

# Tobacco and health in Wales

June 2012



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A **technical guide** explaining the data sources and methods used in this report, plus **interactive spreadsheets** containing additional data at health board and local authority level, are available at:

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

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## Foreword

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This report lays bare the impact of tobacco on health in Wales. Over half a century since Doll and Hill demonstrated the harmful effect of smoking on health, smoking continues to be the single greatest avoidable cause of death causing almost one in five deaths in Wales. Almost one in four adults continue to smoke in 2010 and over 27,500 admissions to hospital were due to smoking. One in five children are regularly exposed to indoor tobacco smoke causing around 500 children to be admitted to hospital each year.

Reducing smoking prevalence and exposure to second-hand smoke is a priority of *Our Healthy Future*, the public health strategic framework for Wales. A *Tobacco Control Action Plan* has now been developed. This has the key aim of reducing the prevalence of smoking in Wales to 16 per cent by 2020. The ban on smoking in enclosed public spaces introduced in 2007 has already begun to pay dividends as demonstrated by the significant reductions in exposure to second-hand smoke shown in this report. However, there are clear challenges. Some sections of society, such as those of lower socio-economic groups have shown little or no reduction in smoking prevalence in recent years.

Recent work by the Public Health Wales Observatory, *Measuring Inequalities: Trends in mortality and life expectancy*, highlighted the widening and unacceptable inequalities in health between the most deprived and least deprived areas of our country. *Fairer Health Outcomes for All* sets out the Welsh Government's strategy for reducing health inequities. This report reveals how smoking is estimated to cause around 30 per cent of the total inequality in death rates between the most and least deprived areas in Wales. To tackle these inequalities we must look beyond smoking itself, to the 'causes of the causes'. Differences in the prevalence of smoking can be attributed to social determinants of health such as education and employment. If we are to be successful in further reducing the prevalence of smoking in Wales we must target those wider social determinants.

Other countries have shown that with bold and sustained action, the prevalence of smoking can be reduced to the levels aspired to in the *Tobacco Control Action Plan*. Government, the health service and wider society must commit to realising this aspiration.

We congratulate our colleagues at Public Health Wales and the Welsh Government for producing the most comprehensive picture of tobacco and health in Wales to date. It shows how far we have come. It demonstrates how much further we need to go.



**Dr. Tony Jewell**  
Chief Medical Officer for Wales



**Professor Sir Mansel Aylward CB**  
Chair, Public Health Wales

## Key messages

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- Smoking continues to be the greatest single cause of avoidable mortality in Wales. In people aged 35 and over, smoking causes nearly one in five of all deaths and around one third of the inequality in mortality between the most and least deprived areas.
- Twenty-three per cent of adults described themselves as current smokers in 2010. This is considerably lower than in the 1970s, but the fall in rates has slowed down in recent years. Considerable efforts are therefore required to meet the Welsh Government's target of 16 per cent by 2020.
- Overall, smoking is more common in males than in females, although in children and young people the reverse is true. Rates of smoking in males aged 25-34 and 35-44 are particularly high (37 per cent and 31 per cent respectively) and have not reduced appreciably in the last seven years. Latest estimates suggest that around one in six girls aged 15-16 are regular smokers, compared to one in nine boys. Smokers in this age group reported starting at an average of just 12 years of age.
- Smoking rates are highest in the most deprived areas of Wales. More than 40 per cent of people who have never worked or are unemployed are current smokers, with no recent signs of this figure decreasing. Smoking rates in managerial and professional groups continue to fall. These trends are likely to contribute to widening health inequalities in the future.
- Around one in six females living in Wales smoke throughout pregnancy, the highest rate of all UK nations, though this has fallen since 2005. Older mothers and those in managerial and professional groups are most likely to give up smoking during pregnancy.
- The 2007 ban on smoking in enclosed public places has led to considerable falls in people's exposure to second-hand smoke. However, 39 per cent of children live in households where at least one adult is a current smoker, and 20 per cent report recent exposure to second-hand smoke in cars. Exposure is most likely in children of parents who are unemployed or in routine and manual occupations, and children living in more deprived areas are more likely than their less deprived peers to be admitted to hospital for diseases associated with second-hand smoke.
- In 2010, seven out of ten smokers reported that they would like to give up and around six out of ten smokers receiving support from Stop Smoking Wales reported success at the four-week point.
- Overall rates of death from smoking are falling, but socio-economic inequalities are widening due to faster falls in the least deprived parts of Wales than in the most deprived. Lung cancer mortality rates in females have risen in Wales and the UK over the last ten years, whereas in males they have fallen slightly. This is likely a reflection of the differences in the historical patterns of smoking between males and females in the late 20th century.
- Smoking is estimated to cause around 27,700 hospital admissions each year in Wales. This represents a considerable burden on the health service.
- Tobacco is around 30 per cent less affordable than in 1980, but the effectiveness of price as a control measure is diminished by continued access to smuggled products.
- Major reductions in smoking prevalence are achievable, given evidence from California and Singapore.

# 1 Introduction

The current impact of tobacco use on the health in Wales has its origins in the 20th century, which saw the rise and fall of the smoking epidemic in the UK as a whole. Men were already commonly using tobacco in the 1900s, when manufactured cigarettes were not yet widespread, and as figure 1 shows, consumption rose rapidly and reached a peak around the Second World War. In 1948, an estimated 80 per cent of men were tobacco users<sup>1</sup>. Having been considered socially unacceptable prior to the liberation of women associated with the Suffragette movement in the 1920s<sup>2</sup>, tobacco use in women started later than in men, with estimated prevalence reaching 45 per cent in 1966<sup>1</sup>.

The realisation in the 1950s and 1960s that smoking causes major harm to health, thanks in part to the long-term study of male British doctors carried out by Richard Doll and colleagues<sup>3</sup>, led to falling tobacco consumption in the UK in the latter part of the 20th century.

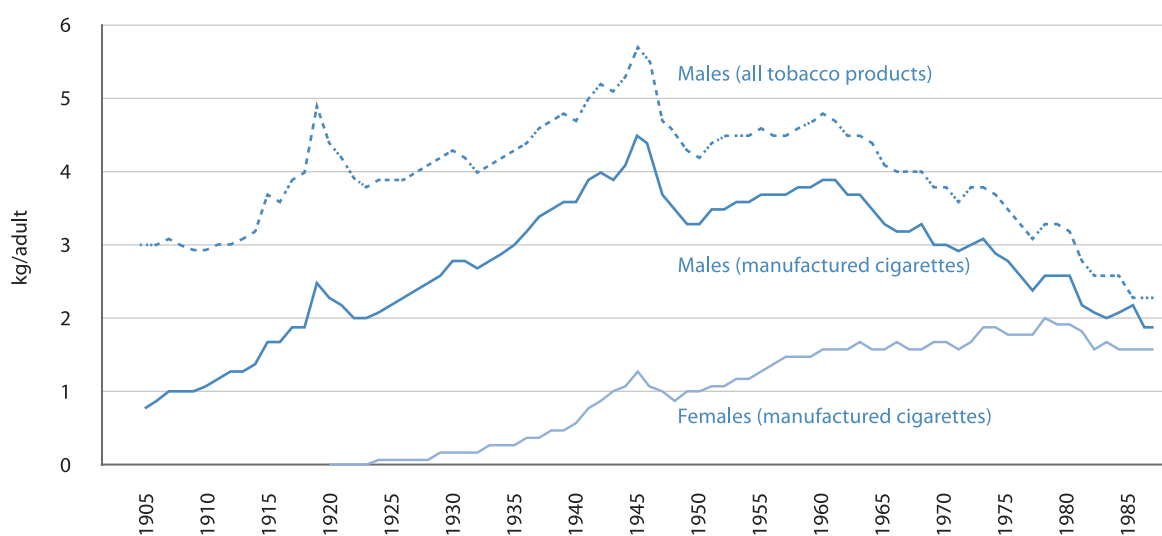
However, the impact of long-term smoking on the young adults of the 1960s and 1970s, when around half the population were tobacco users, continues to be visible in high rates of lung cancer and other smoking-related diseases today.

Furthermore, whilst great strides have been taken in the lowering of smoking prevalence to around one in four adults in Wales, and exposure to second-hand smoke has been reduced by the ban on smoking in enclosed public places in 2007, considerable challenges remain in the drive to stop young people starting to smoke and to help smokers to stop. Dependence on tobacco remains a serious form of drug addiction<sup>2</sup>, appearing to offer an escape from the stress of socio-economic deprivation whilst exacerbating it by draining income and harming health<sup>4</sup>. These challenges are recognised by *Our Healthy Future*<sup>5</sup>, Wales' current strategy for improving health, which made reducing levels of smoking one of its ten priority outcomes and advocated the development of the recently-published *Tobacco Control Action Plan for Wales*<sup>6</sup>.

This report provides a range of information to support the implementation of this action plan, updating *Smoking in Wales: Current Facts* which was published in 2007 by the Welsh Government and Wales Centre for Health. An accompanying technical guide detailing data sources, methods and caveats is available on the Public Health Wales Observatory website, along with interactive spreadsheets containing additional data.

Figure 1

Estimated annual consumption of tobacco products in UK males and females aged 15+, kilograms per adult, 1905-1987



Source: Tobacco Advisory Council<sup>1</sup>



## 2 The prevalence of tobacco use

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Manufactured filter cigarettes remain the most popular form of tobacco product in Great Britain. However, whereas 25 per cent of male smokers and 8 per cent of female smokers in 1998 reported using mainly hand-rolled cigarettes, these figures rose to 39 and 23 per cent respectively in 2010<sup>7</sup>. This may reflect the increased use of smuggled hand-rolling tobacco due to its substantially lower cost (see section 6).

In minority ethnic groups, different tobacco products are used more commonly than in the general population<sup>8</sup>. Smokeless tobacco comes in a variety of forms, including chewing tobacco, which a survey found to be particularly common in Bangladeshi women<sup>9</sup>. The packaging of these alternative forms of tobacco is less likely to have appropriate health warnings and their use is embedded in South Asian culture<sup>8</sup>, which presents considerable challenges to cessation services.

The smoking of waterpipes (also known as shisha), which originated in the Middle East and parts of Asia and Africa, is becoming more popular in Europe and can give a misleading impression of being a “safe” alternative to cigarettes since the smoke passes through water first<sup>10</sup>. According to the British Heart Foundation, a single puff of shisha is equivalent to inhaling the smoke from a whole cigarette<sup>11</sup>.

### 2.1 Adults

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This section analyses the smoking behaviour of adults (those aged 16 and over) and the prevalence amongst different population sub-groups. The information is taken from surveys where adults may or may not tell the truth about their smoking status. This could lead to bias in the results, for example if certain sub-groups are less likely to admit to smoking than others due to perceptions of social acceptability.

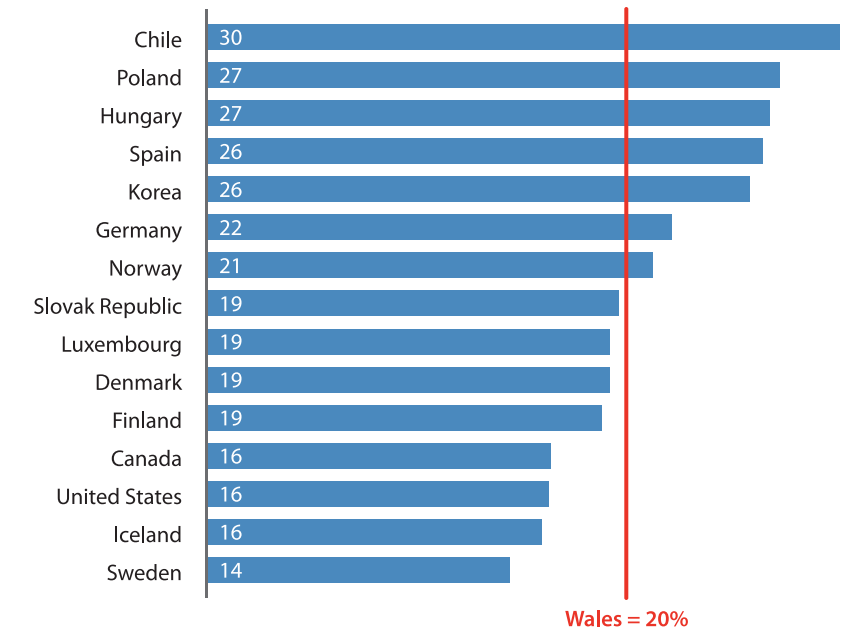
The variation shown between the results of the Welsh Health Survey and the General Lifestyle Survey is likely to be due to differences in their methods, definitions and sample sizes. For example, the Welsh Health Survey has an annual sample size of around 15,000, compared to less than 1,000 in the case of the General Lifestyle Survey. It should also be noted that figures quoted from the General Lifestyle Survey include cigarette smokers only, and may exclude a small number of people who smoke only a pipe or cigar.

### International and Great Britain smoking rates

Comparability between international smoking rates is likely to be limited by methodological differences in health surveys across countries. There may be differences in the question wording, the response categories, the age groups covered and the related administrative methods. However, using daily smoking rates of other Organisation for Economic Co-operation and Development (OECD) countries as a guide for comparison, Wales ranks roughly in the middle (figure 2). An outline of tobacco control measures in countries with comparatively low smoking prevalence can be found in section 7.

Figure 2

Percentage of adults who reported smoking daily, OECD countries, 2009



Source: OECD; Welsh Health Survey (Welsh Government)

(a) Note that 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.

(b) OECD countries with missing data for 2009 have been omitted from the chart.

Smoking is less common in England than in Wales and Scotland. Around one in four adults in Wales and Scotland reported themselves to be cigarette smokers in 2010, compared to one in five in England (figure 3).

Figure 3

Percentage of adults who reported smoking daily or occasionally, by country, 2010



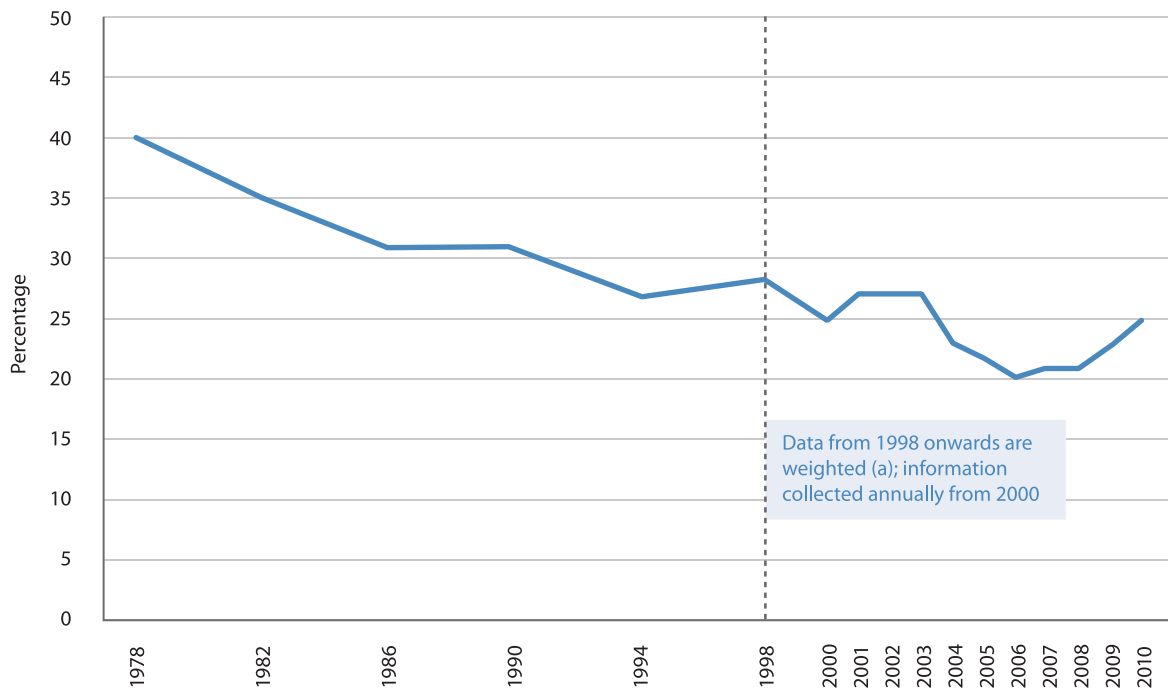
Source: General Lifestyle Survey (Office for National Statistics)

## Smoking trends in Wales

Information on smoking behaviour among adults has been reported since the 1970s through the General Lifestyle Survey. Caution is needed in interpreting the results of this survey due to the small sample size for Wales, but the overall percentage of the population who smoke cigarettes has generally decreased over the period shown in figure 4, from 40 per cent in 1978 to between 20 and 25 per cent in recent years.

Figure 4

Percentage of adults who reported smoking daily or occasionally, Wales, 1978-2010



Source: General Lifestyle Survey (Office for National Statistics)

(a) Weighting applied by ONS to compensate for non-response. Technical reports from the survey show that the weighted percentage of smokers has been around one per cent higher than the unweighted percentage from 1998 onwards.

