

# Correction Notices

## Health Statistics Quarterly No. 43, Autumn 2009

### 22 June 2010

A production error was identified in this release, originally published on 26 August 2009. On page 43, it incorrectly states that 'Between 2004 and 2008, *C. difficile* was involved in 1 per 1,000 deaths in England and Wales'. The correct figure is '10.5 per 1,000'. The figures in the tables are not affected.

ONS apologises for any inconvenience caused.

### 28 January 2010

A further production error was identified in this release, resulting in some incorrect figures in Table 4 (All deaths relating to drug misuse) on p.53, in the 'Deaths related to drug poisonings in England and Wales, 2008' report. The figures affected were for males and females, for the years 2004, 2005 and 2006. These are now correct. The corrected data are in the following link

<http://www.statistics.gov.uk/statbase/Expodata/Spreadsheets/D7892.xls>

These same figures were reported correctly in the 'All ages' category in Table 4 and also in Table 3.

ONS apologises for any inconvenience caused.

### 28 August 2009

A production error has been corrected in this issue of Health Statistics Quarterly, originally published on 26 August 2009. In the report Death registrations in England and Wales, 2008, causes on page 68 the text incorrectly stated that the total number of deaths registered in 2008 for females was '260,076'. This has now been corrected to read '266,076'. The figure in Tables 2 and 3 is correct.

ONS apologises for any inconvenience caused.

Issued by:  
Office for National Statistics  
Government Buildings  
Cardiff Road  
Newport NP10 8XG

Telephone:  
Media Office 0845 604 1858  
Contact Centre 0845 601 3034

# Health Statistics Quarterly

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*Tom Clemens, Paul Boyle and Frank Popham*

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## Contacts

### This publication

For information about this publication, contact the editors:

Myer Glickman

Carol Summerfield

tel: 020 7014 2389, email: [hsq@ons.gsi.gov.uk](mailto:hsq@ons.gsi.gov.uk)

### Other customer and media enquiries

ONS Customer Contact Centre

Tel: 0845 601 3034

International: +44 (0)845 601 3034

Minicom: 01633 812399

Email: [info@statistics.gsi.gov.uk](mailto:info@statistics.gsi.gov.uk)

Fax: 01633 652747

Post: Room 1015, Government Buildings,  
Cardiff Road, Newport, South Wales NP10 8XG  
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## Dates for submissions

Title \ Issue	Spring	Summer	Autumn	Winter
<i>Health Statistics Quarterly</i>	by 11 Sept	by 11 Dec	by 22 Mar	by 21 June
<i>Population Trends</i>	by 23 Oct	by 2 Feb	by 4 May	by 26 July

### Please send to:

Health Statistics Quarterly  
Office for National Statistics  
GE112  
1 Myddelton Street  
London  
EC1R 1UW

# in brief

## Changes to ONS publications

### Health Statistics Quarterly and Population Trends: The future

The Office for National Statistics (ONS) proposes that both *Health Statistics Quarterly* and *Population Trends* will be developed as online journals. The aim is to make this change from January 2010.

ONS intends that both journals will continue to have a strong 'brand identity' and will maintain their status and reputation as journals of record, with peer-reviewed scientific content to recognised standards. The journals will continue to be included in international citation indexes. The 'web' publication approach will be accompanied by greater integration with the statistical content of the ONS website, and ONS plans to take the opportunity to promote wider access to *Health Statistics Quarterly* and *Population Trends* throughout the academic and policy communities.

Further details of these developments will be announced in due course. Palgrave Macmillan will contact current subscribers to both journals as necessary about the option to migrate their accounts to receive the new online journals.

### Life events publications

ONS publishes several annual reference volumes currently as pdf files enhanced with Excel files. As part of modernising ONS outputs, the format of *Conception Statistics*, *Cancer Statistics* (MB1) and *Congenital Anomaly Statistics* (MB3) due to be published in 2009 and 2010 will be reviewed. Proposals for changes are also being developed for both the content and format of *Mortality Statistics: Childhood, Infant and Perinatal* (DH3), *Marriage, Divorce and Adoption Statistics* (FM2), *Mortality Statistics: Deaths Registered* (DR) and *Birth Statistics* (FM1) due to be published in 2010. Further details will be published later in the year.

Comments from users of these annual reference volumes are welcome. Please email: [vsob@ons.gov.uk](mailto:vsob@ons.gov.uk)

### Social Trends: Life begins at 40!

The belief that 'life begins at 40' looks to be true for *Social Trends*, one of the flagship publications of the Government Statistical Service. ONS is proud to publish *Social Trends*, and to continuously develop it, recognising the significant input of many people who contribute content to *Social Trends* and help to quality assure it. *Social Trends* celebrates its 40th year in 2010 and to mark the anniversary is changing its publishing strategy by making some chapters available online earlier than usual. The theme for this edition is 'forty years of social trends in the UK'. After the 40th edition, it is intended to phase out the print publication to evolve into a fully fledged web only publication.

The aim of developing an electronic-only *Social Trends* is to:

- increase opportunities for publicising and promoting *Social Trends* content
- ensure more timely release of topic-based statistical summaries, and
- strengthen links with material published elsewhere

*Social Trends* is currently available as a printed publication as well as being available electronically on the Office for National Statistics website at: [www.statistics.gov.uk/socialtrends](http://www.statistics.gov.uk/socialtrends)

Full reports for each edition from *Social Trends* 30 onwards are available from the Social Trends Archive as interactive pdf files where Excel spreadsheets containing the data used in the publication can be accessed and downloaded by clicking the relevant chart or table.

For further information on these changes, please visit the Office for National Statistics website at: [www.statistics.gov.uk/socialtrends39](http://www.statistics.gov.uk/socialtrends39)

## Health care output

On 9 June, the UK Centre for the Measurement of Government Activity (UKCeMGA) published a study showing the latest estimates of publicly funded health care output in the UK covering the period 1995 to 2007. The article is part of a series of work at ONS based on the recommendations in the *Atkinson Review: Final Report* (Atkinson 2005). Being the part of ONS responsible for implementing the Atkinson Review, UKCeMGA develops methodology and results for estimating public service output and productivity and publishes them on the Office for National Statistics website at: [www.statistics.gov.uk/ukcemga](http://www.statistics.gov.uk/ukcemga)

Key points from the article:

- Publicly funded health care output in the UK grew by 3.3 per cent in 2006 and by 3.2 per cent in 2007
- The estimate of average annual growth of publicly funded health care output between 1995 and 2007 was 3.8 per cent

These new estimates take account of: the change in the categorisation of health activity between 2005/06 and 2006/07 to allow the existing series to be updated to 2007; an improvement to the way in which drugs are treated as part of GPs output; an estimate of quality adjusted output for 2006, which was not previously available; and a forecast of quality adjusted output for 2007.

The full article is available on the Office for National Statistics website at: [www.ons.gov.uk/about-statistics/ukcemga/publications-home/publications/index.html](http://www.ons.gov.uk/about-statistics/ukcemga/publications-home/publications/index.html)

## Smoking-related behaviour and attitudes 2008/09

On 28 July 2009 ONS released results from the *Opinions Survey Report No. 40: Smoking-related Behaviour and Attitudes 2008/09* which covered the period September 2008 to March 2009. The survey was carried out on behalf of the Department of Health and the NHS Information Centre for health and social care. The survey monitors changes in the general attitude towards smoking and towards smoking in public places as well as smoking behaviour and habits, giving up and stopping smoking.

Key findings from the report:

- In 2008/09, 67 per cent of smokers said they would like to give up, which was significantly lower than 2007 (74 per cent)

- The proportion of those polled who supported the smoking ban in restaurants was 93 per cent, compared with 75 per cent who agreed with the ban in pubs

The report is available on the Office for National Statistics website at: [www.statistics.gov.uk/statbase/Product.asp?vlnk=1638](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=1638)

## ONS Longitudinal Study refresh

The annual refresh of vital event registrations linked to the Office for National Statistics Longitudinal Study (ONS LS) was completed in July 2009. Researchers using the LS now have access to an extra year of vital event information to use in their research. Information on vital events is now available for 2007 with the exception of cancer registrations, which is available for 2006.

Longitudinal studies deal with change over time among individuals or groups. The ONS LS contains linked census and vital event data for 1 per cent of the population of England and Wales. Information from the 1971, 1981, 1991 and 2001 Censuses has been linked together, along with information on events such as births, deaths and cancer registrations. At each census, data on more than 500,000 sample members are included. During the 30 years of the study, around 1 million people have been recorded in the sample at some point.

The LS was set up in the 1970s to meet the need for better data on mortality and fertility. Since then it has been used to address a wide range of research questions including studies of social mobility, ageing and migration. Studies that make the fullest use of LS data are those that link social, occupational and demographic information at successive censuses to data on vital events. Examples include studies of mortality, cancer incidence and survival, and fertility patterns.

The ONS actively promotes wide use of the LS while maintaining the confidentiality of the individuals in the sample. LS records available for analysis are anonymised but the database contains individual-level data that have not been aggregated or disguised. To ensure confidentiality, these microdata are only held at ONS sites and can only be accessed from a secure area known as the Virtual Microdata Laboratory (VML). Support officers are available to help users extract and use the data. LS users can be sent aggregated data in the form of tabulations. Aggregated data are checked using the LS Clearance Protocol to ensure no statistics can be produced that are likely to identify an individual. Researchers who need to work with individual-level data may visit the VML in London to analyse their data.

For further information or for an informal discussion about using the LS, contact:

Government and other non-academic users  
Tel: +44 (0) 1633 45 5936  
Email: [maus@ons.gsi.gov.uk](mailto:maus@ons.gsi.gov.uk)  
Website: [www.ons.gov.uk/about/who-we-are/our-services/longitudinal-study](http://www.ons.gov.uk/about/who-we-are/our-services/longitudinal-study)

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Email: [celsius@lshtm.ac.uk](mailto:celsius@lshtm.ac.uk)  
Website: [www.celsius.lshtm.ac.uk](http://www.celsius.lshtm.ac.uk)

## Joining Forces conference

Joining Forces on Mortality and Longevity: A Multidisciplinary Conference on Research in Mortality is being held on 21–22 October 2009 at the Royal College of Physicians, Edinburgh.

Mortality and longevity are of fundamental importance to the world of medicine, finance and social care. The pace of change is not merely evolving over time: new science and new analysis techniques are providing insights into developments at a previously inconceivable rate. This conference will be invaluable to those needing to understand and influence change, and to those who are driving or responding to developments in the many disciplines involved. It will bring together practitioners and researchers. It is particularly important for:

- policy makers and practitioners in business and financial services
- academic and medical researchers
- pensions and life assurance actuaries who make decisions on mortality bases
- early career researchers
- users of research, including potential funders such as research councils, and
- other professionals wishing to keep pace with developments

The Organising Committee invites submissions of posters addressing these themes from actuaries, academic and medical research users. Submissions from PhD/Masters students are particularly welcomed. Subsidised places will be available for PhD/Masters students and a prize will be offered for the best paper by a PhD/Masters student.

For more information visit: [www.actuaries.org.uk/events/mortality2009](http://www.actuaries.org.uk/events/mortality2009)

## Health Statistics Quarterly 42 correction

There was an error in *Health Statistics Quarterly* 42 Summer 2009, page 11, Table 6. The age stated in the title of Table 6 should read 25–59 and not 25–29 as shown.

## Recent and forthcoming ONS releases

### Recent releases

11 June

*Focus on Children and Young People update*

[www.statistics.gov.uk/statbase/product.asp?vlnk=15232](http://www.statistics.gov.uk/statbase/product.asp?vlnk=15232)

24 June

*Regional Trends No. 41 2009 edition*

[www.statistics.gov.uk/statbase/product.asp?vlnk=14356](http://www.statistics.gov.uk/statbase/product.asp?vlnk=14356)

Print copies available from Palgrave Macmillan 01256 302611

25 June

*Population Trends No. 136 Summer 2009*

[www.statistics.gov.uk/statbase/product.asp?vlnk=6303](http://www.statistics.gov.uk/statbase/product.asp?vlnk=6303)

Print copies available from Palgrave Macmillan 01256 357893

8 July

*Probability of survival to age 75 for local authorities in England and Wales, 2005–07*

[www.statistics.gov.uk/statbase/product.asp?vlnk=15105](http://www.statistics.gov.uk/statbase/product.asp?vlnk=15105)

9 July

*Annual Abstract of Statistics 2009 edition*

[www.statistics.gov.uk/statbase/product.asp?vlnk=94](http://www.statistics.gov.uk/statbase/product.asp?vlnk=94)

Print copies available from Palgrave Macmillan 01256 302611

28 July

*Smoking-related attitudes and behaviour, 2008/09*

[www.statistics.gov.uk/statbase/product.asp?vlnk=1638](http://www.statistics.gov.uk/statbase/product.asp?vlnk=1638)

26 August

*Quarterly conceptions to women under 18 – quarter 2 2008*

[www.statistics.gov.uk/statbase/ssdataset.asp?vlnk=4877](http://www.statistics.gov.uk/statbase/ssdataset.asp?vlnk=4877)

### Forthcoming releases

27 August

*Births and Deaths 2008 registered in England and Wales (final)*

[www.statistics.gov.uk/statbase/product.asp?vlnk=14408](http://www.statistics.gov.uk/statbase/product.asp?vlnk=14408)

2 September

*Infant and perinatal mortality 2008: health areas, England and Wales*

24 September

*Population Trends No. 137 Autumn 2009*

[www.statistics.gov.uk/statbase/product.asp?vlnk=6303](http://www.statistics.gov.uk/statbase/product.asp?vlnk=6303)

Print copies available from Palgrave Macmillan 01256 357893

15 October

*Cancer registration statistics 2007*

[www.statistics.gov.uk/statbase/product.asp?vlnk=7720](http://www.statistics.gov.uk/statbase/product.asp?vlnk=7720)

15 October

*Mortality statistics: deaths registered in 2008 (DR)*

[www.statistics.gov.uk/statbase/product.asp?vlnk=15096](http://www.statistics.gov.uk/statbase/product.asp?vlnk=15096)

20 October

*Contraception and sexual health, 2008/09*

[www.statistics.gov.uk/statbase/product.asp?vlnk=6988](http://www.statistics.gov.uk/statbase/product.asp?vlnk=6988)

21 October

*Life expectancy at birth and at 65 by local areas in the United Kingdom, 2006–08*

[www.statistics.gov.uk/statbase/product.asp?vlnk=8841](http://www.statistics.gov.uk/statbase/product.asp?vlnk=8841)

