 (younger, high risk, not morbid) had at least one psychosocial risk (low wellbeing and/or psychological distress), prevalence of poor self-reported general health was low and health service usage was similar to group 1 (young, low risk).
- The wellbeing and disease risk profile of group 4, notably their high smoking prevalence and low fruit and vegetable consumption, suggest that they are a group with many risks that could be amenable to interventions, but low contact with primary care services make them potentially difficult to reach.

9.1 INTRODUCTION

The 2010 Scottish Health Survey (SHeS) annual report explored the prevalence of multiple risks for poor health among adults in Scotland,[1] focussing on the following five risks: smoking, hazardous or harmful alcohol consumption, overweight and obesity, low fruit and vegetable consumption and low physical activity levels. All these factors impact negatively on individual and population health and all feature among the top ten risks that have been estimated to contribute most to disease across the globe.[2]

Concern about multiple risks has parallels with another relatively new field now attracting significant attention from health policy makers and practitioners: multimorbidity - the concurrent existence of multiple health conditions in the same individual. The clinical consequences of multimorbidity on outcomes for people and for health and care systems are widely acknowledged, for example, the challenges associated with delivering effective, safe and person-centred treatment, care and support in the context of health and care systems and guidelines that are largely structured around single diseases.[3,4] The population health implications of multiple overlaying risks are similarly challenging, given that many of the individual risks are themselves part of a complex web of causation (for example, obesity), and the policy interventions available are themselves multi-faceted, and at times controversial (for example, policies to reduce harmful alcohol consumption).

Many, but by no means all, interventions to improve health and wellbeing that focus primarily on individual risk factors treat them as single entities rather than adopting a more holistic approach. In part, this is due to the complexity of delivering such interventions, and the lack of evidence for their efficacy, for example in reducing heart disease mortality.[5] In contrast, greater evidence exists about the efficacy of delivering interventions for specific risks, for example smoking cessation.[6] Furthermore, the balance of evidence favours population-level approaches, rather than those solely targeting individual behavioural risk factors, especially where the aim is to improve health without widening health inequalities.[7,8,9]

Although numerous definitions of multimorbidity have been used over time, and debates still persist,[10,11] a number of validated indices have been developed to assist with estimates of its impact on outcomes such as health care costs and mortality.[12,13] In contrast, while the importance of acknowledging the contribution of other risks beyond health conditions is recognised,[12] and theoretical models have been developed to help shape how this topic might be approached,[14,15] comparatively fewer attempts have been made to develop validated complexity measures for use in population health research.[16]

9.1.1 Reporting on multiple risks in the Scottish Health Survey (SHeS)

The analysis presented in this chapter is designed to help illustrate the myriad ways in which risks and vulnerabilities occur in the population, identify which are more commonly found to co-exist, and how they are distributed between men and women, across different age groups and through the deprivation spectrum. Rather than simply update the 2010 analysis (which itself partially replicated analysis of the 2003 survey),[17] this chapter has extended the approach to include a wider range of measures, spanning a number of domains, in order to provide a more detailed picture of the range, nature and burden of risk and vulnerabilities in the adult population in Scotland.

9.2 METHODS

9.2.1 Index construction and selection criteria

SHeS contains a large range of measures of individual risk factors and other vulnerabilities, so a selection process was necessary to identify suitable items for use in a risk index. The Scottish Index of Multiple Deprivation (SIMD), which uses data on 38 indicators across 7 domains, was developed to capture the social complexity of geographic areas (See Glossary for a detailed description of the SIMD). A similar approach, of identifying domains, and selecting indicators to populate them, was also adopted for the analysis presented in this chapter.

A number of existing frameworks helped to guide the choice of measures used in the index, including theoretical models of health and disease causation that emphasize multiple pathways (such as Krieger's eco-social model);[15] life-course models of risk acquisition;[18] the social determinants of health literature;[19] and evidence relating to the well-established chronic disease risk-factors that feature prominently in most public health policy (each of which has been demonstrated to have negative associations with a range of health outcomes). Although the analysis presented in this chapter focuses on risks and vulnerabilities experienced by individuals, this is a function of the available data and should not be taken to imply that the more fundamental causes that underlie the social distribution of these risks have been ignored.[20]

The index was not designed with the intention of predicting outcomes (such as health status or mortality). Instead, its function is to identify risks within the population, such as smoking, as well as broader factors

that make people vulnerable, such as chronic conditions and psychological distress. An index designed for predictive purposes would also use weighting, both within and across individual domains, to reflect the relative contributions of its components to the outcome of interest. In contrast, this index is intended to simply identify the presence of risks (they either exist or they do not), for a selection of available indicators, and does not attach greater significance to any individual component. A final point to note is that the index was created after the data were collected, the survey was not designed with the specific purpose of analysing multiple risks in this way. The selection of items for use in the index was therefore necessarily limited by the questions and measures included in the survey.

9.2.2 Items included in the risk index

The percentage of adults aged 16 and over in each of the categories making up the index is shown in the table below for the years 2012 and 2013 combined. The overall risk score was calculated by summing the total number of risks a person had (each individual risk was scored 1 if present, 0 if not). While the maximum possible score was 20, the highest score that anyone had in these years was in fact 18. Note that due to the exclusion of any cases with missing data on an item, these figures are not the true total population estimates for these measures, and should not be cited as such. They are shown for illustrative purposes only.

Risk index items	% adults with risk factor 2012/2013 combined
Current chronic disease risk-factors	
Eats fewer than 5 portions of fruit or vegetables per day	78
BMI of 25 kg/m^2 or above (overweight or obese)	67
Does not meet physical activity guideline on aerobic activity	33
Weekly and/or daily alcohol consumption outwith sensible drinking guidelines	43
Current cigarette smoker	22
Historic / familial chronic disease risk-factors	
Ex-cigarette smoker	25
Mother/father/both died of CVD condition	30
Mother/father/sibling developed CVD condition before age of 60	27
Current morbidity[21]	
Number of long-term conditions (each condition contributes to index) 1 condition 2 conditions 3 conditions 4 conditions 5 conditions 6 conditions	 23 12 6 2 1 0
Daily activities limited by a long-term condition[22]	29
Psycho-social distress / low wellbeing	
GHQ12 score greater than or equal to 4	14
WEMWBS score more than 1 SD below the mean	14
Socio-economic vulnerability	
No educational qualifications	16
Unemployed	4
Routine or manual occupation NS-SEC category	15
In lowest equivalised household income quintile	17
Unweighted sample size	*6601*

9.2.3 Classification of risk groups

To make the presentation of results more meaningful, two methods to summarise the data were applied. The first was a simple grouping of the index into approximate quartiles. Exact quartiles could not be created as the data were not normally distributed, with a larger proportion at the lower end of the index than the top. Grouping the risks in this way helps to distinguish between groups with relatively lower and higher risk profiles: those in the lowest quartile had 0-3 risks, while those in the highest had 8 or more.

The second method of summarising the data was more complex. Latent Class Analysis (LCA) was used to identify typologies of risk profiles, to help identify patterns within the data that would not otherwise be apparent. This statistical approach categorises individuals into different groups, or 'latent classes,' based on their responses to a series of questions, or in this case, the risk factors presented above. LCA operates by identifying the number of classes or groups that best fit the data and generating probabilities of membership of each group for every eligible participant. Once this is complete, a participant is assigned to the class for which they have the highest probability of membership. The first step is to identify how many different classes or groups best fit the data. To test this, a number of models, each containing a pre-specified number of classes, were produced. Results from each model were compared and the most appropriate solution selected. Once the latent classes were identified,[23] information about the age and deprivation profile of each class was used to help complete their description.