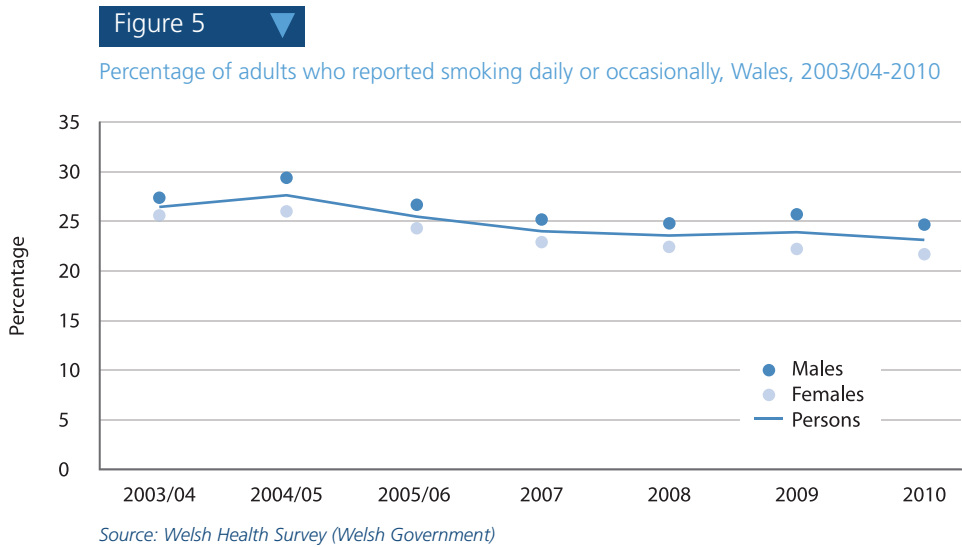
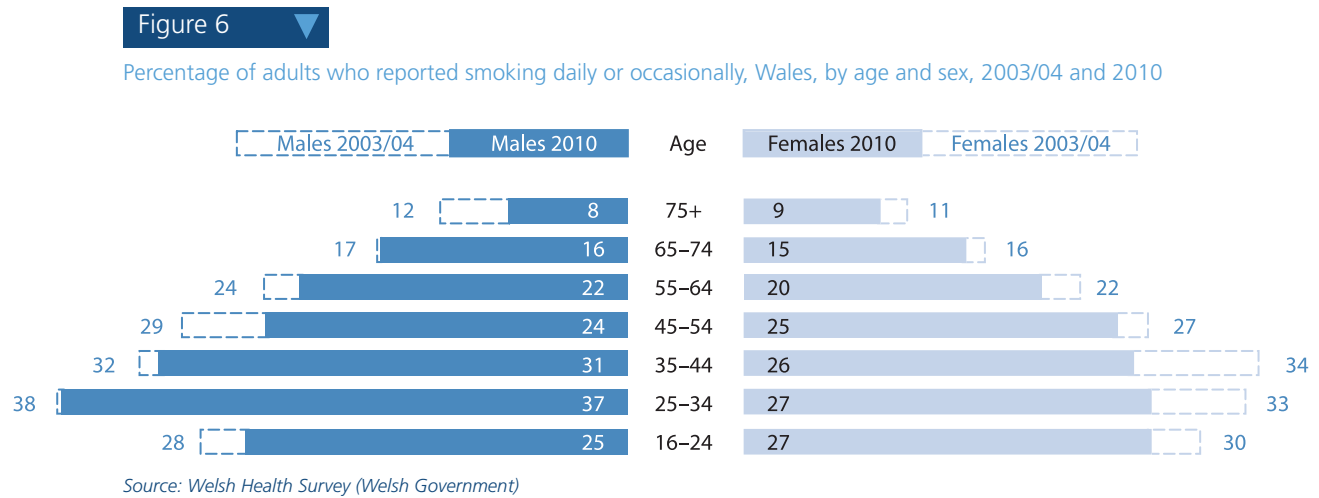


Figure 5 shows trend data for adult smokers from the Welsh Health Survey. This has a much larger sample size than the Welsh sample of the General Lifestyle Survey and the results are therefore less subject to random fluctuation and can be analysed in more detail. The chart shows that smoking remains slightly more common in males than females over this period. The relatively slow pace of decline in smoking rates in recent years, to 23 per cent in 2010, represents a considerable challenge given the target of reaching 16 per cent by 2020 set by the *Tobacco Control Action Plan for Wales*<sup>6</sup>.



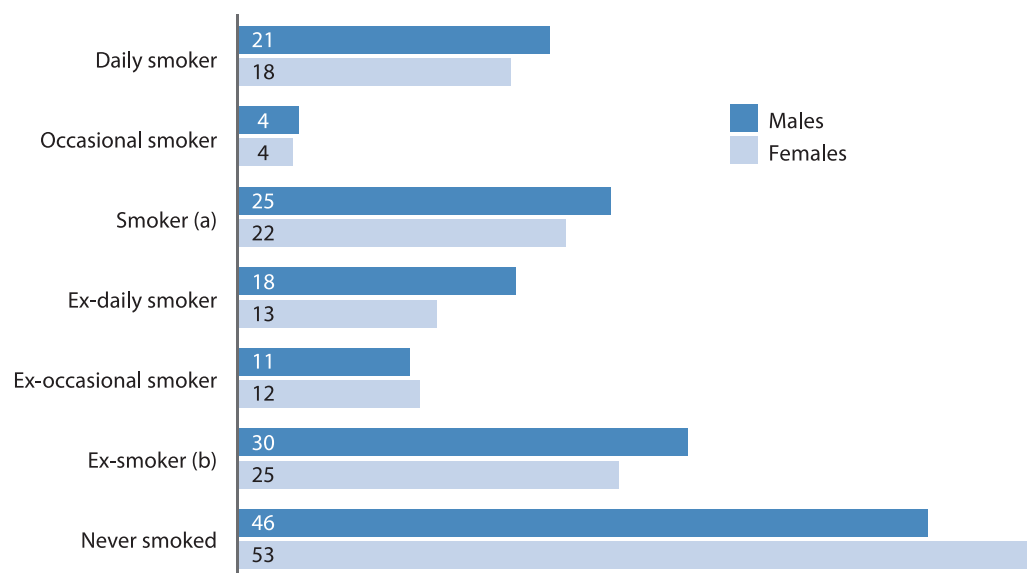
Most age groups have seen a slight decline in smoking rates since 2003/04, although most of the decreases are not statistically significant (figure 6). The rates of male smokers aged 25-34 and 35-44 in 2010 remain at similar levels to 2003/04, however, female smoking rates have decreased for these age groups. The rates of male smokers aged 45-54 and 75+ have decreased since 2003/04, but there has been little change in the 65-74 age group. It can be seen that the prevalence of smoking decreases with age.

## Smoking status

In the 2010 Welsh Health Survey, 23 per cent of adults reported that they currently smoke, 27 per cent reported that they used to smoke, and 50 per cent reported that they have never smoked. This suggests that around 570,000 adults in Wales smoke (either daily or occasionally).

Figure 7

Percentage of adults reporting specific smoking status, by sex, 2010



Source: Welsh Health Survey (Welsh Government)

(a) 'Smoker' indicates those who smoke either daily or occasionally.

(b) 'Ex-smoker' indicates those who used to smoke either daily or occasionally.

Figure 7 illustrates that a slightly higher proportion of males reported themselves to be smokers (25 per cent) compared with females (22 per cent). The percentage of adults who have never smoked is higher amongst females than males. However, the fact that around half of people surveyed had tried smoking at some point illustrates the challenge of preventing people from taking up this highly addictive habit.

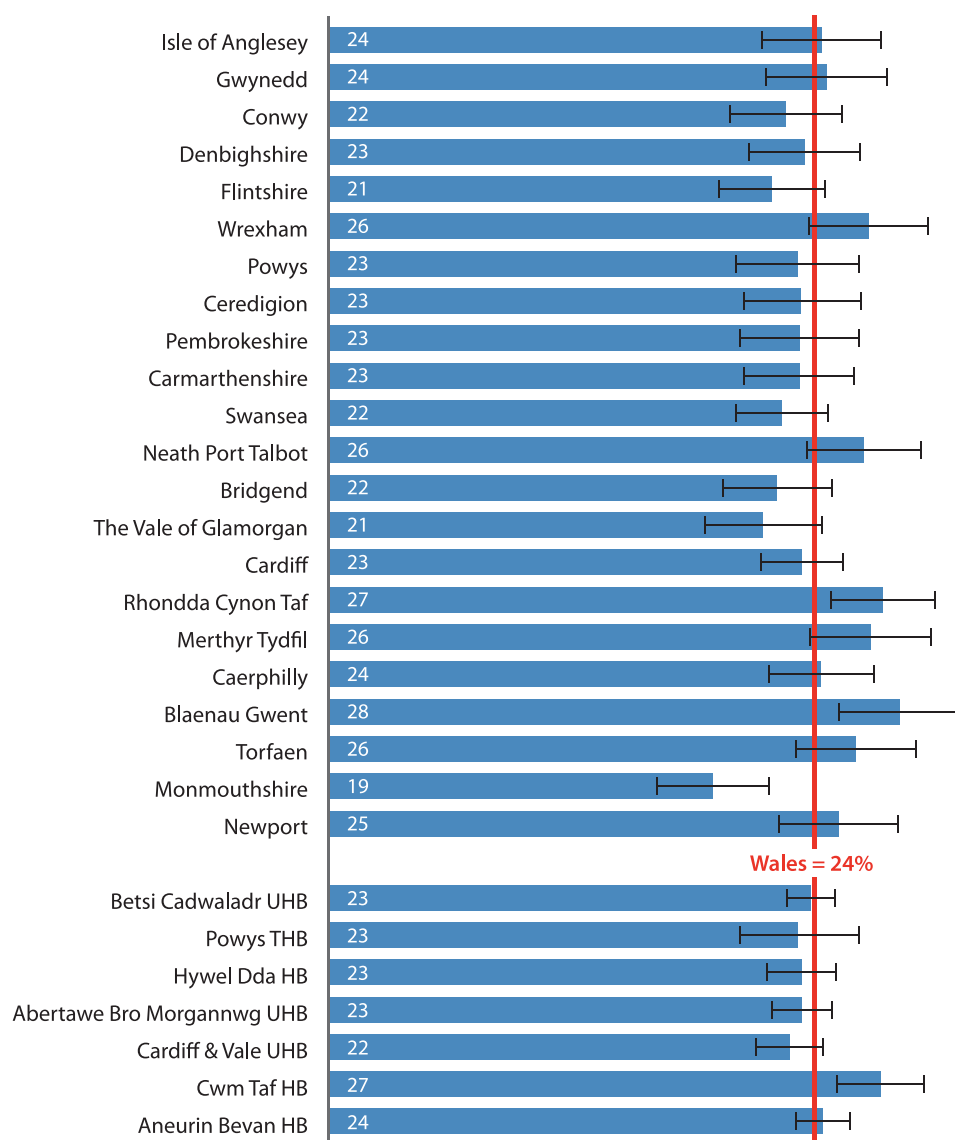


## Smoking by geographic area

Combining data from the 2009 and 2010 Welsh Health Surveys, adult smoking rates were highest in the South Wales Valleys areas of Blaenau Gwent and Rhondda Cynon Taf (figure 8). These areas experience high levels of deprivation<sup>12</sup> and as shown in figures 10 and 11, smoking rates in the most deprived areas of Wales rise to around 35 per cent. The variation between levels of smoking across Wales is a key contributor to health inequalities (section 5.2). In 2009-10, nine percentage points separated the smoking rates of Blaenau Gwent and Monmouthshire.

Figure 8

Percentage of adults who reported smoking daily or occasionally, by local authority and health board, age-standardised, 2009-10

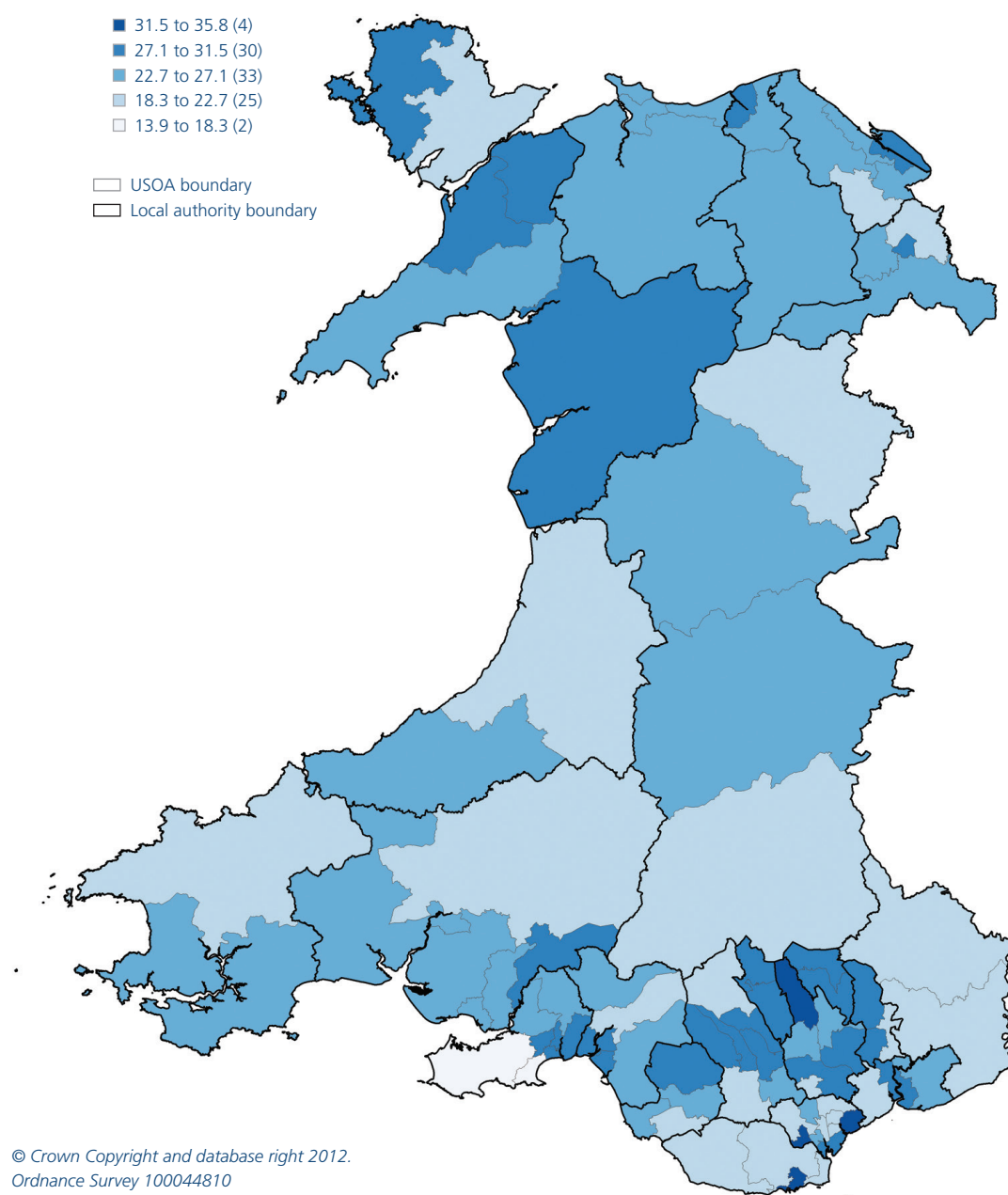


Source: Welsh Health Survey (Welsh Government)

Horizontal lines (—) show 95 per cent confidence interval

Figure 9

Percentage of adults who reported smoking daily or occasionally, by Upper Super Output Area (USOA), age-standardised, 2003/04-2009



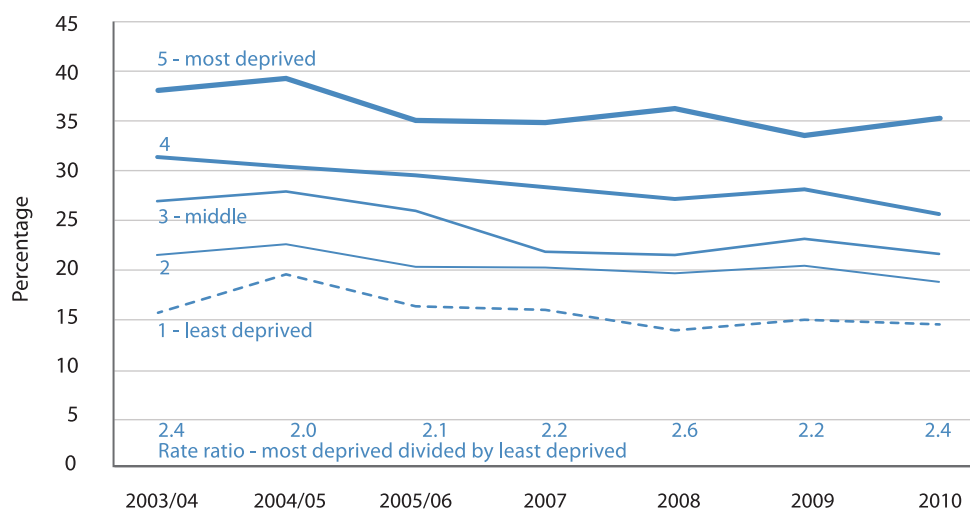
Source: Welsh Health Survey (Welsh Government)

The map in figure 9 shows adult smoking rates using Upper Super Output Areas (USOAs), a statistical geography. Wales has 94 USOAs with a consistent population size of around 30,000. Welsh Health Survey data from 2003/04 to 2009 was combined to increase the sample size for these areas and improve the precision of the estimates. Smoking rates are high across the South Wales Valleys regions, and also in parts of Cardiff, Barry (in The Vale of Glamorgan) and North West Wales. Greater variation can be seen across USOAs in Wales compared to local authority and health board areas (figure 8), with rates ranging from around 14 to 35 per cent.

## Smoking by socio-economic factors

Figure 10

Percentage of adults who reported smoking daily or occasionally, by deprivation fifth (Welsh Index of Multiple Deprivation 2008), age-standardised, 2003/04-2010

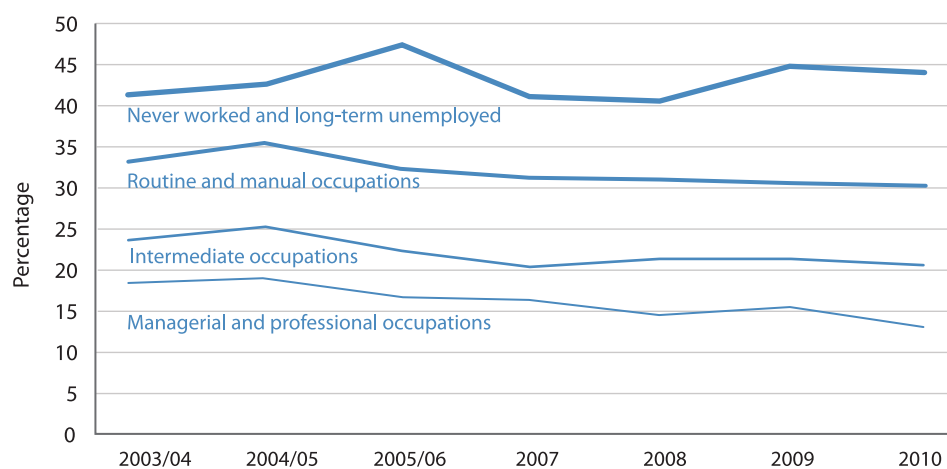


Source: Welsh Health Survey, Welsh Index of Multiple Deprivation (Welsh Government)

As suggested by figures 8 and 9, adult smoking rates are highest in the most deprived parts of Wales (figure 10). This analysis has been carried out by combining small areas across Wales into five groups ('fifths'), based on ranked deprivation scores from the Welsh Index of Multiple Deprivation 2008. All fifths have experienced a slight decline in smoking rates since 2003/04, however, the inequality between the most and least deprived areas (groups 5 and 1) in 2010 remains similar to 2003/04, with rates in the most deprived areas remaining more than twice as high as the least deprived.