21 October

*National interim life tables, 2006–08*

[www.statistics.gov.uk/statbase/product.asp?vlnk=14459](http://www.statistics.gov.uk/statbase/product.asp?vlnk=14459)

29 October

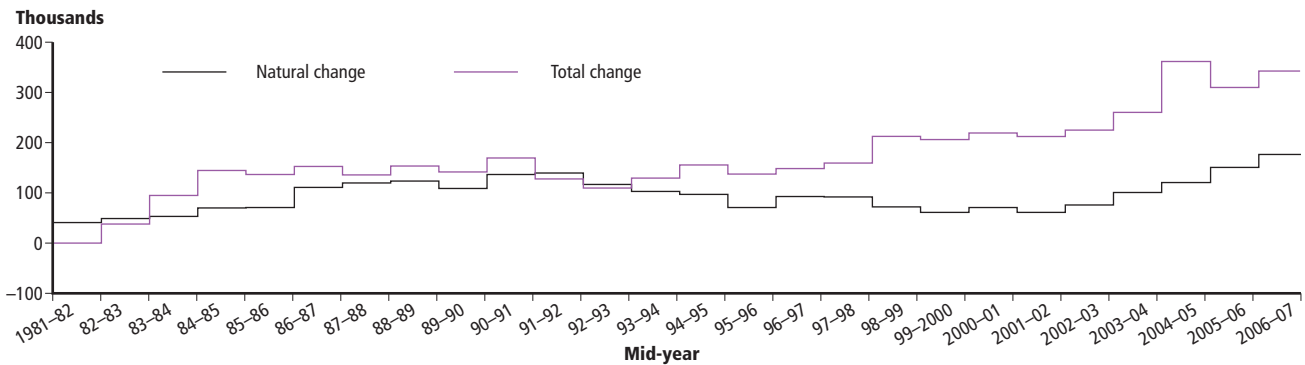
*Occupational Mortality in England and Wales, 1991–2000*

For further information, contact the ONS Customer Contact Centre 0845 601 3034, email [info@statistics.gsi.gov.uk](mailto:info@statistics.gsi.gov.uk)

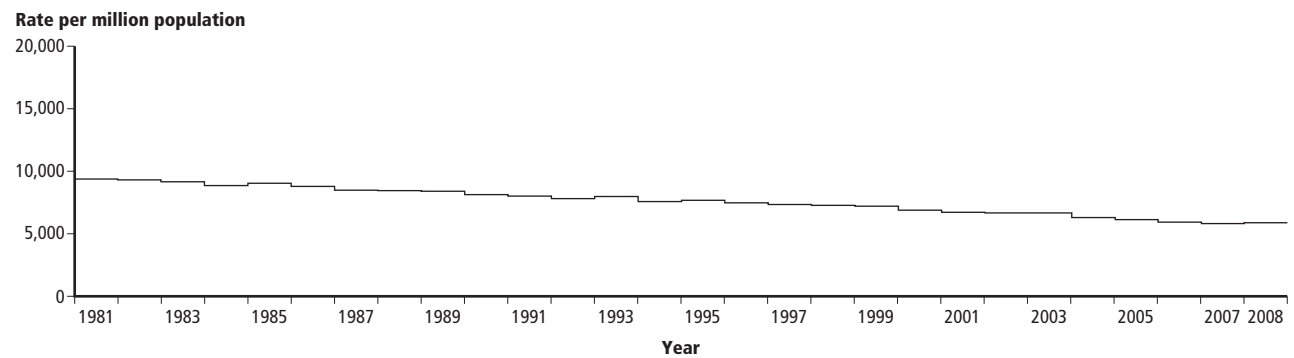
# Health indicators

England and Wales

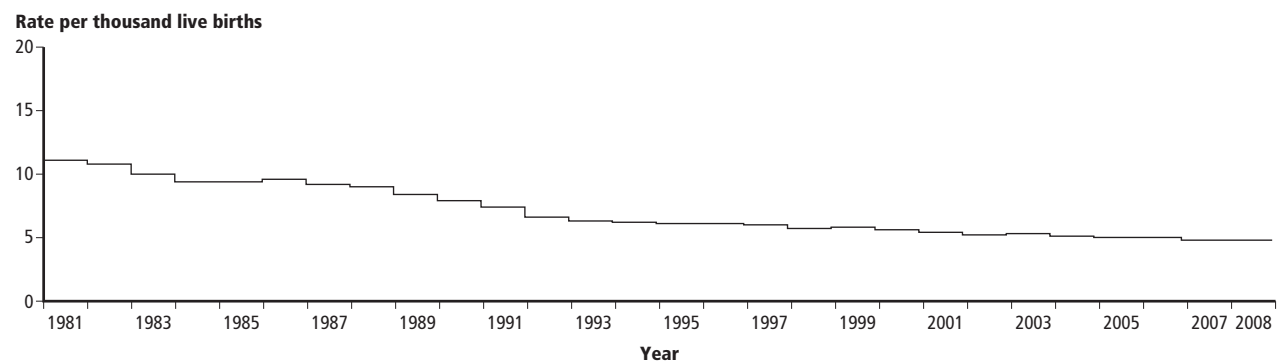
**Figure A** Population change (mid-year to mid-year)



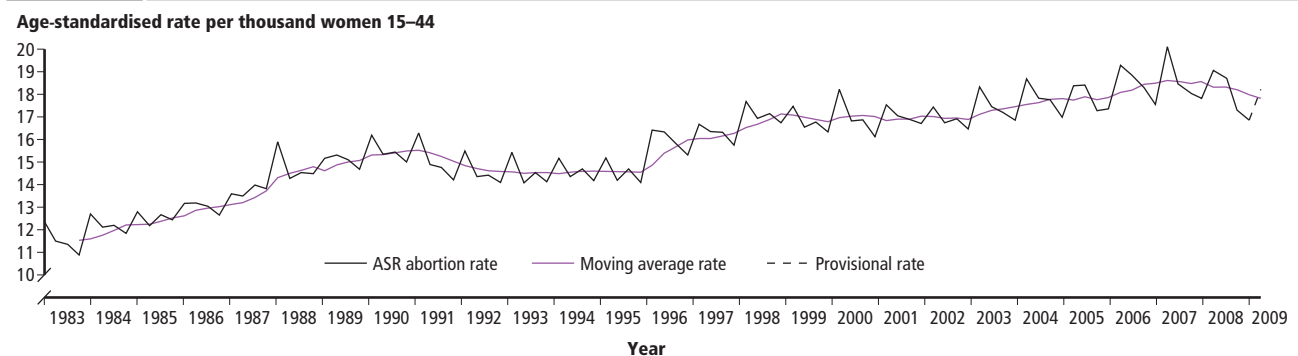
**Figure B** Age-standardised mortality rate<sup>1</sup>



**Figure C** Infant mortality (under 1 year)



**Figure D** Age-standardised quarterly abortion rates – residents<sup>2</sup>



1 The age-standardised mortality rate for 2007 and 2008 is based on mid-2007 population estimates published on 21 August 2007.

2 Rates for 2008 and 2009 are based on projected projections.

# Unemployment, mortality and the problem of health-related selection: Evidence from the Scottish and England & Wales (ONS) Longitudinal Studies

Tom Clemens, Paul Boyle and Frank Popham  
Longitudinal Studies Centre – Scotland (LSCS), University of St Andrews

Testing whether unemployment causes health deterioration is complicated because failing health may increase the probability of unemployment. In some previous studies of unemployment and mortality a 'wear-off' period is used to exclude any deaths occurring in the first few years after employment status was observed. It is assumed that selection effects will wear-off during this period. In this article the effectiveness of using wear-off periods is tested. Using data from the Scottish Longitudinal Study and the England and Wales Longitudinal Study, logistic regression models were used for estimating the odds of death in a given time period after the 1991 Census for those aged 35–64 in 1991. The odds ratios for the different economic positions (in work, unemployed, retired, permanently sick and other inactive) were compared, as well as the changes in risk associated with cumulatively increasing the length of wear-off prior to follow-up. No evidence was found of health-related selection for the unemployed in 1991. This observation was consistent across both studies. This suggests that the use of the five year wear-off period in many studies of mortality and unemployment may be an ineffective and unnecessary technique for mitigating the effects of health-related selection.

## Introduction

The potential for unemployment to negatively affect an individual's health status has been the focus of much research.<sup>1</sup> Associations between a spectrum of health outcomes and unemployment have been empirically borne out in the literature including mental health,<sup>2,3</sup> substance use and teenage pregnancy,<sup>4</sup> suicidal behaviours<sup>5</sup> and limiting long-term illness (LLTI).<sup>6</sup> In addition to these outcomes much work has sought to investigate associations between unemployment and mortality.<sup>7,8,9,10,11,12,13</sup>

While many of these studies report statistically strong associations between unemployment and poor health, establishing this as a causal relationship poses a greater challenge as they rely on observational rather than experimental studies.<sup>14,15</sup> One problem stems from the possibility that health may be both an outcome of, and a cause of, unemployment; ill members of the population are at higher risk of unemployment so any observational analysis could exaggerate the direct effect of unemployment on health or mortality.<sup>16,17</sup> If such health selection takes place, even strong relationships between unemployment and health cannot be regarded as causal. More generally, of course, there may be other (unobserved) factors that increase the likelihood of unemployment and therefore could potentially bias any claims that unemployment *per se* can increase the risk of subsequent poor health and death.

A number of techniques have been applied in attempts to overcome such selection issues. Commonly, longitudinal data are used and the various approaches include controlling for baseline health,<sup>18,19</sup> studying whether the impact of unemployment differs at times of low and high overall unemployment when selection effects might be expected to vary,<sup>20,21,22</sup> and studying the impact of unemployment experimentally when whole workforces are made, or threatened with being made redundant.<sup>23,24</sup>



Another common approach, based on the work of Fox *et al.*,<sup>9</sup> is to exclude deaths in the first few years of follow-up after employment status was observed. If the relative mortality risk is lowered when these deaths are excluded this suggests that health selection may have introduced bias which could result in an exaggeration of the effect of unemployment on mortality risk. As Bartley<sup>25</sup> comments:

in a cohort study, any group selected for physical illness should exhibit high mortality in the early years of follow up which returns towards the level of the rest of the cohort later on as those who are very ill die and the rest recover.

There are reasons to suppose that this approach may not be as appropriate nowadays. In the UK, there has been a steady increase in those of working age who are permanently sick with some evidence suggesting that many of those who may previously have identified themselves as unemployed have been diverted to sickness related benefits.<sup>26</sup> This may be typical of those with a limiting long-term illness (LLTI).<sup>27</sup>

A consequence of this is that by the time of the 1991 Census those classifying themselves as unemployed may be less likely to have done so because of poor health than may have been the case in the 1970s or 1980s when studies such as those by Fox *et al.*<sup>9</sup> were conducted. Also, the addition of a question on work related LLTI in the 1991 UK Census provides the opportunity to control for health selection in a way that was not possible in previous UK census-based studies. This measure of health has demonstrated links to worklessness with evidence to suggest that unemployment independently increases an individual's chance of suffering a LLTI.<sup>28</sup> Therefore, this study will utilise the LLTI measure to adjust for underlying baseline health which may cause confounding in the relationship between unemployment and mortality.

In this study, the Scottish Longitudinal Study (SLS) and the England and Wales ONS Longitudinal Study (ONS LS) are used to explore possible health-related selection into unemployment using post-1991 mortality data linked to individuals whose economic position was recorded in the 1991 Census. The association of unemployment with mortality is assessed by varying the length of the period during which mortality events are ignored and adjusting for limiting illness, recorded in 1991.

## Methods

### Data and outcome variables

The data for Scotland were extracted from the SLS which links census records from 1991 and 2001 for 5.3 per cent of the Scottish population. In addition, corresponding vital events registry data, from which mortality data are drawn, is also linked for this period and beyond up to 2003 (the last year for which mortality data had been recorded at the time this study was undertaken). The data for England and Wales were extracted from the ONS LS. The ONS LS links decennial census information for 1 per cent of the population in England and Wales from 1971, along with their registration data. Information from the 1971, 1981, 1991 and 2001 Censuses is linked with vital events information (births, deaths and cancer registrations), from which mortality data are drawn.

These longitudinal studies are dynamic samples; some members are lost to the study through emigration (moving to another country and settling), and death, and new members enter the study through birth and immigration.<sup>28,29</sup> Sample selection is based on birth dates, using twenty dates in Scotland and four dates in England and Wales to create samples which are representative of the population.

The analysis focused on the working ages 35 to 64 which gave a sample

size of 95,963 in the SLS and 193,712 in the ONS LS. A follow-up approach was employed in which economic position and the other socio-demographic information is recorded at the 1991 Census (21 April 1991) and then related to deaths occurring after the census. These mortality events are arranged, as detailed in Table 1, into periods of follow-up of various lengths with eight variables in total corresponding to eight varying periods during which mortality events are ignored prior to follow-up. The first of these periods of follow-up involved 0 months of wear-off, and thus contained all deaths that occurred within five years of the census (1991–95). The second period delayed mortality follow-up to the end of 1991 and thus ignored all deaths occurring eight months after the census but captured all mortality events in the subsequent five years (1992–96). The third period delayed mortality follow-up to the end of 1992 (20 months) and then captured mortality events in 1993–97. The remaining periods were produced following the same procedure up to period eight which involved delaying mortality follow-up by seven years and captured those deaths between 1998 and 2002. It was decided to carry out five-year follow-up analyses, rather than 10-year, to allow the maximum number of mortality wear-off periods which also allowed this period to be extended two years beyond the traditional five-year period that is often used while still allowing a substantial follow-up period.

