



# Tobacco and health in Wales

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## Technical guide



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Cyhoeddus Cymru  
Public Health  
Wales Observatory



Llywodraeth Cymru  
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# 1 Introduction

This guide describes the methods, indicators, data sources and terms used in the joint Public Health Wales Observatory / Welsh Government publication, *Tobacco and health in Wales*. It also provides definitions, notes for interpretation, and details of where to find further information. It is intended that this guide is used in conjunction with:

- The *Tobacco and health in Wales* report;
- The online interactive spreadsheets, which provide downloadable data from the report plus additional information covering health boards and local authorities within Wales;
- The online Powerpoint files, which provide downloadable slides showing key information from the report.

## How to use this Technical Guide:

- Sections 2 and 3 contain guidance on how to interpret the maps and trend charts included in the *Tobacco and health in Wales* report;
- Section 4 describes the indicators used in the report, for example their definitions and the caveats to be considered when interpreting the data. The order of this section is in line with the order of the indicators in the report;
- Section 5 describes the main sources of data used in the report, to give more detail regarding their method of collection and associated caveats. The order of this section is in line with the order of the indicators in the report;
- Section 6 provides a glossary of terms used within the *Tobacco and health in Wales* report and this technical guide.

In the electronic version of this guide, you can navigate the document by holding the 'Ctrl' key and left-clicking on a section of interest from the contents page.

The *Tobacco and health in Wales* report, plus the supporting interactive spreadsheets and this technical guide, are available from

[www.publichealthwalesobservatory.wales.nhs.uk/tobaccoandhealth](http://www.publichealthwalesobservatory.wales.nhs.uk/tobaccoandhealth)

For further details, please contact us on

[publichealthwalesobservatory@wales.nhs.uk](mailto:publichealthwalesobservatory@wales.nhs.uk)

## Note regarding interpretation of bar charts within *Tobacco and health in Wales*:

- The following bar charts are based on unrounded data, i.e. numbers which have decimal places: figures 2, 6, 7, 8, 18, 20, 22, 25, 26, 28, 30, 32, 37 and 39. The data labels on these bar charts, however, are rounded to the nearest whole number.
- The following bar charts, however, are based on data which had already been rounded to the nearest whole number: figures 3, 12, 13, 14, 15, 16 and 21.

## 2 Interpreting maps

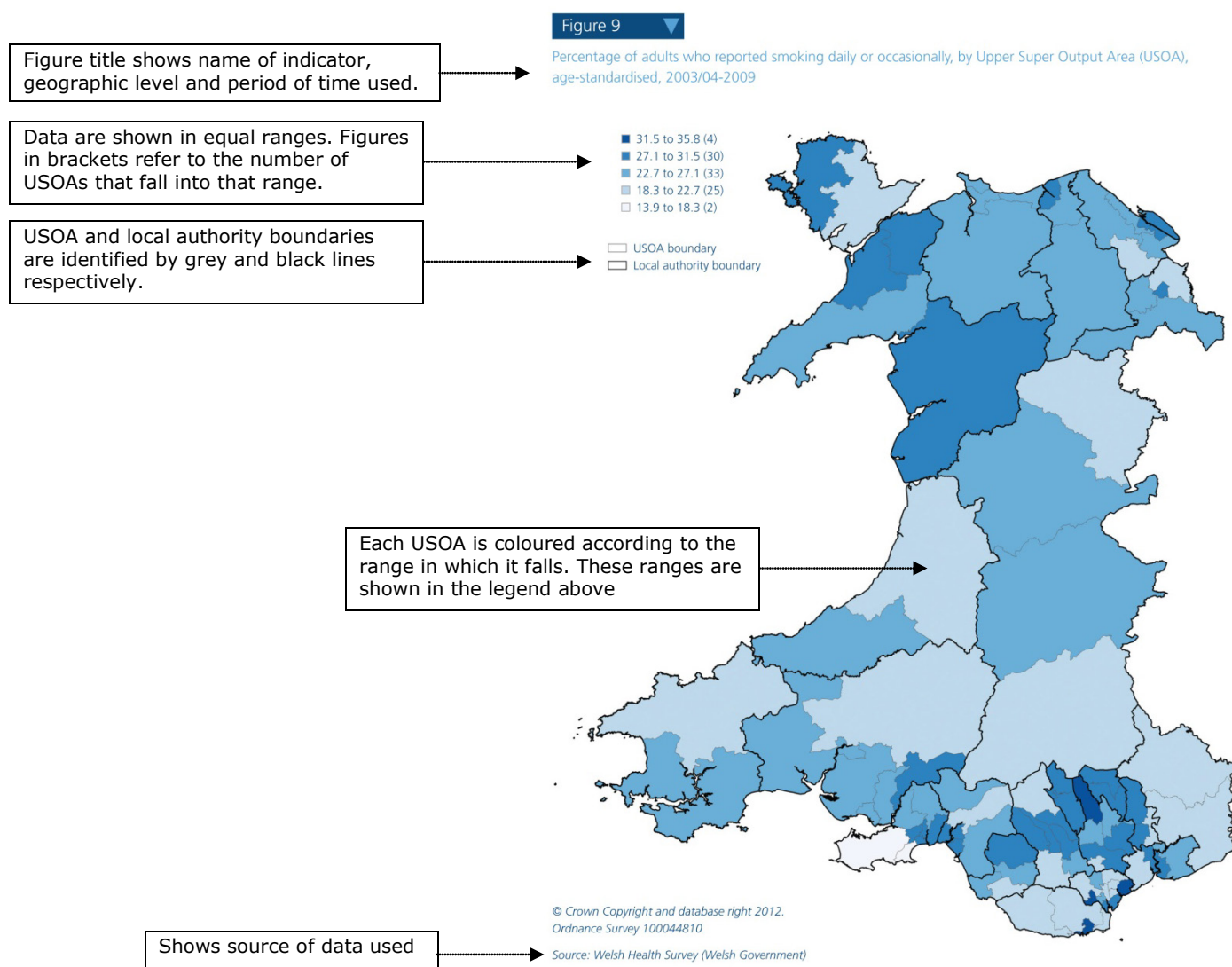
The following maps in *Tobacco and health in Wales* present data at Upper Super Output Area (USOA) level:

- Figure 9: Percentage of adults who reported smoking daily or occasionally, by Upper Super Output Area, age-standardised, 2003/04 - 2009
- Figure 33: Smoking-attributable mortality, age 35 and over, Upper Super Output Areas, age-standardised rate per 100,000, 2008-10
- Figure 40: Smoking-attributable hospital admissions, age 35 and over, Upper Super Output Areas, age-standardised rate per 100,000, 2008-10

Upper Super Output Areas are geographically-defined areas used to show statistical information, with an average population of around 30,000. There are 94 in Wales.

The maps show data for equal range groups within Wales. This was achieved by taking the data at USOA level and splitting it into five equally-sized subsets. For example, if the rate ranged from 10 to 20, the groups would be as follows: 10 to <12; 12 to <14; 14 to <16; 16 to <18; and 18 to 20. The maps were then created by shading each USOA according to which group it fell into. This method aims to put areas with similar values within the same group; however, where there is little variation across Wales, the groups may be quite similar and the use of dark and light colours could make the variation seem greater than it really is.

Figure 9 is shown below with annotation to aid interpretation.



### 3 Interpreting trend charts

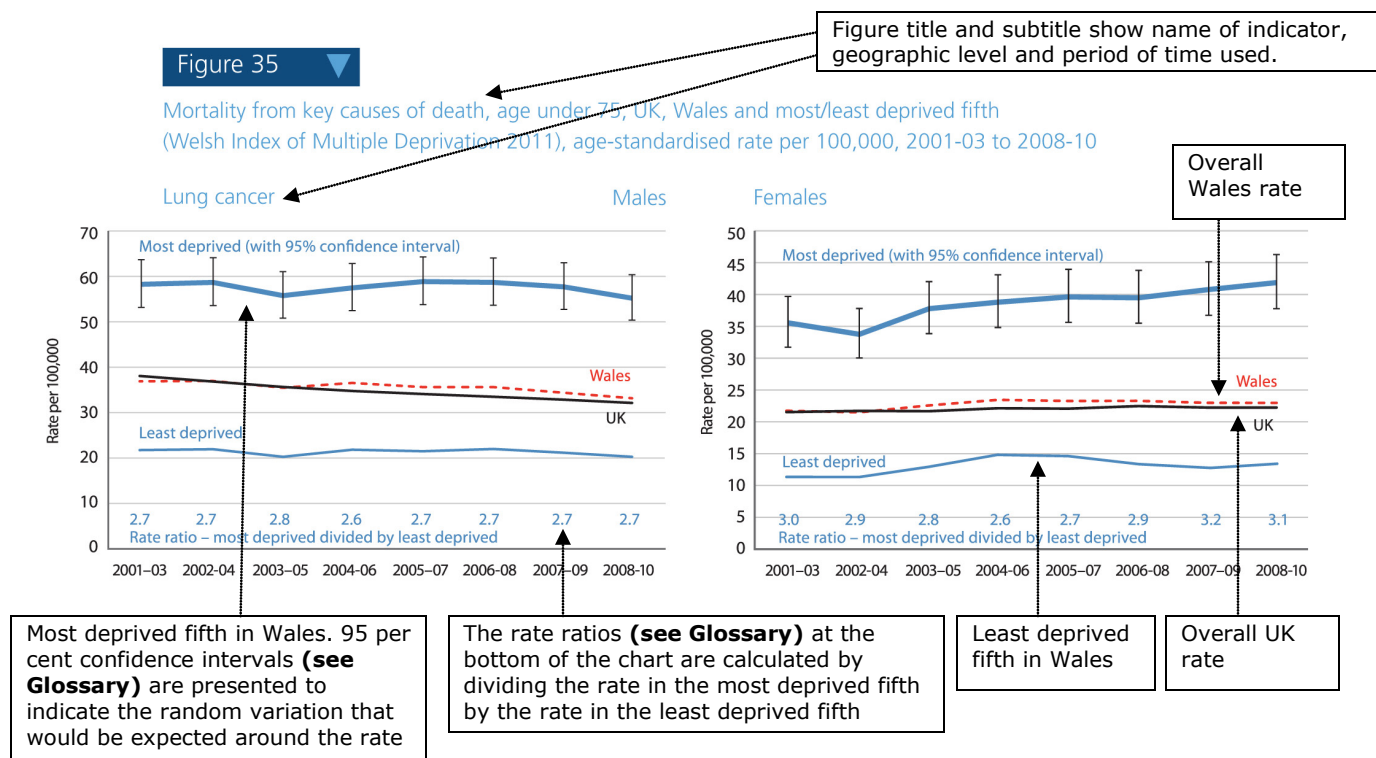
The following figures in *Tobacco and health in Wales* present trend data for males and females within Wales, the most and least deprived fifths (using Welsh Index of Multiple Deprivation) and, where possible, the UK.

- Figure 31: Smoking-attributable mortality, age 35 and over, Wales and most/least deprived fifth (Welsh Index of Multiple Deprivation 2011), age-standardised rate per 100,000, 2001-03 to 2008-10
- Figure 35: Mortality from key causes of death, age under 75, UK, Wales and most/least deprived fifth (Welsh Index of Multiple Deprivation 2011), age-standardised rate per 100,000, 2001-03 to 2008-10
- Figure 38: Smoking-attributable hospital admissions, age 35 and over, Wales and most/least deprived fifth (Welsh Index of Multiple Deprivation 2011), age-standardised rate per 100,000, 2001-03 to 2008-10

Three-year rolling rates were calculated to improve robustness and provide a smoother trend than would be seen using annual data. These three-year periods range from 2001-03 to 2008-10, as shown within the figure titles above. Age-standardisation was carried out using the European standard population (see glossary under *European age-standardised rate*). The charts show 95 per cent confidence intervals (see glossary) for the most deprived fifth in Wales; confidence intervals for the other rates are available within the online data files. The rate ratios appear at the bottom of the chart (see section 3.1 and glossary).

The data used to create the charts in the report, plus additional rates for health boards and local authorities, are available in Excel format on the Public Health Wales Observatory website at [www.publichealthwalesobservatory.wales.nhs.uk/tobaccoandhealth](http://www.publichealthwalesobservatory.wales.nhs.uk/tobaccoandhealth)

An excerpt from Figure 35 is shown below with annotation to aid interpretation.





### **3.1 How to interpret the rate ratio**

The rate ratio used in *Tobacco and health in Wales* is the mortality or admissions rate in the most deprived fifth divided by the rate in the least deprived fifth. A rate ratio of two, for example, means that the rate in the most deprived fifth is twice as high as in the least deprived fifth. The rate ratio is a measure of *relative* inequality that can be compared between causes of death and over time and is independent of the scale. 95 per cent confidence intervals are provided for the rate ratios in the data files published online. These intervals can be used to estimate the statistical significance of a difference between two rate ratios. If, for example, the confidence intervals between two rate ratios do not overlap, then the difference between the two is statistically significant. An *absolute* measure of inequality, calculated as the difference in rate between the most and least deprived, is also included in the online data files (labelled as 'range').