A six class model was selected for use in the analysis presented in this chapter; the classes identified are listed in the table below along with the percentage of adults falling into each risk group:

Risk Group	**% adults in risk group**
Younger, low risks, no morbidity	48
Older, average risks, multimorbid	18
Older, high risks, low morbidity	13
Younger, average / high risks, no morbidity	9
Older, multiple high risks, multimorbid	8
Younger, multiple high risks, multimorbid	5

9.3 RISKS INDEX ANALYSIS

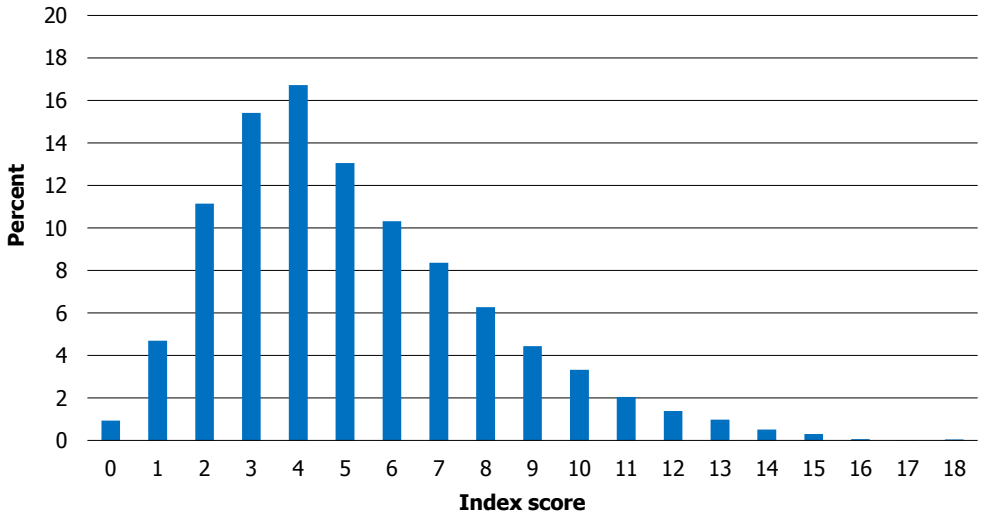
9.3.1 Risks in 2012/2013 combined, by age and sex

This section focuses on the risk index and quartile groups described above in Section 9.2. Scores ranged from 0 to 18, with a score of 0 indicating that none of the risks included in the scale were present.

While the highest theoretically possible score was 20 in 2012/2013, no participants had more than 18 of the identified risks.

In 2012/2013, just 1% of adults had a risk score of 0, indicating that they didn't have any of the 21 risks included in the index. At the other end of the index, 1% had a score of 14 or more (data not shown). As Figure 9A illustrates, the index was not normally distributed, with a higher concentration of scores at the lower end. For this reason, the discussion in this section focuses on the median risks and risk quartiles, rather than means. **Figure 9A**

Figure 9A
Risk index scores for adults (aged 16 and over), 2012/2013 combined



The mean and median number of risks for men, women and all adults, is presented by age group in Table 9.1. The median number of risks for adults in 2012/2013 was 5 and men and women had the same median number of risks. The median number of risks increased with age for both men and women, from 3 risks for those aged 16-24 to 7 risks for those in the oldest age group (aged 75 and above).

One in three (32%) adults were in the lowest risk group with between 0 and 3 risks, while 19% had 8 or more risks and fell in the highest risk group. Similar to the pattern observed for median risks, there were pronounced linear associations with age. Over half (56%) of those aged 16-24 were in the lowest risk group, decreasing steadily to 11% of those aged 75 and over. In contrast, four in ten (40%) of those aged 75 and over were in the highest group, compared with just 3% of the youngest age group.

While the risk profiles of men and women did not vary significantly overall, there was a pronounced difference in the profiles of young men and women (aged 16-24): 62% of young men were in the lowest risk group compared with 49% of young women (the largest difference between the sexes across all of the age groups). This difference appears to be partly due to young women being much less likely than

young men to meet the physical activity guideline on aerobic activity (see Chapter 6). Very few of those aged 16-24 were in the highest risk group (2% of men and 5% of women).

Figure 9B, Figure 9C, Table 9.1

Figure 9B
Risk quartiles, 2012/2013 combined, by age (Men)

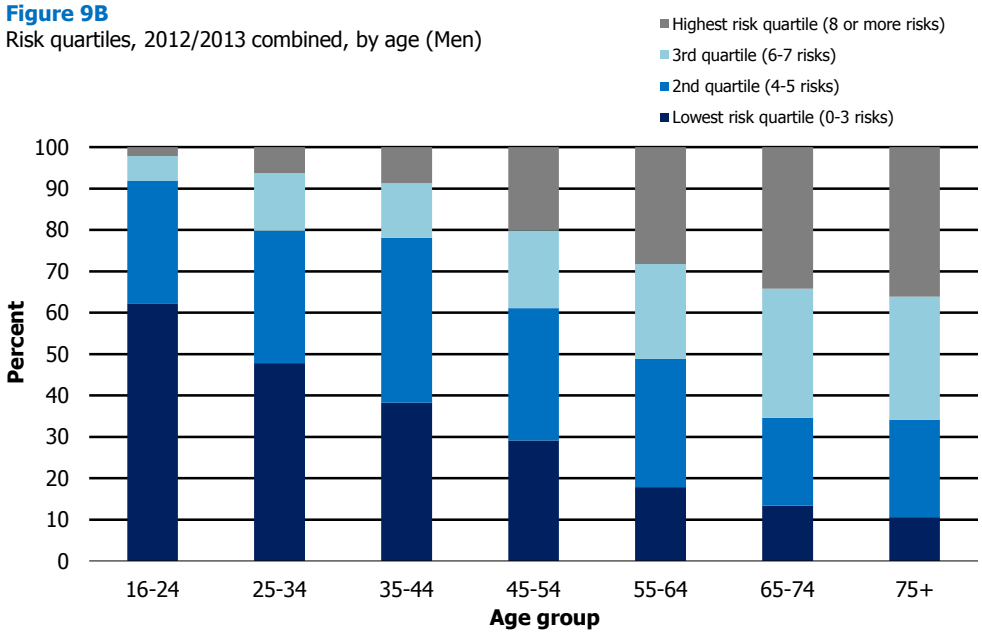
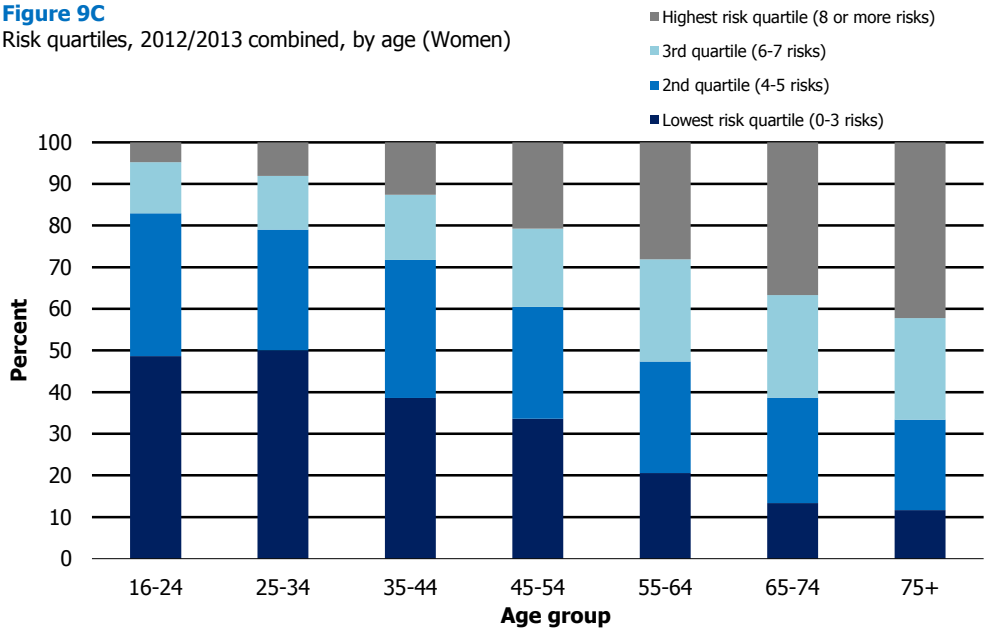


Figure 9C
Risk quartiles, 2012/2013 combined, by age (Women)



9.3.2 Risks by Scottish Index of Multiple Deprivation (SIMD), age and sex in 2012/2013 combined

In Table 9.2 risk scores are presented by area deprivation, grouped by sex and age group. Area deprivation is measured using the Scottish Index of Multiple Deprivation (SIMD). This differs from the usual approach adopted in analysis presented in SHeS annual reports which is to present age-standardised figures for area deprivation. (See Glossary for a detailed description of SIMD and age-standardisation).