**Table 1**

**Length of wear-off period, mortality periods and mortality frequencies for each wear-off period**

Length of wear-off period (Dates in brackets)	Mortality periods	Number of deaths	
		Scotland	England and Wales
0 Months	1991–95	3,059	5,429
8 Months (21/04/91–31/12/91)	1992–96	3,517	5,835
20 Months (21/04/91–31/12/92)	1993–97	3,760	6,208
32 Months (21/04/91–31/12/93)	1994–98	4,075	6,633
44 Months (21/04/91–31/12/94)	1995–99	4,284	7,096
56 Months (21/04/91–31/12/95)	1996–2000	4,442	7,528
68 Months (21/04/91–31/12/96)	1997–2001	3,966	7,954
80 Months (21/04/91–31/12/97)	1998–2002	3,146	8,392

Source: Scottish Longitudinal Study; England and Wales ONS Longitudinal Study

### Analysis

As the outcome was binary (whether the individual died or not in the period), binomial logistic regression models were used for each of the different length periods of follow-up beginning with 0 years through to 7 years successively (Box One provides a brief explanation of logistic regression). Two sets of two models were produced; a first set without direct control for LLTI and a second including this direct control. Within each set a base model including only age, age squared and sex was produced followed by a more complex full model including additional confounding variables drawn from the 1991 Census. The confounding variables were chosen on the basis of known associations with mortality and economic position and included age, age squared, sex, social class, marital status, educational attainment (1991), area deprivation quintile, and ethnicity. This additional adjustment ensured that the estimate of the association of unemployment with mortality was robust to these observed social factors. Odds ratios associated with the different categories of economic position were then graphed to see patterns of change with different length periods of follow-up. If health-related influences on the movement into unemployment were an issue which could be properly addressed using a wear-off period, the odds of unemployment-related mortality would be expected to be higher in the initial period immediately after 1991 and lower in the later mortality periods, when selection effects would be expected to have diminished.<sup>9</sup>

Table 2

Frequencies, number of deaths and corresponding percentages for levels of economic position, sex, social class, marital status, Carstairs deprivation, ethnicity and limiting long-term illness

Variable	Scotland				England and Wales			
	Frequency	Per cent	Deaths	Per cent <sup>1</sup>	Frequency	Per cent	Deaths	Per cent <sup>1</sup>
<b>Economic position</b>								
In work	62,856	65.5	6,003	9.6	132,252	68.3	11,384	8.6
Unemployed	5,600	5.8	1,213	21.7	10,841	5.6	1,802	16.6
Retired	6,487	6.8	2,195	33.8	13,104	6.8	3,826	29.2
Permanently sick	8,726	9.1	3,346	38.3	12,705	6.8	4,668	36.7
Other inactive	12,294	12.8	1,610	13.1	24,810	12.8	2,591	10.4
<b>Sex</b>								
Male	46,747	48.7	8,237	17.6	96,522	49.8	14,390	14.9
Female	49,216	51.3	6,130	12.5	97,190	50.1	9,881	10.2
<b>Social class</b>								
Professional occupations	3,218	3.4	266	8.3	7,374	3.8	604	8.2
Managerial and technical occupations	22,331	23.3	2,070	9.3	48,496	25.0	4,153	8.6
Skilled non-manual occupations	15,961	16.6	1,597	10.0	34,377	17.8	2,980	8.7
Skilled manual occupations	17,179	17.9	2,774	16.1	34,501	17.8	4,751	13.8
Partly skilled occupations	12,599	13.1	2,016	16.0	26,461	13.7	3,604	13.6
Unskilled occupations	7,413	7.7	1,310	17.7	11,579	5.9	1,749	15.1
Armed forces	259	0.3	14	5.4	517	0.3	31	6.0
No job in last ten years/not stated	17,003	17.7	4,320	25.4	30,407	15.7	6,399	21.0
<b>Marital status</b>								
Single	8,639	9.0	1,733	20.1	15,766	8.1	2,635	16.7
Married (first marriage)	68,395	71.3	9,064	13.3	131,478	67.9	14,818	11.3
Remarried	7,350	7.7	962	13.1	21,159	10.9	2,446	11.6
Divorced	7,095	7.4	1,268	17.9	17,948	9.3	2,528	14.1
Widowed	4,484	4.7	1,340	29.9	7,361	3.8	1,844	25.1
<b>Carstairs quintiles</b>								
One (least deprived)	19,116	19.9	1,736	9.1	31,001	16.0	2,889	9.3
Two	24,442	25.5	2,977	12.2	35,001	18.1	3,688	10.5
Three	20,187	21.1	3,068	15.2	37,065	19.1	4,269	11.5
Four	17,030	17.8	3,140	18.4	42,752	22.1	5,643	13.2
Five (most deprived)	15,087	15.7	3,427	22.7	47,884	24.7	7,781	16.2
<b>Ethnicity<sup>2</sup></b>								
White	95,115	99.1	14,309	15.0	181,442	93.7	23,121	12.7
Non-white	848	0.9	58	6.8	12,270	6.3	1,085	8.8
<b>Limiting long-term illness</b>								
Has a health problem	14,885	15.5	5,229	35.1	25,996	13.4	8,283	31.9
Does not have a health problem	81,078	84.5	9,138	11.3	167,716	86.6	15,988	9.5

1 Death percentages are expressed as a proportion of deaths against all members in that group.

2 To allow comparison with Scotland, ethnicity figures for England and Wales are shown in reduced binary form. In the logistic regression analysis a longer form of the ethnicity variable was used when modelling the England and Wales data due to its larger sample size (see Appendix Table A1).

Source: Scottish Longitudinal Study; England and Wales ONS Longitudinal Study

## Box one

### Logistic regression modelling

A logistic regression model was used to model the probability of an LS member dying in the follow-up period. In a logistic regression the parameter estimates are known as logit coefficients. Logit coefficients can be used to construct prediction equations and generate predicted values. Logit coefficients represent changes in the log-odds of the dependent variable not the changes themselves, as is the case with Ordinary Least Squares regression. The most common way to interpret a logit is to convert it to an odds ratio using the exponential transformation. The odds ratio is easier to interpret, for example, in a logistic regression of the event dying (0=not died, 1=died) on gender (0=female, 1=male), the logit coefficient is equal to 0.47 and the odds ratio is equal to 1.60. This means that the odds of a male dying are 1.6 times higher than those for a female.

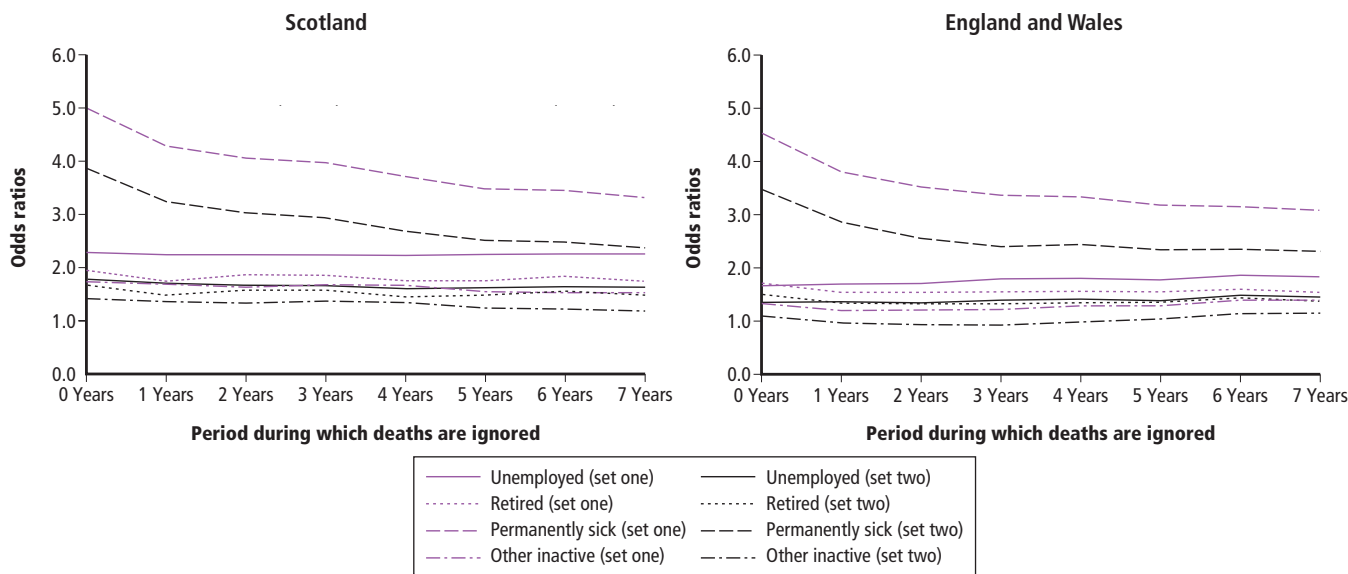
## Results

Figures 1 and 2 present the results from the analysis. In almost all of the graphs, and in line with previous studies, being out of work for whatever reason is associated with an increased risk of death relative to those in work. The set one models in Figure 1 show that the unemployed are around two times more likely to die relative to those in work. Importantly, however, this relationship remains stable irrespective of the duration of follow-up in which mortality is ignored. However, for the permanently sick in the set one models in Figure 1, there is a marked selection pattern, with higher relative mortality risk in the earlier periods shortly after the census followed by a steady decline with increased duration of the mortality wear-off period.

The addition of the social class, marital status, area deprivation and ethnicity variables in the set two models in Figure 1 slightly attenuated the relationship between all out of work categories and mortality (compared with the 'in work') but the relative relationships remained

**Figure 1**

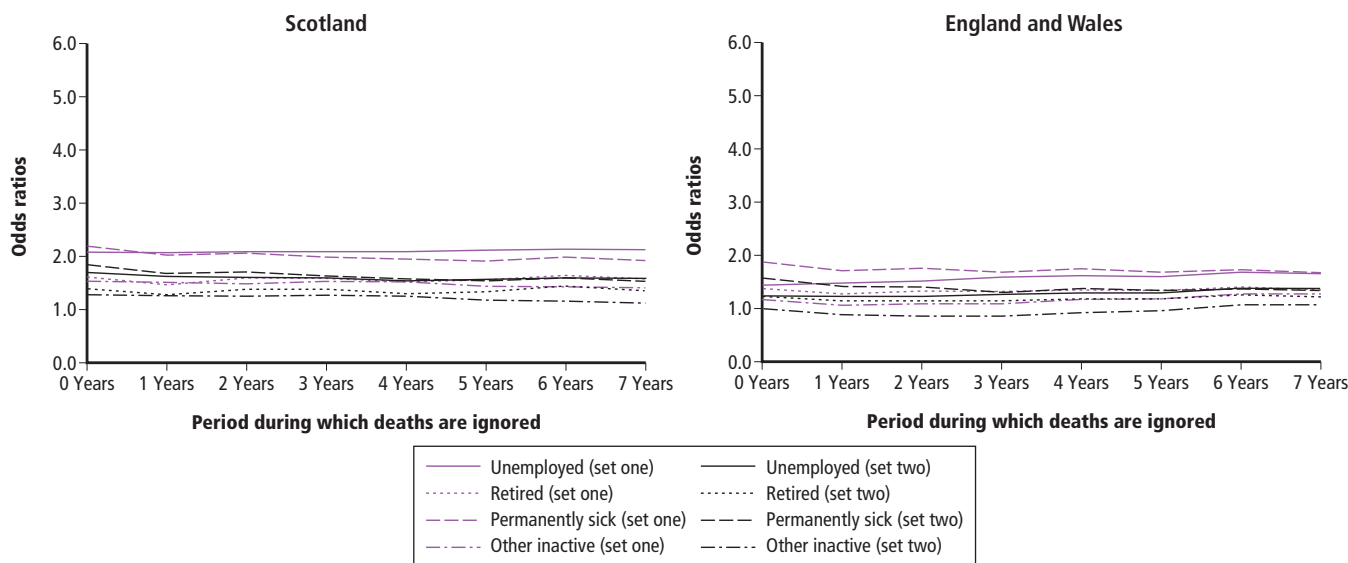
Odds ratios for levels of economic position from two sets of eight logistic regression models predicting mortality within given wear-off period. Set one models are adjusted for age, age (squared) and sex. Set two models are additionally adjusted for social class, marital status, deprivation and ethnicity



Source: Scottish Longitudinal Study; England and Wales ONS Longitudinal Study

**Figure 2**

Odds ratios for levels of economic position from two sets of eight logistic regression models predicting mortality within a given wear-off period. Set one models are adjusted for age, age (squared), sex and limiting long-term illness. Set two models are additionally adjusted for social class, marital status, deprivation and ethnicity



Source: Scottish Longitudinal Study; England and Wales ONS Longitudinal Study

unchanged for unemployment and permanent sickness. The relationship between unemployment and mortality remained stable irrespective of the duration of the mortality wear-off period that is used despite this additional adjustment for social factors.

Controlling for LLTI in the set one models in Figure 2 attenuates the relationship for the unemployed but the relative pattern remains the same, with the mortality risk for the unemployed unchanged by the duration of mortality wear-off. The selection shape for the permanently sick that is apparent in Figure 1 disappears with the addition of LLTI as a control variable. This has the effect of removing

the excess risk of death for the permanently sick to the point that it closely matches the risk magnitude of the unemployed, a relationship that is mostly constant across all of the different periods of follow-up. This relationship holds when adjusted for the other social factors as well as LLTI in the set two models in Figure 2. (Appendix Table A1 shows the full model output with adjustment for LLTI and other social factors including odds ratios and significance tests for the zero wear-off period and 80 months wear-off period for both England and Wales and Scotland.)

## Discussion

In line with almost all work completed previously in this field, being unemployed is related to significantly higher odds of death relative to being employed in all of the models. This relationship is apparent both generally and after adjustment for individual socio-economic circumstances.

However, as described above, drawing causal conclusions about this relationship has been complicated by the potential for ill health to influence employment status. Thus, the strong associations between unemployment and mortality may reflect a concentration of unhealthy members of the population within the unemployed group rather than a causal effect of unemployment on health *per se*. A popular technique in prospective studies has been to allow these potential selection effects to diminish by ignoring all mortality events that occurred within the first five years after economic position is observed. As Fox *et al*<sup>9</sup> suggest, this period allows for non-steady state unemployed individuals to either recover and return to the labour force or die.

This analysis therefore explored whether it was possible to detect a change in the odds of death of the unemployed relative to the employed depending upon the length of this delayed mortality follow-up period. The analysis was interested in both the effectiveness of this technique as well as potentially illustrating the effect and magnitude of these selection effects. Assuming that this delayed mortality follow-up approach is appropriate, the evidence presented above suggests that the process of selection into unemployment of sick individuals is non-existent. If strong selection effects were present, the unemployed group might be expected to experience higher likelihoods of death initially with this figure declining steadily over time until reaching a steady state around the five year delayed mortality follow-up period. Indeed the distribution might be expected, at a lower magnitude, to match more closely the pattern exhibited by the permanently sick category in which a steady decline in the likelihood of death is seen as those suffering acute illness either die or recover. This was not the case. Furthermore, direct adjustment for LLTI had the effect of drastically reducing the apparent effects of selection in the permanently sick. However, it is important to note that nearly all individuals who are registered permanently sick in the census are also coded as having a LLTI which may complicate this conclusion.