Figure 11

Percentage of adults who reported smoking daily or occasionally, by household National Statistics Socio-economic Classification, age-standardised, 2003/04-2010



Source: Welsh Health Survey (Welsh Government)

The magnitude of the challenge to reduce smoking rates to 16 per cent in Wales by 2020 is illustrated by figure 11. In households headed by someone who has never worked or who is long term unemployed, 44 per cent of adults reported to be smoking. This is based on a fairly small number of respondents, showing fluctuation over time, but there is little sign of a downward trend. Smoking rates have dropped slightly among adults in routine/manual households, to around 30 per cent, but not as much as those in managerial/professional households. This has resulted in an increasing inequality between the smoking rates of adults in managerial/professional households and routine/manual and never worked/long term unemployed households between 2003/04 and 2010.

This pattern, if allowed to continue, is likely to contribute to widening health inequalities in the future. For this reason, cessation services such as Stop Smoking Wales aim to target people in more deprived areas<sup>13</sup>. However, if tobacco use begins as an attempt to relieve the stress of socio-economic deprivation<sup>4</sup>, then action to improve education, employment and the physical environment is also required to help people stop smoking.

### 2.1.1 Adults with mental health problems

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People with mental health problems are more likely to smoke, and also to smoke more heavily, than the general population<sup>14</sup>. This may be due to tobacco use offering the illusion of reducing stress and anxiety<sup>15</sup>. It may also be that increased socio-economic deprivation acts as a confounding factor, contributing to increased prevalence of both mental illness and smoking; each are considerably more common in the most deprived areas of Wales than in the least deprived<sup>16</sup>. Around 14 per cent of current smokers in Wales report being treated for a mental illness, compared to 8 per cent of people who used to or have never smoked (age-standardised percentages)<sup>17</sup>.

Life expectancy in people with schizophrenia is thought to be 20 per cent lower than the general population, a difference which has been partly attributed to high rates of smoking<sup>18</sup>. This places an imperative on the health service to ensure that both patients' physical and mental health are looked after<sup>19</sup>.

The prevalence of smoking is thought to be as high as 70 per cent amongst inpatients in mental health units<sup>20</sup>. In Wales, these units are exempted from the 2007 ban on smoking in enclosed public places, whereas in England an initial exemption was withdrawn in July 2008, one year after the implementation of smoke-free legislation.

## 2.2 Maternity, children and young people

### Smoking in pregnancy

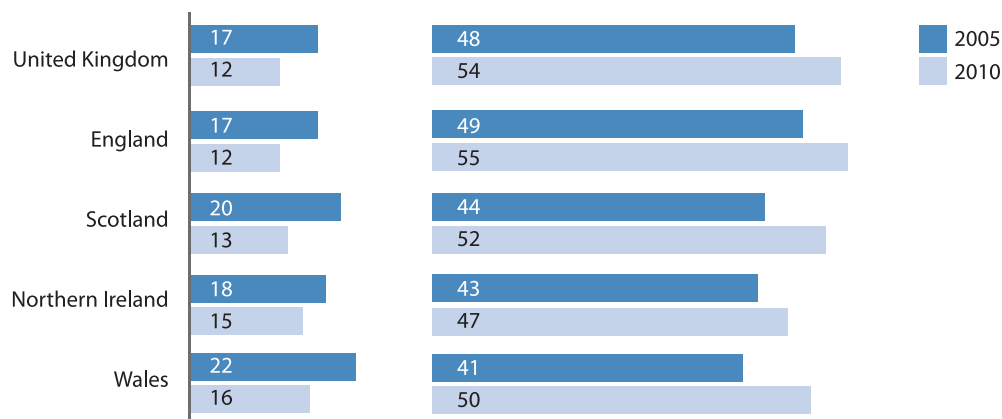
The Infant Feeding Survey is run every five years in the UK, collecting information about the smoking and drinking behaviour of mothers before, during and after pregnancy.

Figure 12

Percentage of mothers, by UK nation, who:

a) smoked throughout pregnancy

b) were smokers but gave up before or during pregnancy



Source: Infant Feeding Survey (NHS Information Centre)

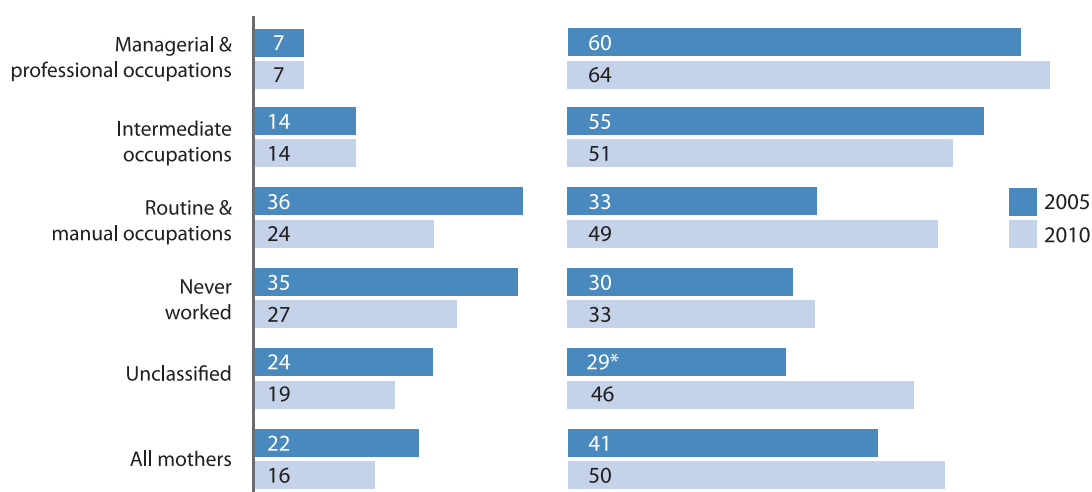
Figure 12 shows that in 2010, the proportion of mothers smoking throughout pregnancy was highest in Wales at 16 per cent, although this is lower than the figure of 22 per cent in 2005. Half of mothers in Wales who were previously smokers had given up before or during pregnancy in 2010, whereas in 2005 the corresponding figure was 41 per cent.

Echoing the pattern shown in figure 11, smoking throughout pregnancy is most common in the routine/manual and never worked groups, whereas the proportion who gave up is highest in the managerial/professional group (figure 13). However, the proportion of mothers in the routine/manual group who stopped smoking has increased from 33 per cent in 2005 to 49 per cent in 2010.



Figure 13

Percentage of mothers in Wales, by individual National Statistics Socio-economic Classification, who:  
 a) smoked throughout pregnancy      b) were smokers but gave up before or during pregnancy



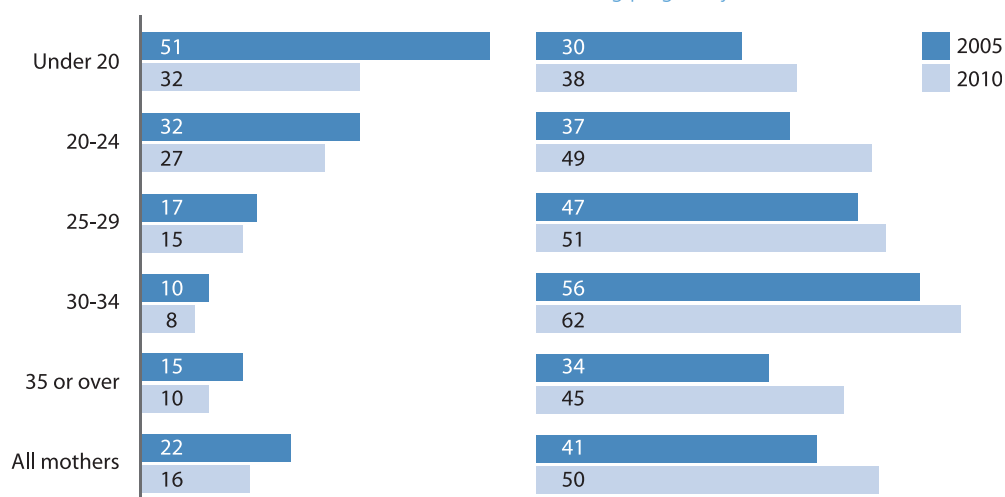
\*Data should be treated with caution due to small sample size  
 Source: Infant Feeding Survey (NHS Information Centre)

Although the overall proportion of mothers who smoked during pregnancy in Wales is 16 per cent, this is much higher in the lower age groups at 32 per cent and 27 per cent for the under 20 and 20-24 age groups respectively in 2010 (figure 14). However, the former figure has fallen from 51 per cent in 2005, which is a positive sign. Older mothers were generally more likely to stop smoking than younger mothers.

Figure 14

Percentage of mothers in Wales, by age, who:  
 a) smoked throughout pregnancy

b) were smokers but gave up before or during pregnancy



Source: Infant Feeding Survey (NHS Information Centre)

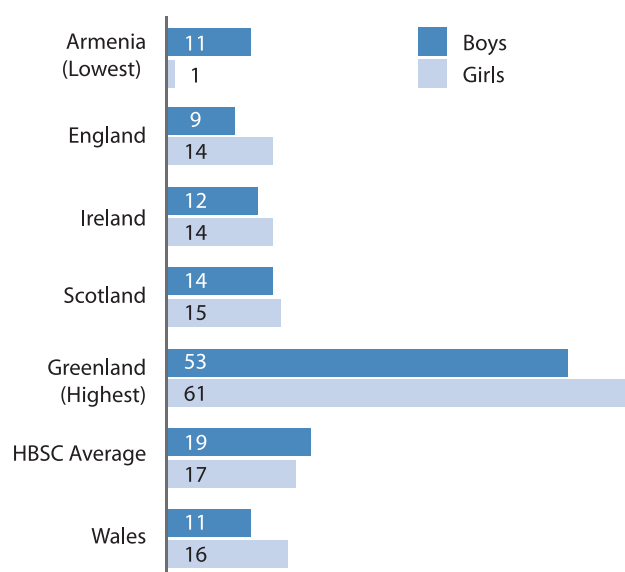
## Smoking in children and young people

One of the key priority areas for the Welsh Government is to address smoking among children and young people<sup>6</sup>. Smoking behaviour often starts during adolescence and affects health in later life. The average age at which children aged 15 in Wales start to smoke is just 12 years old<sup>21</sup>, with eight out of ten smokers starting before the age of 19<sup>7</sup>.

The charts below illustrate results from the Health Behaviour in School-aged Children (HBSC) survey. This is an ongoing international study with a consistent protocol; the latest survey in Wales received 9,194 completed questionnaires from secondary school children between October 2009 and January 2010 (see online technical guide for more information).

Figure 15

Percentage of 15 year-olds who smoke at least once a week by country and sex, 2009/10

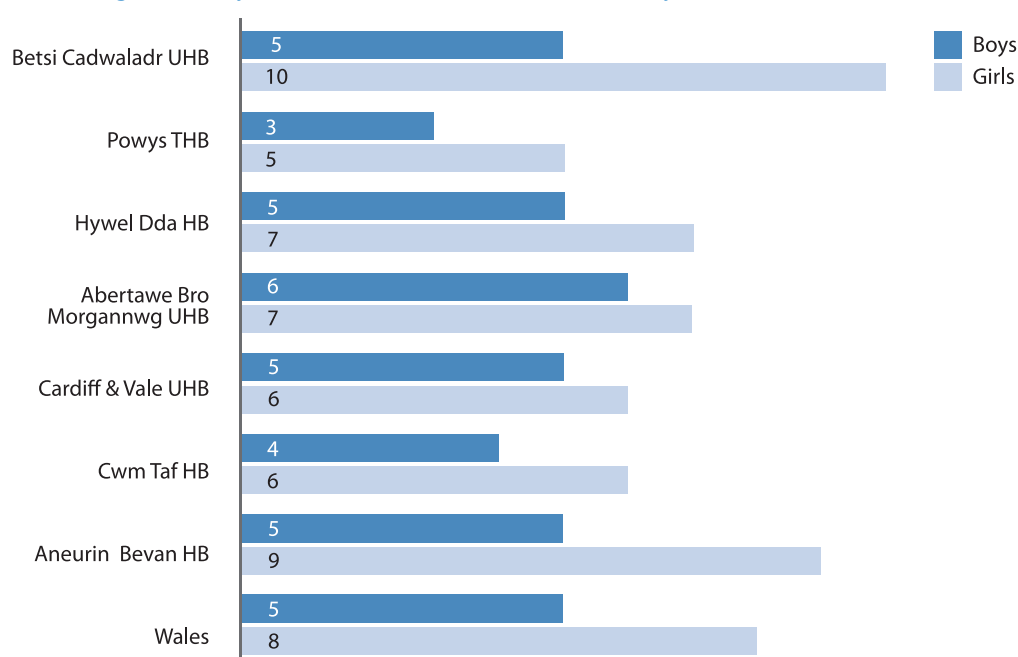


Source: Health Behaviour in School-Aged Children survey (World Health Organisation/Welsh Government)

Girls in Wales are more likely to report smoking weekly than their male counterparts (figure 15). The numbers of boys (11 per cent) and girls (16 per cent) smoking in Wales are similar to their counterparts elsewhere in Great Britain and Ireland.

Figure 16

Percentage of 11-16 year-olds who smoke at least once a week by health board, 2009

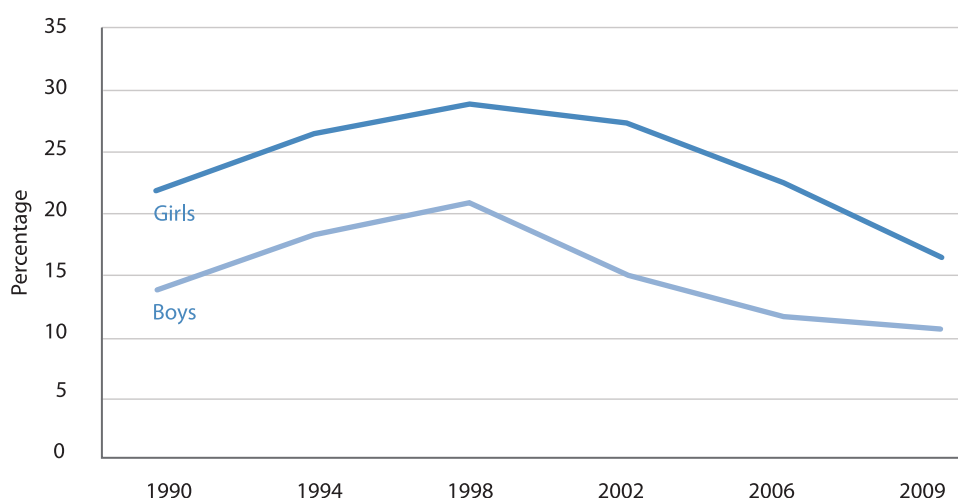


Source: Health Behaviour in School-Aged Children survey (World Health Organisation/Welsh Government)

Figure 16 shows that girls are consistently more likely to smoke than boys across all health board areas in Wales. This is particularly evident in Aneurin Bevan and Betsi Cadwaladr University health boards where girls are approximately twice more likely to smoke than boys. Children and young people living in these areas are also almost twice as likely to smoke regularly than those living in Powys Teaching Health Board. It is noteworthy that whereas adult smoking prevalence is highest in Cwm Taf (figure 8), rates in young people are comparatively low, although this may reflect the relatively small sample size by health board.

Figure 17

Percentage of 15 years-olds in Wales who smoke at least once a week by sex, 1990-2009



Source: Health Behaviour in School-Aged Children survey (World Health Organisation/Welsh Government)

The proportion of regular smokers was consistently higher among girls than boys from 1990 to 2009 (figure 17). In 2009, smoking rates for 15 year-olds in Wales were lower than in 1990 (11 per cent for boys; 16 per cent for girls) following a peak in 1998 (21 per cent for boys; 29 per cent for girls). This overall downward trend is encouraging.

### 3 Exposure to second-hand smoke

The legislation passed in April 2007 to ban smoking in enclosed public places in Wales was intended to reduce people’s exposure to second-hand smoke, which appears to have been successful (section 3.1).

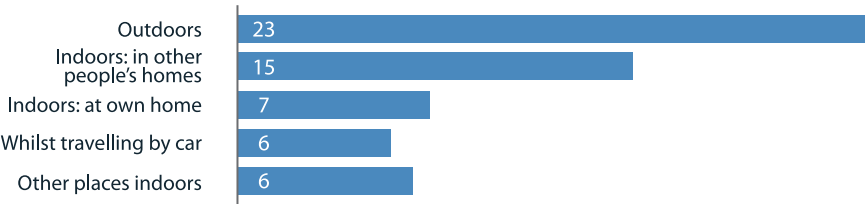
The further reduction of exposure to second-hand smoke is the fourth action area within the Welsh Government’s *Tobacco Control Action Plan*. Setting an example for other organisations, health boards in Wales are gradually making their hospital grounds completely smoke-free. National work is also planned by Public Health Wales and ASH Wales to review smoke-free homes initiatives and encourage local promotion of appropriate schemes.

#### 3.1 Adults

In 2010, 21 per cent of adult non-smokers reported being regularly exposed to other people’s tobacco smoke indoors, and 33 per cent indoors or outdoors.