## 4 Indicators

### 4.1 Smoking prevalence in adults

<b>Which charts or tables display this information?</b>	<ul style="list-style-type: none"> <li>Figures 2 to 11 in <i>Tobacco and health in Wales</i></li> <li>Online interactive spreadsheets</li> </ul>
<b>What is being measured?</b>	The percentage of the adult population who report to be smokers.
<b>How is this indicator defined?</b>	<p>The report uses data from three different sources to estimate smoking prevalence (see below). The definitions for each figure in the report are as follows:</p> <ul style="list-style-type: none"> <li>Figure 2: percentage of survey respondents reporting to smoke every day</li> <li>Figures 3 and 4: percentage of survey respondents reporting to smoke daily or occasionally (cigarettes only)</li> <li>Figures 5 to 11: percentage of survey respondents reporting to smoke daily or occasionally</li> </ul>
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>Figure 2: Organisation for Economic Co-operation and Development (OECD)</li> <li>Figures 3 and 4: General Lifestyle Survey (GLS): Office for National Statistics</li> <li>Figures 5, 6, 7, 8, 9 and 11: Welsh Health Survey (WHS): Welsh Government (figure 10)</li> <li>Figure 10: Welsh Health Survey (WHS), Welsh Index of Multiple Deprivation 2008 (WIMD): Welsh Government</li> </ul>
<b>Who does it measure?</b>	<ul style="list-style-type: none"> <li>OECD: adults in selected countries. There is a lack of standardisation in the measurement of smoking habits in health interview surveys across OECD countries, for example in the ages of people surveyed.</li> <li>GLS: Wales, Scotland and England residents aged 16 and over</li> <li>WHS: Wales residents aged 16 and over</li> </ul>
<b>When does it measure it?</b>	<ul style="list-style-type: none"> <li>OECD: 2009</li> <li>GLS: 1978 to 2010</li> <li>WHS: <ul style="list-style-type: none"> <li>2009 (fig 2)</li> <li>2003/04 to 2010 single year trend (figs 5, 10 and 11)</li> <li>2003/04 and 2010 single years (fig 6)</li> <li>2010 (fig 7)</li> <li>2009 and 2010 combined (fig 8)</li> <li>2003/04 to 2009 combined (fig 9)</li> </ul> </li> </ul>
<b>What geographical areas does it cover?</b>	<ul style="list-style-type: none"> <li>OECD: selected countries</li> <li>GLS: Scotland, Wales, England</li> <li>WHS: Wales; health boards; local authorities; Upper Super Output Areas</li> </ul> <p>Data from the WHS are also shown for WIMD fifths (figure 10) and household National Statistics Socio-economic Classifications</p>



	(figure 11).
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>• The percentage of adults responding to health surveys according to the definitions above.</li> <li>• For figures 8 to 11, WHS data were age-standardised to adjust for the effect of age in comparisons between areas and groups.</li> <li>• GLS and WHS data are weighted to adjust for non-response to the survey. Further information is available in the documents referenced below<sup>1,2</sup> and in sections 5.1 and 5.2 of this technical guide.</li> </ul>
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b>	<ul style="list-style-type: none"> <li>• OECD: international comparability is limited due to the lack of standardisation in the measurement of smoking habits in health interview surveys across OECD countries. There is variation in the wording of the question, the response categories, the age groups covered and the related administrative methods. Further information is available via the link below<sup>3</sup>.</li> <li>• Smoking figures from GLS and WHS are based on self-reported data, that is, the surveys rely on the respondent's honesty when reporting their smoking status. There may be systematic bias if some groups are less likely to be honest about their smoking status than others, for example across age groups or socio-economic classifications. This is unlikely to have a large impact on the results. However, the overall estimate of prevalence is more likely to be an underestimate rather than an overestimate of the true percentage of people who smoke, since people may prefer not to report themselves as smokers due its perceived social acceptability.</li> <li>• All the surveys used to estimate smoking prevalence are based on samples of the population. The larger sample size of the Welsh Health Survey (approximately 15,000 adult Wales residents per year) means that its estimates of smoking prevalence are likely to be more accurate than those from the General Lifestyle Survey (approx 1,000). For further information about the accuracy of these surveys, see sections 5.1 and 5.2 of this technical guide.</li> <li>• The 95 per cent confidence intervals are indications of the natural variation that would be expected around a rate. See glossary for more information.</li> <li>• <b>Small fluctuations in local smoking prevalence over time, shown in the interactive spreadsheets, should be interpreted with caution.</b> The confidence intervals indicate the precision of the smoking prevalence estimates. As a rough guide to interpretation, when comparing two years, if the confidence intervals around the local authority or health board estimates overlap, it can be assumed that the estimates are not statistically significantly different. This approach is not as rigorous as doing a formal statistical test, but is straightforward, widely used and reasonably robust. Furthermore, if the confidence intervals around the local authority or health board estimates overlap with the Wales confidence intervals, it can be assumed that the estimates are not statistically significantly different. In the</li> </ul>

	absence of confidence intervals for Wales, the Wales line can be used as a proxy.
<b>References</b>	<p>1. Office for National Statistics. <i>General Lifestyle Survey: Technical Appendices 2010</i>. ONS; 2012. Available at <a href="http://www.ons.gov.uk/ons/rel/ghs/general-lifestyle-survey/2010/index.html">http://www.ons.gov.uk/ons/rel/ghs/general-lifestyle-survey/2010/index.html</a> [Accessed 8<sup>th</sup> May 2012]</p> <p>2. Sadler et al. <i>Welsh Health Survey 2010 Technical Report</i>. National Centre for Social Research; 2011. Available at <a href="http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en">http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en</a> [Accessed 8<sup>th</sup> May 2012]</p> <p>3. OECD. <i>Health at a Glance 2011: OECD Indicators</i>. OECD Publishing; 2011. Available at <a href="http://dx.doi.org/10.1787/health_glance-2011-en">http://dx.doi.org/10.1787/health_glance-2011-en</a> [Accessed 8<sup>th</sup> May 2012]</p>

## 4.2 Smoking in pregnancy

<b>Which charts or tables display this information?</b>	Figures 12 to 14 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	The percentage of mothers who i) report to have smoked throughout pregnancy, ii) report that they were smokers but gave up before or during pregnancy.
<b>How is this indicator defined?</b>	<p>The following definitions are published by the NHS Information Centre<sup>1</sup>:</p> <ul style="list-style-type: none"> <li>• "Smoked throughout pregnancy" is the percentage of women who smoked in the two years before they completed the survey, and who were smoking at the time of their baby's birth. It included women who may have given up smoking before or during their pregnancy, but who had restarted before the birth.</li> <li>• "Gave up smoking before or during pregnancy" is the percentage of women who smoked in the two years before they completed the survey and who gave up during this period and had not restarted before the birth of the baby.</li> </ul>
<b>Where does the data come from?</b>	Infant Feeding Survey: NHS Information Centre
<b>Who does it measure?</b>	A sample of mothers resident in the UK, taken from birth registration records
<b>When does it measure it?</b>	2005 and 2010
<b>What geographical areas does it cover?</b>	<ul style="list-style-type: none"> <li>• England, Wales, Scotland and Northern Ireland</li> <li>• Data from the Infant Feeding Survey are also shown for household National Statistics Socio-economic Classifications (figure 13).</li> </ul>
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>• "Smoked throughout pregnancy" is the percentage of women who smoked in the two years before they completed the survey, and who were smoking at the time of their baby's birth. It included women who may have given up smoking before or during their pregnancy, but who had restarted before the birth.</li> <li>• "Gave up smoking before or during pregnancy" is the percentage of women who smoked in the two years before they completed the survey and who gave up during this period and had not restarted before the birth of the baby.</li> <li>• The data were weighted to adjust for non-response to the survey. Further information on the Infant Feeding Survey and the method of weighting can be found in the document referenced below<sup>1</sup> and in section 5.4 of this technical guide.</li> </ul>
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes</b>	<ul style="list-style-type: none"> <li>• Since the data are based on a survey of a sample of mothers, there is a potential for non-response bias i.e. there could be a systematic difference between the answers from people who respond to the survey and people who do not. Weighting was applied to the Infant Feeding Survey results to try and correct</li> </ul>

<p><b>for interpretation or warnings with the data in relation to this indicator?</b></p>	<p>for non-response, e.g. younger and more deprived mothers were historically found to be less likely to respond<sup>1</sup>. The overall response rate for the first stage of the 2010 survey was 52 per cent (15,724 mothers).</p> <ul style="list-style-type: none"> <li>• Social acceptability bias may also affect the results of the Infant Feeding Survey. This can occur where the respondent's answer is influenced by their perception of social acceptability. For example, a mother who smoked throughout pregnancy may be less likely to report this in the survey if there is a perception that smoking in pregnancy is socially unacceptable. The impact of social acceptability bias on the results is hard to measure; there may be different perceptions of social acceptability across mothers in different socio-economic classifications.</li> <li>• Figure 13 in the report uses the National Statistics Socio-economic Classification (NS-SEC), with one of the groups being called 'Never worked'. Elsewhere in the report, in figure 11, the classification is 'Never worked and long-term unemployed'. A personal communication from the NHS Information Centre confirmed that the setup of the Infant Feeding Survey questionnaire did not allow the category 'Long-term unemployed'. Mothers who had previously worked were assigned a classification based on their most recent job, whilst those who had never worked were assigned the 'Never worked' category.</li> </ul>
	<p>1. NHS Information Centre. 2011. <i>Infant Feeding Survey 2010: Early Results</i>. Available at <a href="http://www.ic.nhs.uk/pubs/infantfeeding10">http://www.ic.nhs.uk/pubs/infantfeeding10</a> [Accessed 26/04/2012]</p>

### 4.3 Smoking prevalence in children

<b>Which charts or tables display this information?</b>	Figures 15 to 17 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	The percentage of children and young people who report to be smokers.
<b>How is this indicator defined?</b>	The percentage of survey respondents who reported smoking at least once a week.
<b>Where does the data come from?</b>	Health Behaviour in School-Aged Children (HBSC) survey: Welsh Government / World Health Organisation
<b>Who does it measure?</b>	<ul style="list-style-type: none"> <li>• 15 year-old boys and girls (figures 15 and 17)</li> <li>• 11-16 year-old boys and girls (figure 16)</li> </ul>
<b>When does it measure it?</b>	<ul style="list-style-type: none"> <li>• 2009/10 (figure 15, International HBSC survey)</li> <li>• 2009 (figure 16, Wales HBSC survey)</li> <li>• 1990-2009 (figure 17, Wales HBSC survey)</li> </ul>
<b>What geographical areas does it cover?</b>	<ul style="list-style-type: none"> <li>• Figure 15: Armenia (lowest prevalence), Greenland (highest prevalence), England, Ireland, Scotland, Wales</li> <li>• Figure 16: Wales health boards</li> <li>• Figure 17: Wales</li> </ul>
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>• The percentage of respondents to the HBSC survey who reported smoking at least once a week.</li> <li>• Figure 16 is based on the the 2009/10 Wales survey, for which weightings were applied to adjust for non-response and for different probabilities of being selected to answer the survey. Further information is available in the document referenced below<sup>1</sup> and in section 5.5 of this technical guide.</li> </ul>
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b>	<ul style="list-style-type: none"> <li>• The countries shown in figure 15 represent a selection of those submitting data to the international study. These were selected to illustrate the range of values and how Wales compares.</li> <li>• Smoking figures from the HBSC survey are based on self-reported data, that is, the survey relies on the respondent's honesty when reporting their smoking status. There may be systematic bias if some types of children are less likely to be honest about their smoking status than others, for example across age groups or socio-economic classifications. Children may fear reporting themselves as smokers, in case parents or teachers find out. The overall estimate of prevalence is therefore more likely to be an underestimate rather than an overestimate of the true percentage of young people who smoke.</li> <li>• The sample size for the Wales HBSC fieldwork in 2009/10 was around 9,200. Further information about the accuracy of the survey is available in the document referenced below<sup>1</sup> and in section 5.5 of this technical guide.</li> </ul>
<b>References</b>	1. Welsh Assembly Government Social Research. <i>Health Behaviour in School-Aged Children: initial findings from the 2009/10 survey in Wales</i> . WAG; 2011. Available at <a href="http://wales.gov.uk/about/aboutresearch/social/latestresearch/healthbehaviours/?lang=en">http://wales.gov.uk/about/aboutresearch/social/latestresearch/healthbehaviours/?lang=en</a> [Accessed 8 <sup>th</sup> May 2012]

#### 4.4 Exposure to second-hand smoke

<b>Which charts or tables display this information?</b>	Figures 18 to 21 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	<p>The percentage of people exposed to second-hand smoke:</p> <ul style="list-style-type: none"> <li>• Adults <ul style="list-style-type: none"> <li>◦ Figure 18: regular exposure by location</li> <li>◦ Figure 19: regular exposure over time and (from 2008 to 2010) by location</li> </ul> </li> <li>• Children <ul style="list-style-type: none"> <li>◦ Figure 20: living in households where adults smoke</li> <li>◦ Figure 21: exposure during most recent car journey</li> </ul> </li> </ul>
<b>How is this indicator defined?</b>	<ul style="list-style-type: none"> <li>• Adults <ul style="list-style-type: none"> <li>◦ Figures 18/19: adults who answered “yes” to the Welsh Health Survey question “Are you regularly exposed to other people’s tobacco smoke in any of these places?”</li> </ul> </li> <li>• Children <ul style="list-style-type: none"> <li>◦ Figure 20: children living in households where an adult answered the Welsh Health Survey questionnaire by saying they i) smoked daily or occasionally, and/or ii) had smoked in their own home during the last seven days</li> <li>◦ Figure 21: children who answered “yes” to the Health Behaviour in School-Aged Children survey question asking if anyone was smoking the last time they were in a car.</li> </ul> </li> </ul>
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>• Figures 18 to 20: Welsh Health Survey (WHS): Welsh Government</li> <li>• Figure 21: Health Behaviour in School-Aged Children (HBSC) survey: Welsh Government / World Health Organisation</li> </ul>
<b>Who does it measure?</b>	<ul style="list-style-type: none"> <li>• WHS: <ul style="list-style-type: none"> <li>◦ Wales residents aged 16 and over (figures 18 and 19)</li> <li>◦ Children living in households in Wales (figure 20)</li> </ul> </li> <li>• HBSC: children aged 11-16</li> </ul>
<b>When does it measure it?</b>	<ul style="list-style-type: none"> <li>• WHS: <ul style="list-style-type: none"> <li>◦ 2010 (figure 18)</li> <li>◦ 2003/04 to 2010 (figure 19); 2009 and 2010 combined (figure 20)</li> </ul> </li> <li>• HBSC: 2009</li> </ul>
<b>What geographical areas does it cover?</b>	Wales; health boards
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>• The percentage of adults or children responding to the WHS or HBSC questionnaire according to the definitions above.</li> <li>• Weightings were applied to adjust for non-response and for different probabilities of being selected to answer both the WHS and the 2009/10 HBSC survey in Wales. Further information is available in the documents referenced below<sup>1,2</sup></li> </ul>