This alternative approach was adopted to illustrate any interactions between these factors (sex, age and SIMD).

Risk distributions are presented by SIMD quintile in Figure 9D, without any adjustment for age. The chart illustrates that the percentage of adults in the highest risk group increases, in a fairly linear fashion, with increased deprivation, for both sexes.

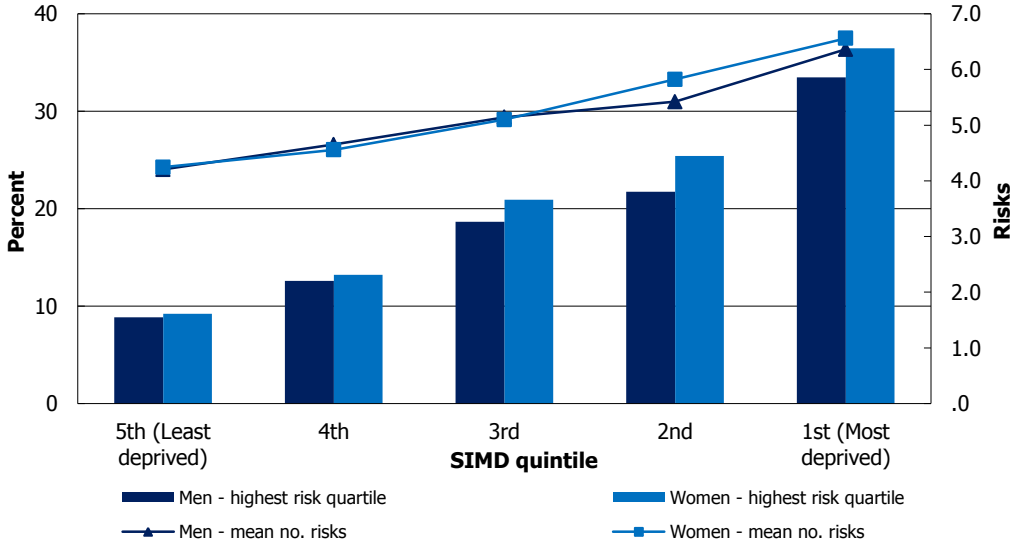
Table 9.2 indicates that the association with deprivation was evident within each of the age groups examined. For example, 3-5% of adults aged 16-44 living in the three least deprived quintiles (SIMD quintiles 3, 4 and 5) were in the highest risk group, compared with 18% of 16-44 year olds living in the most deprived quintile (SIMD quintile 1). This pattern of increasing risks in line with increased deprivation was even more pronounced for older age groups. Among the 45-64 age group, 9% of those in the least deprived quintile were in the highest risk group, compared with 48% of those living in the most deprived areas. The proportion of those aged 65 and over in the highest risk group more than doubled between those in the least and most deprived quintiles (22% and 56%, respectively).

These results illustrate that the association between risks and age group, shown in Table 9.1, is strongly mediated by area deprivation. While the sample sizes for men and women separately were somewhat smaller and the estimates were therefore less robust, the same overall patterns were evident. It is notable, for example, that even among the youngest men (the group most likely to have the lowest risk score), the proportion with 0-3 risks halves between the least and most deprived quintiles (from 66% to 33%).

The largest analysis of chronic condition multimorbidity conducted in Scotland to-date found that people living in the most deprived areas of the country were typically multimorbid 10-15 years before their less deprived counterparts.[24] Similarly, Table 9.2 shows that the risk profiles of young and middle-aged adults living in the most deprived areas more closely resemble the profiles of less deprived older age groups, than of their counterparts of the same age. For example, 32% of adults aged 16-44 living in the most deprived areas were in the lowest risk group, 30% in the next lowest, 20% in the second highest risk group and 18% in the highest group, a profile very similar to that of adults aged 45-64 living in the second least deprived quintile (SIMD quintile 2).

Figure 9D, Table 9.2

Figure 9D
Percentage of adults in the highest risk quartile, and median number of risks, 2012/2013 combined, by SIMD quintile and sex



9.4 RISK GROUPS ANALYSIS

9.4.1 Risk group profiles in 2012/2013 combined

The remaining discussion focuses on the results of the Latent Class Analysis (LCA), which as noted in Section 9.2.3, identified the following six groups within the adult population, based on their risk profiles:

Risk group	%
Younger, low risks, no morbidity	48
Older, average risks, multimorbid	18
Older, high risks, low morbidity	13
Younger, average / high risks, no morbidity	9
Older, multiple high risks, multimorbid	8
Younger, multiple high risks, multimorbid	5

The key features that distinguish these groups or classes are, broadly, the age, socio-economic status and morbidity status of their members. Comprehensive details of the risk profile for each of the groups are presented in Table 9.3. The individual prevalence for each of the risks included in the index across the six risk groups are presented.[25] These details are provided largely for reference purposes, to help the reader understand more about how the groups are comprised.

A more detailed description of the six groups, drawing on the information presented in Table 9.3, and the age and sex information presented in Table 9.4 follows:

Group 1 - Younger, below average risks, no morbidity

Median age	41
Male (%)	50
Female (%)	50
Median number of risks	3

This group comprised 48% of adults. The key risk for the group is excess alcohol consumption (53% of group members drank outwith the government's daily and/or weekly sensible drinking guidelines). For the remaining risks, levels for group members were below average, or at worst, roughly average (though note that below average can still mean a highly prevalent risk, for example 60% were overweight or obese, 72% ate fewer than 5 portions of fruit or vegetables per day). This group was also notable for its low levels of socio-economic disadvantage, across all of the measures included.

Group 2 - Older, average risks, multimorbid

Median age	56
Male (%)	46
Female (%)	54
Median number of risks	7

The second group comprised 18% of adults. Like group 1, most members had favourable socio-economic circumstances. This group had a higher number of risks than group 1 overall. With the exception of familial risk factors, which were somewhat above average, group members were at, or just below, average for most risks. The key distinguishing feature of this group was their multimorbidity, with almost all group members reporting that they had a limiting long-term condition (a mean of 1.9 conditions).

Group 3 - Older, high risks, low morbidity

Median age	60
Male (%)	55
Female (%)	45
Median number of risks	6

Reflecting their older age, prevalence of family and historic disease risks were higher than average for the third group (which comprised 13% of adults). Forty-two percent had at least one parent who died of a CVD condition and a close relative with CVD onset before the age of 60. Forty-four percent were ex cigarette smokers. While over a third (37%) had no educational qualifications, the group was not notably disadvantaged on any of the other socio-economic measures included

in the index. Prevalence of chronic disease risks was generally high, the most notable being the prevalence of overweight or obesity (91%), though alcohol consumption and smoking rates were below average. Despite their older age and other risk profile, this group was notable for having, on average, less than one chronic condition, and no limiting long-standing conditions.

Group 4 - younger, average / high risks, no morbidity

Median age	38
Male (%)	50
Female (%)	50
Median number of risks	5

With a median age of 38, the fourth group (9% of adults) had a similar age profile to group 1, but with higher prevalence of some key chronic disease risks, the most notable being their very low fruit and vegetable consumption (96% ate fewer than 5 portions per day), and very high smoking prevalence (66% were current cigarette smokers). The group had high levels of socio-economic disadvantage on all measures: 24% were unemployed, 28% had no educational qualifications and 59% were in the lowest equivalised household income quintile. The group reported very few chronic and/or limiting conditions, but wellbeing/psychological distress prevalence was higher than average (36% had at least one psychosocial risk factor). One positive risk factor was apparent: only 50% were overweight or obese, compared with an average of 67%. However, the group was almost twice as likely as the other group of equivalent age (group 1) to be physically inactive.