Figure 18 ▼

Percentage of non-smoking adults who reported being regularly exposed to other people’s tobacco smoke, 2010

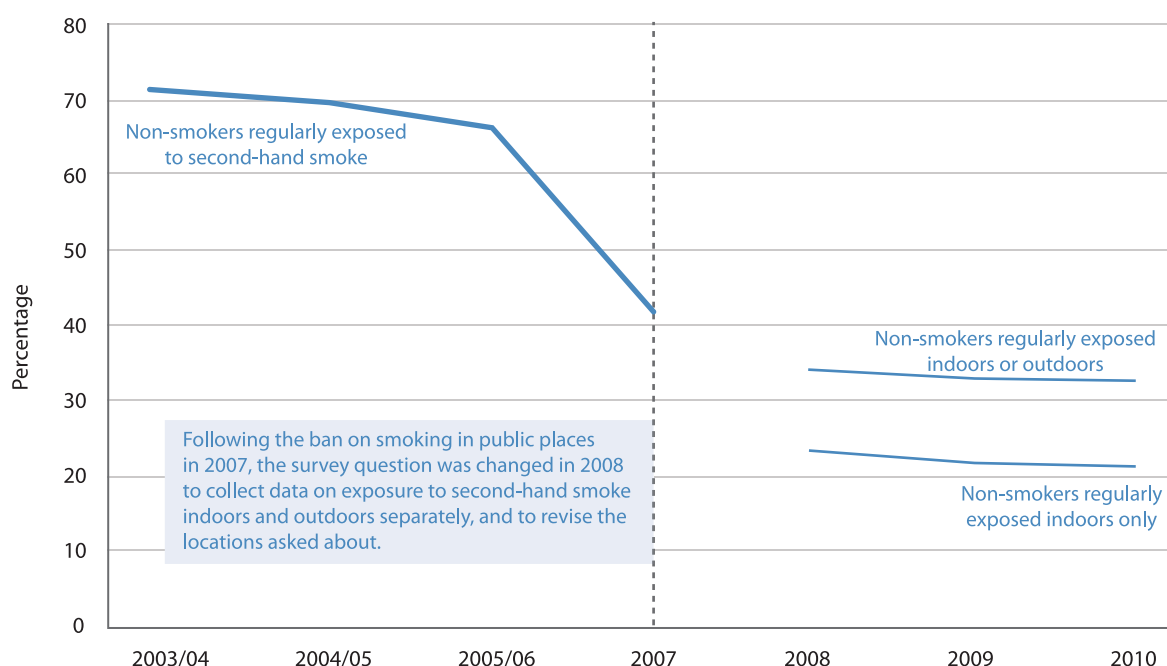


Source: Welsh Health Survey (Welsh Government)

Figure 18 shows that of all adult non-smokers, 15 per cent reported being exposed to other people’s smoke in other people’s homes, 7 per cent in their own homes, 6 per cent whilst travelling by car, and 6 per cent in other places indoors. Adults’ reported exposure to second-hand smoke decreased with age, and this applied for all the places specified.

Figure 19

Percentage of non-smoking adults who reported being regularly exposed to other people's tobacco smoke, 2003/04-2010



Source: Welsh Health Survey (Welsh Government)

The trend in 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.

The chart shows that the percentage of non-smokers regularly exposed to second-hand smoke dropped considerably from 66 per cent in 2005/06 to 42 per cent in 2007, coinciding with the implementation of the smoking ban in Wales which came into force on 2nd April 2007, ending smoking in enclosed and substantially enclosed public places. Since 2008, second-hand smoking rates have remained fairly constant, for those exposed indoors or outdoors and indoors only.



## 3.2 Children

Initial concerns that banning smoking in enclosed public places would lead to increased smoking at home, and therefore increased exposure of children to second-hand smoke, appear to have been unfounded. Studies of primary school children in Wales<sup>22</sup> and Scotland<sup>23</sup> found no increase in exposure, and even suggested a slight decrease, possibly due to parents responding to smoke-free legislation by smoking less at home.

### *Children living in households where adults smoke*

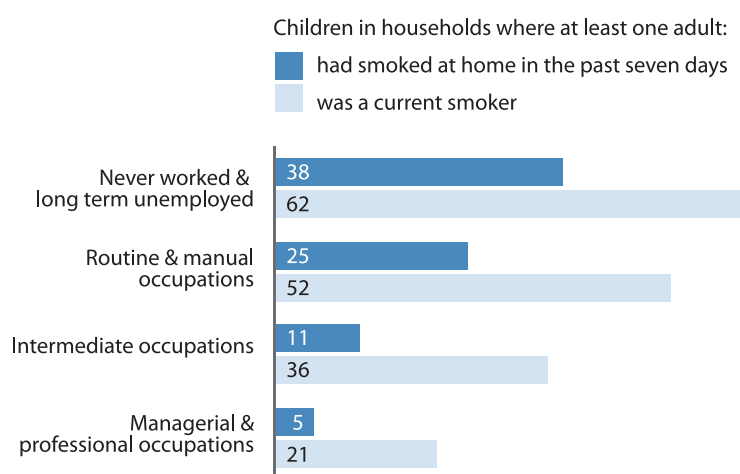
In 2010, results from the Welsh Health Survey showed that 39 per cent of children lived in households where at least one adult was a current smoker, and 17 per cent of children lived in households where at least one adult had smoked in their home in the past seven days.

The percentage of children living in households where at least one adult was a current smoker increases considerably from managerial and professional households through to households headed by someone who had never worked/was long term unemployed (figure 20). Similarly, the percentage of children living in households where an adult had smoked at home in the previous week was five times higher in routine and manual households (25 per cent) compared with managerial and professional households (5 per cent).

Figure 20 also appears to indicate differences in the propensity of adult smokers to smoke in homes where children are present. In managerial and professional households, 21 per cent of children lived with at least one current smoker, yet only 5 per cent of children in these households lived with an adult who had recently smoked in the home. In households headed by someone who had never worked/was long term unemployed, 62 per cent of children lived with a current smoker and 38 per cent with an adult who had recently smoked in the home.

Figure 20

Percentage of children living in households where adults smoke, by household National Statistics Socio-economic Classification, 2009-10



Source: Welsh Health Survey (Welsh Government)

Analysis by area of residence using the Welsh Index of Multiple Deprivation showed similar results, with over twice as many children in the most deprived areas living in households where an adult is a current smoker (55 per cent) compared to the least deprived areas (24 per cent).

## Children exposed to smoking in cars

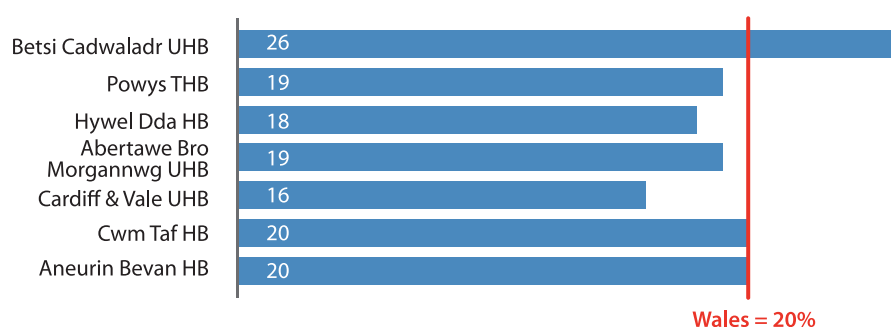
Although the ban on smoking in public places introduced in 2007 protects people from second-hand smoke when travelling on public transport, the same level of protection does not apply when travelling by car. Unlike adults, children are often unable to control whether or not they are exposed to second-hand smoke in cars.

Whilst the smoking ban has had a positive impact in reducing exposure to second-hand smoke in enclosed public places and workplaces, the proportion of children who report being exposed to smoking in cars remains high at 20 per cent (figure 21). The Welsh Government launched a campaign in February 2012 called Fresh Start Wales, calling on adults to keep their cars smoke free to protect children, with a pledge to consider legislation if this does not lead to falls in exposure.

Children living in the Betsi Cadwaladr health board area are more likely to be exposed to second-hand smoke in cars when compared to other health board areas in Wales (figure 21). In fact, nearly one in three girls living in the Betsi Cadwaladr health board area said that they were exposed to smoking the last time they travelled by car. Conversely, one in six boys and girls living in the Cardiff and Vale health board area reported exposure to smoke during their last car journey. Findings for other health board areas are comparable to the Welsh average.

Figure 21

Percentage of 11-16 year-olds exposed to smoke in cars by health board, 2009



Source: Health Behaviour in School-Aged Children survey (World Health Organisation/Welsh Government)

## 4 Prevention and cessation

Reducing the uptake of smoking and lowering smoking prevalence are two of the key action areas within the Welsh Government's *Tobacco Control Action Plan*. Considerable efforts will be required, both in preventing young people from starting to smoke and helping smokers to quit, in order to meet the target set within the Action Plan of reducing the adult prevalence of smoking in Wales to 16 per cent by 2020.

The health benefits of both these strategies are clear. A major study of cigarette smoking found that quitting at age 60, 50, 40, or 30 years old gained an estimated 3, 6, 9, or 10 years of life expectancy respectively<sup>3</sup>.

### 4.1 National prevention initiatives

The ASSIST programme<sup>24</sup> aims to stop young people starting to smoke by training influential year 8 students as peer supporters. Having been nominated as 'respected' and 'looked up to' by other students, these peer supporters are given initial training and follow-up support to discourage smoking within their year group through informal conversations about the risks of tobacco use.

The programme, which is run by Public Health Wales, trained 1400 peer supporters from 46 schools in 2010/11 (table 1), which represents 21 per cent of the 223 schools in Wales. This is a considerable increase from the 500 peer supporters from 17 schools trained in 2008/09.

Table 1

Number of peer supporters trained by ASSIST programme, 2008/09-2010/11

Year	Number of schools	Number of peer supporters (approx)
2008/09	17	500
2009/10	39	1100
2010/11	46	1400

Source: Public Health Wales

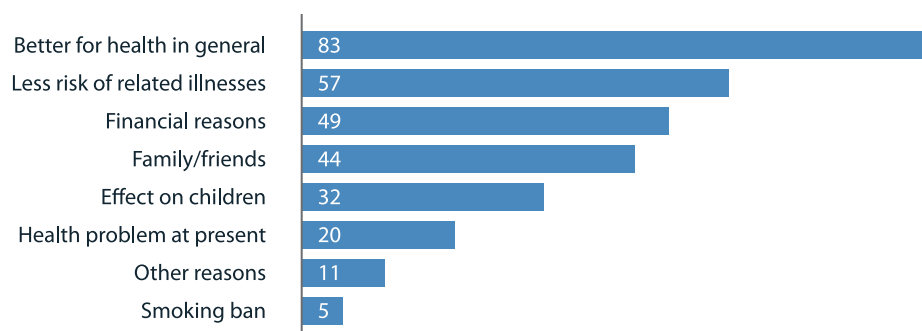
Smokefree Class<sup>25</sup> and Smokebugs! are two further national smoking prevention projects for children and young people. The former is a European initiative run in years 7 and 8, with pupils pledging as a class to remain smoke free. Smokebugs! is a club for younger children (years 4 to 6) which had around 9,400 members in November 2011. Newsletters and activity packs are sent to members, aiming to help them choose not to start smoking, along with discounts for local attractions.

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

In Wales in 2010, 70 per cent of adult smokers reported that they would like to give up smoking, while 38 per cent of adult smokers had tried to give up in the last year. Figure 22 shows that the main reason reported by adult smokers for wanting to give up was better health (83 per cent), although nearly half also cited financial reasons.

Figure 22

Percentage of adult smokers citing specific reasons for wanting to give up smoking, 2010



Source: Welsh Health Survey (Welsh Government)

## 4.3 People using Stop Smoking Wales to help them quit

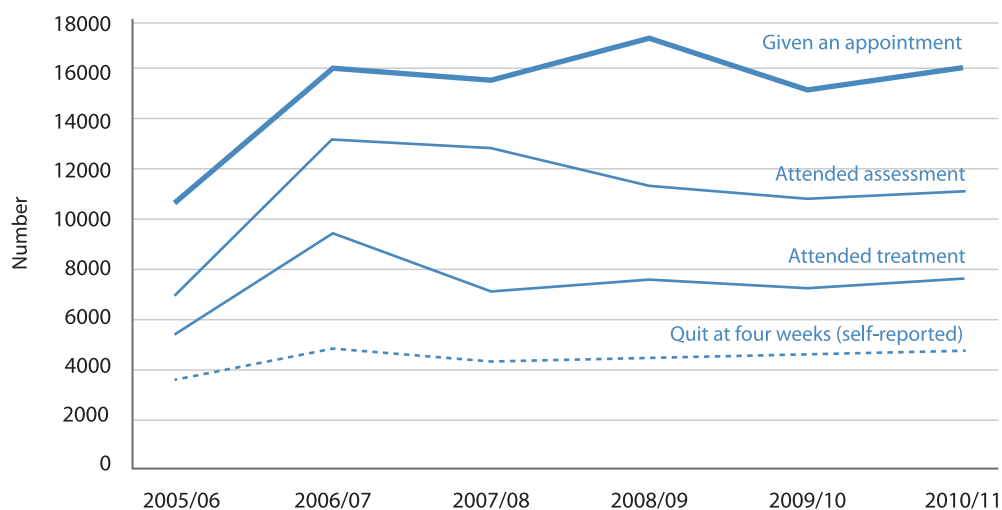
Stop Smoking Wales is a national service provided by Public Health Wales. Trained advisors deliver an evidence-based six-week behavioural support programme to smokers who want to give up, usually in a group setting, across more than 200 sites in Wales. Evidence-based cessation services such as Stop Smoking Wales have been shown to be a cost-effective way of helping smokers to quit<sup>26</sup>. Current priorities for Stop Smoking Wales include preoperative and maternity smoking cessation.

Figure 23 shows that in recent years, an annual average of around 16,000 people contact the service and are given appointments with an advisor. In 2010/11, three-quarters of these appointments were delivered in closed groups, with most of the remainder undertaken on a one-to-one basis to accommodate clients' specific needs. Around 200 people received telephone support. Closed groups have demonstrated a higher rate of successful quitters than one-to-one appointments<sup>27</sup>.

The number of smokers going on to attend the initial assessment session fell from around 13,300 in 2006/07 to 11,100 in 2010/11. In 2006/07, when the impending ban on smoking in enclosed public places was perhaps providing smokers with additional motivation to quit, around 60 per cent of people contacting the service went on to attend at least one treatment session. In subsequent years, this figure fell to between 45 and 50 per cent.

Figure 23

Use of Stop Smoking Wales: i) given an appointment, ii) attended assessment, iii) attended treatment, iv) quit at four weeks (self-reported), 2005/06-2010/11



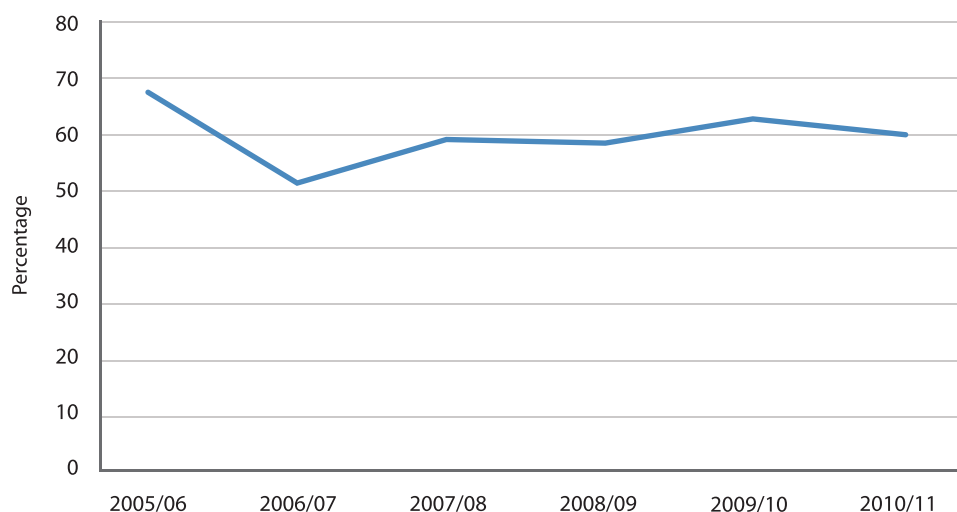
Source: Stop Smoking Wales (Public Health Wales)

The drop in self-reported quit rate in 2006/07 (figure 24) coincides with the higher numbers of smokers attending assessment treatment during this period (figure 23). This may indicate that the 2007 ban on smoking in enclosed public places provided an initial motivation to quit which smokers were then unable to maintain. Since 2007/08, the quit rate has remained fairly steady at around 60 per cent. This compares to a figure of 49 per cent reported in England over the same period<sup>28</sup>, although the method of service delivery is slightly different and this may affect the measurement of quit rates.

It should be noted that these trends may be influenced by changes in the reliability of self-reported data. Carbon monoxide (CO) testing provides a more accurate measure of the success of treatment programmes, but not all quitters attend the final treatment session in which this is carried out. Quit status is then confirmed by telephone follow-up.

Figure 24

Quit rate after four weeks (self-reported), percentage of all smokers attending at least one treatment session, 2005/06-2010/11



Source: Stop Smoking Wales (Public Health Wales)

The estimated proportion of smokers being given an appointment with Stop Smoking Wales increases with deprivation (figure 25a). This pattern has the potential to start to address inequalities in mortality between the most and least deprived areas (figure 31). However, continuation to treatment appears less likely in the most deprived groups. The rate of treatment is 12 per 1,000 in the most deprived males, compared to 27 per 1,000 who are given an appointment; in the least deprived males, 10 per 1,000 attend treatment compared to 19 per 1,000 given an appointment.

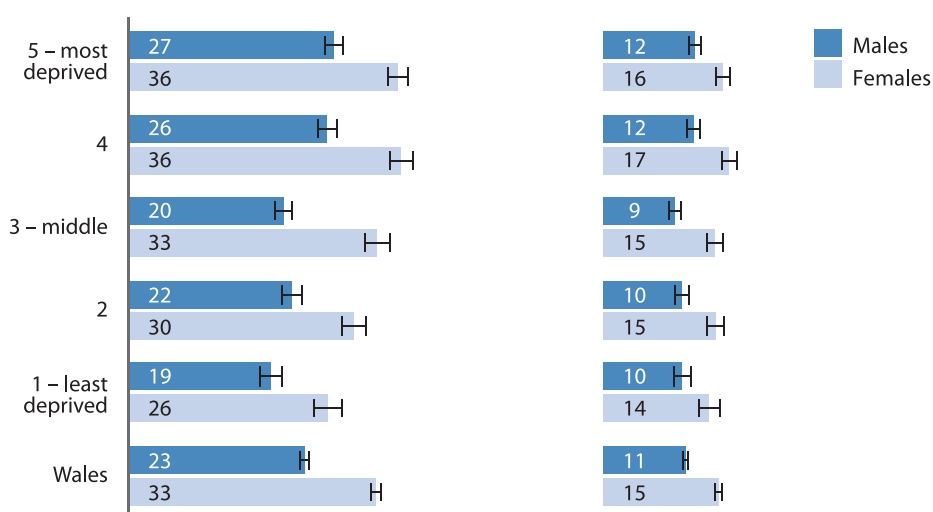
Although women are generally more likely to use the service than men, the proportion of female smokers attending treatment is similar in the least (14 per 1,000) and most deprived areas (16 per 1,000).