While literature on social class inequalities in mortality appears to show the presence of health selection effects when both the unemployed and permanently sick are included,<sup>31,32,33</sup> the lack of selection effects in the results for the unemployed seems to accord with some suggestions made in the unemployment literature previously, although these do not appear to have been rigorously tested. For example, Moser *et al*<sup>10</sup> used a 'wear-off' period following the 1971 England and Wales Census and suggested that the overall mortality risk associated with unemployment was little changed by excluding deaths in the initial years. Bartley's review of unemployment and mortality studies, mainly conducted using 1971 and 1981 Census data, concludes, 'this [wear-off] pattern is seen in men who are permanently sick but not in the unemployed.'<sup>25</sup>

These results, particularly the apparent lack of any selection processes among the unemployed, leave two possible explanations. First, the sample of individuals (aged 35–64) may include a majority of steady-state employment status experiences. For example, it is plausible that a significant majority of the group of unemployed had been unemployed for at least five years (prior to 1991) thus removing the potential for them to be unemployed through ill health in this period. In this analysis, the unemployed maintained constant higher odds ratios relative to the employed group. This explanation was suggested as a possible reason accounting for the lack of apparent selection effects found in the work of Fox *et al*.<sup>9</sup> However, it seems highly improbable that a majority of the unemployed group would have been in this steady state of unemployment for the requisite length of time to mask the effects of selection.

A second explanation could be simply that the role or magnitude of any selection effects for unemployment status and health are minimal in this sample. The odds ratios for the unemployed, while being significantly higher relative to the employed, remained mostly constant suggesting that unemployed individuals are dying at the same rates regardless of the duration of the period in which deaths were ignored. In the literature to date, a delay of five years when following up mortality events has been widely adopted as it is deemed an appropriate timescale for unemployment to have had an impact on a person's health if one were to exist. This allows for those individuals who became unemployed due to poor health to either die or recover and allows the researcher to begin to rule out the possibility of health selection. However, if the unemployed group had contained a significant number of recently unemployed individuals due to ill health, the patterns described by Fox and colleagues of an early peak in odds ratios followed by gradual decline would be expected to be seen.

Finally, it is worth mentioning the findings of Martikainen *et al*<sup>20</sup> which suggest that the association between unemployment and health may differ during periods of higher and lower general levels of population wide unemployment figures. The timing of the 1991 Census coincided with a period of economic slowdown which could potentially result, according to Martikainen *et al*, in a period when the health effects of unemployment may have been masked. This would appear to suggest that, if anything, the analysis has underestimated the true strength of the relationship between unemployment and health.

In conclusion this study has found little evidence of a selection effect operating on the unemployed within the 1991 Census measure of economic position. The technique of delaying follow-up of mortality events for five years following measurement of economic position may be an unnecessary and ineffective method for mitigating the effects of health-related selection for the unemployed.

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## Appendix

Table A1

Example model output with odds ratios and significance tests for models predicting death in zero wear-off period and seven-year wear-off period

Variable	Model Scotland		Variable	Model England and Wales	
	Period 0	Period 7		Period 0	Period 7
<b>Economic position</b>			<b>Economic position</b>		
Unemployed	1.687***	1.580***	Unemployed	1.231***	1.366***
Retired	1.392***	1.350***	Retired	1.247***	1.234***
Permanently sick	1.835***	1.533***	Permanently sick	1.598***	1.392***
Other inactive	1.270***	1.124	Other inactive	0.992	1.076
<b>Age</b>	1.131***	1.149***	<b>Age</b>	1.104***	1.110***
<b>Age<sup>1</sup></b>	1.000	1.000	<b>Age<sup>1</sup></b>	1.000	1.000
<b>Sex</b>			<b>Sex</b>		
Male	1.650***	1.704***	Male	1.616***	1.752***
<b>Social class</b>			<b>Social class</b>		
Managerial and technical occupations	1.078	1.118	Managerial and technical occupations	0.915	1.245***
Skilled non-manual occupations	1.157	1.136	Skilled non-manual occupations	1.014	1.420***
Skilled manual occupations	1.242	1.520***	Skilled manual occupations	1.1	1.536***
Partly skilled occupations	1.108	1.506***	Partly skilled occupations	1.188*	1.753***
Unskilled occupations	1.233	1.693***	Unskilled occupations	1.17	1.828***
Armed forces	0.802	0.911	Armed forces	1.12	1.301*
No job in last ten years/not stated	1.503***	1.842***	No job in last ten years/not stated	1.419***	2.029***
<b>Marital status</b>			<b>Marital status</b>		
Married (first marriage)	0.763***	0.726***	Married (first marriage)	1.481***	1.491***
Remarried	0.690***	0.768***	Remarried	1.157***	1.141***
Divorced	0.916	0.92	Divorced	1.329***	1.354***
Widowed	1.06	0.99	Widowed	1.260***	1.401***
<b>Carstairs quintiles</b>			<b>Carstairs quintiles</b>		
Two	1.054	1.211***	Two	0.001	1.088*
Three	1.154**	1.243***	Three	0.954	1.150***
Four	1.204***	1.417***	Four	1.044**	1.258***
Five (most deprived)	1.262***	1.534***	Five (most deprived)	1.123***	1.370***
<b>Ethnicity<sup>2</sup></b>			<b>Ethnicity<sup>2</sup></b>		
Non-white	0.641	0.335***	Black-Caribbean	0.579***	0.565***
			Black-African	0.901	0.686
			Indian	0.791**	0.780***
			Pakistani	0.644***	0.795*
			Bangladeshi	0.451***	0.700*
			Chinese	0.552	0.946
			Mixed or other	0.522***	0.696**
<b>Limiting long-term illness</b>			<b>Limiting long-term illness</b>		
Has a health problem	2.336***	1.639***	Has a health problem	2.479***	1.770***

1 Age (squared).

2 Due to the larger sample size in the England and Wales ONS Longitudinal Study a more detailed variable for ethnicity was used than was possible with the Scottish data.

\* p&lt;0.10

\*\* p&lt;0.05

\*\*\* p&lt;0.01

Source: Scottish Longitudinal Study; England and Wales ONS Longitudinal Study

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## Symbols

- .. not available
- : not applicable
- nil or less than half the final digit shown
- blank not yet available

# Notes to tables

## Time series

For most tables, years start at 1971 or 1976 and then at five-year intervals. Individual years are shown thereafter. If a year is not present the data are not available.

## United Kingdom

The United Kingdom comprises England, Wales, Scotland and Northern Ireland. The Channel Islands and the Isle of Man are not part of the United Kingdom.

## Population

The estimated resident population of an area includes all people who usually live there, whatever their nationality. Members of HM and US Armed Forces in England and Wales are included on a residential basis wherever possible. HM Forces stationed outside England and Wales are not included. Students are taken to be resident at their term time addresses.

Further information on population estimates can be found on the Office for National Statistics website at: [www.statistics.gov.uk/popest](http://www.statistics.gov.uk/popest)

## Live births

For England and Wales, figures relate to the number of births occurring in a period; for Scotland and Northern Ireland, figures relate to births registered in a period. By law, births must be registered within 42 days in England and Wales, within 21 days in Scotland, and within 42 days in Northern Ireland. In England and Wales, where a birth is registered later than the legal time period, and too late to be included in the count for the year of occurrence, it will be included in the count for the following year.

## Perinatal mortality

In October 1992 the legal definition of a stillbirth was changed, from baby born dead after 28 completed weeks of gestation or more, to one born dead after 24 completed weeks of gestation or more.

## Period expectation of life

The life tables on which these expectations are based use death rates for the given period to describe mortality levels for each year. Each individual year shown is based on a three-year period, so that for instance 1986 represents 1985–87. More information is available on the Office for National Statistics website at: [www.statistics.gov.uk/statbase/Product.asp?vlnk=14459](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=14459)

## Deaths

Figures for England and Wales relate to the number of deaths registered in each year up to 1992, and the number of deaths occurring in a year between 1993 and 2005. From 2006 onwards, all figures relate to the number of deaths registered in the year. All figures for Scotland and Northern Ireland relate to the number of deaths registered in each year.

## Coding cause of death

Between 1 January 1984 and 31 December 1992, ONS applied its own interpretation of the International Classification of Diseases (ICD) Section Rule 3 in the coding of deaths where terminal events and other ‘modes of dying’ such as cardiac arrest, cardiac failure, certain thrombotic disorders, and unspecified pneumonia and bronchopneumonia, were stated by the certifier to be the underlying cause of death and other major pathology appeared on the certificate. In these cases ONS Rule 3 allowed the terminal event to be considered a direct sequel to the major pathology and that primary condition was selected as the underlying cause of death. Prior to 1984 and between 1 January 1993 and 31 December 2000, such certificates were coded to the terminal event. National Statistics also introduced automated coding of cause of death in 1993, which may also affect comparisons of deaths by cause from 1993. Further details can be found in the annual volumes *Mortality statistics: Cause 1984*, Series DH2 no. 11, and *Mortality statistics: Cause 1993 (revised) and 1994*, Series DH2 no. 21.

From 1 January 2001, under ICD–10, Rule 3 was again changed – for details see the article in *Health Statistics Quarterly* 13. This resulted in a fall in the death rates from respiratory diseases, notably pneumonia, and consequently slight rises in the rates for other causes (for example strokes). For details of the major changes between ICD–9 and ICD–10, see the articles in *Health Statistics Quarterly* 08, 13 and 14.

## Age-standardised mortality rates

Directly age-standardised rates make allowances for changes in the age structure of the population. The age-standardised rate for a particular condition is that which would have occurred if the observed age-specific rates for the condition had applied in a given standard population. Table 2.2 and 6.3 use the European standard population. This is a hypothetical population standard which is the same for both males and females allowing standardised rates to be compared for each sex, and between males and females.

## Abortions

Figures relate to numbers occurring in a period.

## Calculating quarterly rates

Quarterly rates are calculated using seasonal adjustments which take into account the number of days in the month/year. The denominators used for calculating quarterly rates have been produced from mid-year population estimates and projections.

## Marriages and divorces

Marriages are tabulated according to date of solemnisation. Divorces are tabulated according

to date of decree absolute. The term ‘divorces’ includes decrees of nullity. The fact that a marriage or divorce has taken place in England, Wales, Scotland or Northern Ireland does not necessarily mean that either of the parties is resident there.

## Civil Partnerships

The *Civil Partnership Act 2004* came into force on 5 December 2005 in the UK, the first day couples could give notice of their intention to form a civil partnership. The first day that couples could normally form a partnership was 19 December 2005 in Northern Ireland, 20 December 2005 in Scotland and 21 December 2005 in England and Wales. (18 civil partnerships were formed under special arrangements before these dates. These are included in the figures for England and Wales.)

Civil partnerships are tabulated according to date of formation and area of occurrence. The fact that a civil partnership has taken place in England, Wales, Scotland or Northern Ireland does not necessarily mean either of the parties is resident there.

## Sources

Figures for Scotland and Northern Ireland have been provided by the General Register Office for Scotland and the Northern Ireland Statistics and Research Agency respectively.

## Rounding

All figures are rounded independently; constituent parts may not add to totals. Generally numbers and rates per 1,000 population are rounded to one decimal place (for example 123.4); where appropriate, for small figures (below 10.0), two decimal places are given (for example 7.62). Figures which are provisional or estimated are given in less detail (for example 123 or 7.6 respectively) if their reliability does not justify giving the standard amount of detail. Where figures need to be treated with particular caution, an explanation is given as a footnote.

## Latest figures

Figures for the latest quarters and years may be provisional and will be updated in future issues when later information becomes available.

Where figures are not yet available, cells are left blank.