Group 5 - Older, multiple high risks, multimorbid

Median age	66
Male (%)	37
Female (%)	63
Median number of risks	10

Almost two-thirds of the fifth group were women and this group also had the oldest age profile. This group comprised 8% of adults. They were multiply burdened by risks across all domains, with particularly high levels of socio-economic disadvantage and an average of 2.7 long-term conditions. Like group 2, almost all in the group were limited by their long-term conditions on a day to day basis. Unlike group 2, however, levels of poor mental wellbeing were very high (25% had both a low WEMWBS score and a high GHQ12 score). Their poor health status was also reflected in their notably low activity levels (87% did not meet the aerobic activity guideline). The only factor for which they stood out as being at comparatively low risk was alcohol consumption (just 9% drank outwith the recommended weekly and/or daily limits), but based on other evidence about poor health and alcohol, this may be due to

some giving up drinking for health reasons, and the low prevalence of drinking among older women, rather than low alcohol consumption being deleterious for health.

Group 6 - Younger, multiple high risks, multimorbid

Median age	46
Male (%)	45
Female (%)	55
Median number of risks	9

The final group, comprising 5% of adults, had many parallels with group 5 (older and multimorbid) and group 4 (younger, but not morbid). For example, they had an average of 1.9 long-term conditions, almost half (48%) drank outwith the government guidelines on sensible drinking, and the majority (85%) smoked cigarettes. Overweight or obesity prevalence, however, was much lower than average (52%). Low wellbeing was most prevalent among this group (61% had at least one psychosocial risk), and members had some of the highest levels of socio-economic disadvantage (26% were unemployed, 68% were in the lowest equivalised household income quintile). **Table 9.3, Table 9.4**

9.4.2 Risk groups and selected outcomes in 2012/2013 combined

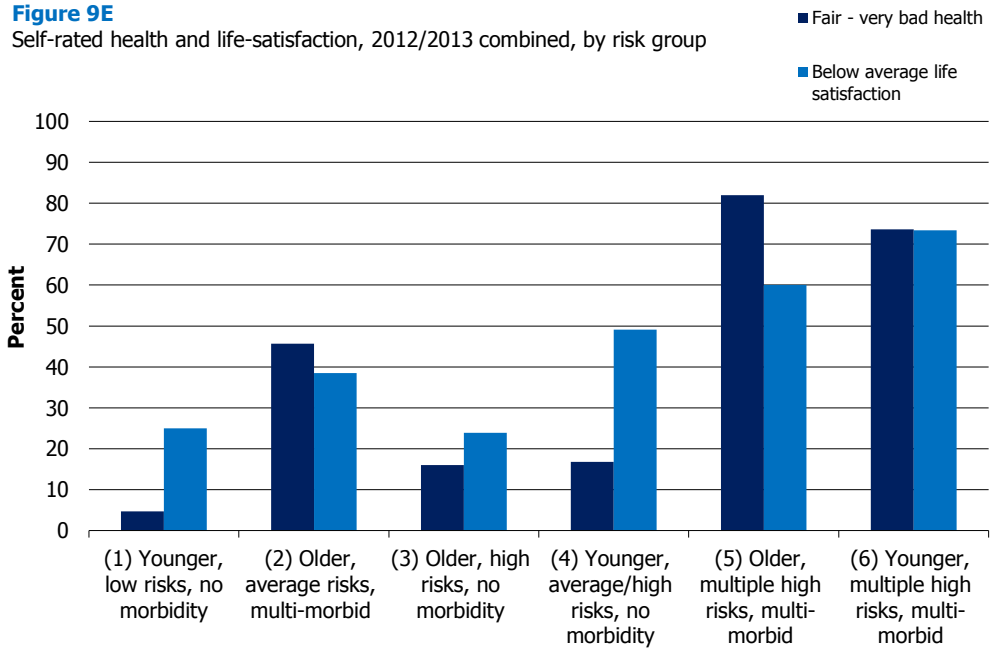
Some further contextual information on the self-reported general health and life-satisfaction of each of the six risk groups is presented in Table 9.5 and Figure 9E. Table 9.5 also provides the SIMD profile of the risk groups. In part, this information is presented to help provide confirmatory support for the results of the LCA analysis – if the measures shown had followed unexpected patterns it would suggest that the LCA lacked substantive validity. It is also presented to help illustrate the interplay between risks, area deprivation and health and wellbeing outcomes in the population.

Following the patterns evident for the indicators of socio-economic disadvantage in Table 9.3, the majority of those in group 4 (Younger, average / high risks, no morbidity) and group 6 (Younger, multiple high risks, multimorbid) lived in the two most deprived SIMD quintiles (SIMD quintiles 1 and 2). In contrast, the younger, low risk group (group 1), and the older, average risk group (group 2), had the most favourable SIMD profiles, with just 11-12% living in the most deprived quintile, and around half living in the two least deprived quintiles (SIMD quintiles 4 and 5).

Unsurprisingly, those groups with high levels of multimorbidity were most likely to report fair to very bad health in general. However, people in groups 5 and 6, who had multimorbidity, high levels of socio-economic disadvantage and low wellbeing had much worse self-rated general health than those in group 2, who were multimorbid but not deprived. Similarly, although below average life-satisfaction was more

prevalent among those in group 2 than among the other two largely non-deprived groups (group 1 and group 3), low life satisfaction was higher still among the groups comprised of people with multimorbidity and high levels of socio-economic disadvantage, or high deprivation without multimorbidity. **Figure 9E, Table 9.5**

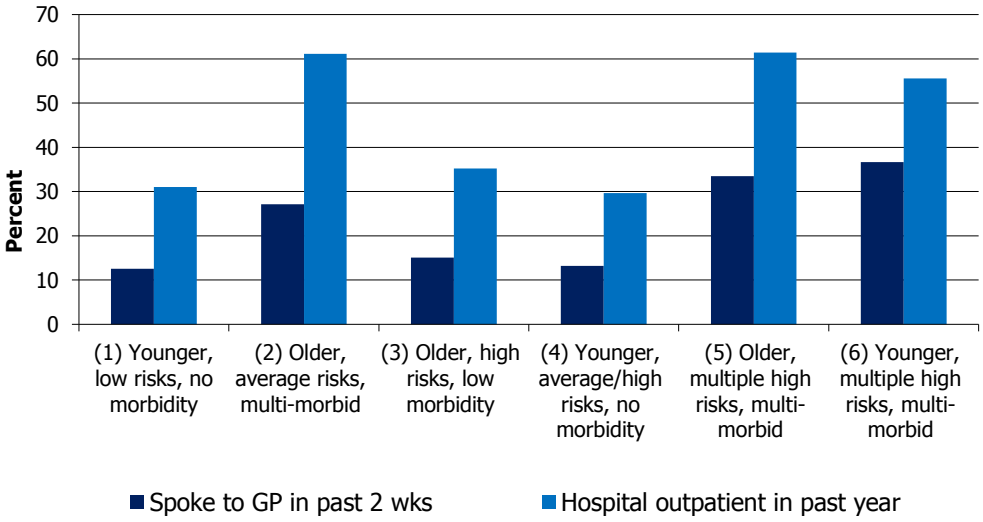
Figure 9E
Self-rated health and life-satisfaction, 2012/2013 combined, by risk group



9.4.3 Risk groups and recent health service use in 2012/2013

Recent health service use, measured by whether a person had spoken to a GP on their own behalf in the previous two weeks or had received outpatient treatment at a hospital in the past year, is presented for each of the six risk groups in Figure 9F.[26] Health service use was greatest among groups 5 and 6 – multimorbid and multiple high risks. Interestingly, although 36% of group 4 (younger, high risk, not morbid) had at least one psychosocial risk (low wellbeing and/or psychological distress), prevalence of poor self-reported general health was low (Figure 9E) and health service usage was similar to group 1 (young, low risk). The wellbeing and disease risk profile of group 4, notably their high smoking prevalence and low fruit and vegetable consumption, suggest that they are a group with many risks that could be amenable to interventions, but their low contact with primary care services might make them potentially difficult to reach. **Figure 9F**

Figure 9F
Recent health service use, 2012/13, by risk group



References and notes

[1] Bromley, C. 2011. Chapter 10: Multiple risks. In Bromley, C. and Given, L. [eds.] *The 2010 Scottish Health Survey - Volume 1: Main Report*. Edinburgh, Scottish Government. www.scotland.gov.uk/Publications/2011/09/27084018/80

[2] Murray, C. J. L. and Lopez, A. 2013. Measuring the Global Burden of Disease. *New England Journal of Medicine*. 369: 448-457. www.nejm.org/doi/full/10.1056/NEJMra1201534

[3] Hughes, L.D., McMurdo, M.E.T. & Guthrie, B., 2013. Guidelines for people not for diseases: the challenges of applying UK clinical guidelines to people with multimorbidity. *Age and Ageing*, 42(1), pp.62–9.