Figure 25

Smokers who contacted Stop Smoking Wales in 2011 and a) were given an appointment, and b) attended treatment, age-standardised rate per 1,000 estimated smokers in Wales, by deprivation fifth (Welsh Index of Multiple Deprivation 2011)

25a) given an appointment

25b) attended treatment



Source: Stop Smoking Wales (Public Health Wales)  
Horizontal lines (—) show 95 per cent confidence interval

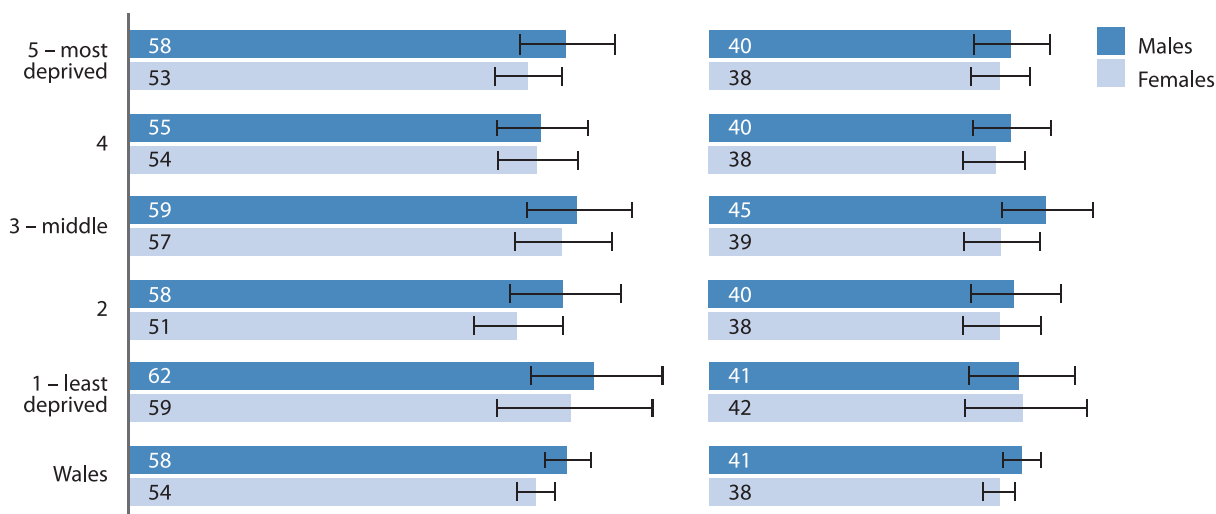
People living in more deprived areas are likely to find it harder to stop smoking than their less deprived peers<sup>29</sup>. Self-reported quit rates in Wales (figure 26a) are slightly lower in the most deprived males than in the least deprived (58 vs 62 per cent), with the gap between females slightly larger (53 vs 59 per cent). However, there is not a great deal of variation across the five groups. The same is true using CO-validated data (figure 26b), where quit rates are only one per cent lower in the most deprived males than in the least deprived.

Figure 26

Quit rate after four weeks, 2011, a) self-reported and b) CO-validated, age-standardised percentage of all smokers attending at least one treatment session, by deprivation fifth (Welsh Index of Multiple Deprivation 2011)

26a) self-reported

26b) carbon monoxide – validated



Source: Stop Smoking Wales (Public Health Wales)

Horizontal lines (—) show 95 per cent confidence interval

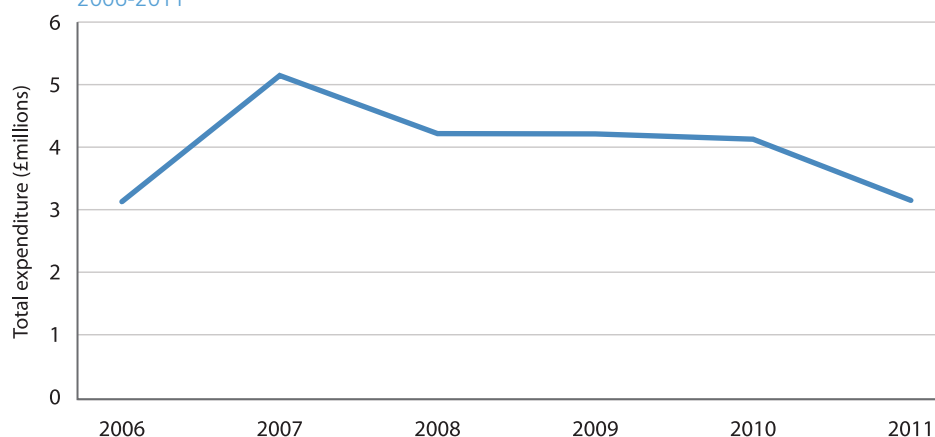
## 4.4 Use of medicines to help people stop smoking

Research has shown that pharmacotherapy can considerably increase a smoker's chances of quitting<sup>30</sup>. The medicines used to support smoking cessation are: nicotine replacement therapy (NRT) (available in several formulations on prescription, over-the-counter in pharmacies, and on general sale), varenicline and bupropion (both are prescription-only medicines). Varenicline was introduced into the UK in 2006. NRT, varenicline and bupropion have all been approved by National Institute for Health and Clinical Excellence as options for people trying to quit smoking.

In 2007, over £5m was spent on prescriptions of these medicines via primary care, an increase of 62 per cent from 2006. This is consistent with the introduction of the ban on smoking in public places in Wales in April 2007. Overall, the expenditure on these medicines has fallen in the years since 2007 with £3.3m spent in 2011. In this four-year period of time, expenditure on varenicline increased by 41 per cent and on bupropion decreased by 75 per cent.

Figure 27

Annual NHS primary care prescribing expenditure in Wales on pharmacotherapy for smoking cessation, 2006-2011



Source: Comparative Analysis System for Prescribing Audit (NHS Wales Shared Services Partnership)

Community pharmacy NHS smoking cessation services have been developed in Wales, potentially reaching large numbers of smokers in the community who may already visit the pharmacy for other reasons. Figure 27 does not include NHS expenditure on NRT through the pharmacy-based services due to the unavailability of complete data for Wales. Health boards may commission community pharmacy enhanced smoking cessation services at two levels (box 1). NRT can be supplied directly to smoking cessation clients who access either level of service. Table 2 shows the number of community pharmacies commissioned by each health board to provide these services.

Abertawe Bro Morgannwg University Health Board, which has over 100 community pharmacies offering level 2 or 3 smoking cessation services, spent £274,466 on NRT through pharmacy smoking cessation services in financial year 2011, which was considerably more than the £156,534 spent via prescription in 2011. In other areas, prescribing accounts for most of the primary care expenditure on NRT. Hywel Dda Health Board, for example, spent £35,027 on NRT via the pharmacy services and £179,303 via prescriptions in 2011.

#### Box 1

Levels of enhanced smoking cessation services provided by community pharmacies

##### Level two:

- Provide NRT and additional support to clients taking part in the Stop Smoking Wales intensive behavioural support programme.
- Ensure clinical suitability of NRT.

##### Level three:

- Assess client on one-to-one basis, then start supply of appropriate NRT.
- Monitor use of NRT and provide ongoing advice and support.

#### Table 2

Number of community pharmacies providing smoking cessation services by health board, 2011

	Level 2 only	Level 3 only	Levels 2 and 3	Total community pharmacies
Betsi Cadwaladr UHB	21	84	0	154
Powys THB	0	0	9	23
Hywel Dda HB	66	0	0	100
Abertawe Bro Morgannwg UHB	108	0	1	125
Cardiff and Vale UHB	0	0	0	106
Cwm Taf HB	22	0	8	77
Aneurin Bevan HB	36	0	0	127

Source: All Wales Pharmacy Database (NHS Wales Shared Services Partnership)



## 5 Impact of tobacco use on health and health services

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The health effects of tobacco use are well known and are examined in this section, with a focus on mortality and hospital admissions. Further information regarding the incidence of specific smoking-related cancers is provided online by the Welsh Cancer Intelligence and Surveillance Unit at [www.wcisu.wales.nhs.uk](http://www.wcisu.wales.nhs.uk).

The full impact of tobacco use on health and health services is hard to quantify in that it is so wide-reaching: fertility can be affected, as well as health in utero; nearly 200 fires in homes in Wales are known to have been caused by smoking materials in 2010/11<sup>31</sup>. Furthermore, the estimates within this section of deaths and hospital admissions due to smoking in adults are likely to be underestimates, given that they do not take into account exposure to second-hand smoke. Lifetime non-smokers have been found to experience approximately 20 per cent higher rates of death from coronary heart disease when exposed to second-hand smoke on a daily basis<sup>32</sup>.

It has been estimated that smoking costs NHS Wales around £1 million per day, which is seven per cent of total expenditure on healthcare<sup>33</sup>.

### 5.1 Maternity, children and young people

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Smoking in pregnancy increases the risk of miscarriage and complications in pregnancy and labour. The risk of infant mortality is increased by an estimated 40 per cent. More low birth weight babies are born to mothers who smoke, with greater consumption of cigarettes leading to greater reduction in birth weight. Low birth weight has also been associated with ill health in adulthood. Babies born to mothers who smoke are more likely to develop middle ear infections, respiratory infections and asthma. Exposure to second-hand smoke during pregnancy can reduce foetal growth and increase the risk of preterm birth<sup>34</sup>. Under its Institute function, Public Health Wales is currently investigating interventions to improve maternal health through its Reproductive and Early Years Pathfinder Programme.

As well as mortality and health issues, there are also cost implications. Using estimates from a report by the Public Health Research Consortium<sup>35</sup>, smoking in pregnancy costs NHS Wales between £352,000 and £2,816,000 per year prior to birth and a further £528,000 to £1,034,000 in the first year of life<sup>36</sup>. Stop Smoking Wales is working with midwifery departments to strengthen referral pathways for pregnant females. It has been reported that spending between £13.60 and £37.00 on smoking cessation interventions per pregnant smoker would yield positive cost savings for the NHS<sup>35</sup>.

The patterns shown in figures 15, 16 and 17 are of particular concern as research suggests that habits established early on affect health-related outcomes in later life<sup>37</sup>. Children and young people who smoke regularly before the age of 15 at least double their risk of lung cancer compared to those starting after the age of 25<sup>38</sup>.

There are a range of inter-related factors involved when children and young people decide to take up smoking which range from influences such as the individual, family, social, community and society. It is believed that children whose parents or siblings smoke are around 90 per cent more likely to become smokers themselves<sup>6</sup>.

With around ten per cent of regular smokers aged 11 to 15 reporting that cigarette vending machines are their usual source of tobacco<sup>39</sup>, the Welsh Government introduced a ban in February 2012 on the sale of cigarettes from vending machines to help combat their sale to children and young people.

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

Exposure to second-hand smoke in childhood is strongly associated with a range of respiratory illnesses and serious diseases, including sudden infant death syndrome and meningitis<sup>40,41</sup>. Given the levels of exposure shown in figures 20 and 21, this represents a major risk to the health of children. Children have little control over their environment and are often unable to remove themselves from the risk of exposure to tobacco smoke. They are also more vulnerable to the effects of second-hand smoking than adults, possibly because they have higher breathing rates<sup>40</sup>.

Table 3 shows that around 570 admissions in Wales residents were attributable to second-hand smoke exposure in 2010, with the majority due to lower respiratory infections. Around 10 cases of meningitis, which can seriously endanger health, could also have been caused by second-hand smoke. These figures were calculated using a method published by the Royal College of Physicians<sup>40</sup>, in which systematic reviews and meta-analysis were analysed to estimate the fraction of hospital admissions for particular diseases that could be attributed to second-hand smoking. It should be noted that the fractions are based on a range of data which is not directly sourced from the Wales population.

Table 3

Hospital admissions in children aged 0-14 for selected childhood diseases attributable to second-hand smoke exposure, Wales residents, 2010

	Age group	Admissions	Fraction attributable to smoking	Admissions attributable to smoking
Lower respiratory infections <sup>a</sup>	0-2	3,260	10 per cent	326
Middle ear infections <sup>b</sup>	0-14	1,580	7 per cent	111
Wheeze <sup>c</sup>	0-2	530	8 per cent	42
Asthma <sup>d</sup>	3-4	280	4 per cent	11
	5-14	700	10 per cent	70
Meningitis <sup>e</sup>	0-14	50	22 per cent	11
TOTAL				571

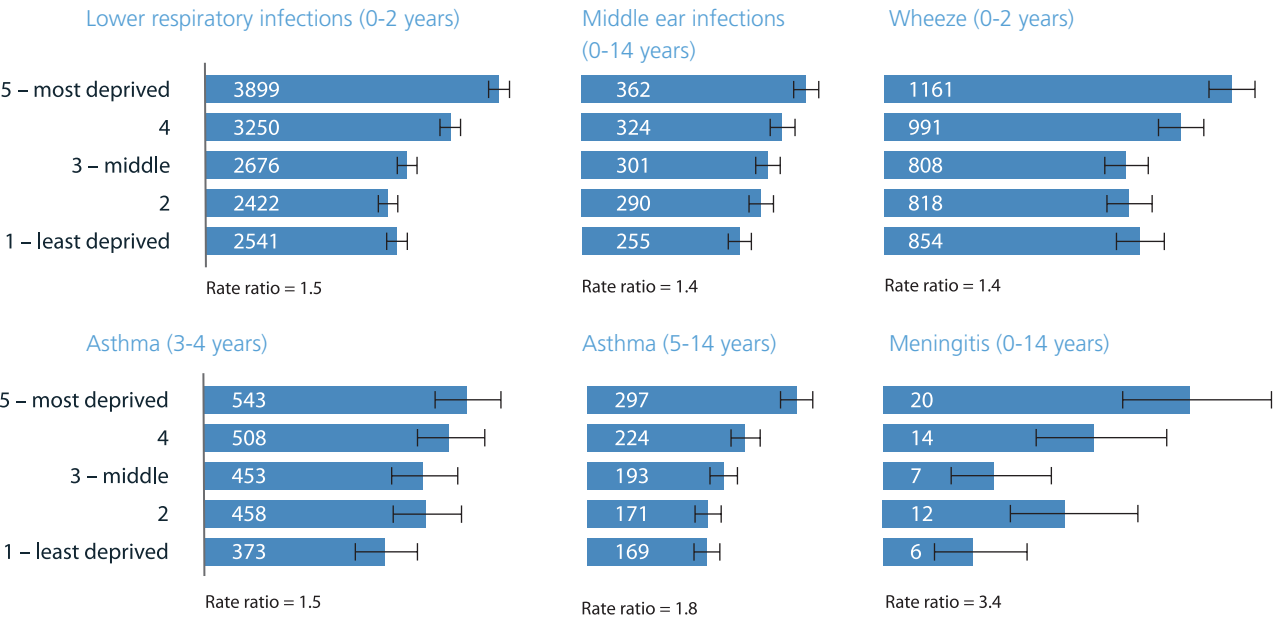
*a* Acute bronchitis (ICD-10 code J20), acute bronchiolitis (J21), unspecified acute lower respiratory infection (J22); *b* Non-suppurative (H65) and suppurative and unspecified otitis media (H66); *c* Code R062; *d* Asthma (J45) and status asthmaticus (J46); *e* Meningococcal meningitis (A39.0), and bacterial meningitis (G00)

Source: Patient Episode Database for Wales (NHS Wales Informatics Service); passive smoking-attributable fractions published by Royal College of Physicians<sup>40</sup>

The association between socio-economic group and second-hand smoke exposure in the home (section 5.2) suggests that children living in more deprived areas will have a higher level of exposure than children living in less deprived areas. This could be a contributory factor in the patterns shown in figure 28, where admission rates increase with deprivation for all childhood diseases listed in table 3. These findings are similar to those reported by the Tobacco Advisory Group using data from England<sup>40</sup>. There is a particularly large difference between least and most deprived groups for meningitis, although the numbers of admissions are comparatively low (as indicated by the wide confidence intervals) and interpretation of these rates should therefore be carried out with caution.

Figure 28

Age-specific hospital admission rates per 100,000 for selected childhood diseases attributable to second-hand smoke exposure, Wales residents by deprivation fifth (Welsh Index of Multiple Deprivation 2011), 2008-10



Source: Patient Episode Database for Wales (NHS Wales Informatics Service); mid-year population estimates (Office for National Statistics); Welsh Index of Multiple Deprivation 2011 (Welsh Government); passive smoking-attributable fractions published by Royal College of Physicians<sup>40</sup>

Horizontal lines (—) show 95 per cent confidence interval

## 5.2 Adults

### 5.2.1 Smoking-attributable mortality

Smoking is the largest single cause of avoidable early death in Wales. In 2010, around 5,450 deaths in people aged 35 and over were caused by smoking, which is 17.8 per cent of all deaths in this age group. A similar proportion of deaths in England (18.1 per cent) were caused by smoking in 2010<sup>42</sup>.

A higher proportion of deaths in males than in females can be attributed to smoking (23.0 vs 13.1 per cent, table 4). These figures rise to 25.5 per cent and 16.4 per cent in the most deprived areas of Wales for males and females respectively, reflecting the differences in smoking prevalence shown in figure 10.

Since smoking often leads to premature death, these differences across the genders may be a key reason why women live longer than men. Recent research suggests that smoking causes around 60 per cent of the gender gap in UK mortality rates<sup>43</sup>. Our analysis, using a more detailed measure of smoking-attributable mortality and counting deaths at age 35 and over (rather than at all ages), gives a lower figure of 46 per cent for Wales in 2008-10.