**Table 1.1** Population and vital rates: international

Selected countries													Numbers (thousands)/Rates per thousand	
Year	United Kingdom	Austria	Belgium	Bulgaria	Cyprus <sup>1</sup>	Czech Republic	Denmark	Estonia	Finland	France	Germany <sup>2</sup>	Greece <sup>3</sup>	Hungary	
<b>Population (thousands)</b>														
1971	55,780	7,501	9,673	8,540	610	9,810	4,963	1,369	4,612	51,251	78,313	8,831	10,370	
1976	56,221	7,566	9,818	8,760	498	10,094	5,073	1,435	4,726	52,909	78,337	9,167	10,590	
1981	56,344	7,569	9,859	8,891	515	10,293	5,121	1,482	4,800	54,182	78,408	9,729	10,712	
1986	56,619	7,588	9,862	8,958	545	10,340	5,120	1,534	4,918	55,547	77,720	9,967	10,631	
1991	57,338	7,813	9,979	8,982	587	10,309	5,154	1,566	5,014	57,055	79,984	10,247	10,346	
1996	58,095	7,959	10,137	8,363	661 <sup>12</sup>	10,315	5,262	1,416	5,125	58,026	81,896	10,709	10,193	
2001	59,000	8,021	10,263	8,149	698 <sup>12</sup>	10,267	5,349	1,367	5,181	60,964	82,260	10,931	10,200	
2002	59,218	8,065	10,310	7,891	706 <sup>12</sup>	10,206	5,368	1,361	5,195	61,399	82,440	10,969	10,175	
2003	59,440	8,102	10,356	7,846	715 <sup>12</sup>	10,203	5,384	1,356	5,206	61,832	82,537	11,006	10,142	
2004	59,702	8,140	10,396	7,801	730 <sup>12</sup>	10,211	5,398	1,351	5,220	62,252	82,532	11,041	10,117	
2005	60,042	8,207	10,446	7,761	749 <sup>12</sup>	10,221	5,411	1,348	5,237	62,638	82,501	11,083	10,098	
2006	60,413	8,266	10,511	7,719	766 <sup>12</sup>	10,251	5,427	1,345	5,256	62,999	82,438	11,125	10,077	
2007	60,781	8,299	10,585	7,679	779 <sup>12</sup>	10,287	5,447	1,342	5,277	63,392	82,315	11,171	10,066	
2008	..	8,319	10,667	7,640	789 <sup>12</sup>	10,381	5,472	1,341	5,300	63,753	82,218	11,214	10,045	
2009	..	8,355	10,755 <sup>p</sup>	7,607	794 <sup>12,p</sup>	10,468	5,511	1,340	5,326	64,351 <sup>p</sup>	82,050 <sup>p</sup>	11,257 <sup>p</sup>	10,031 <sup>p</sup>	
<b>Population changes (per 1,000 per annum)</b>														
1971–76	1.6	1.7	3.0	5.2	-36.7	5.8	4.4	9.6	4.9	6.5	0.1	7.6	4.2	
1976–81	0.4	0.1	0.8	3.0	6.8	3.9	1.9	6.6	3.1	4.8	0.2	12.3	2.3	
1981–86	1.0	0.5	0.1	1.5	11.7	0.9	0.0	7.0	4.9	5.0	-1.8	4.9	-1.5	
1986–91	2.5	5.9	2.4	0.5	15.4	-0.6	1.3	4.2	3.9	5.4	5.8	5.6	-5.4	
1991–96	2.6	3.7	3.6	-13.8	25.2	0.1	4.2	-19.2	4.4	3.4	4.8	9.0	-3.0	
1996–01	3.1	1.6	2.1	-5.1	11.2	-0.9	3.3	-6.9	2.2	10.1	0.9	4.1	0.1	
2001–02	3.7	5.5	4.6	-31.7	11.5	-5.9	3.6	-4.4	2.7	7.1	2.2	3.5	-2.5	
2002–03	3.7	4.6	4.5	-5.7	12.7	-0.3	3.0	-3.7	2.1	7.1	1.2	3.4	-3.2	
2003–04	4.4	4.7	3.9	-5.7	21.0	0.8	2.6	-3.7	2.7	6.8	-0.1	3.2	-2.5	
2004–05	5.7	8.2	4.8	-5.1	26.0	1.0	2.4	-2.2	3.3	6.2	-0.4	3.8	-1.9	
2005–06	6.2	7.2	6.2	-5.4	22.7	2.9	3.0	-2.2	3.6	5.8	-0.8	3.8	-2.1	
2006–07	6.1	2.4	7.0	-5.2	17.0	3.5	3.7	-2.2	4.0	6.2	-1.5	4.1	-1.1	
2007–08	..	2.4	7.7	-5.1	12.8	9.1	4.6	-0.7	4.4	5.7	-1.2	3.8	-2.1	
2008–09	..	4.3	8.2	-4.3	6.3	8.4	7.1	-0.7	4.9	9.4	-2.0	3.8	-1.4	
<b>Live birth rate (per 1,000 population per annum)</b>														
1971–75	14.1	13.3	13.4	13.2	17.7	17.8	14.6	15.4	13.1	16.0	10.5	15.8	16.1	
1976–80	12.5	11.5	12.5	15.1	19.0	17.1	12.0	15.0	13.6	14.1	10.5	15.6	15.8	
1981–85	12.9	12.0	12.0	13.7	20.2	13.5	10.2	15.6	13.4	14.2	10.7	13.3	12.3	
1986–90	13.7	11.6	12.1	12.7	18.8	12.7	11.5	15.5	12.7	13.8	9.8	10.6	11.8	
1991–95	13.2	11.8	12.0	9.8	16.9	11.1	13.1	10.7	12.9	12.7	10.9	9.9	11.7	
1996–00	12.0	10.2	11.2	8.3	13.2	8.8	12.6	8.9	11.3	12.7	9.6	10.2	9.8	
2001	11.3	9.4	11.1	8.5	11.6	8.9	12.2	9.3	10.8	13.1	8.9	9.3	9.5	
2002	11.3	9.7	10.8	8.5	11.1	9.1	11.9	9.6	10.7	12.8	8.7	9.4	9.5	
2003	11.7	9.5	10.8	8.6	11.2	9.2	12.0	9.6	10.9	12.8	8.6	9.5	9.3	
2004	12.0	9.7	11.1	9.0	11.2	9.6	12.0	10.4	11.0	12.8	8.6	9.6	9.4	
2005	12.0	9.5	11.3	9.2	10.9	10.0	11.9	10.7	11.0	12.9	8.3	9.7	9.7	
2006	12.4	9.4	11.5	9.6	11.3	10.3	12.0	11.1	11.2	13.1	8.2	10.0	9.9	
2007	12.7	9.2	11.4	9.8	10.9	11.1	11.7	11.8	11.1	12.9	8.3	10.0	9.7	
2008	12.9 <sup>p</sup>	9.3	11.7	10.2	11.6	11.5	11.8	12.1	11.2	13.0	8.2	10.3	9.9	
<b>Death rate (per 1,000 population per annum)</b>														
1971–75	11.8	12.6	12.1	9.8	9.9	12.4	10.1	11.1	9.5	10.7	12.3	8.6	11.9	
1976–80	11.9	12.3	11.6	12.9	10.4	12.5	10.5	12.1	9.3	10.2	12.2	8.8	12.9	
1981–85	11.7	12.0	11.4	11.3	10.0	12.8	11.1	12.3	9.3	10.1	12.0	9.0	13.7	
1986–90	11.4	11.1	10.8	11.9	10.2	12.4	11.5	11.9	9.8	9.5	11.6	9.3	13.5	
1991–95	11.1	10.4	10.4	12.9	9.0	11.6	11.9	13.9	9.8	9.1	10.8	9.5	14.3	
1996–00	10.6	9.7	10.3	14.0	7.7	10.8	11.2	13.1	9.6	9.2	10.4	9.7	13.9	
2001	10.2	9.3	10.1	14.2	6.9	10.5	10.9	13.6	9.4	8.9	10.1	9.4	13.0	
2002	10.2	9.4	10.2	14.3	7.3	10.6	10.9	13.5	9.5	9.0	10.2	9.5	13.1	
2003	10.3	9.5	10.3	14.3	7.2	10.9	10.7	13.4	9.4	9.2	10.3	9.6	13.4	
2004	9.7	9.1	9.8	14.2	7.1	10.5	10.3	13.2	9.1	8.4	10.0	9.5	13.1	
2005	9.7	9.1	9.9	14.7	7.2	10.6	10.2	12.9	9.1	8.6	10.1	9.5	13.5	
2006	9.4	9.0	9.6	14.8	6.7	10.2	10.2	12.9	9.1	8.5	9.9	9.5	13.1	
2007	9.4	9.0	9.5	14.8	6.9	10.1	10.2	13.0	9.3	8.4	10.0	9.8	13.0	
2008	9.4 <sup>p</sup>	9.0	9.5	14.5	6.4	10.1	9.9	12.5	9.2	8.4	10.3	9.3	13.0	

Note: Estimated population (as at 1 January), live birth and death rates up to the latest available data, as given in the *United Nations Monthly Bulletin of Statistics, the United Nations Demographic Yearbook*, and the Eurostat website (July 2009). Birth and death rates for 2008 have been calculated using 2006-based population projections for 2008.

These will be revised later in 2009 when the 2008 mid-year population estimates are available.

1 Republic of Cyprus – Data refer to Government controlled areas.

2 Including the former GDR throughout.

3 Greece – Mid-year population excludes armed forces stationed outside the country but includes alien forces stationed in the area.

4 Malta – including work and resident permit holders and foreigners residing in Malta.

5 Poland – excluding civilian aliens within the country but including civilian nationals temporarily outside the country.

6 Portugal – including the Azores and Madeira Islands.

7 Spain – including the Balearic and Canary Islands.

8 For 1971 the European Union consisted of the 6 original member countries. This has since been expanded to include: 9 countries (1976-EU15); 10 countries (2004-EU25); 2 countries (2007-EU27). In this table, all totals include the EU27.

9 Including the Indian held part of Jammu and Kashmir, the final status of which has not yet been determined.

10 Japan – excluding diplomatic personnel outside the country and foreign military and civilian personnel and their dependants stationed in the area.

11 USA – excluding armed forces overseas and civilian citizens absent from the country for extended periods.

12 Indicates population estimates of uncertain reliability.

13 Data refers to 15 April.

14 Mid-year estimates have been adjusted for under-enumeration.

15 For statistical purposes the data for China do not include those for the Hong Kong SAR, Macao SAR and Taiwan province of China. Data for the period 1996 to 2000 have been adjusted on the basis of the Population Census of 2000. Data from 2001 to 2007 have been estimated on the basis of the annual national sample surveys of Population Changes.

16 Rate is for 1990–1995.

s Eurostat estimate

p provisional

**Table 1.1**  
**continued****Population and vital rates: international**

Selected countries														Numbers (thousands)/Rates per thousand	
Year	Irish Republic	Italy	Latvia	Lithuania	Luxemb- bourg	Malta <sup>a</sup>	Nether- lands	Poland <sup>b</sup>	Portugal <sup>c</sup>	Romania	Slovakia	Slovenia	Spain <sup>d</sup>	Sweden	
<b>Population (thousands)</b>															
1971	2,992	54,073	2,366	3,160	342	330	13,194	32,800	8,644	20,470	4,540	1,732	34,216	8,098	
1976	3,238	55,718	2,465	3,315	361	330	13,774	34,360	9,356	21,450	4,764	1,809	36,118	8,222	
1981	3,443	56,502	2,515	3,422	365	322	14,247	35,902	9,851	22,353	4,996	1,910	37,741	8,320	
1986	3,543	56,596	2,588	3,560	368	344	14,572	37,456	10,011	22,823	5,179	1,975	38,536	8,370	
1991	3,526	56,751	2,662	3,742	387	358	15,070	38,245	9,871	23,185	5,283	2,002	38,920	8,617	
1996	3,626 <sup>13</sup>	56,860	2,457	3,602	414	380	15,530	38,618	10,058	22,608	5,374	1,991	39,479	8,841	
2001	3,833 <sup>13</sup>	56,960	2,364	3,487	439	391	15,987	38,254	10,257	22,430	5,379	1,990	40,477	8,883	
2002	3,900 <sup>13</sup>	56,994	2,346	3,476	444	395	16,105	38,242	10,329	21,833	5,379	1,994	40,964	8,909	
2003	3,964 <sup>13</sup>	57,321	2,331	3,463	448	397	16,193	38,219	10,407	21,773	5,379	1,995	41,664	8,941	
2004	4,028 <sup>13</sup>	57,888	2,319	3,446	455	400	16,258	38,191	10,475	21,711	5,380	1,996	42,345	8,976	
2005	4,109 <sup>13</sup>	58,462	2,306	3,425	461	403	16,306	38,174	10,529	21,659	5,385	1,998	43,038	9,011	
2006	4,209 <sup>13</sup>	58,752	2,295	3,403	469	405	16,334	38,157	10,570	21,610	5,389	2,003	43,758	9,048	
2007	4,313 <sup>13</sup>	59,131	2,281	3,385	476	408	16,358	38,125	10,599	21,565	5,394	2,010	44,475	9,113	
2008	4,401 <sup>13</sup>	59,619	2,271	3,366	484	410	16,405	38,116	10,618	21,529	5,401	2,010	45,283	9,183	
2009	4,466 <sup>13,p</sup>	60,053 <sup>p</sup>	2,261	3,350	494	414	16,487 <sup>p</sup>	38,136	10,627 <sup>p</sup>	21,499	5,412	2,032	45,828	9,256	
<b>Population changes (per 1,000 per annum)</b>															
1971-76	16.4	6.1	8.4	9.8	10.7	0.0	8.8	9.5	16.5	9.6	9.9	8.9	11.1	3.1	
1976-81	12.7	2.8	4.1	6.5	2.5	-4.8	6.9	9.0	10.6	8.4	9.7	11.2	9.0	2.4	
1981-86	5.8	0.3	5.8	8.1	1.8	13.7	4.6	8.7	3.2	4.2	7.3	6.8	4.2	1.2	
1986-91	-1.0	0.5	5.7	10.2	10.2	4.2	6.8	4.2	-2.8	3.2	4.0	2.7	2.0	5.9	
1991-96	5.7	0.4	-15.4	-7.5	13.9	12.3	6.1	2.0	3.8	-5.0	3.4	-1.1	2.9	5.2	
1996-01	11.4	0.4	-7.6	-6.4	12.1	5.8	5.9	-1.9	4.0	-1.6	0.2	-0.1	5.1	1.0	
2001-02	17.5	0.6	-7.6	-3.2	11.4	10.2	7.4	-0.3	7.0	-26.6	0.0	2.0	12.0	2.9	
2002-03	16.4	5.7	-6.4	-3.7	9.0	5.1	5.5	-0.6	7.6	-2.7	0.0	0.5	17.1	3.6	
2003-04	16.1	9.9	-5.1	-4.9	15.6	7.6	4.0	-0.7	6.5	-2.8	0.2	0.5	16.3	3.9	
2004-05	20.1	9.9	-5.6	-6.1	13.2	7.5	3.0	-0.4	5.2	-2.4	0.9	1.0	16.4	3.9	
2005-06	24.3	5.0	-4.8	-6.4	17.4	5.0	1.7	-0.4	3.9	-2.3	0.7	2.5	16.7	4.1	
2006-07	24.7	6.5	-6.1	-5.3	14.9	7.4	1.5	-0.8	2.7	-2.1	0.9	3.5	16.4	7.2	
2007-08	20.4	8.3	-4.4	-5.6	16.8	4.9	2.9	-0.2	1.8	-1.7	1.3	0.0	18.2	7.7	
2008-09	14.8	7.3	-4.4	-4.8	20.7	9.8	5.0	0.5	0.8	-1.4	2.0	10.9	12.0	7.9	
<b>Live birth rate (per 1,000 population per annum)</b>															
1971-75	22.2	16.0	14.4	16.4	11.6	17.5	14.9	17.9	20.3	19.3	19.7	16.4	19.2	13.5	
1976-80	21.3	12.6	13.9	15.4	11.2	17.0	12.6	19.3	17.9	18.9	20.3	16.3	17.1	11.6	
1981-85	19.2	10.6	15.2	16.0	11.6	15.3	12.2	19.0	14.5	15.6	18.0	14.2	12.8	11.3	
1986-90	15.8	9.8	15.3	15.8	12.2	16.0	12.8	15.5	11.9	15.8	15.8	12.3	10.8	13.2	
1991-95	14.0	9.6	10.8	13.1	13.3	14.0	12.8	12.9	11.4	11.1	13.3	10.0	9.8	13.3	
1996-00	14.2	9.2	8.0	10.4	13.1	12.0	12.6	10.4	11.3	10.4	10.7	9.1	9.5	10.2	
2001	15.0	9.4	8.4	9.1	12.4	10.1	12.6	9.6	11.0	10.1	9.5	8.8	10.0	10.3	
2002	15.4	9.4	8.6	8.7	12.0	9.9	12.5	9.3	11.0	9.7	9.5	8.8	10.2	10.7	
2003	15.4	9.4	9.0	8.9	11.7	10.2	12.3	9.2	10.8	9.8	9.6	8.7	10.5	11.1	
2004	15.2	9.7	8.8	8.9	11.9	9.7	11.9	9.3	10.4	10.0	10.0	9.0	10.6	11.2	
2005	14.7	9.5	9.3	9.0	11.5	9.6	11.5	9.5	10.4	10.2	10.1	9.1	10.7	11.2	
2006	15.1	9.5	9.7	9.2	11.7	9.6	11.3	9.8	10.0	10.2	10.0	9.4	10.9	11.7	
2007	16.2	9.5	10.2	9.6	11.4	9.5	11.0	10.2	9.7	10.0	10.1	9.8	11.0	11.7	
2008	16.9	9.6	10.6	10.4	11.5	10.0	11.2	10.9	9.8	10.3	10.6	10.5	11.4	11.9	
<b>Death rate (per 1,000 population per annum)</b>															
1971-75	11.0	9.8	11.6	9.0	12.2	9.0	8.3	8.4	11.0	9.4	9.4	10.0	8.5	10.5	
1976-80	10.2	9.7	12.6	10.1	11.5	9.0	8.1	9.2	10.1	9.8	9.8	9.8	8.0	10.9	
1981-85	9.4	9.5	12.8	10.6	11.2	8.2	8.3	9.6	9.6	10.3	10.1	10.3	7.7	11.0	
1986-90	9.1	9.4	12.4	10.3	10.5	7.4	8.5	10.0	9.6	10.8	10.1	9.6	8.2	11.1	
1991-95	8.8	9.7	14.8	12.0	9.8	7.6	8.8	10.2	10.4	11.5	9.9	9.7	8.7	10.9	
1996-00	8.5	9.8	13.9	11.5	9.0	7.7	8.8	9.8	10.5	12.0	9.7	9.5	9.1	10.6	
2001	7.9	9.6	14.0	11.6	8.4	7.6	8.7	9.5	10.2	11.6	9.7	9.3	8.9	10.5	
2002	7.5	9.8	13.9	11.8	8.4	7.8	8.8	9.4	10.2	12.4	9.6	9.4	8.9	10.6	
2003	7.2	10.2	13.9	11.9	9.0	7.9	8.7	9.6	10.4	12.3	9.7	9.7	9.2	10.4	
2004	7.0	9.4	13.9	12.0	7.6	7.5	8.4	9.5	9.7	11.9	9.6	9.3	8.7	10.1	
2005	6.6	9.7	14.2	12.8	8.0	7.8	8.4	9.7	10.2	12.1	9.9	9.4	8.9	10.2	
2006	6.5	9.5	14.5	13.2	8.0	7.9	8.3	9.7	9.7	11.9	9.9	9.1	8.4	10.0	
2007	6.6	9.6	14.5	13.5	8.1	7.6	8.1	9.9	9.8	11.7	9.9	9.2	8.6	10.0	
2008	6.1	9.8	13.8	13.1	7.4	7.7	8.2	10.0	9.7	11.8	9.8	9.1	8.7	9.9	