	and in sections 5.1 and 5.5 of this technical guide.
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b>	<ul style="list-style-type: none"> <li>• It should be noted that the trend in adults' exposure to second-hand smoke (figure 19) reflects a question change on the Welsh Health Survey in 2008. Prior to this, there was no specific guidance to respondents about recording exposure to smoke outdoors. From 2008, the question was revised and asked about exposure indoors and outdoors separately. It also revised the locations asked about in order to reflect the ban on smoking in public places implemented during 2007. As a result, the 2003/04 -2007 trend for "non-smokers regularly exposed to second-hand smoke" is not directly comparable to the 2008-2010 trend for "non-smokers regularly exposed indoors or outdoors". It should also be noted that fieldwork in 2007 took place throughout the year, i.e. both before and after the ban on smoking in enclosed public places came into force in April. This is likely to account for some of the fall in exposure shown for 2007 in figure 19.</li> <li>• Figure 20 was produced using household data collected by the WHS, i.e. by looking at households where children were living with adults who reported smoking. Children were therefore not specifically asked about exposure to second-hand smoke. This means that there was less chance of bias due to children being reluctant to report their parents or other adults smoking in the home. However, parents or other adults living with children may have been reluctant to report smoking indoors if they perceived this as socially unacceptable.</li> <li>• Figure 21 is based on a question about the child's most recent car journey. Therefore, some children who are regularly exposed to second-hand smoke in cars may not have been captured. However, this is unlikely to systematically affect the health board results.</li> <li>• Both the Welsh Health Survey and the Health Behaviour in School-Aged Children survey are based on samples of the population. For further information about the accuracy of these surveys, see sections 5.1 and 5.5 of this technical guide.</li> </ul>
<b>References</b>	<p>1. Sadler et al. <i>Welsh Health Survey 2010 Technical Report</i>. National Centre for Social Research; 2011. Available at <a href="http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en">http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en</a> [Accessed 8<sup>th</sup> May 2012]</p> <p>2. Welsh Assembly Government Social Research. <i>Health Behaviour in School-Aged Children: initial findings from the 2009/10 survey in Wales</i>. WAG; 2011. Available at <a href="http://wales.gov.uk/about/aboutresearch/social/latestresearch/healthbehaviours/?lang=en">http://wales.gov.uk/about/aboutresearch/social/latestresearch/healthbehaviours/?lang=en</a> [Accessed 8<sup>th</sup> May 2012]</p>

#### 4.5 How many smokers would like to quit, and why?

<b>Which charts or tables display this information?</b>	Figure 22 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	Smokers' desire to quit
<b>How is this indicator defined?</b>	<ul style="list-style-type: none"> <li>The percentage of current smokers who say they would like to stop smoking</li> <li>The percentage of current smokers citing specific reasons for wanting to stop</li> </ul> <p>'Current smoker' is defined as smoking daily or occasionally.</p>
<b>Where does the data come from?</b>	Welsh Health Survey (WHS): Welsh Government
<b>Who does it measure?</b>	Wales residents aged 16 and over
<b>When does it measure it?</b>	2010
<b>What geographical areas does it cover?</b>	Wales
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>The number of smokers wanting to stop, or citing particular reasons for wanting to stop, is calculated as a percentage of the total number of survey respondents reporting to be current smokers.</li> <li>WHS data is weighted to adjust for non-response to the survey. Further information is available in the document referenced below<sup>1</sup> and in section 5.1 of this technical guide.</li> </ul>
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b>	<ul style="list-style-type: none"> <li>Smoking figures from the WHS are based on self-reported data, that is, the surveys rely on the respondent's honesty when reporting their smoking status or desire to quit. Some respondents may feel that it is more socially acceptable to report that they would like to give up.</li> <li>The WHS results are based on a sample of the population. For further information about the accuracy of the survey, see document referenced below<sup>1</sup> or section 5.1 of this technical guide.</li> </ul>
<b>References</b>	1. Sadler et al. <i>Welsh Health Survey 2010 Technical Report</i> . National Centre for Social Research; 2011. Available at <a href="http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en">http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en</a> [Accessed 8 <sup>th</sup> May 2012]

## 4.6 Stop Smoking Wales activity rates

<b>Which charts or tables display this information?</b>	Figures 23 and 25 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	<ul style="list-style-type: none"> <li>Figure 23: the number of people using the Stop Smoking Wales service</li> <li>Figure 25: the number of people using the Stop Smoking Wales service as a proportion of the estimated number of smokers in Wales</li> </ul>
<b>How is this indicator defined?</b>	<ul style="list-style-type: none"> <li>'Given an appointment': the number of people who contacted Stop Smoking Wales and were given an appointment with an advisor</li> <li>'Attended assessment': the number of people who attended the initial assessment session</li> <li>'Attended treatment': the number of people who attended at least one of the six treatment sessions.</li> </ul> <p>The estimated number of smokers in Wales was calculated using a definition of 'current smoker' from the Welsh Health Survey. This includes people smoking daily or occasionally.</p>
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>Stop Smoking Wales database: Public Health Wales</li> <li>Welsh Health Survey: Welsh Government</li> <li>Welsh Index of Multiple Deprivation 2011 (WIMD): Welsh Government</li> <li>Mid-year population estimates: Office for National Statistics (ONS)</li> </ul>
<b>Who does it measure?</b>	<ul style="list-style-type: none"> <li>All people who were given an appointment, attended an assessment or attended treatment with Stop Smoking Wales.</li> <li>The estimated number of smokers in Wales is based on people aged 16 and over.</li> </ul>
<b>When does it measure it?</b>	<ul style="list-style-type: none"> <li>2005/06 to 2010/11 financial years (figure 23)</li> <li>2011 calendar year (figure 25)</li> </ul>
<b>What geographical areas does it cover?</b>	Wales; deprivation fifths
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>Deprivation fifths were created by ranking all 1896 Lower Super Output Areas in Wales by their WIMD score, then inserting four cut-points to create five groups of increasing deprivation. These are numbered from 1 (least deprived) to 5 (most deprived).</li> <li>The numbers of people using the service were counted based on the definitions described above, on an all-Wales basis and by age and sex for each of the five deprivation groups.</li> <li>For the rate denominator, the number of estimated smokers by age and sex was calculated by multiplying the prevalence of smoking from the 2009-10 Welsh Health Survey (defined above) by population estimates for each of the five deprivation groups.</li> <li>Rates of smokers given an appointment or attending treatment were directly age-standardised using the European standard</li> </ul>

	<p>population, to adjust for the effect of age in comparisons between deprivation groups. Using a method proposed by Dobson et al<sup>1</sup>, 95 per cent confidence intervals were also added to the rates.</p>
<p><b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b></p>	<ul style="list-style-type: none"> <li>• The systems used to record Stop Smoking Wales activity over the period shown are likely to have been subject to a small amount of human error e.g. when entering clients' details.</li> <li>• The data presented in figure 25 of the report should be used as a guide rather than a precise measure, for the following reasons: <ul style="list-style-type: none"> <li>○ Two sets of imprecise measures are multiplied together to estimate the number of smokers in Wales: the prevalence of smoking (from the Welsh Health Survey) and population estimates (from ONS).</li> <li>○ The number of smokers in 2011 was estimated using the most recently available Welsh Health Survey and population estimates from 2009-10 and 2010 respectively.</li> </ul> </li> <li>• The 95 per cent confidence intervals are indications of the natural variation that would be expected around a rate. See glossary for more information.</li> </ul>
<p><b>References</b></p>	<p>1. Dobson AJ et al. Confidence intervals for weighted sums of Poisson parameters. <i>Stat Med</i> 1991;10(3):457-462.</p>

## 4.7 Stop Smoking Wales quit rates

<b>Which charts or tables display this information?</b>	Figures 23, 24 and 26 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	The number of smokers who manage to quit using the Stop Smoking Wales service.
<b>How is this indicator defined?</b>	<ul style="list-style-type: none"> <li>Self-reported numbers of quitters (figure 23): The number of smokers who are assessed (face-to-face, by postal questionnaire or by telephone) four weeks after the designated quit date and declare that they have not smoked even a single puff of a cigarette in the past two weeks.</li> <li>Self-reported quit rate (figures 24 and 26a): The percentage of all smokers attending at least one treatment session who are assessed (face-to-face, by postal questionnaire or by telephone) four weeks after the designated quit date and declare that they have not smoked even a single puff of a cigarette in the past two weeks.</li> <li>Carbon monoxide-validated quit rate (figure 26b): The percentage of all smokers attending at least one treatment session who report to have quit smoking four weeks after the designated quit data, and for whom this is validated by the carbon monoxide test carried out in the final treatment session.</li> </ul>
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>Stop Smoking Wales database: Public Health Wales</li> <li>Welsh Index of Multiple Deprivation (WIMD) 2011: Welsh Government</li> </ul>
<b>Who does it measure?</b>	All smokers attending at least one treatment session with Stop Smoking Wales.
<b>When does it measure it?</b>	<ul style="list-style-type: none"> <li>2005/06 to 2010/11 financial years (figure 24)</li> <li>2011 calendar year (figure 26)</li> </ul>
<b>What geographical areas does it cover?</b>	Wales; deprivation fifths
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>Numbers and percentages were produced according to the definitions of self-reported and carbon monoxide-validated quitters described above.</li> <li>Deprivation fifths were created by ranking all 1896 Lower Super Output Areas in Wales by their WIMD score, then inserting four cut-points to create five groups of increasing deprivation. These are numbered from 1 (least deprived) to 5 (most deprived). The percentages of self-reported and carbon monoxide-validated quitters were then calculated for these five groups.</li> <li>Quit rates were directly age-standardised using the European standard population, to adjust for the effect of age in comparisons between deprivation groups. Using a method proposed by Dobson et al<sup>1</sup>, 95 per cent confidence intervals were also added to the rates.</li> </ul>
<b>How accurate and</b>	<ul style="list-style-type: none"> <li>Self-reported quit rates are vulnerable to bias. Having</li> </ul>

<p><b>complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b></p>	<p>attended treatment, people continuing to smoke may feel ashamed of not being able to quit, or may want to 'please' the service provider by saying they have quit. Self-reported quit rates are likely to be a slight over-estimate of the actual quit rate.</p> <ul style="list-style-type: none"> <li>• A small proportion of smokers attending at least one treatment session do not report their quit status at four weeks after the designated quit date, e.g. Stop Smoking Wales may not be able to contact them.</li> <li>• The 95 per cent confidence intervals are indications of the natural variation that would be expected around a rate. See glossary for more information.</li> </ul>
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## 4.8 Use of medicines to help people stop smoking

<b>Which charts or tables in the report display this information?</b>	Figure 27 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	The amount of money spent by the NHS in Wales on medicines dispensed in community pharmacies in Wales to help people stop smoking.
<b>How is this indicator defined?</b>	NHS Wales primary care prescribing expenditure on pharmacotherapy (medicines) for smoking cessation. The medicines prescribed are as follows: <ul style="list-style-type: none"> <li>• Nicotine replacement therapy (NRT)</li> <li>• Varenicline (Champix™)</li> <li>• Bupropion (Zyban™)</li> </ul>
<b>Where does the data come from?</b>	Comparative Analysis System for Prescribing Audit (CASPA): NHS Wales Shared Services Partnership
<b>Who does it measure?</b>	All people receiving medicines dispensed in community pharmacies in Wales
<b>When does it measure it?</b>	Calendar years 2006-11
<b>What geographical areas does it cover?</b>	Wales
<b>How is it calculated?</b>	Information was obtained from prescriptions sent for payment to the Prescribing Services Unit, NHS Wales Shared Services Partnership. The costs of each medicine related to smoking cessation was then totalled for Wales.
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b>	<ul style="list-style-type: none"> <li>• NRT supplied via NHS enhanced community pharmacy stop smoking services commissioned by health boards in Wales is not included in the analysis. It was not possible on a Wales-wide basis to separate the costs of NRT products supplied from professional costs associated with the community pharmacy services.</li> <li>• People living in Wales but registered with GPs in England will be covered by this data if the medicine was dispensed in Wales, but not if it was dispensed in England. More information on CASPA is available in section 5.8 of this technical guide.</li> </ul>

## 4.9 Community pharmacies providing enhanced smoking cessation services

<b>Which charts or tables in the report display this information?</b>	Table 2 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	The number of community pharmacies that offer enhanced smoking cessation services.
<b>How is this indicator defined?</b>	<p>The number of community pharmacies providing the following services:</p> <p>Level two:</p> <ul style="list-style-type: none"> <li>• Provide NRT and additional support to clients taking part in the Stop Smoking Wales intensive behavioural support programme</li> <li>• Ensure clinical suitability of NRT</li> </ul> <p>Level three:</p> <ul style="list-style-type: none"> <li>• Assess client on one-to-one basis, then start supply of appropriate NRT</li> <li>• Monitor use of NRT and provide ongoing advice and support</li> </ul>
<b>Where does the data come from?</b>	All Wales Pharmacy Database (AWPD): NHS Wales Shared Services Partnership
<b>Who does it measure?</b>	Community pharmacies in Wales
<b>When does it measure it?</b>	2011
<b>What geographical areas does it cover?</b>	Health boards
<b>How is it calculated?</b>	<p>The number of community pharmacies providing the following services (as defined above) was counted:</p> <ul style="list-style-type: none"> <li>• Level 2 only</li> <li>• Level 3 only</li> <li>• Levels 2 and 3</li> </ul>
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b>	<ul style="list-style-type: none"> <li>• <b>Data from the AWPD on the number of community pharmacies offering enhanced smoking cessation services should be treated with caution.</b> The AWPD is relatively new and relies on pharmacy contractors supplying accurate details of the services they provide. Cwm Taf Health Board records show that all 30 of the community pharmacies in Cwm Taf that provided enhanced smoking cessation services in 2011 offered both levels 2 and 3 services, compared to the AWPD reporting that 22 offered the level 2 service only and 8 offered levels 2 and 3 (see table 2 of <i>Tobacco and health in Wales</i>). Similar discrepancies may occur in other areas.</li> <li>• There may have been changes to the number of participating community pharmacies providing enhanced smoking cessation services at either or both service levels since 2011.</li> </ul>