[4] Boyd, C.M. & Fortin, M., 2010. Future of Multimorbidity Research: How Should Understanding of Multimorbidity Inform Health System Design? *Public Health Reviews*, 32(2), pp.451–474.

[5] Ebrahim S, Taylor F, Ward K, Beswick A, Burke M, Davey Smith G. Multiple risk factor interventions for primary prevention of coronary heart disease. *Cochrane Database of Systematic Reviews* 2011, Issue 1. Art. No.: CD001561. DOI: 10.1002/14651858.CD001561.pub3.

[6] NICE. 2013. *Smoking cessation services*. NICE Public Health guidance 10. http://www.nice.org.uk/nicemedia/live/11925/39596/39596.pdf

[7] Nuffield Council on Bioethics. 2007. *Public health – ethical issues*. http://www.nuffieldbioethics.org/public-health

[8] Marmot M; Friel, S; Bell, R; and Houweling, TA. Closing the gap in a generation: health equity through action on the social determinants of health. *Lancet* 2008 372: 1661-1669.

[9] Macintyre S. *Inequalities in health in Scotland: What are they and what can we do about them?* Glasgow: MRC Social and Public Health Sciences Unit, 2007, Working Paper #17.

[10] Almirall, J. & Fortin, M., 2013. The coexistence of terms to describe the presence of multiple concurrent diseases. *Journal of Comorbidity*, 3, pp.4–9.

[11] Huntley, A. et al., 2012. Measures of Multimorbidity and Morbidity Burden for Use in Primary Care and Community Settings: A Systematic Review and Guide. *Annals of Family Medicine*, 10, pp.134–141.

[12] Valderas, J., Sibbald, B. & Salisbury, C., 2009. Defining Comorbidity: Implications for Understanding Health and Health Services. *Annals Of Family Medicine*, pp.357–363

[13] Diederichs, C., Berger, K. & Bartels, D.B., 2011. The measurement of multiple chronic diseases - a systematic review on existing multimorbidity indices. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, 66(3), pp.301–11

[14] Safford, M.M., Allison, J.J. & Kiefe, C.I., 2007. Patient complexity: more than comorbidity. The vector model of complexity. *Journal of General Internal Medicine*, 22 Suppl 3, pp.382–90.

[15] Krieger, N., 2011. *Epidemiology and the people's health*, Oxford: Oxford University Press.

[16] One of the definitions of multimorbidity that has been proposed includes both health conditions and risk factors and vulnerabilities, though this chapter does not adopt that approach. See: Le Reste, J.Y., Nabbe, P., Manceau, B., et al., 2013. The European General Practice Research Network presents a comprehensive definition of multimorbidity in family medicine and long term care, following a systematic review of relevant literature. *Journal of the American Medical Directors Association*, 14(5), pp.319–25.

[17] Lawder, R., Harding, O., Stockton, D., Fischbacher, C., Brewster, D., Chalmers, A., Finlayson, A. and Conway, D. (2010). *Is the Scottish Population living dangerously? Prevalence of multiple risk*

*factors: the Scottish Health Survey 2003.*BMC Public Health. 10:330. http://www.biomedcentral.com/1471-2458/10/330

[18] Ben-Shlomo Y. and Kuh D. A life course approach to chronic disease epidemiology: conceptual models, empirical challenges and interdisciplinary perspectives. International Journal of Epidemiology. 2002: 31, 285-293

[19] Marmot M. Fair Society, Healthy Lives - The Marmot Review. London: Strategic Review of Health Inequalities in England post-2010; 2010

[20] Scott S, Curnock E, Mitchell R, Robinson M, Taulbut M, Tod E, McCartney G. 2013. *What would it take to eradicate health inequalities? Testing the fundamental causes theory of health inequalities in Scotland.* Glasgow : NHS Health Scotland.

[21] Respondents were asked if they had a physical or mental health condition or illness, which has lasted, or is expected to last for at least 12 months. Details of up to 6 such conditions were recorded. Similar conditions, such as back and neck problems, or depression and anxiety disorders were only counted once. This measure used the full 40 condition codes in the codeframe, rather than the 15 ICD chapter-level condition codes that previous SHeS reports have used, and are provided as routine in the main datasets.

[22] This item was intended to capture information about the *impact* of long-term conditions on people's lives, it was not intended as a severity weight. Therefore, whereas each individual condition people reported contributed to the index, reporting that daily activities were limited as a result of a condition only contributed once.

[23] Selection of the most appropriate solution was made based on both statistical and substantive considerations. This included an examination of 'goodness of fit' statistics. Recommended guidelines are that a model which fits the data well should have lower BIC, AIC and AIC3 values, although BIC has been highlighted as the most robust and consistent statistic to consider. Classification error should be low, meaning that the likelihood that someone does not really belong to the group they have been assigned is low, the model should have good stability meaning that it can be replicated and finally the resulting groups should make substantive sense

[24] Barnett, K. et al., 2012. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *Lancet*, 380, pp.37-43.

[25] To minimise correlations between the factors entered into the Latent Class Analysis the two family risks variables were used to create a single summary measure with four categories, as follows: 1) Parent died of CVD and relative CVD <60, 2) Parent died of CVD, 3) relative CVD <60, 4) Neither risks. The WEMWBS and GHQ12 variables were also made into a single summary measure: 1) GHQ12 >=4 and low wellbeing (WEMWBS), 2) low wellbeing (WEMWBS), 3) GHQ12 >=4, 4) Neither risks.

[26] Respondents were asked when they last spoke to a doctor on their own behalf – apart from at a hospital – either in person or by phone. It is presumed that a doctor fitting this description would be a GP. Hospital outpatient use included day-patient treatment and accident and emergency department visits.

Table list

Table 9.1 Average number of risks, and percentage in each quartile, 2012/2013 combined, by age and sex

Aged 16 and over *2012/2013 combined*

Number of risks[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
Men								
Median risks	3	4	4	5	6	7	7	5
Mean risks	3.1	4.0	4.3	5.3	6.1	6.6	6.8	5.1
SE of mean	0.16	0.12	0.12	0.13	0.14	0.14	0.18	0.07
Lowest quartile (0-3 risks)	62	48	38	29	18	13	11	32
2nd quartile (4-5 risks)	30	32	40	32	31	21	24	31
3rd quartile (6-7 risks)	6	14	13	19	23	31	30	19
Highest quartile (8 or more risks)	2	6	9	20	28	34	36	18
Women								
Median risks	4	4	4	5	6	6	7	5
Mean risks	3.8	3.9	4.4	5.3	6.1	6.6	7.0	5.2
SE of mean	0.15	0.11	0.11	0.13	0.14	0.16	0.19	0.06
Lowest quartile (0-3 risks)	49	50	39	34	21	13	12	32
2nd quartile (4-5 risks)	34	29	33	27	27	25	22	28
3rd quartile (6-7 risks)	12	13	16	19	25	25	24	19
Highest quartile (8 or more risks)	5	8	13	21	28	37	42	21