See notes on first page of table.

**Table 1.1**  
**continued** **Population and vital rates: international**

Selected countries										
										Numbers (thousands)/Rates per thousand
Year	EU <sup>8</sup>	Russian Federation	Australia	Canada	New Zealand	China	India <sup>9</sup>	Japan <sup>10</sup>	USA <sup>11</sup>	Year
<b>Population (thousands)</b>										
1971	438,728	130,934	13,067	22,026	2,899	852,290 <sup>15</sup>	551,311	105,145	207,661	1971
1976	450,468	135,027	14,033	23,517	3,163	937,170 <sup>15</sup>	617,248	113,094	218,035	1976
1981	459,807	139,225	14,923	24,900	3,195	1,008,460 <sup>15</sup>	675,185	117,902	229,958	1981
1986	465,336	144,154	16,018	26,204	3,317	1,086,733 <sup>15</sup>	767,199	121,672	240,680	1986
1991	473,094	148,245	17,284	28,031	3,477	1,170,100 <sup>15</sup>	851,897	123,964	252,639	1991
1996	478,084	148,160	18,311 <sup>14</sup>	29,611 <sup>14</sup>	3,732	1,217,550 <sup>15</sup>	942,157 <sup>12</sup>	125,757	269,394	1996
2001	483,782	145,976	19,413 <sup>14</sup>	31,021 <sup>14</sup>	3,880	1,271,850 <sup>12,15</sup>	1,035,066 <sup>12</sup>	127,150	285,108	2001
2002	484,614	145,306	19,650 <sup>14</sup>	31,373 <sup>14</sup>	3,939	1,280,400 <sup>12,15</sup>	1,051,260 <sup>12</sup>	127,450	287,985	2002
2003	486,617	144,566	19,990 <sup>14</sup>	31,669 <sup>14</sup>	4,009	1,288,400 <sup>12,15</sup>	1,068,070 <sup>12</sup>	127,720	290,850	2003
2004	488,757	143,821	20,140 <sup>14</sup>	31,974 <sup>14</sup>	4,061	1,296,075 <sup>12,15</sup>	1,085,600 <sup>12</sup>	127,760	293,623	2004
2005	491,024	143,110	20,409 <sup>14</sup>	32,312 <sup>14</sup>	4,099	1,303,720 <sup>12,15</sup>	1,101,320 <sup>12</sup>	127,773	296,410	2005
2006	492,975	142,490	20,700 <sup>14</sup>	32,650 <sup>14</sup>	4,180	1,311,020 <sup>12,15</sup>	1,117,730 <sup>12</sup>	127,760	299,400	2006
2007	495,090	142,110	21,070 <sup>14</sup>	32,980 <sup>14P</sup>	4,230	1,324,660 <sup>12,15</sup>	1,134,020 <sup>12</sup>	127,770	301,620	2007
2008	497,660 <sup>P</sup>	..	21,430 <sup>14P</sup>	..	4,270	..	1,150,000 <sup>12</sup>	127,700	..	2008
2009	499,795 <sup>P</sup>	..	..	..	..	..	..	..	..	2009
<b>Population changes (per 1,000 per annum)</b>										
1971-76	5.4	6.3	14.8	13.5	18.2	19.9	23.9	15.1	10.0	1971-76
1976-81	4.1	6.2	12.7	11.8	2.0	15.2	18.8	8.5	10.9	1976-81
1981-86	2.4	7.1	14.7	10.5	7.6	15.5	27.3	6.4	9.3	1981-86
1986-91	3.3	5.7	15.8	13.9	9.6	15.3	22.1	3.8	9.9	1986-91
1991-96	2.1	-1.7	11.9	11.3	14.7	10.3	21.1	2.9	12.1	1991-96
1996-01	2.4	-2.9	12.0	9.5	7.9	8.9	19.7	2.2	11.7	1996-01
2001-02	1.7	-4.6	12.2	11.3	15.2	6.7	15.6	2.4	10.1	2001-02
2002-03	4.1	-5.1	17.3	9.4	17.8	6.2	16.0	2.1	9.9	2002-03
2003-04	4.4	-5.2	7.5	9.6	13.0	6.0	16.4	0.3	9.5	2003-04
2004-05	4.6	-4.9	13.4	10.6	9.4	5.9	14.5	0.1	9.5	2004-05
2005-06	4.0	-4.3	14.3	10.5	19.8	5.6	14.9	-0.1	10.1	2005-06
2006-07	4.3	-2.7	17.9	10.1	12.0	10.4	14.6	0.1	7.4	2006-07
2007-2008	5.2	..	17.1	..	9.5	..	14.1	0.5	..	2007-08
2008-09	4.3	..	..	..	..	..	..	..	..	2008-09
<b>Live birth rate (per 1,000 population per annum)</b>										
1971-75	..	..	18.8	15.9	20.4	27.2	35.6	18.6	15.3	1971-75
1976-80	..	..	15.7	15.5	16.8	18.6	33.4	14.9	15.2	1976-80
1981-85	..	..	15.6	15.1	15.8	19.2	..	12.6	15.7	1981-85
1986-90	..	..	15.1	14.8	17.1	..	..	10.6	16.0	1986-90
1991-95	11.4	10.2	14.7	13.6	16.9	18.5 <sup>16</sup>	..	9.7	13.1	1991-95
1996-00	10.6	8.6	13.4	11.4	14.9	..	..	9.5	14.3	1996-00
2001	10.4	9.0	12.7	10.8	14.4	13.4 <sup>15</sup>	25.4	9.2	14.1	2001
2002	10.3	9.6	12.8	10.5	13.7	12.9 <sup>15</sup>	25.0	9.1	14.0	2002
2003	10.3	10.2	12.6	10.6	14.0	12.4 <sup>15</sup>	24.8	8.8	14.1	2003
2004	10.4	10.4	12.7	10.5	14.3	12.3 <sup>15</sup>	24.1	8.7	14.0	2004
2005	10.4	10.2	12.9	10.6	14.1	12.4 <sup>15</sup>	23.8	8.3	14.0	2005
2006	10.6	10.4	12.9	10.7	14.1	12.1 <sup>15</sup>	23.5	8.6	14.2	2006
2007	10.6	11.3	13.5	..	15.2	12.0 <sup>15</sup>	23.1	8.6	..	2007
2008	10.9	..	..	..	15.1	..	..	..	..	2008
<b>Death rate (per 1,000 population per annum)</b>										
1971-75	..	..	8.2	7.4	8.4	7.3	15.5	6.4	9.1	1971-75
1976-80	..	..	7.6	7.2	8.2	6.6	13.8	6.1	8.7	1976-80
1981-85	..	..	7.3	7.0	8.1	6.7	..	6.1	8.6	1981-85
1986-90	..	..	7.2	7.3	8.2	..	..	6.4	8.7	1986-90
1991-95	10.4	13.7	7.0	7.8	7.8	..	..	7.0	8.7	1991-95
1996-00	10.2	14.3	6.9	7.2	7.2	..	..	7.4	8.5	1996-00
2001	9.9	15.4	6.6	7.1	7.2	6.4 <sup>15</sup>	8.4	7.6	8.5	2001
2002	9.9	16.1	6.8	7.1	7.1	6.4 <sup>15</sup>	8.1	7.7	8.5	2002
2003	10.1	16.4	6.7	7.1	7.0	6.4 <sup>15</sup>	8.0	7.9	8.4	2003
2004	9.7	16.0	6.6	7.1	7.0	6.4 <sup>15</sup>	7.5	8.1	8.2	2004
2005	9.8	16.1	6.4	7.1	6.6	6.5 <sup>15</sup>	7.6	8.5	8.3	2005
2006	..	15.2	6.5	7.1	6.7	6.8 <sup>15</sup>	7.5	8.5	8.1	2006
2007	..	14.7	6.6	..	6.8	6.9 <sup>15</sup>	7.4	8.8	..	2007
2008	9.7	..	..	..	6.8	..	..	..	..	2008

See notes on first page of table.

**Table 1.2** Mid Year Population: national

Constituent countries of the United Kingdom		Numbers (thousands) and percentage age distribution					
Mid-year	United Kingdom	Great Britain	England and Wales	England	Wales	Scotland	Northern Ireland
<b>Estimates</b>							
1971	55,928	54,388	49,152	46,412	2,740	5,236	1,540
1976	56,216	54,693	49,459	46,660	2,799	5,233	1,524
1981	56,357	54,815	49,634	46,821	2,813	5,180	1,543
1986	56,684	55,110	49,999	47,188	2,811	5,112	1,574
1991	57,439	55,831	50,748	47,875	2,873	5,083	1,607
1993	57,714	56,078	50,986	48,102	2,884	5,092	1,636
1994	57,862	56,218	51,116	48,229	2,887	5,102	1,644
1995	58,025	56,376	51,272	48,383	2,889	5,104	1,649
1996	58,164	56,503	51,410	48,519	2,891	5,092	1,662
1997	58,314	56,643	51,560	48,665	2,895	5,083	1,671
1998	58,475	56,797	51,720	48,821	2,900	5,077	1,678
1999	58,684	57,005	51,933	49,033	2,901	5,072	1,679
2000	58,886	57,203	52,140	49,233	2,907	5,063	1,683
2001	59,113	57,424	52,360	49,450	2,910	5,064	1,689
2002	59,323	57,627	52,572	49,652	2,920	5,055	1,697
2003	59,557	57,855	52,797	49,866	2,931	5,057	1,703
2004	59,846	58,136	53,057	50,111	2,946	5,078	1,710
2005	60,238	58,514	53,419	50,466	2,954	5,095	1,724
2006	60,587	58,846	53,729	50,763	2,966	5,117	1,742
2007	60,975	59,216	54,072	51,092	2,980	5,144	1,759
<i>2007 by age group (percentages)</i>							
0-4	5.9	5.9	5.9	5.9	5.5	5.3	6.6
5-15	13.0	12.9	13.0	13.0	13.2	12.5	15.1
16-44	40.1	40.1	40.2	40.3	37.4	39.3	41.2
45-64M/59F	22.0	22.1	21.9	21.9	22.9	23.4	20.7
65M/60F-74	11.2	11.3	11.2	11.1	12.5	11.9	10.1
75 and over	7.7	7.8	7.8	7.8	8.5	7.5	6.3
<b>Projections<sup>1</sup></b>							
2006	60,587	58,846	53,729	50,763	2,966	5,117	1,742
2011	62,761	60,950	55,744	52,706	3,038	5,206	1,812
2016	64,975	63,107	57,837	54,724	3,113	5,270	1,868
2021	67,191	65,269	59,943	56,757	3,186	5,326	1,922
2026	69,260	67,294	61,931	58,682	3,248	5,363	1,966
2031	71,100	69,101	63,727	60,432	3,296	5,374	1,999
<i>2031 by age group (percentages)</i>							
0-4	5.5	5.5	5.6	5.6	5.1	4.7	5.7
5-15	12.4	12.4	12.5	12.5	12.1	11.2	13.4
16-44	36.4	36.4	36.6	36.8	33.7	34.3	35.5
45-64 <sup>2</sup>	23.4	23.4	23.3	23.3	23.5	24.4	23.9
65-74 <sup>2</sup>	10.6	10.6	10.5	10.4	12.0	12.4	10.7
75 and over	11.6	11.6	11.5	11.4	13.7	12.9	10.9

1 National projections based on mid-2006 population estimates.

2 Between 2010 and 2020, state pension age will change from 65 years for men and 60 years for women to 65 years for both sexes. Between 2024 and 2026, state pension age will increase from 65 years to 66 years for both men and women.