Table 4

Counts and percentages of deaths attributable to smoking, age 35 and over, by cause and deprivation fifth (Welsh Index of Multiple Deprivation (WIMD) 2011), 2010

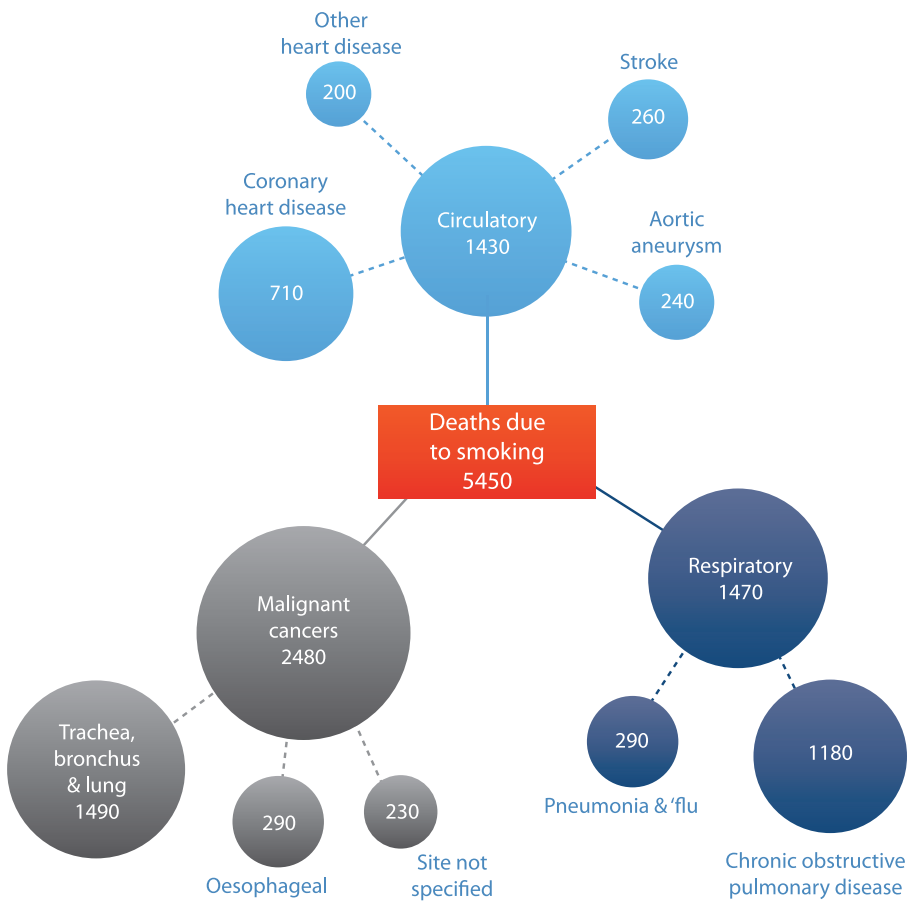
	Males			Females		
	Number of deaths		Attributable to smoking (per cent)	Number of deaths		Attributable to smoking (per cent)
	All	Attributable to smoking		All	Attributable to smoking	
Wales						
All causes	14,520	3,350	23.0	16,030	2,100	13.1
All cancers	4,450	1,600	36.0	4,160	880	21.1
All circulatory disease	4,990	920	18.5	5,310	510	9.6
All respiratory disease	1,990	790	39.9	2,330	680	29.2
All diseases of the digestive system	760	30	4.3	850	30	3.8
By WIMD 2011 fifth (all causes of death)						
5 - most deprived	3,040	780	25.5	3,290	540	16.4
4	3,110	750	24.2	3,330	440	13.1
3 - middle	3,130	710	22.7	3,550	460	12.9
2	2,830	630	22.3	3,160	370	11.8
1- least deprived	2,410	480	19.8	2,700	300	11.1

Source: Annual District Deaths Extract (Office for National Statistics); Welsh Index of Multiple Deprivation 2011 (Welsh Government); smoking-attributable fractions published by NHS Information Centre

Figure 29 shows that just over half of all deaths caused by smoking were due to respiratory and circulatory disease, with cancers accounting for the majority of the rest. Of all deaths from lung cancer and chronic obstructive pulmonary disease (COPD), around 80 per cent were considered attributable to smoking.

Figure 29

Breakdown of deaths attributable to smoking for selected causes, age 35 and over, 2010

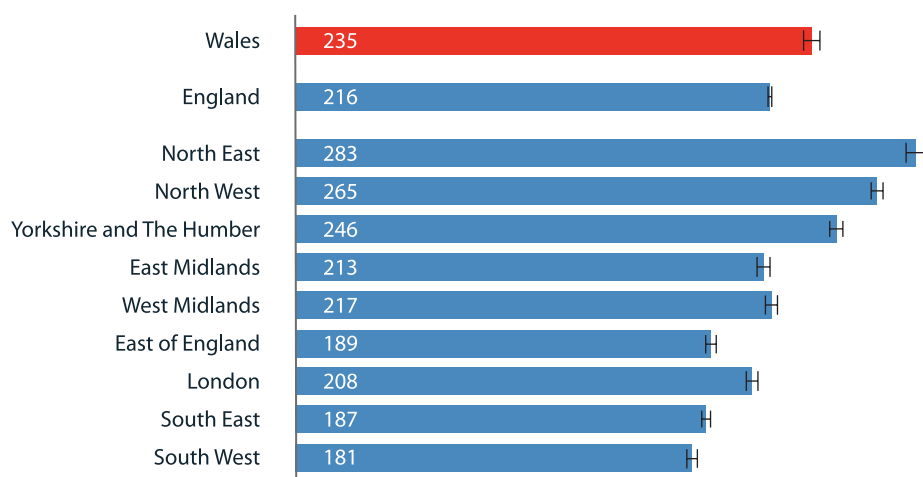


Source: Annual District Deaths Extract (Office for National Statistics); smoking-attributable fractions published by NHS Information Centre

The overall rate of deaths from smoking in England is lower than in Wales, although the North East and North West regions of England have considerably higher rates (figure 30). According to the General Lifestyle Survey<sup>7</sup>, the prevalence of smoking in these regions has historically been high, with rates of 30 per cent and over being reported in both males and females over the last decade.

Figure 30

Smoking-attributable mortality, age 35 and over, age-standardised rate per 100,000, all persons, English Regions and Wales, 2007-09



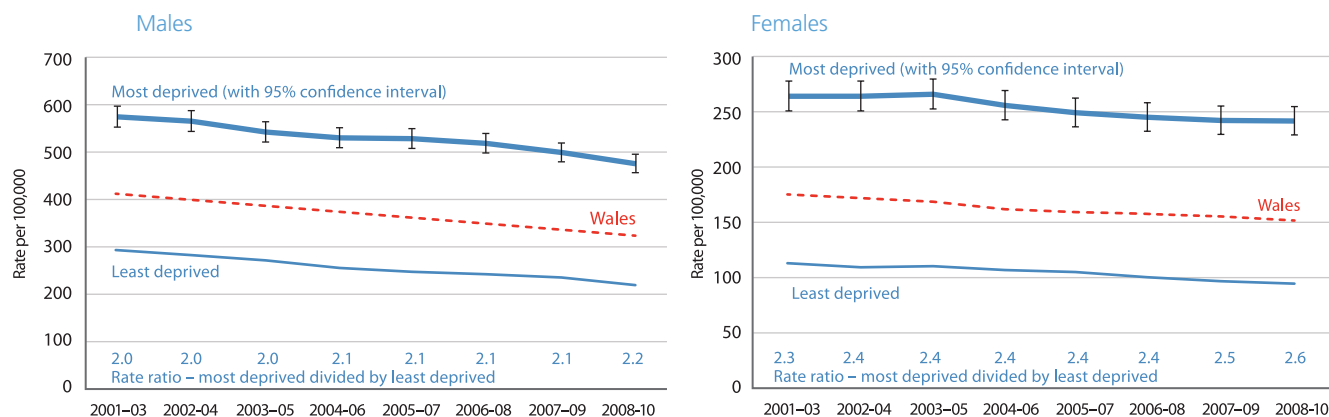
Source: Wales: Annual District Deaths Extract; Mid-year population estimates (Office for National Statistics); smoking-attributable fractions published by NHS Information Centre; England: Local Tobacco Control Profiles for England (Public Health Observatories in England)  
Horizontal lines (—) show 95 per cent confidence interval

In Wales, where smoking is about two and a half times more common in the most deprived compared to the least deprived areas (figure 10), there is a similar ratio in rates of death from smoking across the deprivation fifths (figure 31). This inequality is slightly larger in females (ratio of 2.6) than in males (2.2) in 2008-10. However, in both sexes, these rate ratios have increased slightly since 2001-03, suggesting a widening inequality. This is due to the mortality rate in the least deprived falling more quickly than the rate in the most deprived. Such trends demonstrate the action required if the Welsh Government's vision from *Fairer Health Outcomes For All*<sup>44</sup> is to be realised: "Improved health and wellbeing for all, with the pace of improvement increasing in proportion to the level of disadvantage."

Rates of death from smoking have also fallen more quickly over the period in males (21 per cent fall) than in females (13 per cent). This difference in trends may partially be explained by historical smoking patterns, with tobacco consumption beginning to fall in males earlier in the 20th century than in females (figure 1).

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

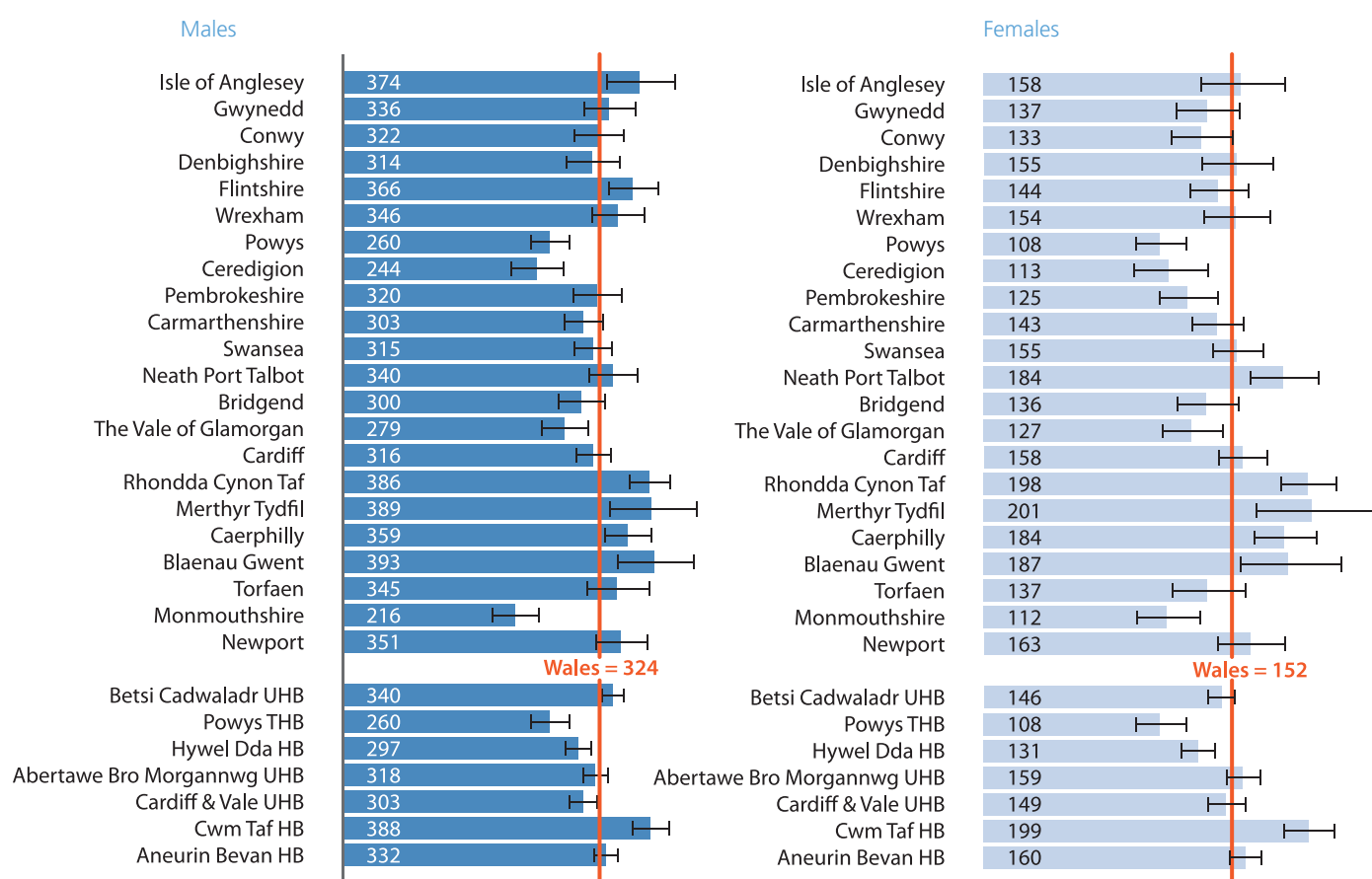


Source: Annual District Deaths Extract & mid-year population estimates (Office for National Statistics); Welsh Index of Multiple Deprivation 2011 (Welsh Government); smoking-attributable fractions published by NHS Information Centre

The pattern of mortality rates from smoking across local authority areas is largely as would be expected given the pattern of smoking prevalence shown in figure 8. The highest rates are found in the South Wales Valleys areas of Rhondda Cynon Taf, Merthyr Tydfil, and Blaenau Gwent (figure 32), where smoking prevalence is highest, and rates are lower in the more rural parts of Wales such as Powys, Ceredigion and Monmouthshire. However, rates in males living in the Isle of Anglesey and Flintshire are higher than might be expected given the prevalence of smoking. In addition, whereas the rate of deaths attributable to smoking in males living in Neath Port Talbot is average, in females the rate is considerably higher than Wales as a whole.

Figure 32

Smoking-attributable mortality, age 35 and over, local authorities and health boards, age-standardised rate per 100,000, 2008-10



Source: Annual District Deaths Extract & mid-year population estimates (Office for National Statistics); smoking-attributable fractions published by NHS Information Centre  
Horizontal lines (—) show 95 per cent confidence interval

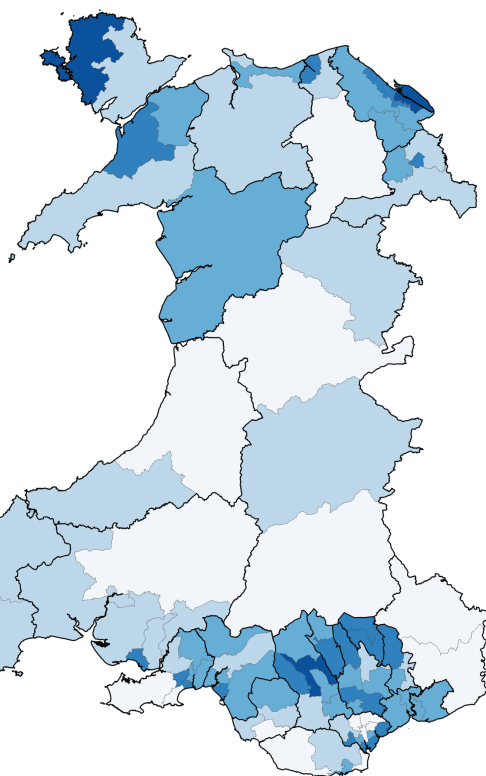
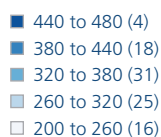
Maps of death rates from smoking in Upper Super Output Areas (USOAs, figure 33) add further detail to the geographical pattern shown in figure 32. Rates are high in males living in the west of the Isle of Anglesey and the east of Flintshire, and females living in the southeast part of Neath Port Talbot. Local variation is also apparent, with a clear disparity in rates between north and south Cardiff for both males and females. This reflects the USOA map of smoking prevalence (figure 9). Nationally, there is more than a threefold difference between the highest and lowest USOA rates in females, a difference which is slightly smaller in males. This echoes the wider inequalities in females shown in figure 31.



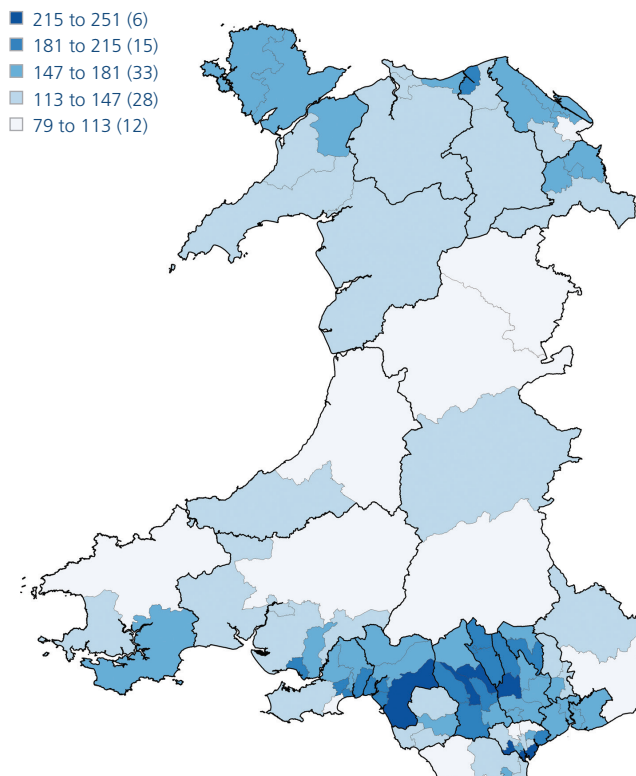
Figure 33

Smoking-attributable mortality, age 35 and over, Upper Super Output Areas (USOAs), age-standardised rate per 100,000, 2008-10

Males



Females



USOA boundary  
Local authority boundary

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Source: Annual District Deaths Extract & mid-year population estimates (Office for National Statistics); smoking-attributable fractions published by NHS Information Centre

It should be noted that the method of estimating the rate of deaths from smoking is not exact and relies on a single set of population attributable fractions which are not changed over time. To complement these data, the web-based resource accompanying this report includes rates of death from key smoking-related causes such as lung cancer and COPD. It is recommended that these rates be used to aid interpretation of the overall rate in deaths from smoking.