Continued…

Table 9.1 - *Continued*

Aged 16 and over *2012/2013 combined*

Number of risks[a]	Age							Total
	16-24	25-34	35-44	45-54	55-64	65-74	75+	
	%	%	%	%	%	%	%	%
All adults								
Median risks	3	4	4	5	6	6	7	5
Mean risks	3.4	4.0	4.4	5.3	6.1	6.6	6.9	5.1
SE of mean	0.11	0.08	0.09	0.10	0.11	0.11	0.14	0.05
Lowest quartile (0-3 risks)	56	49	38	31	19	13	11	32
2nd quartile (4-5 risks)	32	30	36	29	29	23	22	30
3rd quartile (6-7 risks)	9	13	14	19	24	28	27	19
Highest quartile (8 or more risks)	3	7	11	20	28	36	40	19
Bases (weighted):								
Men	*310*	*486*	*566*	*635*	*526*	*358*	*204*	*3085*
Women	*304*	*516*	*595*	*649*	*540*	*374*	*265*	*3244*
All adults	*614*	*1003*	*1161*	*1284*	*1066*	*732*	*469*	*6329*
Bases (unweighted):								
Men	*183*	*381*	*521*	*609*	*524*	*485*	*259*	*2962*
Women	*233*	*523*	*678*	*763*	*636*	*486*	*320*	*3639*
All adults	*416*	*904*	*1199*	*1372*	*1160*	*971*	*579*	*6601*

a See Section 9.2 for further details on the risk index

Table 9.2 Average number of risks, and percentage in each quartile, 2012/2013 combined, by Scottish Index of Multiple Deprivation, age and sex

Aged 16 and over *2012/2013 combined*

Number of risks[a]	Scottish Index of Multiple Deprivation				
	5th (least deprived)	4th	3rd	2nd	1st (most deprived)
	%	%	%	%	%
Men					
Age 16-44					
Median risks	3	4	4	4	4
Mean risks	3.2	3.7	3.8	4.2	4.8
SE of mean	0.13	0.14	0.14	0.17	0.25
Lowest quartile (0-3 risks)	66	49	50	36	33
2nd quartile (4-5 risks)	27	35	33	43	34
3rd quartile (6-7 risks)	4	12	14	13	18
Highest quartile (8 or more risks)	3	3	4	7	15
Age 45-64					
Median risks	4	5	5	6	7
Mean risks	4.4	5.2	5.8	6.0	7.6
SE of mean	0.13	0.18	0.20	0.20	0.33
Lowest quartile (0-3 risks)	35	28	24	18	9
2nd quartile (4-5 risks)	42	32	30	28	21
3rd quartile (6-7 risks)	15	21	21	25	23
Highest quartile (8 or more risks)	8	19	25	29	47
Age 65+					
Median risks	6	6	7	7	8
Mean risks	5.8	6.0	6.9	7.5	7.8
SE of mean	0.19	0.19	0.26	0.29	0.29
Lowest quartile (0-3 risks)	21	14	13	8	2
2nd quartile (4-5 risks)	22	29	23	16	18
3rd quartile (6-7 risks)	36	32	24	31	28
Highest quartile (8 or more risks)	22	24	40	45	52

Continued…

Table 9.2 - *Continued*

Aged 16 and over *2012/2013 combined*

Number of risks[a]	Scottish Index of Multiple Deprivation				
	5th (least deprived)	4th	3rd	2nd	1st (most deprived)
	%	%	%	%	%
Women					
Age 16-44					
Median risks	3	3	4	4	5
Mean risks	3.4	3.4	3.8	4.6	5.2
SE of mean	0.14	0.13	0.15	0.15	0.21
Lowest quartile (0-3 risks)	60	54	47	34	31
2nd quartile (4-5 risks)	25	33	35	39	26
3rd quartile (6-7 risks)	12	9	11	16	22
Highest quartile (8 or more risks)	3	4	7	12	20
Age 45-64					
Median risks	4	4	5	6	7
Mean risks	4.4	4.8	5.8	6.5	7.5
SE of mean	0.17	0.15	0.20	0.20	0.26
Lowest quartile (0-3 risks)	38	35	29	18	12
2nd quartile (4-5 risks)	36	30	25	20	19
3rd quartile (6-7 risks)	16	23	18	31	21
Highest quartile (8 or more risks)	10	12	28	32	48
Age 65+					
Median risks	5	6	7	7	8
Mean risks	5.4	6.3	6.7	7.4	8.5
SE of mean	0.20	0.21	0.23	0.29	0.31
Lowest quartile (0-3 risks)	25	13	12	8	4
2nd quartile (4-5 risks)	29	32	23	21	11
3rd quartile (6-7 risks)	25	23	24	25	26
Highest quartile (8 or more risks)	21	33	41	46	59

Continued…

Table 9.2 - *Continued*

Aged 16 and over *2012/2013 combined*

Number of risks[a]	Scottish Index of Multiple Deprivation				
	5th (least deprived)	4th	3rd	2nd	1st (most deprived)
	%	%	%	%	%
All adults					
Age 16-44					
Median risks	3	3	4	4	5
Mean risks	3.3	3.6	3.8	4.4	5.0
SE of mean	0.11	0.11	0.10	0.12	0.18
Lowest quartile (0-3 risks)	63	51	49	35	32
2nd quartile (4-5 risks)	26	34	34	41	30
3rd quartile (6-7 risks)	8	11	12	14	20
Highest quartile (8 or more risks)	3	4	5	10	18
Age 45-64					
Median risks	4	5	5	6	7
Mean risks	4.4	5.0	5.8	6.3	7.6
SE of mean	0.12	0.12	0.16	0.15	0.23
Lowest quartile (0-3 risks)	36	32	26	18	11
2nd quartile (4-5 risks)	39	31	27	24	20
3rd quartile (6-7 risks)	16	22	20	28	22
Highest quartile (8 or more risks)	9	15	27	30	48
Age 65+					
Median risks	6	6	7	7	8
Mean risks	5.6	6.2	6.8	7.4	8.2
SE of mean	0.16	0.15	0.19	0.23	0.23
Lowest quartile (0-3 risks)	23	13	12	8	3
2nd quartile (4-5 risks)	26	30	23	19	14
3rd quartile (6-7 risks)	30	28	24	28	27
Highest quartile (8 or more risks)	22	29	40	46	56

Continued…

Table 9.2 - *Continued*

Aged 16 and over *2012/2013 combined*

Number of risks[a]	5th (least deprived)	4th	3rd	2nd	1st (most deprived)
Bases (weighted):					
Men 16-44	*271*	*312*	*265*	*291*	*223*
Men 45-64	*291*	*223*	*243*	*221*	*182*
Men 65+	*127*	*132*	*111*	*108*	*83*
Women 16-44	*261*	*281*	*288*	*295*	*289*
Women 45-64	*277*	*264*	*242*	*218*	*189*
Women 65+	*138*	*141*	*120*	*130*	*110*
All adults 16-44	*532*	*593*	*553*	*587*	*512*
All adults 45-64	*568*	*488*	*485*	*439*	*371*
All adults 65+	*265*	*273*	*231*	*238*	*194*
Bases (unweighted):					
Men 16-44	*209*	*272*	*225*	*222*	*157*
Men 45-64	*254*	*237*	*274*	*210*	*158*
Men 65+	*156*	*182*	*172*	*139*	*95*
Women 16-44	*251*	*318*	*303*	*296*	*266*
Women 45-64	*298*	*331*	*339*	*245*	*186*
Women 65+	*159*	*197*	*180*	*156*	*114*
All adults 16-44	*460*	*590*	*528*	*518*	*423*
All adults 45-64	*552*	*568*	*613*	*455*	*344*
All adults 65+	*315*	*379*	*352*	*295*	*209*