**Table 1.3** Population: subnational

Government Office Regions of England									
Numbers (thousands) and percentage age distribution									
Mid-year	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West
<b>Estimates</b>									
1971	2,679	7,108	4,902	3,652	5,146	4,454	7,529	6,830	4,112
1976	2,671	7,043	4,924	3,774	5,178	4,672	7,089	7,029	4,280
1981	2,636	6,940	4,918	3,853	5,187	4,854	6,806	7,245	4,381
1986	2,594	6,833	4,884	3,908	5,180	4,999	6,774	7,468	4,548
1991	2,587	6,843	4,936	4,011	5,230	5,121	6,829	7,629	4,688
1993	2,594	6,847	4,954	4,056	5,246	5,154	6,844	7,673	4,734
1994	2,589	6,839	4,960	4,072	5,249	5,178	6,874	7,712	4,757
1995	2,583	6,828	4,961	4,092	5,257	5,206	6,913	7,763	4,782
1996	2,576	6,810	4,961	4,108	5,263	5,233	6,974	7,800	4,793
1997	2,568	6,794	4,958	4,120	5,262	5,267	7,015	7,853	4,827
1998	2,561	6,792	4,958	4,133	5,271	5,302	7,065	7,889	4,849
1999	2,550	6,773	4,956	4,152	5,272	5,339	7,154	7,955	4,881
2000	2,543	6,774	4,959	4,168	5,270	5,375	7,237	7,991	4,917
2001	2,540	6,773	4,977	4,190	5,281	5,400	7,322	8,023	4,943
2002	2,541	6,778	5,002	4,222	5,295	5,433	7,362	8,047	4,973
2003	2,541	6,800	5,028	4,254	5,312	5,475	7,364	8,087	5,005
2004	2,542	6,820	5,064	4,291	5,327	5,511	7,389	8,125	5,042
2005	2,550	6,840	5,108	4,328	5,351	5,563	7,456	8,185	5,087
2006	2,556	6,853	5,142	4,364	5,367	5,607	7,512	8,238	5,124
2007	2,564	6,864	5,177	4,400	5,382	5,661	7,557	8,309	5,178
<i>2007 by age group (percentages)</i>									
0-4	5.5	5.9	5.8	5.6	6.1	5.9	7.0	5.8	5.2
5-15	12.6	13.2	13.0	12.9	13.4	13.2	12.2	13.2	12.5
16-44	38.9	39.4	40.3	39.4	39.1	38.6	48.3	38.9	37.1
45-64M/59F	23.2	22.3	22.0	22.7	22.0	22.4	18.6	22.5	22.9
65M/60F-74	11.9	11.5	11.3	11.6	11.6	11.7	8.1	11.3	12.6
75 and over	8.0	7.7	7.6	7.8	7.9	8.2	5.7	8.3	9.5
<b>Projections<sup>1</sup></b>									
2006	2,556	6,853	5,142	4,364	5,367	5,607	7,512	8,238	5,124
2011	2,594	7,014	5,377	4,591	5,506	5,890	7,817	8,550	5,368
2016	2,638	7,193	5,621	4,825	5,662	6,179	8,114	8,871	5,620
2021	2,685	7,377	5,866	5,060	5,824	6,471	8,390	9,202	5,882
2026	2,730	7,546	6,101	5,286	5,977	6,747	8,633	9,523	6,139
2031	2,769	7,696	6,319	5,491	6,114	6,997	8,858	9,814	6,374
<i>2031 by age group (percentages)</i>									
0-4	5.2	5.5	5.6	5.3	5.9	5.5	6.7	5.5	5.0
5-15	12.1	12.6	12.5	12.3	13.2	12.6	12.6	12.7	11.8
16-44	35.6	36.3	37.7	35.6	35.7	34.9	43.7	35.1	33.9
45-64 <sup>2</sup>	23.0	23.2	23.0	23.8	22.8	23.7	22.9	23.6	23.7
65-74 <sup>2</sup>	11.7	10.9	10.2	11.0	10.5	10.9	7.4	10.8	11.8
75 and over	12.4	11.5	10.9	12.0	11.9	12.4	6.7	12.4	13.9

1 These projections are based on the 2006 population estimates and are consistent with the 2006-based national projections produced by the Office for National Statistics.

2 Between 2010 and 2020, state pension age will change from 65 years for men and 60 years for women to 65 years for both sexes. Between 2024 and 2026, state pension age will increase from 65 years to 66 years for both men and women.









**Table 1.5** Population: age, sex and legal marital status<sup>1</sup>

England and Wales		Numbers (thousands)									
Mid-year	Total population	Males					Females				
		Single	Married	Divorced	Widowed	Total	Single	Married	Divorced	Widowed	Total
<b>Aged</b>											
<b>16 and over</b>											
1971	36,818	4,173	12,522	187	682	17,563	3,583	12,566	296	2,810	19,255
1976	37,486	4,369	12,511	376	686	17,941	3,597	12,538	533	2,877	19,545
1981	38,724	5,013	12,238	611	698	18,559	4,114	12,284	828	2,939	20,165
1986	39,837	5,625	11,867	917	695	19,103	4,617	12,000	1,165	2,953	20,734
1991	40,501	5,891	11,636	1,187	727	19,441	4,817	11,833	1,459	2,951	21,060
1996	40,827	6,225	11,310	1,346	733	19,614	5,168	11,433	1,730	2,881	21,212
1999	41,325	6,582	11,143	1,433	732	19,890	5,526	11,235	1,875	2,800	21,435
2000	41,569	6,721	11,113	1,456	731	20,022	5,650	11,199	1,927	2,772	21,547
2001	41,865	6,894	11,090	1,482	733	20,198	5,798	11,150	1,975	2,745	21,667
2002	42,135	7,062	11,043	1,524	730	20,358	5,944	11,094	2,031	2,709	21,777
2003	42,409	7,226	10,995	1,571	726	20,517	6,102	11,033	2,087	2,669	21,892
2004	42,731	7,419	10,941	1,617	722	20,700	6,279	10,980	2,144	2,628	22,031
2005	43,141	7,623	10,923	1,662	719	20,927	6,486	10,943	2,198	2,588	22,214
2006	43,494	7,833	10,881	1,696	716	21,126	6,683	10,893	2,244	2,548	22,367
2007	43,860	8,049	10,851	1,724	715	21,338	6,871	10,851	2,289	2,511	22,521
<b>16–19</b>											
1971	2,666	1,327	34	0	0	1,362	1,163	142	0	0	1,305
1976	2,901	1,454	28	0	0	1,482	1,289	129	0	0	1,419
1981	3,310	1,675	20	0	0	1,694	1,523	93	0	0	1,616
1986	3,131	1,587	10	0	0	1,596	1,484	49	1	0	1,535
1991	2,665	1,358	8	0	0	1,366	1,267	32	0	0	1,300
1996	2,402	1,209	6	0	0	1,216	1,164	21	0	0	1,186
1999	2,543	1,280	6	1	1	1,288	1,234	20	1	1	1,255
2000	2,523	1,276	6	1	1	1,283	1,221	18	1	1	1,240
2001	2,567	1,304	5	1	1	1,312	1,237	16	1	1	1,255
2002	2,630	1,351	5	1	1	1,357	1,258	13	1	1	1,273
2003	2,703	1,392	4	1	1	1,397	1,293	12	0	1	1,306
2004	2,771	1,424	3	0	0	1,428	1,331	11	0	0	1,343
2005	2,801	1,434	2	0	0	1,436	1,355	10	0	0	1,365
2006	2,829	1,457	2	0	0	1,459	1,363	7	0	0	1,370
2007	2,861	1,473	2	0	0	1,475	1,379	7	0	0	1,386
<b>20–24</b>											
1971	3,773	1,211	689	3	0	1,904	745	1,113	9	2	1,869
1976	3,395	1,167	557	4	0	1,728	725	925	16	2	1,667
1981	3,744	1,420	466	10	1	1,896	1,007	811	27	2	1,847
1986	4,171	1,768	317	14	0	2,099	1,383	657	32	1	2,072
1991	3,911	1,717	242	12	0	1,971	1,421	490	29	1	1,941
1996	3,291	1,538	117	3	0	1,658	1,361	260	11	1	1,633
1999	3,047	1,449	78	2	0	1,530	1,320	188	8	1	1,517
2000	3,088	1,470	74	3	0	1,548	1,352	180	8	1	1,540
2001	3,157	1,501	74	3	1	1,579	1,390	178	8	1	1,578
2002	3,212	1,530	73	3	1	1,606	1,427	170	8	1	1,606
2003	3,281	1,568	74	3	1	1,645	1,459	166	8	1	1,636
2004	3,376	1,632	75	3	1	1,712	1,491	163	8	2	1,664
2005	3,477	1,693	73	3	1	1,771	1,539	157	8	2	1,706
2006	3,558	1,741	67	3	1	1,812	1,591	146	7	1	1,746
2007	3,661	1,813	64	3	1	1,881	1,637	136	6	1	1,780
<b>25–29</b>											
1971	3,267	431	1,206	16	1	1,654	215	1,367	29	4	1,614
1976	3,758	533	1,326	39	2	1,900	267	1,522	65	5	1,859
1981	3,372	588	1,057	54	1	1,700	331	1,247	89	4	1,671
1986	3,713	835	949	79	1	1,863	527	1,207	113	4	1,850
1991	4,154	1,132	856	82	1	2,071	800	1,158	123	2	2,083
1996	3,950	1,273	650	46	1	1,970	977	906	93	3	1,980
1999	3,687	1,304	497	34	1	1,836	1,051	725	72	3	1,851
2000	3,605	1,305	459	31	1	1,796	1,065	677	65	3	1,810
2001	3,487	1,293	420	28	1	1,742	1,059	625	58	3	1,745
2002	3,365	1,277	384	26	1	1,688	1,049	574	52	3	1,676
2003	3,284	1,265	356	24	1	1,647	1,051	536	48	2	1,638
2004	3,280	1,278	339	23	1	1,641	1,078	513	46	2	1,639
2005	3,354	1,320	331	23	1	1,675	1,128	504	45	2	1,679
2006	3,434	1,371	324	22	1	1,718	1,178	490	45	2	1,716
2007	3,526	1,422	326	22	1	1,770	1,223	486	44	2	1,756

1 Rates have been revised from 2002 to include the adjustments for marriages to England and Wales residents occurring abroad – see 'In Brief'.

**Table 1.5**  
**continued** Population: age, sex and legal marital status<sup>1</sup>

England and Wales		Numbers (thousands)									
Mid-year	Total population	Males					Females				
		Single	Married	Divorced	Widowed	Total	Single	Married	Divorced	Widowed	Total
<b>30-34</b>											
1971	2,897	206	1,244	23	3	1,475	111	1,269	34	8	1,422
1976	3,220	236	1,338	55	3	1,632	118	1,388	75	8	1,588
1981	3,715	318	1,451	97	3	1,869	165	1,544	129	9	1,846
1986	3,338	355	1,197	124	2	1,679	206	1,293	154	6	1,660
1991	3,708	520	1,172	155	2	1,849	335	1,330	189	5	1,859
1996	4,126	776	1,135	138	2	2,050	551	1,316	201	7	2,076
1999	4,113	877	1,043	121	3	2,044	651	1,223	188	7	2,069
2000	4,076	904	1,007	114	2	2,027	679	1,182	181	7	2,049
2001	4,050	934	971	108	2	2,016	711	1,142	174	7	2,033
2002	3,992	951	927	103	2	1,984	739	1,097	166	6	2,009
2003	3,919	964	881	99	2	1,947	760	1,049	158	6	1,972
2004	3,810	967	834	94	2	1,897	768	993	147	5	1,913
2005	3,724	972	793	88	2	1,856	778	948	137	5	1,868
2006	3,606	972	744	81	2	1,799	782	896	124	5	1,808
2007	3,473	962	701	74	1	1,738	777	840	114	4	1,735
<b>35-44</b>											
1971	5,736	317	2,513	48	13	2,891	201	2,529	66	48	2,845
1976	5,608	286	2,442	104	12	2,843	167	2,427	129	42	2,765
1981	5,996	316	2,519	178	12	3,024	170	2,540	222	41	2,972
1986	6,856	396	2,738	293	12	3,438	213	2,815	350	39	3,418
1991	7,022	477	2,632	384	11	3,504	280	2,760	444	34	3,517
1996	7,017	653	2,426	398	12	3,489	427	2,568	497	36	3,528
1999	7,475	832	2,459	408	13	3,711	577	2,617	533	37	3,763
2000	7,661	899	2,481	410	12	3,802	635	2,640	547	37	3,859
2001	7,816	963	2,494	411	12	3,881	692	2,649	558	36	3,935
2002	7,964	1,027	2,499	420	12	3,957	749	2,653	570	35	4,007
2003	8,058	1,080	2,488	427	12	4,007	801	2,638	579	33	4,051
2004	8,133	1,126	2,466	433	11	4,036	853	2,623	588	32	4,097
2005	8,194	1,173	2,452	436	11	4,073	903	2,597	590	31	4,121
2006	8,213	1,219	2,419	431	11	4,080	955	2,564	585	30	4,134
2007	8,209	1,259	2,385	422	10	4,076	1,004	2,525	574	29	4,132
<b>45-64</b>											
1971	11,887	502	4,995	81	173	5,751	569	4,709	125	733	6,136
1976	11,484	496	4,787	141	160	5,583	462	4,568	188	683	5,901
1981	11,040	480	4,560	218	147	5,405	386	4,358	271	620	5,635
1986	10,860	461	4,422	331	141	5,355	327	4,220	388	570	5,505
1991	10,960	456	4,394	456	127	5,433	292	4,211	521	503	5,527
1996	11,820	528	4,587	628	121	5,864	318	4,466	732	440	5,956
1999	12,198	589	4,627	706	121	6,043	355	4,541	844	415	6,155
2000	12,328	615	4,638	727	121	6,101	372	4,564	881	410	6,227
2001	12,447	644	4,647	747	121	6,159	391	4,578	918	401	6,289
2002	12,573	670	4,647	775	119	6,211	413	4,599	959	391	6,362
2003	12,710	700	4,653	807	118	6,278	437	4,616	999	380	6,432
2004	12,852	734	4,657	840	116	6,347	464	4,630	1,041	370	6,505
2005	13,021	771	4,672	873	115	6,431	496	4,650	1,084	361	6,590
2006	13,243	813	4,703	906	115	6,537	534	4,688	1,130	355	6,706
2007	13,439	857	4,716	935	114	6,621	576	4,719	1,175	347	6,818
<b>65 and over</b>											
1971	6,592	179	1,840	17	492	2,527	580	1,437	32	2,016	4,065
1976	7,119	197	2,033	33	510	2,773	569	1,579	60	2,138	4,347
1981	7,548	216	2,167	54	534	2,971	533	1,692	90	2,263	4,578
1986	7,768	223	2,234	76	539	3,072	477	1,759	127	2,333	4,696
1991	8,080	231	2,332	99	586	3,248	422	1,853	152	2,405	4,832
1996	8,221	247	2,390	134	597	3,367	369	1,897	196	2,393	4,854
1999	8,262	251	2,431	161	594	3,437	338	1,922	230	2,336	4,825
2000	8,287	252	2,449	171	593	3,466	327	1,938	243	2,313	4,821
2001	8,342	254	2,478	183	595	3,510	318	1,960	259	2,295	4,832
2002	8,398	255	2,509	196	594	3,554	308	1,987	276	2,272	4,844
2003	8,454	257	2,539	209	592	3,597	301	2,017	295	2,245	4,857
2004	8,510	258	2,568	223	591	3,640	293	2,046	314	2,216	4,870
2005	8,571	259	2,599	238	589	3,685	286	2,078	334	2,187	4,885
2006	8,611	260	2,622	252	587	3,722	279	2,102	353	2,155	4,889
2007	8,690	263	2,658	268	587	3,775	274	2,138	375	2,128	4,915