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

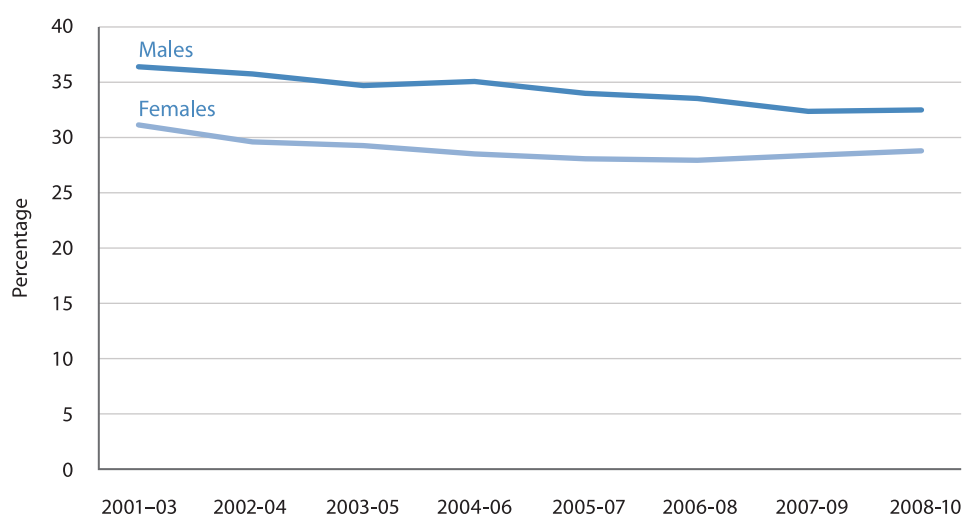
The continuing inequality in all-cause mortality, with substantially higher rates in the most deprived populations than in the least deprived, was documented in the Public Health Wales Observatory's recent profile entitled *Measuring Inequalities: Trends in mortality and life expectancy in Wales*.

Smoking has been referred to as a *proximal* cause of health inequalities<sup>45</sup>. This means that whilst differences in health across socio-economic groups can be attributed to smoking, as explored in this section, differences in smoking prevalence can in turn be attributed to social determinants of health such as education, employment and housing. As a result, whilst helping people to stop smoking is an important aim, long-term reductions in health inequalities are more likely to result from a range of complementary programmes addressing these social determinants.

It has already been shown in this report that smoking prevalence, and consequently smoking-attributable mortality, is higher in the most deprived areas of Wales than in the least deprived (figures 10 and 31). Presented in figure 34 is an estimate of the contribution of smoking-attributable mortality to the inequality in all-cause mortality. In effect, this is an estimate of the reduction in the all-cause mortality inequality that could eventually (given a suitable time lag) be achieved if smoking prevalence, and hence smoking-attributable mortality, in the most deprived populations was reduced to the same level as in the least deprived. See the technical guide online for further methodological information.

Figure 34

Percentage of inequality in mortality attributable to smoking, age 35 and over, 2001-03 to 2008-10



Source: Annual District Deaths Extract & mid-year population estimates (Office for National Statistics); Welsh Index of Multiple Deprivation 2011 (Welsh Government); smoking-attributable fractions published by NHS Information Centre

It is clear that smoking is, and will continue to be, a major contributor to the gap in all-cause mortality. It is estimated that smoking-attributable mortality accounts for around a third of the all-cause mortality inequality in males and only a little less for females.

Over the past decade, the percentage of the all-cause mortality inequality that can be attributed to smoking has fallen slightly for both sexes. This is because whilst the *relative mortality gap*, i.e. the rate in the most deprived divided by the rate in the least deprived, has increased, the *absolute mortality gap*, i.e. the rate in the most deprived minus the rate in the least deprived, has decreased. There may also have been changes in the patterns of other causes of death that have contributed to the relative influence of smoking on inequality in mortality. The rate of decline appears to be greater for males than females. As a result, the difference between the sexes, in terms of the percentage of the all-cause inequality attributable to smoking, is narrowing.

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

---

This section shows trends in premature mortality for selected causes of death which contribute heavily to smoking-attributable mortality (figure 29). Charts showing local authority and health board rates for these causes of death can be found in the online interactive spreadsheets accompanying this report.

As the following charts show, mortality rates in Wales are generally falling and are either similar to or slightly higher than overall rates for the UK. Inequalities between the least and most deprived areas of Wales are generally slightly larger in females than in males, but in both sexes are remaining consistent or growing.

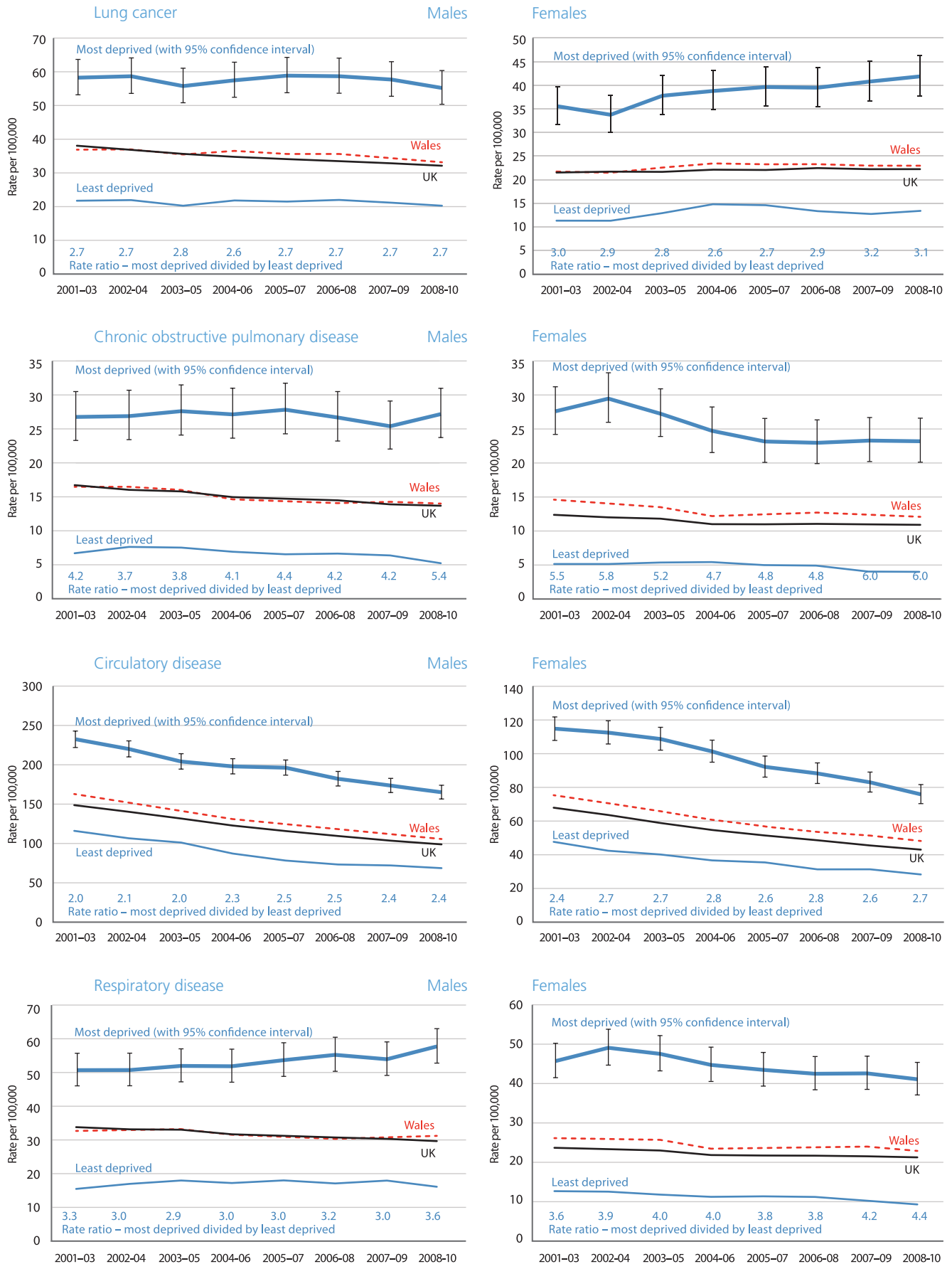
However, rates of respiratory disease mortality in the most deprived males have risen since 2001-03. This may not be linked to diseases attributable to smoking, since the corresponding mortality rate for chronic obstructive pulmonary disease (COPD, which causes the majority of smoking-related deaths due to smoking in males) has remained fairly steady over the period.

Lung cancer mortality rates in females are also noteworthy, in that overall rates in Wales and the UK have remained largely unchanged since 2001-03. Rates in the most deprived females have risen from 36 to 42 per 100,000 over the period, whilst for males these figures have remained stable or fallen slightly. This is likely to be a reflection of the historic differences in smoking prevalence between males and females<sup>46</sup>. Tobacco consumption peaked later in the 20th century in females than in males (figure 1), and given the time lag between changes in prevalence and mortality, this may explain the fact that lung cancer mortality rates have not yet started to fall in females.

The inequality in premature mortality is noticeably larger for COPD than any other cause of death, with rate ratios rising to 5.4 in males and 6.0 in females by the end of the period. Around 80 per cent of deaths from COPD are due to smoking, so this large inequality reflects the difference in smoking prevalence across socio-economic groups shown in figure 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



Source: Annual District Deaths Extract & mid-year population estimates (Office for National Statistics); Welsh Index of Multiple Deprivation 2011 (Welsh Government)

## 5.2.4 Smoking-attributable hospital admissions

Smoking is associated with a wide variety of diseases that can result in admission to hospital. In 2010, around 27,700 admissions in people aged 35 and over are estimated to have been caused by smoking, which represents approximately 5.3 per cent of all admissions in this age group. In England, for financial year 2009/10, this figure was slightly lower at 4.7 per cent. These proportions are considerably lower than for smoking-attributable mortality (table 4), which is likely to reflect the relatively larger numbers of hospital admissions which are not attributable to smoking. Under the method used, individual people could be counted numerous times for repeated admissions to hospital.

Table 5 shows that of all admissions in males in 2010, around seven per cent are estimated to be due to smoking, higher than in females (four per cent). When considering the most deprived areas, the number of attributable admissions increases to eight per cent in males and five per cent in females. This is likely to be a result of the increased prevalence of smoking in more deprived areas (figure 10).

Table 5

Counts and percentages of hospital admissions attributable to smoking, age 35 and over, by cause and deprivation fifth (Welsh Index of Multiple Deprivation (WIMD) 2011), 2010

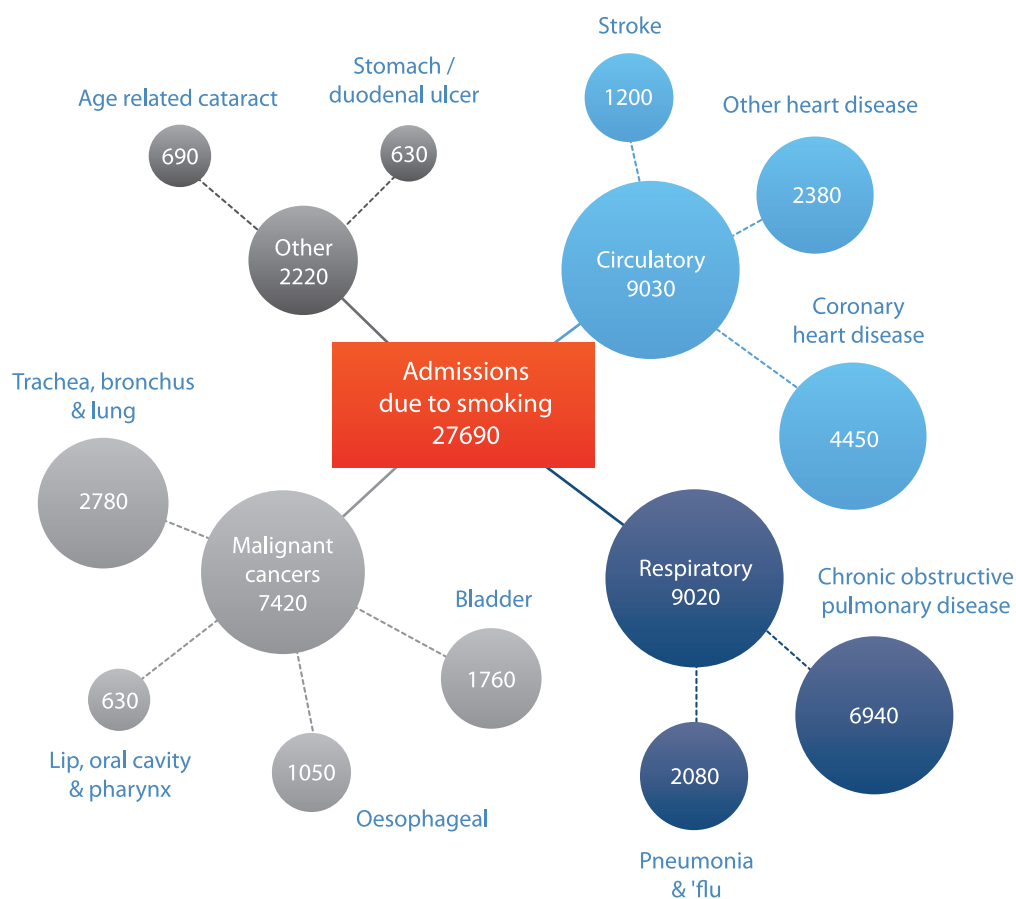
	Males			Females		
	Number of admissions		Attributable to smoking (per cent)	Number of admissions		Attributable to smoking (per cent)
	All	Attributable to smoking		All	Attributable to smoking	
Wales						
All admissions	246,750	17,020	6.9	276,690	10,670	3.9
All cancers	27,180	5,210	19.2	25,060	2,210	8.8
All circulatory disease	31,320	6,240	19.9	24,560	2,800	11.4
All respiratory disease	15,500	4,620	29.8	16,230	4,400	27.1
All diseases of the digestive system	34,680	450	1.3	36,260	440	1.2
By WIMD 2011 fifth (all admissions)						
5 - most deprived	49,680	3,990	8.0	55,910	2,790	5.0
4	51,170	3,710	7.3	57,220	2,390	4.2
3 - middle	52,020	3,550	6.8	58,260	2,160	3.7
2	49,550	3,240	6.5	55,230	1,830	3.3
1- least deprived	44,340	2,530	5.7	50,070	1,500	3.0

Source: Patient Episode Database for Wales (NHS Wales Informatics Service); Welsh Index of Multiple Deprivation (Welsh Government); smoking-attributable fractions published by NHS Information Centre

Two thirds of all admissions caused by smoking in 2010 were the result of circulatory and respiratory diseases (figure 36), with most of the remainder due to cancers. Respiratory disease caused a higher proportion of smoking-attributable admissions in females (41 per cent) than males (27 per cent), with the pattern reversed for circulatory disease (37 per cent in males and 26 per cent in females).

Figure 36

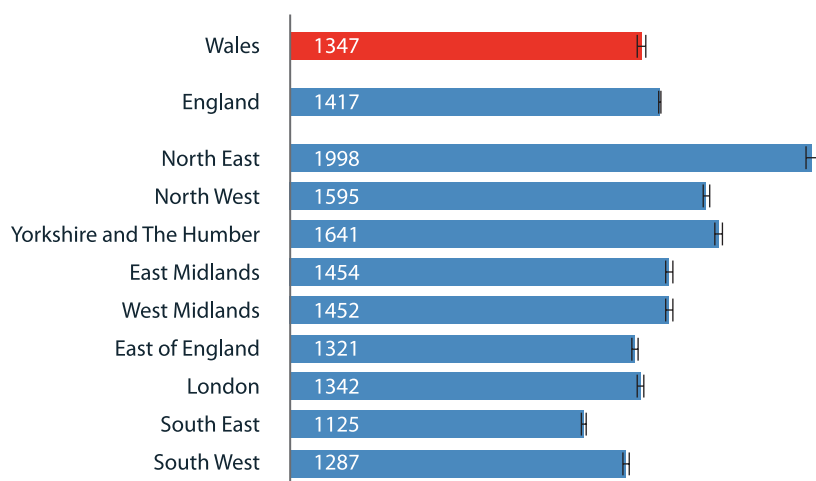
Counts of hospital admissions attributable to smoking for selected causes, age 35 and over, 2010



Source: Patient Episode Database for Wales (NHS Wales Informatics Service); smoking-attributable fractions published by NHS Information Centre

Figure 37

Smoking-attributable hospital admissions, age 35 and over, age-standardised rate per 100,000, English Regions (2009/10), Wales (2009)



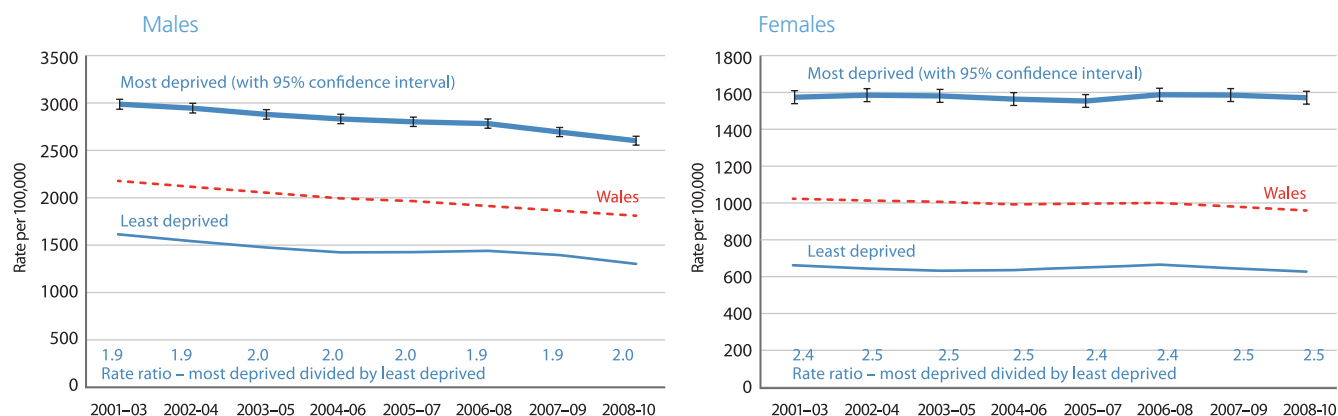
Source: Wales: Patient Episode Database for Wales (NHS Wales Informatics Service); Mid-year population estimates (Office for National Statistics); smoking-attributable fractions published by NHS Information Centre; England: Local Tobacco Control Profiles for England (Public Health Observatories in England)

Horizontal lines ( — ) show 95 per cent confidence interval

The rate of hospital admissions caused by smoking in Wales is lower than in England overall (figure 37), which is surprising given that both smoking-attributable mortality (figure 30) and the percentage of all admissions that are attributable to smoking are higher in Wales (page 42). Using published hospital admissions figures<sup>47,48</sup> the overall crude rate of admissions in Wales residents (260 per 1,000 population) is lower than in England (279 per 1,000). Therefore, lower rates of smoking-attributable admissions in Wales compared to England may reflect wider differences in referral patterns and both the demand for and the supply of hospital services. A cautionary note should also be added: although care has been taken to ensure consistency in methods, there will inevitably be differences in the recording of hospital data between the separate systems in use in England and Wales.