a See Section 9.2 for further details on the risk index

Table 9.3 Individual risks by risk group membership, 2012/2013 combined

Aged 16 and over *2012/2013 combined*

Individual risks	Risk group type[a]						All
	Younger, below average risks, non-morbid, non-deprived	Older, low to average risks, multi-morbid, non-deprived	Older, high disease/ family risks, non-morbid, low to average deprivation	Younger, average to high risks, non-morbid, high deprivation	Older, high risks, multi-morbid, high deprivation	Younger, high risks, multi-morbid, high deprivation	
	%	%	%	%	%	%	%
Individual risks							
Eats <5 fruit/vegetables a day	72	72	85	96	87	95	78
Overweight or obese	60	74	91	50	84	52	67
Does not meet activity recommendations	19	36	37	37	87	53	33
Drinks outwith recommended limits	53	37	39	40	9	48	43
Current cigarette smoker	12	13	17	66	31	85	22
Ex-smoker	20	30	44	8	39	2	25
Parent died of CVD and relative CVD <60	5	19	42	6	39	14	15
Parent died of CVD (but no relative CVD <60)	10	21	30	6	28	4	15
Mother, father or sibling CVD <60 (but no parent died of CVD)	11	12	4	23	6	23	12
Mean number of conditions	.2	1.9	.7	.1	2.7	1.9	.8
Standard error	.01	.04	.03	.01	.07	.06	.02
Daily activities limited by LTC	-	97	-	-	98	97	29
GHQ12 >=4 and low wellbeing (WEMWBS)	3	6	2	12	25	35	7
Low wellbeing (WEMWBS) (but GHQ12 <4)	2	6	6	14	13	19	6
GHQ12 >=4 (but not low wellbeing)	5	10	1	10	10	7	7

Continued…

Table 9.3 - *Continued*

Aged 16 and over *2012/2013 combined*

Individual risks	**Risk group type**[a]						**All**
	Younger, below average risks, non-morbid, non-deprived	Older, low to average risks, multi-morbid, non-deprived	Older, high disease/ family risks, non-morbid, low to average deprivation	Younger, average to high risks, non-morbid, high deprivation	Older, high risks, multi-morbid, high deprivation	Younger, high risks, multi-morbid, high deprivation	
	%	%	%	%	%	%	%
No qualifications	-	7	37	28	78	28	16
Unemployed	1	0	1	24	-	26	4
Routine or manual NS-SEC	4	8	29	43	41	32	15
Lowest household income quintile	3	6	13	59	50	68	17
Grouped risks							
Median risks	3	7	6	5	10	9	5
Mean risks	3.1	6.7	5.9	5.5	10.6	9.3	5.1
SE of mean	.03	.07	.06	.07	.12	.12	.05
Total group size	48	18	13	9	8	5	100
Bases (weighted):	*3061*	*1138*	*789*	*563*	*481*	*297*	*6329*
Bases (unweighted):	*2996*	*1268*	*905*	*544*	*557*	*331*	*6601*

a See Section 9.2.3 for further details on the risk groups classification

Table 9.4 Age, sex and risk profile by risk group membership, 2012/2013 combined

Aged 16 and over *2012/2013 combined*

Age and sex	Risk group type[a]					
	Younger, below average risks, non-morbid, non-deprived	Older, low to average risks, multi-morbid, non-deprived	Older, high disease/ family risks, non-morbid, low to average deprivation	Younger, average to high risks, non-morbid, high deprivation	Older, high risks, multi-morbid, high deprivation	Younger, high risks, multi-morbid, high deprivation
	%	%	%	%	%	%
Risk numbers						
Median risks	3	7	6	5	10	9
Mean risks	3.1	6.7	5.9	5.5	10.6	9.3
SE of mean	.03	.07	.06	.07	.12	.12
Sex						
Men	50	46	55	50	37	45
Women	50	54	45	50	63	55
Men						
16-24	15	4	0	18	-	6
25-34	21	9	3	26	1	15
35-44	24	12	10	24	5	18
45-54	21	18	27	14	17	31
55-64	12	24	27	10	23	19
65-75	5	21	22	6	29	7
75 and over	2	12	11	2	25	4
Women						
16-24	12	5	4	19	0	9
25-34	22	12	4	22	2	17
35-44	24	14	8	23	5	23
45-54	22	20	19	14	15	24
55-64	13	21	25	10	23	17
65-75	6	16	26	4	24	7
75 and over	2	10	14	7	29	3
All adults						
16-24	14	5	2	19	0	7
25-34	22	10	4	24	2	16
35-44	24	13	9	24	5	20
45-54	21	19	23	14	16	27
55-64	12	23	26	10	23	18
65-75	5	19	24	5	26	7
75 and over	2	11	13	4	28	4
Total group size	48	18	13	9	8	5

Continued…

Table 9.4 - *Continued*

Aged 16 and over *2012/2013 combined*

Age and sex	Risk group type[a]					
	Younger, below average risks, non-morbid, non-deprived	Older, low to average risks, multi-morbid, non-deprived	Older, high disease/ family risks, non-morbid, low to average deprivation	Younger, average to high risks, non-morbid, high deprivation	Older, high risks, multi-morbid, high deprivation	Younger, high risks, multi-morbid, high deprivation
Bases (weighted):						
Men	*1529*	*525*	*435*	*281*	*180*	*135*
Women	*1533*	*613*	*354*	*281*	*301*	*162*
All	*3061*	*1138*	*789*	*563*	*481*	*297*
Bases (unweighted):						
Men	*1335*	*543*	*472*	*255*	*215*	*142*
Women	*1661*	*725*	*433*	*289*	*342*	*189*
All	*2996*	*1268*	*905*	*544*	*557*	*331*

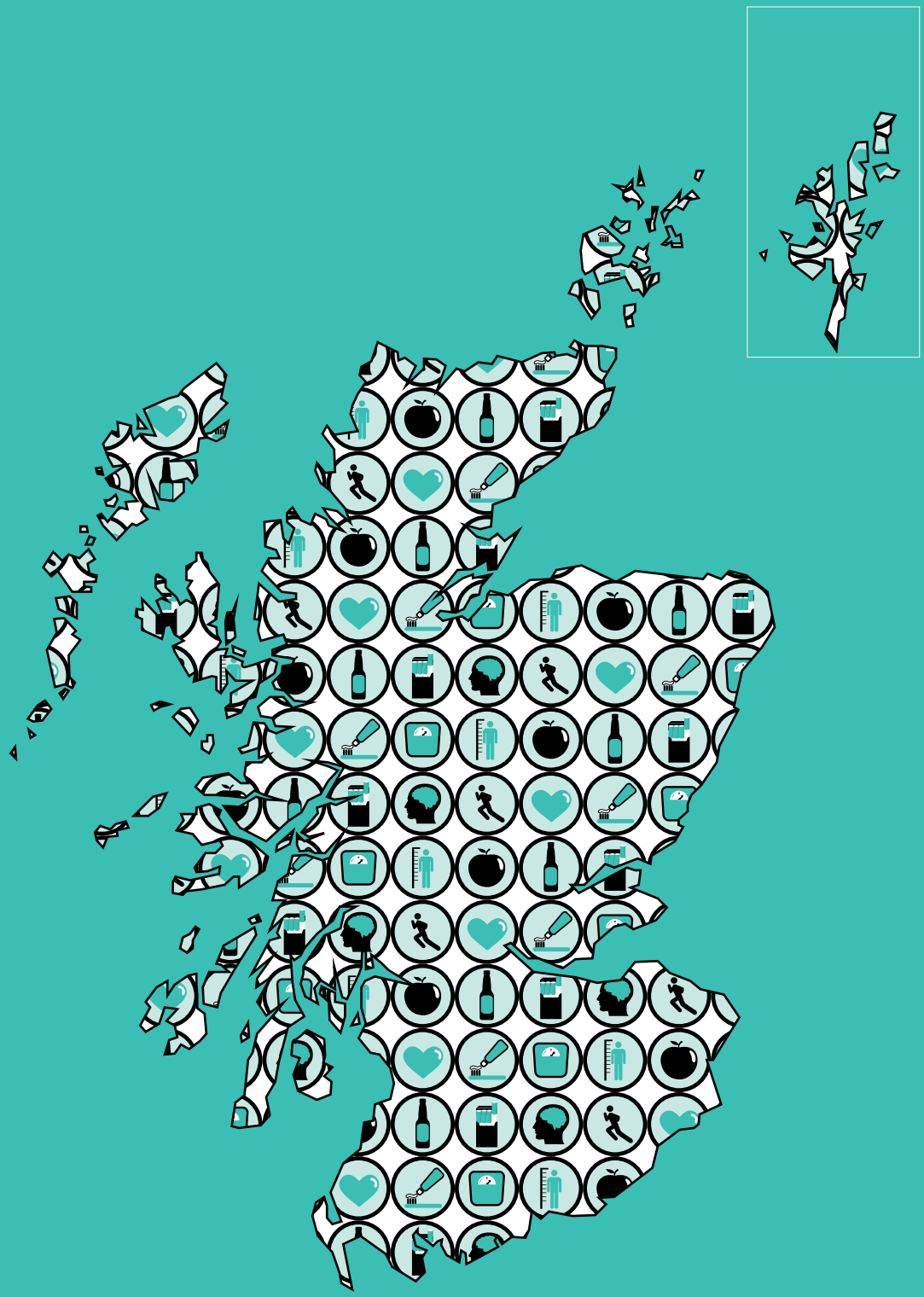
a See Section 9.2.3 for further details on the risk groups classification