#### 4.10 Hospital admissions in children attributable to second-hand smoke

<b>Which charts or tables display this information?</b>	Table 3 and figure 28 in <i>Tobacco and health in Wales</i> .
<b>What is being measured?</b>	Hospital admissions in children attributable to second-hand smoke
<b>How is this indicator defined?</b>	The estimated number and age-specific rate of hospital admissions attributable to exposure to second-hand smoke in children, based on a list of five childhood diseases published by the Royal College of Physicians <sup>1</sup> which are considered to be in-part attributable to second-hand smoke.
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>• Patient Episode Database for Wales (PEDW): NHS Wales Informatics Service</li> <li>• Welsh Index of Multiple Deprivation (WIMD) 2011: Welsh Government</li> <li>• Mid-year population estimates: Office for National Statistics</li> <li>• Proportions of hospital admissions for selected diseases that are considered to be attributable to second-hand smoke: Royal College of Physicians<sup>1</sup>.</li> </ul>
<b>Who does it measure?</b>	Children in specified age groups (see below) living in Wales
<b>When does it measure it?</b>	<ul style="list-style-type: none"> <li>• 2010 (table 3 of report)</li> <li>• 2008-10 (figure 28)</li> </ul>
<b>What geographical areas does it cover?</b>	Wales; deprivation fifths
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>• Counts of admissions for the following diseases and age groups were extracted from PEDW, where the disease was the primary diagnosis in the admitting episode of a hospital spell. <ul style="list-style-type: none"> <li>◦ Lower respiratory tract infections (ICD-10 J20-J22), aged 2 and under</li> <li>◦ Middle ear infections (H65-H66), aged 14 and under</li> <li>◦ Wheeze (R06.2), aged 2 and under</li> <li>◦ Asthma (J45-J46), aged 3 to 4 or aged 5 to 14</li> <li>◦ Meningitis (A39.0, G00), aged 14 and under</li> </ul> </li> <li>• These counts were then multiplied by attributable fractions published by the Royal College of Physicians<sup>1</sup>, to give an estimated number of admissions attributable to second-hand smoke. For example, 4 per cent of admissions for asthma in children aged 3 to 4 were estimated to be attributable to second-hand smoke.</li> <li>• Deprivation fifths were created by ranking all 1896 Lower Super Output Areas in Wales by their WIMD score, then inserting four cut-points to create five groups of increasing deprivation. These are numbered from 1 (least deprived) to 5 (most deprived).</li> <li>• Age-specific admission rates for deprivation fifths were calculated using mid-year population estimates. Using a method proposed by Altman et al<sup>2</sup>, 95 per cent confidence intervals were also added to the rates.</li> </ul>

	<ul style="list-style-type: none"> <li>Rate ratios were calculated as the rate in the most deprived fifth divided by the rate in the least deprived, to provide a relative measure of inequality.</li> </ul>
<p><b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b></p>	<ul style="list-style-type: none"> <li>The attributable fractions published by the Royal College of Physicians<sup>1</sup> are based on systematic reviews and meta-analyses of studies into the effects of second-hand smoke on the health of children. The fractions are limited to the more common diseases linked to second-hand smoke. Key assumptions of this method are that: <ul style="list-style-type: none"> <li>The studies on which the fractions were based are applicable to the population of Wales</li> <li>The proportion of readmissions (i.e. children discharged and then admitted again in the time period) attributable to smoking is the same as that for first admissions</li> </ul> <p>Given these assumptions, the numbers and rates presented should be treated as broad estimates rather than exact figures.</p> </li> <li>The 95 per cent confidence intervals are indications of the natural variation that would be expected around a rate. See glossary for more information.</li> </ul>
<p><b>References</b></p>	<ol style="list-style-type: none"> <li>Royal College of Physicians. <i>Passive smoking and children. A report by the Tobacco Advisory Group.</i> London: RCP; 2010.</li> <li>Altman DG et al. <i>Statistics with confidence.</i> BMJ books: UK; 2000.</li> </ol>

## 4.11 Smoking-attributable mortality

<b>Which charts or tables display this information?</b>	<ul style="list-style-type: none"> <li>Table 4 and figures 29 to 33 in <i>Tobacco and health in Wales</i></li> <li>Online interactive spreadsheets</li> </ul>
<b>What is being measured?</b>	Deaths that are considered attributable to smoking
<b>How is this indicator defined?</b>	The estimated number and age-standardised rate of deaths attributable to smoking, based on a list of diseases published by the NHS Information Centre <sup>1</sup> which are considered more likely to cause death in smokers and ex-smokers than in people who have never smoked.
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>Annual District Deaths Extract (ADDE): Office for National Statistics (ONS)</li> <li>Mid-year population estimates: ONS</li> <li>Welsh Index of Multiple Deprivation (WIMD) 2011: Welsh Government</li> <li>Welsh Health Survey: Welsh Government</li> <li>Relative risks of death, by disease, for smokers and ex-smokers compared to people who have never smoked: NHS Information Centre<sup>1</sup></li> <li>Smoking-attributable mortality rates for England (figure 30): Local Tobacco Control Profiles for England<sup>1</sup></li> </ul>
<b>Who does it measure?</b>	Males / females aged 35 and over (data for all persons is included in online interactive spreadsheet)
<b>When does it measure it?</b>	<ul style="list-style-type: none"> <li>2010 (table 4 and figure 29)</li> <li>2007-09 (for comparison with England, figure 30)</li> <li>2001-2003 to 2008-10 (rolling 3-year rates, figure 31)</li> <li>2008-10 (figures 32 and 33)</li> </ul>
<b>What geographical areas does it cover?</b>	<ul style="list-style-type: none"> <li><i>Tobacco and health in Wales</i> report: Wales; most and least deprived fifths in Wales; health boards; local authorities; Upper Super Output Areas</li> <li>Online interactive spreadsheets: as in report, plus deprivation fifths within health board</li> </ul>
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>The fractions of deaths attributable to smoking (<i>attributable fractions</i>), for each disease listed below by age and sex, were calculated by combining relative risk of death with local authority smoking prevalence figures from the Welsh Health Survey 2009-10 in an equation, as outlined in appendix B of <i>Statistics on Smoking: England, 2011</i><sup>2</sup>.</li> <li>Counts of deaths registered between 2001 and 2010 were extracted from the ADDE by age and sex, where the underlying cause of death was in the following list of ICD-10 codes<sup>2</sup>: <ul style="list-style-type: none"> <li><i>Malignant cancers</i> <ul style="list-style-type: none"> <li>C00–C14 Lip, oral cavity, pharynx</li> <li>C15 Oesophagus</li> <li>C16 Stomach</li> <li>C25 Pancreas</li> </ul> </li> </ul> </li> </ul>

	<p>C32 Larynx  C33–C34 Trachea, lung, bronchus (“lung cancer”)  C53 Cervix Uteri  C64–C66, C68 Kidney and renal pelvis  C67 Urinary bladder  C80 Unspecified site  C92 Myeloid leukaemia</p> <ul style="list-style-type: none"> <li>○ <i>Cardiovascular diseases</i> <ul style="list-style-type: none"> <li>I20–I25 Ischaemic heart disease</li> <li>I00–I09, I26–I51 Other heart disease</li> <li>I60–I69 Cerebrovascular disease</li> <li>I70 Atherosclerosis</li> <li>I71 Aortic aneurysm</li> <li>I72–I78 Other arterial diseases</li> </ul> </li> <li>○ <i>Respiratory diseases</i> <ul style="list-style-type: none"> <li>J10–J18 Pneumonia, influenza</li> <li>J40–J43 Bronchitis, emphysema</li> <li>J44 Chronic airway obstruction</li> </ul> </li> <li>○ <i>Digestive diseases</i> <ul style="list-style-type: none"> <li>K25–K27 Stomach/duodenal ulcer</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>• These counts of deaths were then multiplied by the attributable fractions, to give an estimated number of deaths attributable to smoking. For example, 85 per cent of deaths from bronchitis or emphysema counted in women aged 65–69 were considered to be attributable to smoking.</li> <li>• Deprivation fifths were created by ranking all 1896 Lower Super Output Areas in Wales by their WIMD score, then inserting four cut-points to create five groups of increasing deprivation. These are numbered from 1 (least deprived) to 5 (most deprived). For the counts of deaths by health board shown within the online interactive spreadsheets, the same process was carried out to produce five groups <i>within</i> each health board.</li> <li>• Rates of smoking-attributable mortality for health boards, local authorities and deprivation fifths (as well as Wales overall) were calculated using mid-year population estimates. These rates were directly age-standardised using the European standard population, to adjust for the effect of age in comparisons between areas. Using a method proposed by Dobson et al<sup>3</sup>, 95 per cent confidence intervals were also added to the rates.</li> <li>• Rate ratios for the deprivation fifths were calculated as the rate in the most deprived fifth divided by the rate in the least deprived, to provide a relative measure of inequality.</li> <li>• The online interactive spreadsheets also show the statistical significance of differences between the Wales rate and the local rates. This was calculated at a 95 per cent level of confidence using a method proposed by Woodward<sup>4</sup>.</li> </ul>
<b>How accurate and complete will the data be for this</b>	<ul style="list-style-type: none"> <li>• The registration of death is mandatory in the UK, so the dataset should be a near complete record of mortality. Mortality counts from the ADDE were based on the original</li> </ul>



<p><b>indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b></p>	<p>underlying cause of death for which there is nearly 100 per cent coverage on the mortality register.</p> <ul style="list-style-type: none"> <li>• Data were aggregated from postcodes to local authority, health board or national level. This means a small number of records that could not be mapped to an area were excluded from the analysis and figures may not therefore match exactly to other data sources where data are aggregated at a higher level.</li> <li>• Cause-specific mortality data may be affected by variation in the completion of underlying cause on the death certificate, but this is unlikely to systematically bias the results.</li> <li>• The relative risks are based on the American Cancer Prevention Society II study (1982-88) and assume that the impact of smoking on mortality in that population is the same as its impact on the population of Wales in 2001-2010.</li> <li>• Smoking prevalence is estimated using survey data. Smoking status is self-reported and as such there is likely to be some responder bias. Sample sizes may also be comparatively small for some areas and age groups.</li> <li>• A single set of attributable fractions was used for the trend analyses (2001-03 to 2008-10) using smoking prevalence from the combined 2009 and 2010 Welsh Health Surveys, despite known changes in smoking prevalence over this period. This is standard practice but is likely to underestimate attributable mortality in the early part of this period when smoking prevalence was higher than in 2009-10. Similarly, attributable mortality rates in Upper Super Output Areas (figure 33) with higher smoking prevalence than the local authority average are likely to be underestimated, and vice versa.</li> <li>• The 95 per cent confidence intervals are indications of the natural variation that would be expected around a rate. See glossary for more information.</li> </ul> <p>For further information about the Annual District Deaths Extract, see section 5.10 of this technical guide.</p>
<p><b>References</b></p>	<ol style="list-style-type: none"> <li>1. Public Health Observatories in England. <i>Local Tobacco Control Profiles for England</i>. UK; 2012. Available at <a href="http://www.lho.org.uk/viewResource.aspx?id=16647">http://www.lho.org.uk/viewResource.aspx?id=16647</a> [Accessed 10/01/2012]</li> <li>2. NHS Information Centre. <i>Statistics on Smoking: England, 2011</i>. UK; 2011. Available at <a href="http://www.ic.nhs.uk/pubs/smoking11">www.ic.nhs.uk/pubs/smoking11</a> [Accessed 21/03/2012]</li> <li>3. Dobson AJ et al. Confidence intervals for weighted sums of Poisson parameters. <i>Stat Med</i> 1991;10(3):457-462.</li> <li>4. Woodward M. <i>Study Design and Data Analysis</i>. Chapman &amp; Hall: London; 1999.</li> </ol>

## 4.12 Contribution of smoking to overall inequality in mortality rates

<b>Which charts or tables display this information?</b>	Figure 34 in <i>Tobacco and health in Wales</i> report
<b>What is being measured?</b>	The contribution of smoking to inequalities in mortality
<b>How is this indicator defined?</b>	The percentage of the inequality in mortality rates between the most and least deprived areas which is attributable to deaths from smoking
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>Annual District Deaths Extract (ADDE): Office for National Statistics (ONS)</li> <li>Mid-year population estimates: ONS</li> <li>Welsh Index of Multiple Deprivation (WIMD) 2011: Welsh Government</li> <li>Welsh Health Survey: Welsh Government</li> <li>Relative risks of death, by disease, for smokers and ex-smokers compared to people who have never smoked: NHS Information Centre<sup>1</sup></li> </ul>
<b>Who does it measure?</b>	Males / females aged 35 and over
<b>When does it measure it?</b>	2001-03 to 2008-10 (rolling 3-year rates)
<b>What geographical areas does it cover?</b>	Wales
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>The difference (inequality) between age-standardised all-cause mortality rates in the most and least deprived fifths of Wales was calculated. For example, in males aged 35 and over there was a difference of 787 between the European age-standardised rates in the most and least deprived groups in 2008-10.</li> <li>The difference (inequality) between age-standardised smoking-attributable mortality rates in the most and least deprived fifths of Wales was calculated (see section 4.10 of this technical guide). For example, in males aged 35 and over there was a difference of 256 between the European age-standardised rates in the most and least deprived groups in 2008-10.</li> <li>The inequality in smoking-attributable mortality was calculated as a percentage of the inequality in all-cause mortality. For example, in males in 2008-10, the inequality in smoking-attributable mortality of 256 constituted 33 per cent of the total inequality in all-cause mortality of 787.</li> </ul> <p>This method follows elements of a study published by Jha et al<sup>2</sup>.</p>
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes</b>	<ul style="list-style-type: none"> <li>This indicator should be used as a high-level estimate rather than a precise figure.</li> <li>The caveats described in section 4.10 of this technical guide, in regard to the calculation of smoking-attributable mortality,</li> </ul>