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



Source: Patient Episode Database for Wales (NHS Wales Informatics Service); mid-year population estimates (Office for National Statistics); Welsh Index of Multiple Deprivation 2011 (Welsh Government); smoking-attributable fractions published by NHS Information Centre

Generally the rate of smoking attributable admissions is falling in males living in Wales; this trend can be seen across the deprivation fifths. However, this is not the case for females, where the admission rate has remained fairly consistent. This is likely to reflect differences in historical smoking patterns between the sexes, as described in relation to the mortality trends in figure 31.

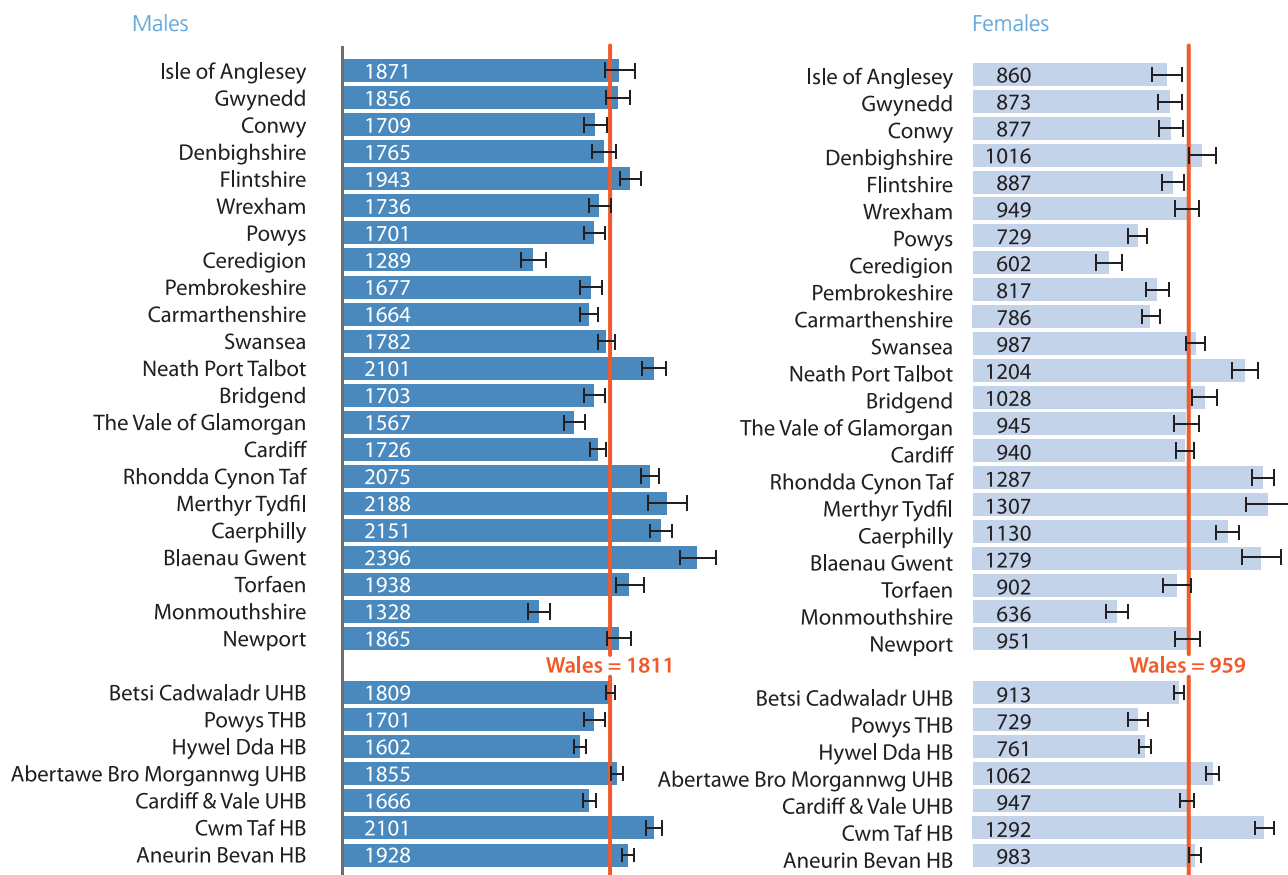
Males in the most deprived fifth are around twice as likely to be admitted to hospital as a result of smoking than males in the least deprived fifth. In females this gap is slightly wider, as in the case of mortality due to smoking (figure 31). In both sexes, the gap has remained fairly stable over the period.

It should be noted that the method of estimating the rate of hospital admissions due to smoking is not exact and relies on a single set of population attributable fractions which are not changed over time.



Figure 39

Smoking-attributable hospital admissions, age 35 and over, local authorities and health boards, age-standardised rate per 100,000, 2008-10



Source: Patient Episode Database for Wales (NHS Wales Informatics Service); mid-year population estimates (Office for National Statistics); smoking-attributable fractions published by NHS Information Centre  
Horizontal lines (—) show 95 per cent confidence interval

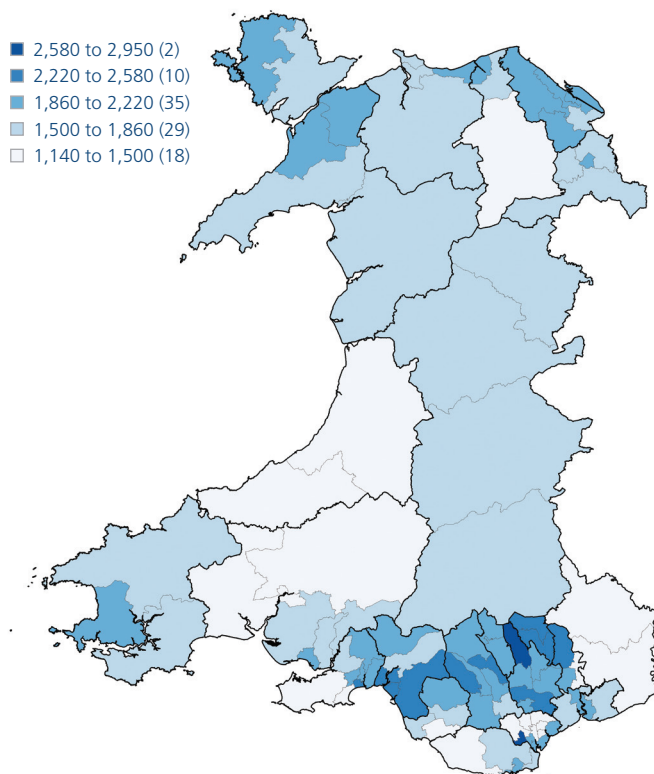
The variation in smoking-attributable hospital admission rates between local authorities is generally consistent with the prevalence of smoking in these areas. However, perhaps reflecting the wider inequalities in females shown in figure 38, there is greater local variation in local authority rates in females than males. For example, the admission rate in males in the Cwm Taf Health Board area is around 16 per cent higher than the Wales rate, whereas in females it is 35 per cent higher.

This pattern is also reflected at Upper Super Output Area level (figure 40), where more than a threefold difference in rates can be found in females (520 to 1,710 per 100,000) compared to a range of 1,140 to 2,950 per 100,000 in males. In both sexes, the areas with high smoking prevalence (figure 9) generally show high rates of admissions, for example in southern Cardiff, the more northerly areas of the South Wales Valleys, and parts of North Wales such as Rhyl.

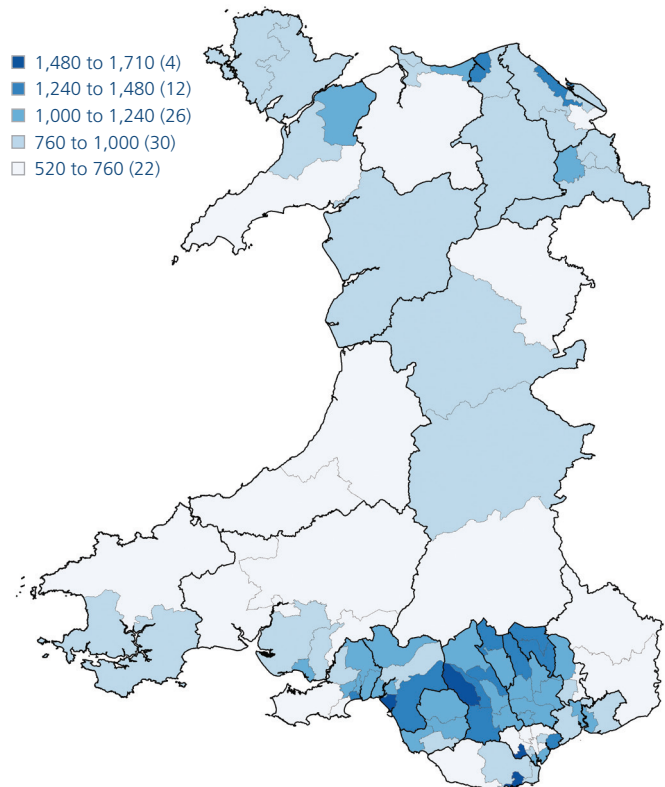
Figure 40

Smoking-attributable hospital admissions, age 35 and over, Upper Super Output Areas (USOAs), age-standardised rate per 100,000, 2008-10

Males



Females



USOA boundary  
Local authority boundary

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Source: Patient Episode Database for Wales (NHS Wales Informatics Service); mid-year population estimates (Office for National Statistics); smoking-attributable fractions published by NHS Information Centre

## 6 Affordability

Increasing the price of tobacco products, for example, by raising levels of taxation, is a key strategy in tobacco control. There is evidence that making tobacco less affordable encourages current users to quit, as well as preventing young people from starting to smoke and lowering consumption in smokers who do not quit<sup>49</sup>.

Figure 41 shows that tobacco is 33 per cent less affordable in the UK than in 1980. This is because the relative price of tobacco has increased more than disposable income over the last 30 years. In the South Wales Valleys, tobacco should be comparatively even less affordable, given that disposable income is currently around 20 per cent lower than the UK average<sup>50</sup>.

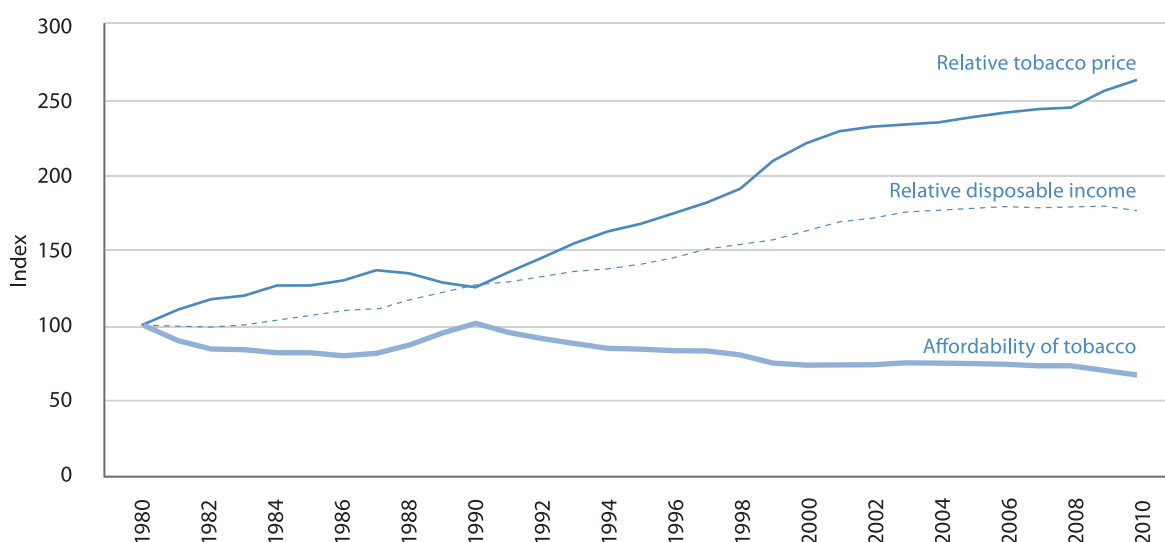
Yet the effectiveness of price in controlling tobacco, perhaps especially in deprived areas such as the South Wales Valleys, is hampered by smuggling. Illicit products provide a cheaper alternative for people living in relative poverty, facilitating continued heavy tobacco use and thus contributing to the perpetuation of health inequalities<sup>51</sup>.

Although efforts to limit tobacco smuggling in recent years are considered to have been successful, latest estimates suggest that around one in ten cigarettes and half of all hand-rolling tobacco smoked in the UK are illicit<sup>51</sup>. Of concern recently has been an upward trend in the supply of 'illicit white' cigarettes, which are manufactured solely for smuggling and have been found to contain high levels of toxic heavy metals such as cadmium and lead<sup>52</sup>.

In Wales, a survey of around 500 smokers living in the South Wales Valleys found that around one in four had purchased tobacco products brought into the UK by someone who was not a friend or relative<sup>53</sup>. This study also found that younger and heavier smokers were most likely to buy illicit tobacco.

Figure 41

Change in affordability of tobacco over time, UK, 1980-2010



Source: NHS Information Centre; Office for National Statistics

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Data supplied by



## 7 Examples of successful tobacco control policy from California and Singapore

The *Tobacco Control Action Plan for Wales* aims to reduce adult smoking prevalence levels to 16 per cent by the year 2020<sup>6</sup>. Such a decrease in smoking rates is a challenging yet attainable aim as it has been achieved elsewhere, including in California and Singapore. The key component of their success has been a sustained multi-faceted approach, including developing and supporting long term multi-tiered policies and programmes, incorporating legislative measures, smoking cessation services, partnerships with key stakeholders, and mass media campaigns<sup>6</sup>.

### Box 2

The four priority areas within the California Tobacco Control Program

- Countering pro-tobacco influences in the community
- Reducing exposure to second-hand smoke
- Reducing the availability of tobacco
- Promoting services that help smokers quit

California has a long history as an international leader in tobacco control. The landmark 1988 *California Tobacco Tax and Health Protection Act* dedicated 5 cents of the 25-cent tax on cigarettes to fund the California Tobacco Control Program<sup>54</sup> (CTCP) (Box 2), including funding for local health departments and community organisations, a groundbreaking media campaign, and tobacco-related evaluation and surveillance.

This comprehensive approach has changed public attitudes toward tobacco use, creating an environment where tobacco is less desirable, less acceptable, and less accessible. As a result, smoking prevalence among adults has fallen from 26.7 per cent in 1985 to 13.1 per cent in 2009<sup>54</sup>. In Wales, prevalence fell from 31 to 23 per cent over a similar period (figure 4).

Singapore also has one of the strongest tobacco control legislations in the world. Efforts to promote a smoke-free lifestyle in Singapore started in the 1970s when legislations were enacted to ban smoking in public places and prohibit tobacco advertising and promotion. In 1986, the National Tobacco Control Programme, a comprehensive long-term programme for smoking control was launched<sup>55</sup>. The programme uses a comprehensive strategy to promote non-smoking in Singapore and has contributed to reducing smoking levels from 20 per cent in 1984 to 12.6 per cent in 2004<sup>55</sup>.

### Box 3

Target areas within Singapore's National Tobacco Control Programme

- Raising tobacco taxation
- Tobacco control legislation
- Improving public education
- Increasing partnership working
- Additional provision of smoking cessation services

Central to the successful tobacco control measures introduced by these countries and states is the World Health Organization Framework Convention on Tobacco Control (WHO FCTC). The WHO FCTC is a legally binding global treaty that provides the foundation for countries to implement and manage tobacco control programmes<sup>56</sup>. As of May 2011, the WHO FCTC had 173 Parties covering 87 per cent of the world's population.

To help countries fulfil their WHO FCTC obligations, the WHO in 1998 introduced the MPOWER package of six evidence-based tobacco control measures that are proven to reduce tobacco use. The MPOWER measures provide practical assistance with country-level implementation of effective policies to reduce the demand for tobacco. Together, health warning labels and anti-tobacco mass media campaigns are the most widely embraced MPOWER measures, based on population coverage<sup>56</sup>.

Box 4



The six components of MPOWER

- Monitor tobacco use and prevention policies
- Protect people from tobacco smoke
- Offer help to quit tobacco use
- Warn about the dangers of tobacco
- Enforce bans on tobacco advertising, promotion and sponsorship
- Raise taxes on tobacco

## 8 Implications for public health

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The major implications for public health from this report are presented below. Many of these actions are included in the *Tobacco Control Action Plan for Wales*.

- The rate of decline in smoking prevalence has slowed in Wales in recent years. Sustained and multi-agency partnership working will be required on a national and local level to drive down prevalence to the target of 16 per cent set by the Welsh Government for 2020. International examples demonstrate that such figures are achievable given appropriately bold policy, such as in California, where a proportion of tobacco tax revenue is channelled directly to local interventions to reduce smoking.
- Reducing the high levels of smoking in deprived areas requires innovative implementation of brief interventions and formal cessation services. Proportionate action across the deprivation range, addressing the social determinants of health, is required to level out continuing health inequalities of which smoking is a proximal cause.
- Too many young people in Wales are taking up smoking and carrying on the habit into later life. The removal of cigarette vending machines from public houses is a positive step towards reducing access to tobacco. However, given the addictive nature of smoking and its impact on health, evidence-based interventions need to be implemented from a young age on a Wales-wide basis to reduce uptake. The attractiveness of tobacco products could also be reduced by introducing plain packaging and removing them from view in shops. Supermarkets and large shops in England were banned from displaying tobacco in April 2012.
- The legislation banning smoking in enclosed public places has reduced exposure to second-hand smoke. However, children remain vulnerable to exposure at home and in cars. The existing campaigns to reduce such exposure require national and local backing. Robust monitoring of children's exposure to smoking in cars should remain in place.
- Despite showing signs of falling, the rate of smoking in pregnancy in Wales is still the highest in the UK. Focussed efforts are required to help young mothers and those from routine and manual occupational groups to stop smoking.
- Smuggling is maintaining the affordability of tobacco products. Evidence-based local campaigns are required to educate smokers on the dangers of illicit cigarettes.

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