Table 9.5 Risk group membership, 2012/2013 combined, by Scottish Index of Multiple Deprivation, general health and life-satisfaction

Aged 16 and over *2012/2013 combined*

Area deprivation (SIMD), general health, life satisfaction	Risk group type					
	Younger, below average risks, non-morbid, non-deprived	Older, low to average risks, multi-morbid, non-deprived	Older, high disease/ family risks, non-morbid, low to average deprivation	Younger, average to high risks, non-morbid, high deprivation	Older, high risks, multi-morbid, high deprivation	Younger, high risks, multi-morbid, high deprivation
	%	%	%	%	%	%
SIMD						
5th (least deprived)	29	22	18	7	8	5
4th	24	25	21	16	12	8
3rd	20	21	21	19	19	13
2nd	16	20	23	28	27	27
1st (most deprived)	11	12	18	29	34	46
General health						
Very good	53	12	33	35	3	6
Good	42	42	51	48	15	21
Fair	4	33	15	15	42	42
Bad	0	10	0	1	31	26
Very bad	0	2	0	0	10	6
Life satisfaction						
Below average	25	38	24	49	60	73
Average	36	33	35	21	23	15
Above average	39	29	41	30	17	12
Bases (weighted):	*3060*	*1136*	*789*	*562*	*480*	*296*
Bases (unweighted):	*2995*	*1266*	*904*	*543*	*556*	*329*

a See Section 9.2.3 for further details on the risk groups classification



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-2012 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:

$$var(p') = \frac{\sum_i (N_i^2 p_i q_i / n_i)}{(\sum_i N_i)^2}$$

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.

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 ≥140 mmHg or DBP ≥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:

BMI (kg/m^2)	*Description*
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:

Percentile cut-off	*Description*
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 and below 98th percentile	At risk of obesity

CAGE	The CAGE questionnaire was included in SHeS between 1995 and 2011 and was replaced by the AUDIT questionnaire in 2012. It was asked of participants aged 16 and over who drank alcohol more than occasionally. Three questions relate to physical dependency on alcohol and the other three relate to feeling that they ought to cut down on drinking, feeling guilty about drinking and annoyance of other people's impression of their own drinking. Agreement with two (or more) of the six CAGE items is indicative of problem drinking. This questionnaire was administered in self-completion format due to the sensitive nature of the questions.
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.
Chronic Obstructive Pulmonary Disease (COPD)	COPD is defined by the World Health Organisation (WHO) as 'a pulmonary disease characterised by chronic obstruction lung airflow that interferes with normal breathing and is not fully reversible.' It is associated with symptoms and clinical signs that in the past have been called 'chronic bronchitis' and 'emphysema,' including regular cough (at least three consecutive months of the year) and production of phlegm.
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.**

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 as follows. It utilises the widely used McClements scoring system, described below.

1. A score was allocated to each household member, and these were added together to produce an overall household McClements score. Household members were given scores as follows.

First adult (HRP)	0.61
Spouse/partner of HRP	0.39
Other second adult	0.46
Third adult	0.42
Subsequent adults	0.36
Dependant aged 0-1	0.09
Dependant aged 2-4	0.18
Dependant aged 5-7	0.21
Dependant aged 8-10	0.23
Dependant aged 11-12	0.25
Dependant aged 13-15	0.27
Dependant aged 16+	0.36

2. The equivalised income was derived as the annual household income divided by the McClements 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 tertiles, 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: McClements, D. (1977). Equivalence scales for children. *Journal of Public Economics.* 8: 191-210.

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 (2x10=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.
Income	See **Equivalised household income**
Ischaemic heart disease	Participants were classified as having ischaemic heart disease (IHD) if they reported ever having angina or a heart attack diagnosed by a doctor.
Latent Class Analysis	Latent class analysis is a statistical approach which categorises people into different groups or 'latent classes' based on responses to a series of questions. LCA operates by identifying the number of classes or groups that best fit the data and generating probabilities membership of each group for every eligible participant. Once this is done, a participant is assigned to the class for which they have the highest probability of membership.
Long-term conditions & limiting long-term conditions	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. Between 2008 and 2011 participants were asked whether they had a long-standing physical or mental condition or disability that has troubled them for at least 12 months, or is likely to affect them for at least 12 months. Note that prior to 2008 these were described as long-standing illnesses. 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.

Mean Most means in this report are **Arithmetic means** (the sum of the values for cases divided by the number of cases). See also **Geometric means** which are used in the analysis of saliva samples.

Median The value of a distribution which divides it into two equal parts such that half the cases have values below the median and half the cases have values above the median.

Morbid obesity See **Body mass index.**

NHS Health Board The National Health Service (NHS) in Scotland is divided up into 14 geographically-based local NHS Boards and a number of National Special Health Boards. Health Boards in this report refers to the 14 local NHS Boards. (See Volume 2: Appendix C)

NS-SEC The National Statistics Socio-economic Classification (NS-SEC) is a social classification system that attempts to classify groups on the basis of employment relations, based on characteristics such as career prospects, autonomy, mode of payment and period of notice. There are fourteen operational categories representing different groups of occupations (for example higher and lower managerial, higher and lower professional) and a further three 'residual' categories for full-time students, occupations that cannot be classified due to lack of information or other reasons. The operational categories may be collapsed to form a nine, eight, five or three category system. This report mostly uses the five category system in which participants are classified as managerial and professional, intermediate, small employers and own account workers, lower supervisory and technical, and semi-routine and routine occupations. In some instances where there were insufficient numbers to use the five category classification, the three category system was used instead. In analyses presented in this report it is the NS-SEC of the household reference person which is used. NS-SEC was introduced in 2001 and replaced Registrar General's Social Class (which had been used in the 1995 and 1998 surveys) as the main measure of socio-economic status.

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.
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.
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.**

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.

Standardisation In this report, standardisation refers to standardisation (or 'adjustment') by age (see **Age standardisation**).

Unit of alcohol Alcohol consumption is reported in terms of units of alcohol. A unit of alcohol is 8 gms or 10ml of ethanol (pure alcohol). See Chapter 3 of volume 1 of this Report for a full explanation of how reported volumes of different alcoholic drinks were converted into units. The method for doing this has undergone significant change since the report of the 2003 SHeS was published, these are also detailed in Chapter 3.

Waist Circumference Waist circumference is a measure of deposition of abdominal fat. It was measured during the biological module. A raised waist circumference has been defined as more than 102cm in men and more than 88cm in women.

WEMWBS 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: <www.wellscotland.info/indicators.html>

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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 scottishealthsurvey@scotland.gsi.gov.uk for further information.

Further breakdowns of the data:
☒ are available via the Scottish Health Survey website
http://www.scotland.gov.uk/Topics/Statistics/Browse/Health/scottish-health-survey

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