<b>for interpretation or warnings with the data in relation to this indicator?</b>	<p>also apply to this indicator.</p> <p>For further information about the Annual District Deaths Extract, see section 5.10 of this technical guide.</p>
<b>References</b>	<ol style="list-style-type: none"> <li>1. NHS Information Centre. <i>Statistics on Smoking: England, 2011</i>. UK; 2011. Available at <a href="http://www.ic.nhs.uk/pubs/smoking11">www.ic.nhs.uk/pubs/smoking11</a> [Accessed 21/03/2012]</li> <li>2. Jha P et al. Social inequalities in male mortality, and in male mortality from smoking: indirect estimation from national death rates in England and Wales, Poland, and North America. <i>Lancet</i> 2006; 368:367-370.</li> </ol>

### 4.13 Mortality from specific causes of death related to smoking

<b>Which charts or tables display this information?</b>	<ul style="list-style-type: none"> <li>Figure 35 in <i>Tobacco and health in Wales</i></li> <li>Online interactive spreadsheets</li> </ul>
<b>What is being measured?</b>	Deaths from causes related to smoking
<b>How is this indicator defined?</b>	<p>The estimated number and age-standardised rate of deaths with an underlying cause as follows:</p> <ul style="list-style-type: none"> <li>Respiratory disease (ICD-10 codes J00-J99)</li> <li>Circulatory disease (I00-I99)</li> <li>Chronic obstructive pulmonary disease (J40 to J44)</li> <li>Lung cancer (includes C33 (trachea) and C34 (bronchus and lung)), following standard definition)</li> </ul>
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>Annual District Deaths Extract (ADDE): Office for National Statistics (ONS)</li> <li>Mid-year population estimates: ONS</li> <li>Welsh Index of Multiple Deprivation (WIMD) 2011: Welsh Government</li> </ul>
<b>Who does it measure?</b>	Males / females aged under 75 (data for all persons is included in online interactive spreadsheet)
<b>When does it measure it?</b>	2001-2003 to 2008-10 (rolling 3-year rates)
<b>What geographical areas does it cover?</b>	<ul style="list-style-type: none"> <li><i>Tobacco and health in Wales</i> report: UK; Wales; most and least deprived fifths</li> <li>Online interactive spreadsheets: as in report, plus health board and local authority areas</li> </ul>
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>For Wales data, counts of deaths registered between 2001 and 2010 were extracted from the ADDE by age and sex, where the underlying cause of death was in the above list of ICD-10 codes. UK mortality data and population estimates were obtained separately from the following sources and then amalgamated: <ul style="list-style-type: none"> <li>England and Wales: ONS<sup>1,2,3</sup></li> <li>Scotland: General Register Office for Scotland (GRO)<sup>4,5</sup></li> <li>Northern Ireland: Northern Ireland Statistics and Research Agency (NISRA)<sup>6,7</sup></li> </ul> </li> <li>Deprivation fifths were created by ranking all 1896 Lower Super Output Areas in Wales by their WIMD score, then inserting four cut-points to create five groups of increasing deprivation. These are numbered from 1 (least deprived) to 5 (most deprived).</li> <li>Rates of mortality were calculated using mid-year population estimates. These rates were directly age-standardised using the European standard population, to adjust for the effect of age in comparisons between areas. Using a method proposed by Dobson et al<sup>8</sup>, 95 per cent confidence intervals were also added to the rates.</li> <li>Rate ratios for the deprivation fifths were calculated as the rate in the most deprived fifth divided by the rate in the least</li> </ul>

	<p>deprived, to provide a relative measure of inequality.</p> <ul style="list-style-type: none"> <li>The online interactive spreadsheets also show the statistical significance of differences between the Wales rate and the local rates. This was calculated at a 95 per cent level of confidence using a method proposed by Woodward<sup>9</sup>.</li> </ul>
<p><b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b></p>	<ul style="list-style-type: none"> <li>The registration of death is mandatory in the UK, so the dataset should be a near complete record of mortality. Mortality counts from the ADDE were based on the original underlying cause of death for which there is nearly 100 per cent coverage on the mortality register.</li> <li>Data were aggregated from postcodes to local authority, health board or national level. This means a small number of records that could not be mapped to an area were excluded from the analysis and figures may not therefore match exactly to other data sources where data are aggregated at a higher level.</li> <li>Cause-specific mortality data may be affected by variation in the completion of underlying cause on the death certificate, but this is unlikely to systematically bias the results.</li> <li>The 95 per cent confidence intervals are indications of the natural variation that would be expected around a rate. See glossary for more information.</li> </ul> <p>For further information about the Annual District Deaths Extract, see section 5.10 of this technical guide.</p>
<p><b>References</b></p>	<ol style="list-style-type: none"> <li>Office for National Statistics. 2001-05. <i>Mortality Statistics: Cause, England and Wales (Series DH2: discontinued)</i>. Available at: <a href="http://www.ons.gov.uk/ons/rel/vsob1/mortality-statistics--cause--england-and-wales--series-dh2--discontinued-/index.html">http://www.ons.gov.uk/ons/rel/vsob1/mortality-statistics--cause--england-and-wales--series-dh2--discontinued-/index.html</a> [Accessed 16/01/2012]</li> <li>Office for National Statistics. 2006-10. <i>Mortality Statistics: Deaths registered in England and Wales (Series DR)</i>. Available at: <a href="http://www.ons.gov.uk/ons/rel/vsob1/mortality-statistics--deaths-registered-in-england-and-wales--series-dr-/index.html">http://www.ons.gov.uk/ons/rel/vsob1/mortality-statistics--deaths-registered-in-england-and-wales--series-dr-/index.html</a> [Accessed 16/01/2012]</li> <li>Office for National Statistics. 2001-10. <i>Population estimates for UK, England and Wales, Scotland and Northern Ireland, Population Estimates Timeseries 1971 to Current Year</i>. Available at: <a href="http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%2Fper%20cent3A77-247414">http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm per cent3A77-247414</a> [Accessed 16/01/2012]</li> <li>General Register Office for Scotland. 2001-10. <i>Births, Deaths and Other Vital Events – Preliminary Annual Figures</i>. Available at: <a href="http://www.gro-scotland.gov.uk/statistics/theme/vital-events/general/bmd-preliminary/index.html">http://www.gro-scotland.gov.uk/statistics/theme/vital-events/general/bmd-preliminary/index.html</a> [Accessed 16/01/2012]</li> <li>GRO population estimates. 2001-10. <i>Mid-Year Population Estimates</i>. Available at: <a href="http://www.gro-scotland.gov.uk/statistics/theme/population/estimates/mid-year/index.html">http://www.gro-scotland.gov.uk/statistics/theme/population/estimates/mid-year/index.html</a> [Accessed 16/01/2012]</li> <li>Northern Ireland Statistics &amp; Research Agency. 2001-10. <i>Deaths by cause</i>. Available at: <a href="http://www.nisra.gov.uk/demography/default.asp14.htm">http://www.nisra.gov.uk/demography/default.asp14.htm</a></li> </ol>

	<p>[Accessed 16/01/2012]</p> <p>7. Northern Ireland Statistics &amp; Research Agency. 2001-10. <i>Mid-Year Population Estimates</i>. Available at:  <a href="http://www.nisra.gov.uk/demography/default.asp17.htm">http://www.nisra.gov.uk/demography/default.asp17.htm</a>  [Accessed 16/01/2012]</p> <p>8. Dobson AJ et al. Confidence intervals for weighted sums of Poisson parameters. <i>Stat Med</i> 1991;10(3):457-462.</p> <p>9. Woodward M. <i>Study Design and Data Analysis</i>. Chapman &amp; Hall: London; 1999.</p>
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#### 4.14 Smoking-attributable hospital admissions

<b>Which charts or tables display this information?</b>	<ul style="list-style-type: none"> <li>Table 5 and figures 36 to 40 in <i>Tobacco and health in Wales</i></li> <li>Online interactive spreadsheets</li> </ul>
<b>What is being measured?</b>	Hospital admissions that are considered to be attributable to smoking
<b>How is this indicator defined?</b>	The estimated number and age-standardised rate of hospital admissions attributable to smoking, based on a list of diseases published by the NHS Information Centre <sup>1</sup> which are considered more likely to cause hospital admission in smokers and ex-smokers than in people who have never smoked.
<b>Where does the data come from?</b>	<ul style="list-style-type: none"> <li>Patient Episode Database for Wales (PEDW): NHS Wales Informatics Service (NWIS)</li> <li>Mid-year population estimates: ONS</li> <li>Welsh Index of Multiple Deprivation (WIMD) 2011: Welsh Government</li> <li>Welsh Health Survey: Welsh Government</li> <li>Relative risks of admission, by disease, for smokers and ex-smokers compared to people who have never smoked: NHS Information Centre<sup>1</sup></li> <li>Smoking-attributable hospital admission rates for England (figure 37): Local Tobacco Control Profiles for England<sup>1</sup></li> </ul>
<b>Who does it measure?</b>	Males / females aged 35 and over (data for all persons is included in online interactive spreadsheet)
<b>When does it measure it?</b>	<ul style="list-style-type: none"> <li>2010 (table 5 and figure 36)</li> <li>2009 (for comparison with England, figure 37)</li> <li>2001-2003 to 2008-10 (rolling 3-year rates, figure 38)</li> <li>2008-10 (figures 39 and 40)</li> </ul>
<b>What geographical areas does it cover?</b>	<ul style="list-style-type: none"> <li><i>Tobacco and health in Wales</i> report: Wales; most and least deprived fifths in Wales; health boards; local authorities; Upper Super Output Areas</li> <li>Online interactive spreadsheets: as in report, plus deprivation fifths within health board</li> </ul>
<b>How is it calculated?</b>	<ul style="list-style-type: none"> <li>The fractions of hospital admissions attributable to smoking (<i>attributable fractions</i>), for each disease listed below by age and sex, were calculated by combining relative risk of admission with local authority smoking prevalence figures from the Welsh Health Survey 2009-10 in an equation, as outlined in appendix B of <i>Statistics on Smoking: England, 2011</i><sup>2</sup>.</li> <li>Counts of hospital admissions (inpatients and day cases) between 2001 and 2010 were extracted from PEDW, where the primary diagnosis in the first episode of the hospital spell was in the following list of ICD-10 codes<sup>2</sup>. The codes for non-fatal diseases were added to those for fatal diseases which were used for smoking-attributable mortality (section 4.10).</li> </ul> <p><b>Fatal diseases</b></p> <ul style="list-style-type: none"> <li>○ <i>Malignant cancers</i></li> </ul>

C00–C14 Lip, oral cavity, pharynx  
 C15 Oesophagus  
 C16 Stomach  
 C25 Pancreas  
 C32 Larynx  
 C33–C34 Trachea, lung, bronchus (“lung cancer”)  
 C53 Cervix Uteri  
 C64–C66, C68 Kidney and renal pelvis  
 C67 Urinary bladder  
 C80 Unspecified site  
 C92 Myeloid leukemia

- *Cardiovascular diseases*

I20–I25 Ischaemic heart disease  
 I00–I09, I26–I51 Other heart disease  
 I60–I69 Cerebrovascular disease  
 I70 Atherosclerosis  
 I71 Aortic aneurysm  
 I72–I78 Other arterial diseases

- *Respiratory diseases*

J10–J18 Pneumonia, influenza  
 J40–J43 Bronchitis, emphysema  
 J44 Chronic airway obstruction

- *Digestive diseases*

K25–K27 Stomach/duodenal ulcer

***Non-fatal diseases***

K50 Crohn’s disease  
 K05 Periodontitis  
 H25 Age-related cataract (ages 45+ only)  
 S72.0–S72.2 Hip fracture (aged 55+ only)  
 O03 Spontaneous abortion

- These counts of hospital admissions were then multiplied by the attributable fractions, to give an estimated number of admissions attributable to smoking. For example, 44 per cent of admissions for periodinitis counted in women aged 65–69 were considered to be attributable to smoking.
- Deprivation fifths were created by ranking all 1896 Lower Super Output Areas in Wales by their WIMD score, then inserting four cut-points to create five groups of increasing deprivation. These are numbered from 1 (least deprived) to 5 (most deprived). For the counts of admissions by health board shown within the online interactive spreadsheets, the same process was carried out to produce five groups *within* each health board.
- Rates of smoking-attributable admissions for health boards, local authorities and deprivation fifths (as well as Wales overall) were calculated using mid-year population estimates. These rates were directly age-standardised using the European standard population, to adjust for the effect of age in comparisons between areas. Using a method proposed by Dobson et al<sup>3</sup>, 95 per cent confidence intervals were also added to the rates.

	<ul style="list-style-type: none"> <li>• Rate ratios for the deprivation fifths were calculated as the rate in the most deprived fifth divided by the rate in the least deprived, to provide a relative measure of inequality.</li> <li>• The online interactive spreadsheets also show the statistical significance of differences between the Wales rate and the local rates. This was calculated at a 95 per cent level of confidence using a method proposed by Woodward<sup>4</sup>.</li> </ul>
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b>	<ul style="list-style-type: none"> <li>• Individual patients can be counted multiple times under the method employed. Therefore, this indicator is a better estimate of the burden of smoking on the health service than of the burden of smoking-attributable disease in the population.</li> <li>• The accuracy of these estimates of smoking-attributable admissions is influenced by the following factors: <ul style="list-style-type: none"> <li>◦ There is known to be a degree of variation in the coding of hospital spells across Wales, but this is unlikely to systematically bias the results.</li> <li>◦ The relative risks are based on the American Cancer Prevention Society II study (1982-88) and assume that the impact of smoking on morbidity in that population is the same as its impact on the population of Wales in 2001-2010.</li> <li>◦ Smoking prevalence is estimated using survey data. Smoking status is self-reported and as such there is likely to be some responder bias. Sample sizes may also be comparatively small for some areas and age groups.</li> <li>◦ A single set of attributable fractions was used for the trend analyses (2001-03 to 2008-10) using smoking prevalence from the combined 2009 and 2010 Welsh Health Surveys, despite known changes in smoking prevalence over this period. This is standard practice but is likely to underestimate attributable admissions in the early part of this period when smoking prevalence was higher than in 2009-10. Similarly, attributable admission rates in Upper Super Output Areas (figure 40) with higher smoking prevalence than the local authority average are likely to be underestimated, and vice versa.</li> </ul> </li> <li>• The 95 per cent confidence intervals are indications of the natural variation that would be expected around a rate. See glossary for more information.</li> </ul> <p>For further information about the Patient Episode Database for Wales, see section 5.9 of this technical guide.</p>
<b>References</b>	<ol style="list-style-type: none"> <li>1. Public Health Observatories in England. <i>Local Tobacco Control Profiles for England</i>. UK; 2012. Available at <a href="http://www.lho.org.uk/viewResource.aspx?id=16647">http://www.lho.org.uk/viewResource.aspx?id=16647</a> [Accessed 10/01/2012]</li> <li>2. NHS Information Centre. <i>Statistics on Smoking: England, 2011</i>. UK; 2011. Available at <a href="http://www.ic.nhs.uk/pubs/smoking11">www.ic.nhs.uk/pubs/smoking11</a> [Accessed 21/03/2012]</li> <li>3. Dobson AJ et al. Confidence intervals for weighted sums of Poisson parameters. <i>Stat Med</i> 1991;10(3):457-462.</li> <li>4. Woodward M. <i>Study Design and Data Analysis</i>. Chapman &amp; Hall: London; 1999.</li> </ol>

#### 4.15 Affordability

<b>Which charts or tables display this information?</b>	Figure 41 in <i>Tobacco and health in Wales</i>
<b>What is being measured?</b>	The relative affordability of tobacco between 1980 and 2010.
<b>How is this indicator defined?</b>	Affordability is defined as the relative cost of tobacco in relation to how much money people have to spend.
<b>Where does the data come from?</b>	The data were published by the NHS Information Centre <sup>1</sup> and are re-used with permission.
<b>Who does it measure?</b>	UK adults aged 18 and over
<b>When does it measure it?</b>	1980-2010
<b>What geographical areas does it cover?</b>	UK
<b>How is it calculated?</b>	<p>The NHS Information Centre<sup>1</sup> calculated the affordability of tobacco using the following method:</p> <ol style="list-style-type: none"> <li>1. Calculate the relative tobacco price by dividing the tobacco price index (the change in price of tobacco since 1980) by the retail price index (the change in price of all items since 1980)</li> <li>2. Calculate relative disposable income using the change in household disposable income since 1980, adjusting for the growth in the UK population aged 18 and over</li> <li>3. Calculate affordability of tobacco by dividing relative disposable income by the relative tobacco price.</li> </ol> <p>For full details see the NHS Information Centre report <i>Statistics on Smoking: England, 2011</i><sup>1</sup>.</p>
<b>How accurate and complete will the data be for this indicator? Are there any problems, notes for interpretation or warnings with the data in relation to this indicator?</b>	<ul style="list-style-type: none"> <li>• The relative price of tobacco was calculated by the NHS Information Centre<sup>1</sup> using the Consumer Prices Index (CPI) and Retail Prices Index (RPI), which are produced by the Office for National Statistics. These measures of inflation are estimates, based on the prices of products sampled randomly from retail outlets. Further details are available from the Office for National Statistics website<sup>2</sup>.</li> <li>• The measure of disposable income used by the NHS Information Centre<sup>1</sup> takes into account households' payment of taxes and selected other outgoings, adjusting for inflation.</li> <li>• This measure of affordability does not take into account the effect of smuggled tobacco. As described in <i>Tobacco and health in Wales</i>, smuggled tobacco provides a cheaper alternative to shop-bought products.</li> </ul>
<b>References</b>	<p>1. NHS Information Centre. <i>Statistics on Smoking: England, 2011</i>. UK; 2011. Available at <a href="http://www.ic.nhs.uk/pubs/smoking11">www.ic.nhs.uk/pubs/smoking11</a> [Accessed 21/03/2012]</p> <p>2. Office for National Statistics. <i>Quality and Methodology</i></p>

	<p><i>Information: Consumer Prices Index and Retail Prices Index.</i> UK;2011. Available at <a href="http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/economic-statistics/quality-and-methodology-information-for-cpi-and-rpi.pdf">http://www.ons.gov.uk/ons/guide-method/method-quality/quality/quality-information/economic-statistics/quality-and-methodology-information-for-cpi-and-rpi.pdf</a> [Accessed 25/04/2012]</p>
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## 5 Main data sources

### 5.1 Welsh Health Survey

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>• The Welsh Health Survey provides estimates of health status, health related lifestyle and health service use at national level, for population sub-groups (such as age, sex and socio-economic group), and for local authorities / health boards.</li> <li>• The current survey format was established in 2003/04, allowing comparisons over time for a number of key measures. From 2007 the survey ran on a calendar year basis, and collected more detailed data for children.</li> <li>• The information presented in the <i>Tobacco and health in Wales</i> report relates to Welsh Health Survey data taken between 2003/04 and 2010.</li> </ul>
<b>How are the data collected?</b>	<ul style="list-style-type: none"> <li>• The Welsh Health Survey is based on a representative sample of adults (aged 16 and over) living in private households in Wales (plus some information for children living in those households), selected using a random sample from the Post Office's Postcode Address File<sup>1</sup>.</li> <li>• Information is collected on households through a short interview and on individuals through a self-completion questionnaire.</li> <li>• A sample of around 15,000 adults and 3,000 children is aimed for per year, to include a minimum of 600 adults from each local authority area.</li> <li>• The Welsh Health Survey achieves high response rates - in 2010, 79 per cent of eligible households took part, and self-completion questionnaires were obtained for 83 per cent of adults and 80 per cent of children in participating households<sup>1</sup>.</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b>	<ul style="list-style-type: none"> <li>• The Welsh Health Survey is the most comprehensive survey into the health of the population across Wales. However, as with all surveys of a sample of the population it is therefore subject to sampling error; that is, the difference between the estimates derived from the sample and the true population values. The technical report accompanying the 2010 survey<sup>2</sup> provides estimates of its accuracy; for example, the estimated smoking prevalence for Wales in the 2010 survey is 23.1 per cent, and the 95 per cent confidence interval is 22.3 per cent to 23.9 per cent.</li> <li>• As the survey is based on self-reported data, the results of the survey reflect people's honesty about their smoking behaviour. This may lead to the overall estimate of smoking prevalence being an underestimate rather than an overestimate of the true percentage of people who smoke, since people may prefer not to report themselves as smokers due its perceived social acceptability.</li> <li>• The survey results are weighted to take account of unequal selection probabilities and for differential non-response, i.e. to ensure that the age and sex distribution of the responding sample matches that of the population of Wales.</li> </ul>

	<ul style="list-style-type: none"> <li>• The larger sample size of the Welsh Health Survey (approx 15,000 adult Wales residents per year) means that its estimates of smoking prevalence are likely to be more accurate than those from the General Lifestyle Survey (approx 1,000).</li> <li>• The Welsh Health Survey does not include adults living in institutional settings such as care homes. Where smoking prevalence is particularly high in such settings, for example in psychiatric units or prisons, the omission of these populations may serve to underestimate the overall smoking prevalence within an area.</li> </ul>
<b>Who manages the data?</b>	The data is owned and managed by the Welsh Government. NatCen Social Research ( <a href="http://www.natcen.ac.uk">www.natcen.ac.uk</a> ) conducts the survey on behalf of the Welsh Government.
<b>Where can you get hold of the data?</b>	Welsh Health Survey results are available at: <a href="http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en">http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en</a>
<b>References</b>	<ol style="list-style-type: none"> <li>1. Welsh Government. <i>Welsh Health Survey Quality Report</i>. Cardiff: WG; 2011. Available at: <a href="http://wales.gov.uk/docs/statistics/2012/120116healthqualityen.pdf">http://wales.gov.uk/docs/statistics/2012/120116healthqualityen.pdf</a> [Accessed 11<sup>th</sup> May 2012]</li> <li>2. Sadler et al. <i>Welsh Health Survey 2010 Technical Report</i>. National Centre for Social Research; 2011. Available at <a href="http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en">http://wales.gov.uk/topics/statistics/theme/health/health-survey/results/?lang=en</a> [Accessed 8<sup>th</sup> May 2012]</li> </ol>



## 5.2 General Lifestyle Survey

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>The General Lifestyle Survey is a multi-purpose continuous survey that collects information on a range of topics from people living in private households in Great Britain.</li> <li>The information presented in <i>Tobacco and health in Wales</i> is based on the most recent 2010 survey, plus historic survey data showing the trend in smoking prevalence.</li> </ul>
<b>How are the data collected?</b>	<ul style="list-style-type: none"> <li>The General Lifestyle Survey is based on a representative sample of adults (aged 16 and over) living in private households in Great Britain (plus some information for children living in those households).</li> <li>Demographic and health information is also collected about children in the household.</li> <li>Information is collected on households through a short interview and on individuals through a self-completion questionnaire.</li> <li>Topics include: smoking; drinking, health; households, families and people; housing and consumer durables; marriage and cohabitation; occupational and personal pension schemes.</li> <li>In 2010, 7,960 households in Great Britain took part in the survey and around 15,000 interviews were conducted with adults aged 16 and older. The household response rate was 72 per cent<sup>1</sup>.</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b>	<ul style="list-style-type: none"> <li>The General Lifestyle Survey is a survey of a sample of the population rather than a full count and is therefore subject to sampling error; that is, the difference between the estimates derived from the sample and the true population values. The technical report accompanying the 2010 survey<sup>2</sup> provides estimates of its accuracy; for example, the estimated smoking prevalence for the UK in the 2010 survey is 20.3 per cent, and the 95 per cent confidence interval is 19.3 per cent to 21.4 per cent.</li> <li>As the survey is based on self-reported data, the results of the survey reflect people's honesty about their smoking behaviour. This may lead to the overall estimate of smoking prevalence being an underestimate rather than an overestimate of the true percentage of people who smoke, since people may prefer not to report themselves as smokers due its perceived social acceptability.</li> <li>The survey results are weighted to take account of unequal selection probabilities and for differential non-response i.e. to ensure that the age and sex distribution of the responding sample matches that of the population.</li> <li>The smaller sample size of General Lifestyle Survey (approx 1,000 Wales residents per year) means that its estimates of smoking prevalence are likely to be less accurate than those from the Welsh Health Survey (approx 15,000).</li> </ul>
<b>Who manages the data?</b>	The Office for National Statistics (ONS)
<b>Where can you</b>	General Lifestyle Survey results are available at:

<b>get hold of the data?</b>	<a href="http://www.ons.gov.uk/ons/rel/ghs/general-lifestyle-survey/2010/index.html">http://www.ons.gov.uk/ons/rel/ghs/general-lifestyle-survey/2010/index.html</a>
<b>References</b>	<p>1. Office for National Statistics. <i>General Lifestyle Survey Overview: A report on the 2010 General Lifestyle Survey</i>. Newport: ONS; 2012. Available at: <a href="http://www.ons.gov.uk/ons/rel/ghs/general-lifestyle-survey/2010/general-lifestyle-survey-overview-report-2010.pdf">http://www.ons.gov.uk/ons/rel/ghs/general-lifestyle-survey/2010/general-lifestyle-survey-overview-report-2010.pdf</a> [Accessed 11<sup>th</sup> May 2012]</p> <p>2. Office for National Statistics. <i>General Lifestyle Survey: Technical Appendices 2010</i>. ONS; 2012. Available at <a href="http://www.ons.gov.uk/ons/rel/ghs/general-lifestyle-survey/2010/index.html">http://www.ons.gov.uk/ons/rel/ghs/general-lifestyle-survey/2010/index.html</a> [Accessed 8<sup>th</sup> May 2012]</p>

### 5.3 Welsh Index of Multiple Deprivation

<p><b>What does the data tell you?</b></p>	<ul style="list-style-type: none"> <li>• The Welsh Index of Multiple Deprivation (WIMD) is the official measure of relative deprivation at small area level in Wales<sup>1</sup>.</li> <li>• WIMD is made up of eight separate domains of deprivation: income; employment; health; education; housing; access to services; environment; and community safety.</li> <li>• WIMD is used to give an overall deprivation rank for each of the 1,896 lower super output areas (LSOA) in Wales and to give ranks for the separate deprivation domains for each of the LSOAs.</li> <li>• The 2008 and 2011 versions of WIMD are both used within the <i>Tobacco and health in Wales</i> report.</li> </ul>
<p><b>How are the data collected?</b></p>	<ul style="list-style-type: none"> <li>• Deprivation ranks are calculated for each LSOA in Wales. One area has a higher deprivation rank than another if the proportion of people living there that are classed as deprived is higher. The most deprived area is ranked as one and the least deprived area is ranked as 1,896.</li> <li>• Each of the eight domains are based on a range of different indicators. The domain indices are weighted and combined into an overall index of multiple deprivation. The weighting is the adjustment of the contribution of the domain indices make to the overall index when they are combined. Income and employment are classed as the most important indicators and are given the biggest weighting in the overall index.</li> <li>• To obtain deprivation fifths geographical areas are ranked from highest to lowest by the deprivation rank and then split into five equal groups, ranging from least deprived to most deprived fifth.</li> </ul>
<p><b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b></p>	<ul style="list-style-type: none"> <li>• Not everyone living in a deprived area is deprived and not all deprived people live in deprived areas. An area itself is not deprived, it is the circumstances and lifestyle of people who are living there that affects its deprivation ranks.</li> <li>• The WIMD cannot tell you how much more deprived one LSOA is than another. If one area is ranked as the 100th most deprived and another area as the 300th most deprived, you cannot say that one area is three times more deprived than the other.</li> <li>• Deprivation ranks cannot be compared with scores from a previous index.</li> <li>• The WIMD ranks cannot be compared with those from deprivation indices of other UK countries.</li> <li>• There are no official Local Authority scores.</li> <li>• WIMD is an ecological measure whereas individuals within an area (LSOA in this instance) may vary.</li> <li>• The overall WIMD index includes a health measure and so it can be argued that assessing health experiences against WIMD can have a circular effect.</li> <li>• Unlike measures of material deprivation some of the factors do not relate directly to material deprivation e.g. access to services.</li> <li>• It is important to note that low deprivation does not equate to</li> </ul>

	affluence.
<b>Who manages the data?</b>	Welsh Government's Statistical Directorate and the Local Government Data Unit (Wales)
<b>Where can you get hold of the data?</b>	The Welsh Government website is available at: <a href="http://wales.gov.uk/topics/statistics/theme/wimd/wimd2011/;jsessionid=vtp9PtQGt7KVnyjQBKmBbGF57R2yPK1f3FVCvyb6c5c9PdTdct2j!-587213559?lang=en">http://wales.gov.uk/topics/statistics/theme/wimd/wimd2011/;jsessionid=vtp9PtQGt7KVnyjQBKmBbGF57R2yPK1f3FVCvyb6c5c9PdTdct2j!-587213559?lang=en</a>
<b>References</b>	1. Welsh Government. <i>Welsh Index of Multiple Deprivation 2011: Technical Report</i> . Cardiff: WG; 2011. Available at: <a href="http://wales.gov.uk/docs/statistics/2011/111222wimd11techen.pdf">http://wales.gov.uk/docs/statistics/2011/111222wimd11techen.pdf</a> [Accessed 11 <sup>th</sup> May 2012]

## 5.4 Infant Feeding Survey

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>• The Infant Feeding Survey has been run in the UK every five years since 1975, providing estimates of the incidence, prevalence and duration of breastfeeding and other feeding practices adopted by mothers from the birth of their baby up to around ten months.</li> <li>• The survey also collects information about the smoking and drinking behaviour of mothers before, during and after pregnancy.</li> <li>• The information presented in <i>Tobacco and health in Wales</i> is based on mothers' smoking behaviour from the 2005 survey and the early results from the 2010 survey<sup>1</sup>.</li> </ul>
<b>How are the data collected?</b>	<ul style="list-style-type: none"> <li>• The survey consists of a longitudinal design with data being collected in three stages. The first stage is collected when the babies are approximately 6-10 weeks old, the second when they are 4-6 months old and the third when they are 8-10 months old.</li> <li>• The data collection period was September to December 2010 for the findings contained in the <i>Infant Feeding Survey: Early Results</i><sup>1</sup>.</li> <li>• The results presented in the <i>Early Results</i> are based on Stage 1 of the survey only and cover two key topics; the initial incidence of breastfeeding and smoking during pregnancy.</li> <li>• The Stage 1 questionnaire was 150 questions in length and the estimated completion time was 25-30 minutes.</li> <li>• The fieldwork procedures used in 2010 were broadly the same as in previous surveys, however, for the first time in 2010, mothers could respond online.</li> <li>• For the 2010 survey, a total of 649 mothers chose to complete the Stage 1 survey online and 15,075 completed a paper questionnaire. The overall response rate for the first stage of the 2010 survey was 52 per cent (15,724 mothers)<sup>1</sup>.</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data</b>	<ul style="list-style-type: none"> <li>• Since the data are based on a survey of a sample of mothers, there is a potential for non-response bias i.e. there could be a systematic difference between the answers from people who respond to the survey and people who do not.</li> <li>• Weighting was applied to the Infant Feeding Survey results to try and correct for non-response, e.g. younger and more deprived mothers were historically found to be less likely to respond<sup>1</sup>.</li> <li>• The NHS Information Centre reports that all data have been subject to rigorous checks through all stages of data preparation<sup>2</sup>.</li> <li>• Data in the report is comparable to every survey since 1980.</li> <li>• 2005 was the first year that separate samples were drawn for England and Wales, which allow the results for the two countries to be analysed separately and can be compared between 2005 and 2010<sup>2</sup>.</li> <li>• It should be noted that in Wales, age of mother population data was only available until the end of September (rather than until the 17th of October which was the end of the sampling period) so</li> </ul>

	the eight weeks of data which are available have been used as a proxy for the 10 weeks which would have been ideal <sup>1</sup> .
<b>Who manages the data?</b>	NHS Information Centre for Health and Social Care (2010 survey conducted by IFF Research).
<b>Where can you get hold of the data?</b>	Infant Feeding Survey results are available at: <a href="http://www.ic.nhs.uk/ifs">http://www.ic.nhs.uk/ifs</a>
<b>References</b>	<p>1. NHS Information Centre. 2011. <i>Infant Feeding Survey 2010: Early Results</i>. Available at <a href="http://www.ic.nhs.uk/pubs/infantfeeding10">http://www.ic.nhs.uk/pubs/infantfeeding10</a> [Accessed 01/06/2012]</p> <p>2. NHS Information Centre. 2011. <i>Infant Feeding Survey 2010: Early Results. Data Quality Statement</i>. Available at <a href="http://www.ic.nhs.uk/pubs/infantfeeding10">http://www.ic.nhs.uk/pubs/infantfeeding10</a> [Accessed 01/06/2012]</p>

## 5.5 Health Behaviour in School-aged Children

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>• The Health Behaviour in School-aged Children (HBSC) survey is a cross-national research study conducted in collaboration with the World Health Organisation (WHO) Regional Office for Europe<sup>1</sup>.</li> <li>• The study aims to gain new insight into, and increase our understanding of young people's health and well-being, health behaviours and their social context<sup>1</sup>.</li> <li>• The information presented in <i>Tobacco and health in Wales</i> is based on the most recent 2009/10 HBSC survey, plus historic survey data showing the trend in smoking prevalence.</li> </ul>
<b>How are the data collected?</b>	<ul style="list-style-type: none"> <li>• HBSC was initiated in 1982 by researchers from three countries and was subsequently adopted by the WHO as a collaborative study. There are now 43 participating countries and regions<sup>1</sup>.</li> <li>• The first cross-national survey was conducted in 1983/84, the second in 1985/86 and since then data collection has been carried out every four years using a common research protocol. The most recent survey, the eighth in the series, was conducted in 2009/10<sup>2</sup>.</li> <li>• In 2009/10, 39 countries across Europe and North America drew national samples of 11, 13, and 15-year olds in accordance with the study protocol. In the main, fieldwork took place between October 2009 and May 2010. More than 200,000 young people took part in the survey and approximately 1,500 respondents in each age group were targeted in each country. Pupils were sampled from schools and/or school classes and data were collected by self-administered questionnaire<sup>2</sup>.</li> <li>• The HBSC average presented in this report is based on equal weighting of each region, regardless of differences in achieved sample size.</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b>	<ul style="list-style-type: none"> <li>• There is a lack of systematic data collection systems in relation to young people aged 11-15 years in most member states of the WHO European region. HBSC goes some way to filling this gap, providing a key insight into the health-related behaviours of young people.</li> <li>• The questionnaire is developed in English and is subsequently translated into national and sub-national languages. Specific guidance is provided for translators on the underlying concepts being addressed. Questionnaires are then translated back into English for checking but it is important to acknowledge that some cross-national variation in the way that students understand certain terms may remain<sup>2</sup>.</li> <li>• In 2009/10, a survey of around 9,200 secondary school children in Wales (years 7 to 11) was carried out through interviewer administered paper self-completion sessions in classroom lessons. The response rate for schools was 61 per cent, with 91 per cent of individual pupils responding. From this survey, answers from children in years 7, 9 and 11 (around 5,500 in total) were then submitted to the international study (figure 15) for consistency with the age groups used therein.</li> <li>• The survey is based on a sample rather than the whole</li> </ul>



	<p>population of secondary school children aged 11-16 years old in Wales and, therefore, care must be taken when interpreting the results. It is also noteworthy that as results are self-reported, some of the findings may be over- or under-estimates.</p> <ul style="list-style-type: none"> <li>• Two types of weights were applied to the survey data for Wales: <i>design weights</i> were applied to correct for different selection probabilities of pupils; <i>non-response weights</i> were applied to correct for different levels of response among particular groups<sup>3</sup>.</li> <li>• The Wales 2009/10 survey was designed to report results at the national rather than health board level. The health board estimates presented in <i>Tobacco and Health in Wales</i> should therefore be interpreted with some caution. Further information on the margin of error applicable to the survey results can be found in the document referenced below<sup>3</sup>.</li> <li>• Pupils who were absent on the day of the survey were not followed up. This may lead to smoking prevalence being underestimated, if pupils who were absent were also more likely to be smokers.</li> <li>• Due to cultural sensitivities some countries were not able to collect data on certain topic areas; for example, Turkey and the United States did not collect data on sexual health<sup>2</sup>.</li> </ul>
<b>Who manages the data?</b>	International HBSC research network
<b>Where can you get hold of the data?</b>	HBSC publications are available at <a href="http://www.hbsc.org/">http://www.hbsc.org/</a>
<b>References</b>	<ol style="list-style-type: none"> <li>1. Health Behaviour in School-aged Children [online]. 2012. Available at: <a href="http://www.hbsc.org/about/index.html">http://www.hbsc.org/about/index.html</a> [Accessed 21st May 2012]</li> <li>2. Currie C et al. eds. <i>Social determinants of health and well-being among young people. Health Behaviour in School-aged Children (HBSC) study: international report from the 2009/2010 survey</i>. Copenhagen: WHO Regional Office for Europe, 2012. Available at: <a href="http://www.euro.who.int/_data/assets/pdf_file/0003/163857/Social-determinants-of-health-and-well-being-among-young-people.pdf">http://www.euro.who.int/_data/assets/pdf_file/0003/163857/Social-determinants-of-health-and-well-being-among-young-people.pdf</a> [Accessed 21st May 2012]</li> <li>3. Welsh Assembly Government. <i>Health Behaviour in School-aged Children: initial findings from the 2009/10 survey in Wales</i>. Cardiff: WG; 2011. Available at: <a href="http://wales.gov.uk/docs/caecd/research/110328healthbehaviouren.pdf">http://wales.gov.uk/docs/caecd/research/110328healthbehaviouren.pdf</a> [Accessed 21st May 2012]</li> </ol>

## 5.6 Stop Smoking Wales

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>• Stop Smoking Wales (SSW) is a national smoking cessation service which is managed by Public Health Wales NHS Trust.</li> <li>• Trained advisors deliver an evidence-based six-week behavioural support programme to smokers who want to quit, usually in a group setting, across more than 200 sites in Wales.</li> <li>• The information presented in <i>Tobacco and health in Wales</i> relates to Stop Smoking Wales activity between 2005 and 2011.</li> <li>• Data collected include smokers who were: given an appointment; attended assessment; attended treatment; quit at four weeks (self-reported &amp; carbon monoxide-validated).</li> </ul>
<b>How are the data collected?</b>	<ul style="list-style-type: none"> <li>• SSW provide support and treatment (through a six-week behavioural support programme) to any person in Wales who wishes to stop smoking. Any smoker who wishes to enquire about the SSW service can do so via a freephone number (0800 085 2219). Such an enquiry will result in the creation of a unique record for each contact, including details of the person's address.</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b>	<ul style="list-style-type: none"> <li>• The number of people using the Stop Smoking Wales service is logged using an online database, and the figures recorded are likely to be subject to a small amount of error.</li> <li>• These contacts represent only the number of smokers who have made an initial contact with the service. They do not represent the number of people who have undertaken the SSW smoking cessation programme. Approximately half of all contacts progress to the first step of the programme: attendance at an information session.</li> <li>• These contacts do not represent the total number of smokers, the total number of smokers who wish to quit or the total number of smokers who try to quit, via SSW or other means.</li> </ul>
<b>Who manages the data?</b>	Stop Smoking Wales, part of Public Health Wales NHS Trust
<b>Where can you get hold of the data?</b>	The 2010/11 SSW annual report is available at <a href="http://www.stopsmokingwales.com/sitesplus/documents/1006/SSW%20Annual%20Report%20Final%202010-11%20ENGLISH.pdf">http://www.stopsmokingwales.com/sitesplus/documents/1006/SSW%20Annual%20Report%20Final%202010-11%20ENGLISH.pdf</a>

## 5.7 Mid-year population estimates

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>• Mid-year population estimates (as at 30 June each year) provide an estimate of the resident population of an area.</li> <li>• The analysis presented in the <i>Tobacco and health in Wales</i> report uses population estimates between 2001 and 2010.</li> </ul>
<b>How are the data collected?</b>	<p>Population estimates are based on births, deaths and an estimate of migration since the last census. They are produced using a well-established demographic approach called the cohort component method by the Office for National Statistics (ONS). In simple terms, population estimates are calculated by:</p> <ul style="list-style-type: none"> <li>• Taking the previous years' population estimate</li> <li>• Taking out special population groups (armed forces, prisoners and school boarders)</li> <li>• Adding a year to every person's age</li> <li>• Adding births and subtracting deaths</li> <li>• Allowing for inward and outward migration</li> <li>• Adding back in the special population groups (armed forces, prisoners and school boarders).</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b>	<ul style="list-style-type: none"> <li>• The estimated resident population of an area includes all people who usually live there, whatever their nationality<sup>1</sup>.</li> <li>• Members of the UK and non-UK armed forces stationed in the UK are included<sup>1</sup>.</li> <li>• UK forces stationed outside the UK are excluded<sup>1</sup>.</li> <li>• Students are taken to be resident at their term time address<sup>1</sup>.</li> <li>• The estimates include long term international migrants (defined as somebody who changes his or her country of usual residence for a period of at least one year)<sup>1</sup>.</li> <li>• The estimates do not include short term migrants (people who come to or leave the UK for less than a year)<sup>1</sup>.</li> <li>• The census and therefore mid-year population estimates are thought to underestimate the population in some areas e.g. areas of multi-occupancy housing.</li> <li>• ONS have a long-term programme of work on improving migration and population statistics. In May 2010 ONS released revised sub-national mid-year estimates 2002-2008 to reflect improved methods for measuring migration<sup>2</sup>.</li> <li>• Full guidance on the methodology used by ONS to calculate population estimates can be accessed at:  <a href="http://www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/pop-ests/index.html">www.ons.gov.uk/ons/guide-method/method-quality/specific/population-and-migration/pop-ests/index.html</a> </li> </ul>
<b>Who manages the data?</b>	Office for National Statistics (ONS)
<b>Where can you get hold of the data?</b>	Office for National Statistics website available at: <a href="http://www.statistics.gov.uk/hub/population/population-change/population-estimates">www.statistics.gov.uk/hub/population/population-change/population-estimates</a>
<b>References</b>	1. Office for National Statistics. <i>Topic guide to: Population Estimates</i>

	<p>– <i>Technical Data</i> [Online]. 2011. Available at: <a href="http://www.statistics.gov.uk/hub/population/population-change/population-estimates">www.statistics.gov.uk/hub/population/population-change/population-estimates</a> [Accessed 11<sup>th</sup> May 2012].</p> <p>2. Office for National Statistics. <i>Improvements to 2008 Migration and Population Statistics</i> [Online]. Available at: <a href="http://www.ons.gov.uk/ons/guide-method/method-quality/imps/msi-programme/communication/improvements-mid-2008/index.html">www.ons.gov.uk/ons/guide-method/method-quality/imps/msi-programme/communication/improvements-mid-2008/index.html</a> [Accessed 11<sup>th</sup> May 2012].</p>
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## 5.8 Comparative Analysis System for Prescribing Audit

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>Comparative Analysis System for Prescribing Audit (CASPA) is a Windows application for analysis of prescribing trends in primary care.</li> <li>CASPA can be used to monitor prescription expenditure for individual medicines or groups of medicines.</li> <li>Information is available at local authority, health board and national level to relevant users.</li> <li>The information presented in the <i>Tobacco and health in Wales</i> report relates to the annual NHS primary care prescribing expenditure for Wales on pharmacotherapy for smoking cessation, 2006-11.</li> </ul>
<b>How are the data collected?</b>	<ul style="list-style-type: none"> <li>NHS prescriptions dispensed in community pharmacies in Wales are sent to Prescribing Services on a monthly basis.</li> <li>The items on each prescription are entered into a database using unique drug codes which vary depending on the type and strength of drug.</li> <li>This data is processed by Prescribing Services and anonymised information is uploaded onto CASPA.</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b>	<ul style="list-style-type: none"> <li>Many drug codes are entered manually by a team of coders which may lead to some coding errors. However, quality assurance checks are carried out on a monthly basis to ensure that data entered onto the system is accurate.</li> <li>NRT supplied through NHS enhanced community pharmacy stop smoking services in Wales is not included in the analysis. It was not possible on a Wales-wide basis to separate the costs of NRT products supplied from professional costs associated with community pharmacy services.</li> <li>People living in Wales but registered with GPs in England will be covered by this data if the medicine was dispensed in community pharmacies in Wales, but not if it was dispensed in England.</li> <li>The desktop version of CASPA is being phased out over the next year and replaced by the online version CASPA.Net. The benefits of the new version include centralised data, meaning no requirements to import monthly data; sharing of User Defined Groups; and access to six years of data.</li> </ul>
<b>Who manages the data?</b>	NHS Wales Shared Services Partnership (Prescribing Services)
<b>Where can you get hold of the data?</b>	<p>CASPA data can be downloaded from the Prescribing Services website by NHS users:</p> <p><a href="http://howis.wales.nhs.uk/sites3/page.cfm?orgid=428&amp;pid=27954">http://howis.wales.nhs.uk/sites3/page.cfm?orgid=428&amp;pid=27954</a> (NHS staff only)</p>

## 5.9 Patient Episode Database for Wales

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>The Patient Episode Database for Wales (PEDW) is managed by NHS Wales Informatics Service (NWIS) and comprises records of all episodes of inpatient and daycase activity in NHS Wales hospitals. Hospital activity for Welsh residents treated in other UK nations (primarily England) is also included.</li> <li>The information presented in <i>Tobacco and health in Wales</i> is based on admissions to hospital between 2001 and 2010 by area of residence.</li> </ul>
<b>How are the data collected?</b>	<ul style="list-style-type: none"> <li>The data are collected and coded at each hospital. The records are then electronically transferred to NWIS, where they are validated and merged into the main database.</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b>	<ul style="list-style-type: none"> <li>Postcodes are provided for the large majority of records. The postcodes are used to assign the local authority and health board areas of residence for each record.</li> <li>Outpatient activity is not included in this dataset.</li> <li>The data held in PEDW is of interest to public health services since it can provide information regarding both health service utilisation and also the incidence and prevalence of disease. However, since PEDW was created to track hospital activity from the point of view of payments for services, rather than epidemiological analysis, the use of PEDW for public health work is not straightforward. For example: <ul style="list-style-type: none"> <li>Counts will vary depending on the number of diagnoses fields used e.g. primary only, all fields.</li> <li>there are a number of different 'currencies' that can be counted in PEDW, such as episodes, admissions, discharges, patients and potential limitations associated with the use of each of these.</li> </ul> </li> <li>Coding practices vary. In particular, coding practices for recording secondary diagnoses is likely to vary for different hospitals. This makes regional variations more difficult to interpret. The validation process led by the Corporate Health Improvement Programme and implemented by NWIS is aiming to address some of these inconsistencies.</li> </ul>
<b>Who manages the data?</b>	NHS Wales Informatics Service
<b>Where can you get hold of the data?</b>	<ul style="list-style-type: none"> <li>Annual PEDW data tables are published here: <a href="http://www.infoandstats.wales.nhs.uk/page.cfm?pid=41010&amp;orgid=869">http://www.infoandstats.wales.nhs.uk/page.cfm?pid=41010&amp;orgid=869</a></li> <li>Health Maps Wales is an online tool produced by NWIS which presents a range of information, including hospital admissions data from PEDW: <a href="http://www.infoandstats.wales.nhs.uk/page.cfm?orgid=869&amp;pid=40976">http://www.infoandstats.wales.nhs.uk/page.cfm?orgid=869&amp;pid=40976</a></li> <li>Contact details for NHS Wales Informatics Service can be found on their website: <a href="http://www.wales.nhs.uk/nwis/page/52504">http://www.wales.nhs.uk/nwis/page/52504</a></li> </ul>

## 5.10 Annual District Death Extract

<b>What does the data tell you?</b>	<ul style="list-style-type: none"> <li>The Annual District Death Extract (ADDE) is a dataset containing each individual death of a resident that is registered in the particular year.</li> <li>The information presented in <i>Tobacco and health in Wales</i> relates to deaths registered between 2001 and 2010.</li> </ul>
<b>How are the data collected?</b>	<ul style="list-style-type: none"> <li>Individual records for death registrations are sent on a weekly basis from the Registrars' offices across England and Wales to the Office for National Statistics (ONS). The ONS collates and validates the data. The data are based on the underlying cause of death e.g. if an individual dies from pneumonia but had been made vulnerable to that disease by end-stage cancer, then cancer (rather than pneumonia) is recorded as the underlying cause of death<sup>2</sup>.</li> </ul>
<b>How accurate and complete will the data be? Are there any problems, notes for interpretation or warnings with the data?</b>	<ul style="list-style-type: none"> <li>It is a legal requirement to register a death and so the ADDE provides a reliable and complete data source.</li> <li>Cause of death is based on the medical certificate of cause of death. This is completed by the certifying doctor for about three quarters of deaths and by a coroner for the remainder. Most of the deaths certified by a coroner do not involve an inquest or any suspicion of violence, but are referred to the coroner because they were sudden and unexpected, or because there was no doctor in attendance during the deceased's last illness. There will be a long delay in registering a small number of deaths for which a coroner's ruling is required e.g. suicide, homicide, undetermined intent.</li> <li>It is important to note that with many thousands of doctors writing certificates, the differences in their training, habits and knowledge mean that there will inevitably be variations in the quality of medical certificates of cause of death<sup>1</sup>.</li> <li>The cause of death is easier to define in younger people. Older people are far more likely to have many underlying health conditions, making it more difficult to determine the underlying cause of death<sup>2</sup>.</li> </ul>
<b>Who manages the data?</b>	Office for National Statistics (ONS)
<b>Where can you get hold of the data?</b>	<p>Summary data are available from:</p> <ul style="list-style-type: none"> <li>The Office for National Statistics website: <a href="http://www.statistics.gov.uk/hub/health-social-care/health-of-the-population/causes-of-death/index.html">www.statistics.gov.uk/hub/health-social-care/health-of-the-population/causes-of-death/index.html</a></li> <li>The Welsh Assembly Government website: <a href="http://www.statswales.wales.gov.uk/ReportFolders/reportFolders.aspx">www.statswales.wales.gov.uk/ReportFolders/reportFolders.aspx</a></li> </ul>
<b>References</b>	<ol style="list-style-type: none"> <li>Office for National Statistics. <i>Mortality Statistics: Deaths registered in England and Wales (Series DR), 2010</i>. Newport: ONS 2011. Available at: <a href="http://www.ons.gov.uk/ons/publications/re-metadata.html?edition=tcm%3A77-230730&amp;next">www.ons.gov.uk/ons/publications/re-metadata.html?edition=tcm%3A77-230730&amp;next</a> [Accessed 11<sup>th</sup> May 2012].</li> <li>Rooney C, Smith S. Implementation of ICD-10 for mortality data</li> </ol>



	<p>in England and Wales from January 2001. <i>Health Statistics Quarterly</i> 2000; 8:41-69. Available at:  <a href="http://www.ons.gov.uk/ons/rel/hsg/health-statistics-quarterly/no--8--winter-2000/implementation-of-icd-10-for-mortality-data-in-england-and-wales-from-january-2001.pdf">http://www.ons.gov.uk/ons/rel/hsg/health-statistics-quarterly/no--8--winter-2000/implementation-of-icd-10-for-mortality-data-in-england-and-wales-from-january-2001.pdf</a> [Accessed 11<sup>th</sup> May 2012].</p> <p>3. Gorina Y, Lentzner H. Multiple Causes of Death in Old Age. <i>Aging Trends</i> 2008; 9:1-9. Available at:  <a href="http://www.cdc.gov/nchs/data/ahcd/agingtrends/09causes.pdf">www.cdc.gov/nchs/data/ahcd/agingtrends/09causes.pdf</a> [Accessed 11<sup>th</sup> May 2012].</p>
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## 6 Glossary

### Age-standardised rate

- Age standardisation allows comparison of rates across different populations while taking account of the different age structures of those populations. Failure to take account of differing age structures can be very misleading when comparing rates in different populations. For example, in an area with a high proportion of older people, one would expect more people to die than in an area with a low proportion of older people. Without age standardisation, it would be difficult to compare the death rates in two such areas.

### Attributable fractions

- Attributable fractions are the proportions of all cases (e.g. deaths or hospital admissions) that are thought to be caused by a particular exposure, for example alcohol or smoking. Fractions are calculated for conditions where there is considered sufficient evidence of a causal relationship between the exposure and the disease or injury. In *Tobacco and health in Wales*, attributable fractions were calculated for deaths and hospital admissions in adults due to smoking, as well as hospital admissions in children due to second-hand smoke exposure.

### Confidence intervals (CIs)

- Confidence intervals are indications of the natural variation that would be expected around a rate and they should be considered when assessing or interpreting a rate. The size of the confidence interval is dependent on the number of events occurring and the size of the population from which the events came. Generally speaking, rates based on small numbers of events and small populations are likely to have wider confidence intervals. Conversely, rates based on large populations are likely to have narrower confidence intervals. In the *Tobacco and health in Wales* report we use 95 per cent confidence intervals. This represents a range of values that we can be 95 per cent confident contains the 'true' underlying rate.

### European age-standardised rate

- The European age-standardised rate represents the overall rate you would get if the population had the same age-structure as a theoretical standard European population (direct age-standardisation). In order to calculate this we apply the rates which occur in each age band to the new (standard) population structure. The measure only allows for comparison between rates which have been standardised; it is not a proportion or risk of an event occurring and does not, of itself, involve a comparison with rates across Europe. See *age-standardised rate* for further details.

### Fifths of deprivation

- Geographical areas are ranked from highest to lowest by deprivation score, using the Welsh Index of Multiple Deprivation, and then split into five groups of similar size, ranging from least deprived to most deprived fifth.

## Health board

- Health boards are the NHS bodies in Wales responsible for the health of the population within their geographical area. This includes planning, designing, developing and securing the delivery of primary, community, in-hospital care services and specialised services. There are seven health boards in Wales, changed from 22 local health boards and seven NHS Trusts previously.

## Lower Super Output Area [LSOA]

- Defined geographical area based on Census output areas with an average of 1,500 persons per LSOA. There are 1896 LSOAs in Wales, and the number of LSOAs varies widely between health boards.

## Mid-year estimates

- Annual estimates of the resident population produced by the Office for National Statistics, based on the Census and taking into account population change (births, deaths and migration). See section 5.7 for more information.

## National Statistics Socio-economic Classification (NS-SEC)

- The NS-SEC is an occupation-based classification created by the Office for National Statistics. Its aim is to help explain differences in social behaviour. Whereas deprivation indices such as WIMD are measured at the area level, which means that individuals living within the area can be mis-classified, the NS-SEC has the advantage of being measured at the household or individual level.

## Public Health Wales NHS Trust

- Public Health Wales was established as an NHS Trust on 1 October 2009. The Trust incorporates the functions and services previously provided by the National Public Health Service for Wales, the Wales Centre for Health, the Welsh Cancer Intelligence and Surveillance Unit and Screening Services Wales.

## Rate ratio

- The rate ratio used in *Tobacco and health in Wales* is the rate in the most deprived fifth divided by the rate in the least deprived fifth. See section 3.1 for more information regarding the interpretation of rate ratios.

## Statistical significance

- The online interactive spreadsheets supporting *Tobacco and health in Wales* show whether or not local authority and health board rates are statistically significantly different from the overall Wales rate. A result may be deemed statistically significant if it is considered unlikely to have occurred by chance alone. The basis for such judgements is a predetermined and arbitrary cut-off, usually taken as 5 per cent or 0.05. In some circumstances this cut-off may be lowered to 1 per cent, for example where there is a greater need for certainty over the safety of a drug or procedure. Statistical significance must not be confused with public health significance. A result may have public health significance whilst not being statistically significant and vice versa.

**Upper Super Output Area (USOA)**

- Defined geographical area based on Census output areas with an average of around 30,000 persons per USOA. There are 94 USOAs in Wales, and the number of USOAs varies between health boards.

**Welsh Index of Multiple Deprivation (WIMD)**

- WIMD is a measure of multiple deprivation at lower super output area level. A WIMD deprivation score is calculated using eight domains i.e. income, employment, health, education, access to services, housing, physical environment and community safety.