Table 3.1

## Live births: age of mother

England and Wales

Numbers (thousands), rates, mean age and TFRs

Year and quarter	Age of mother at birth							Mean age <sup>1</sup> (years)	Age of mother at birth							Mean age <sup>2</sup> (years)	TFR <sup>3</sup>
	All ages	Under 20	20–24	25–29	30–34	35–39	40 and over		All ages	Under 20	20–24	25–29	30–34	35–39	40 and over		
	Total live births (numbers)								Age-specific fertility rates <sup>4</sup>								
1961	811.3	59.8	249.8	248.5	152.3	77.5	23.3	27.6	89.2	37.3	172.6	176.9	103.1	48.1	15.0	27.4	2.77
1964(max)	876.0	76.7	276.1	270.7	153.5	75.4	23.6	27.2	92.9	42.5	181.6	187.3	107.7	49.8	13.7	27.3	2.93
1966	849.8	86.7	285.8	253.7	136.4	67.0	20.1	26.8	90.5	47.7	176.0	174.0	97.3	45.3	12.5	27.1	2.75
1971	783.2	82.6	285.7	247.2	109.6	45.2	12.7	26.2	83.5	50.6	152.9	153.2	77.1	32.8	8.7	26.6	2.37
1976	584.3	57.9	182.2	220.7	90.8	26.1	6.5	26.4	60.4	32.2	109.3	118.7	57.2	18.6	4.8	26.5	1.71
1977(min)	569.3	54.5	174.5	207.9	100.8	25.5	6.0	26.5	58.1	29.4	103.7	117.5	58.6	18.2	4.4	26.6	1.66
1981	634.5	56.6	194.5	215.8	126.6	34.2	6.9	26.8	61.3	28.1	105.3	129.1	68.6	21.7	4.9	27.0	1.79
1986	661.0	57.4	192.1	229.0	129.5	45.5	7.6	27.0	60.6	30.1	92.7	123.8	78.0	24.6	4.8	27.4	1.77
1991	699.2	52.4	173.4	248.7	161.3	53.6	9.8	27.7	63.6	33.0	89.3	119.4	86.7	32.1	5.3	27.7	1.82
1992	689.7	47.9	163.3	244.8	166.8	56.7	10.2	27.9	63.6	31.7	86.1	117.6	87.4	33.4	5.8	27.8	1.80
1993	673.5	45.1	152.0	236.0	171.1	58.8	10.5	28.1	62.7	30.9	82.5	114.4	87.4	34.1	6.2	27.9	1.76
1994	664.7	42.0	140.2	229.1	179.6	63.1	10.7	28.4	62.0	28.9	79.0	112.2	89.4	35.8	6.4	28.1	1.75
1995	648.1	41.9	130.7	217.4	181.2	65.5	11.3	28.5	60.5	28.5	76.4	108.4	88.3	36.3	6.8	28.2	1.72
1996	649.5	44.7	125.7	211.1	186.4	69.5	12.1	28.6	60.6	29.7	77.0	106.6	89.8	37.5	7.2	28.2	1.74
1997	643.1	46.4	118.6	202.8	187.5	74.9	12.9	28.8	60.0	30.2	76.0	104.3	89.8	39.4	7.6	28.3	1.73
1998	635.9	48.3	113.5	193.1	188.5	78.9	13.6	28.9	59.2	30.9	74.9	101.5	90.6	40.4	7.9	28.3	1.72
1999	621.9	48.4	110.7	181.9	185.3	81.3	14.3	29.0	57.8	30.9	73.0	98.3	89.6	40.6	8.1	28.4	1.70
2000	604.4	45.8	107.7	170.7	180.1	85.0	15.1	29.1	55.9	29.3	70.0	94.3	87.9	41.4	8.3	28.5	1.65
2001	594.6	44.2	108.8	159.9	178.9	86.5	16.3	29.2	54.7	28.0	69.0	91.7	88.0	41.5	8.8	28.6	1.63
2002	596.1	43.5	110.9	153.4	180.5	90.5	17.3	29.3	54.7	27.1	69.1	91.5	89.9	43.0	9.1	28.7	1.65
2003	621.5	44.2	116.6	156.9	187.2	97.4	19.1	29.4	56.8	26.9	71.3	95.8	94.9	46.4	9.8	28.8	1.73
2004	639.7	45.1	121.1	160.0	190.6	102.2	20.8	29.4	58.2	26.9	72.8	97.6	99.6	48.8	10.4	28.9	1.78
2005	645.8	44.8	122.1	164.3	188.2	104.1	22.2	29.5	58.3	26.3	71.6	97.9	100.7	50.3	10.8	29.1	1.79
2006	669.6	45.5	127.8	172.6	189.4	110.5	23.7	29.5	60.2	26.6	73.2	100.6	104.8	53.8	11.4	29.1	1.86
2007	690.0	44.8	130.8	182.6	191.1	115.4	25.4	29.5	62.0	26.0	73.5	104.0	110.2	56.9	12.0	29.3	1.92
2008	708.7 <sup>p</sup>	44.7 <sup>p</sup>	136.0 <sup>p</sup>	193.0 <sup>p</sup>	192.5 <sup>p</sup>	116.2 <sup>p</sup>	26.4 <sup>p</sup>	29.5 <sup>p</sup>	63.5 <sup>p</sup>	26.2 <sup>p</sup>	74.3 <sup>p</sup>	106.2 <sup>p</sup>	112.3 <sup>p</sup>	58.4 <sup>p</sup>	12.6 <sup>p</sup>	29.3 <sup>p</sup>	1.95 <sup>p</sup>
2004 March	155.2	11.0	29.3	38.7	46.6	24.7	4.9	29.4	56.8	26.5	70.8	95.0	97.9	47.4	9.8	28.9	1.74
June	157.4	10.7	29.3	39.4	47.7	25.2	5.0	29.5	57.6	25.7	70.9	96.6	100.4	48.5	10.1	29.0	1.76
Sept	165.4	11.7	31.4	41.6	49.0	26.3	5.4	29.4	59.9	27.7	75.0	101.0	102.0	50.1	10.7	28.9	1.83
Dec	161.7	11.6	31.1	40.3	47.2	26.0	5.5	29.4	58.5	27.6	74.3	97.7	98.2	49.4	10.9	28.9	1.79
2005 March	154.3	10.9	29.3	38.9	45.0	24.7	5.4	29.4	56.5	26.0	69.6	94.0	97.6	48.5	10.7	29.0	1.74
June	159.8	10.7	29.6	40.3	47.5	26.2	5.4	29.5	57.8	25.3	69.7	96.2	101.9	50.8	10.6	29.1	1.78
Sept	170.2	11.9	32.5	43.7	49.4	26.9	5.7	29.4	60.9	27.6	75.7	103.2	104.9	51.6	11.1	29.0	1.88
Dec	161.7	11.3	30.7	41.4	46.3	26.3	5.7	29.4	57.9	26.3	71.3	97.9	98.3	50.4	11.0	29.0	1.78
2006 March	159.5	11.1	30.5	40.7	45.3	26.3	5.6	29.5	58.2	26.3	70.9	96.1	101.6	52.0	11.0	29.1	1.79
June	166.2	11.4	31.2	42.9	47.6	27.1	5.9	29.5	60.0	26.6	71.8	100.4	105.7	53.0	11.3	29.1	1.85
Sept	174.9	12.0	33.5	45.6	49.0	28.9	6.0	29.4	62.4	27.7	76.1	105.4	107.5	55.9	11.4	29.1	1.93
Dec	169.0	11.1	32.6	43.5	47.5	28.1	6.2	29.5	60.3	25.7	74.0	100.5	104.3	54.4	11.8	29.2	1.86
2007 March	164.0	10.9	31.1	42.7	45.7	27.4	6.2	29.5	59.8	25.5	70.9	98.6	106.9	54.8	12.0	29.3	1.85
June	169.5	10.7	31.4	44.6	47.8	28.9	6.2	29.6	61.1	25.0	70.8	101.9	110.5	57.1	11.8	29.4	1.89
Sept	181.4	11.9	34.6	48.6	50.0	29.9	6.4	29.5	64.7	27.3	77.1	109.9	114.4	58.6	12.0	29.2	2.00
Dec	175.0	11.3	33.7	46.6	47.6	29.2	6.6	29.5	62.4	26.1	75.0	105.4	108.9	57.1	12.4	29.3	1.93
2008 March	173.8 <sup>p</sup>	11.1 <sup>p</sup>	33.5 <sup>p</sup>	46.7 <sup>p</sup>	47.2 <sup>p</sup>	28.8 <sup>p</sup>	6.4 <sup>p</sup>	29.5 <sup>p</sup>	62.6 <sup>p</sup>	26.2 <sup>p</sup>	73.8 <sup>p</sup>	103.3 <sup>p</sup>	110.7 <sup>p</sup>	58.2 <sup>p</sup>	12.3 <sup>p</sup>	29.3 <sup>p</sup>	1.92 <sup>p</sup>
June	177.0 <sup>p</sup>	11.0 <sup>p</sup>	33.5 <sup>p</sup>	48.3 <sup>p</sup>	48.4 <sup>p</sup>	29.2 <sup>p</sup>	6.6 <sup>p</sup>	29.5 <sup>p</sup>	63.8 <sup>p</sup>	25.9 <sup>p</sup>	73.6 <sup>p</sup>	107.0 <sup>p</sup>	113.5 <sup>p</sup>	59.0 <sup>p</sup>	12.6 <sup>p</sup>	29.4 <sup>p</sup>	1.96 <sup>p</sup>
Sept	182.4 <sup>p</sup>	11.4 <sup>p</sup>	35.2 <sup>p</sup>	50.3 <sup>p</sup>	49.3 <sup>p</sup>	29.5 <sup>p</sup>	6.7 <sup>p</sup>	29.4 <sup>p</sup>	65.0 <sup>p</sup>	26.7 <sup>p</sup>	76.5 <sup>p</sup>	110.1 <sup>p</sup>	114.4 <sup>p</sup>	59.0 <sup>p</sup>	12.8 <sup>p</sup>	29.3 <sup>p</sup>	2.00 <sup>p</sup>
Dec	175.5 <sup>p</sup>	11.1 <sup>p</sup>	33.8 <sup>p</sup>	47.7 <sup>p</sup>	47.6 <sup>p</sup>	28.7 <sup>p</sup>	6.7 <sup>p</sup>	29.5 <sup>p</sup>	62.6 <sup>p</sup>	26.0 <sup>p</sup>	73.5 <sup>p</sup>	104.3 <sup>p</sup>	110.6 <sup>p</sup>	57.3 <sup>p</sup>	12.6 <sup>p</sup>	29.3 <sup>p</sup>	1.92 <sup>p</sup>
2009 March	168.1 <sup>p</sup>	10.9 <sup>p</sup>	32.7 <sup>p</sup>	45.9 <sup>p</sup>	45.1 <sup>p</sup>	27.1 <sup>p</sup>	6.5 <sup>p</sup>	29.4 <sup>p</sup>	61.1 <sup>p</sup>	26.1 <sup>p</sup>	71.4 <sup>p</sup>	99.7 <sup>p</sup>	106.4 <sup>p</sup>	56.7 <sup>p</sup>	12.6 <sup>p</sup>	29.3 <sup>p</sup>	1.86 <sup>p</sup>

Note: The rates for women of all ages, under 20, and 40 and over are based upon the populations of women aged 15–44, 15–19, and 40–44 respectively.

Rates for 2008 and 2009 are based on 2006-based population projections for 2008 and 2009.

1 Unstandardised and therefore takes no account of the age structure of the population.

2 Standardised to take account of the age structure of the population. This measure is more appropriate for use when analysing trends or making comparisons between different geographies.

3 TFR (total fertility rate) is the number of children that would be born to a woman if current patterns of fertility persisted throughout her childbearing life. It is sometimes called the TPF (total period fertility rate).

4 Births per 1,000 women in the age-group; all quarterly age-specific fertility rates are adjusted for days in the quarter. They are not adjusted for seasonality.

p provisional.

**Table 3.2 Live births outside marriage: age of mother and type of registration**

England and Wales

Numbers (thousands), mean age and percentages

Year and quarter	Age of mother at birth							Mean age <sup>1</sup> (years)	Age of mother at birth							Registration <sup>2</sup>		
	All ages	Under 20	20–24	25–29	30–34	35–39	40 and over		All ages	Under 20	20–24	25–29	30–34	35–39	40 and over	Joint		Sole
																Same <sup>3</sup> address	Different <sup>3</sup> address	
Live births outside marriage (numbers)							Percentage of total live births in age group							As a percentage of all births outside marriage				
1971	65.7	21.6	22.0	11.5	6.2	3.2	1.1	23.7	8.4	26.1	7.7	4.7	5.7	7.0	9.0	45.5	54.5	
1976	53.8	19.8	16.6	9.7	4.7	2.3	0.7	23.3	9.2	34.2	9.1	4.4	5.2	8.6	10.1	51.0	49.0	
1981	81.0	26.4	28.8	14.3	7.9	1.3	0.9	23.4	12.8	46.7	14.8	6.6	6.2	3.9	12.5	58.2	41.8	
1986	141.3	39.6	54.1	27.7	13.1	5.7	1.1	23.8	21.4	69.0	28.2	12.1	10.1	12.6	14.7	46.6	19.6	33.8
1991	211.3	43.4	77.8	52.4	25.7	9.8	2.1	24.8	30.2	82.9	44.9	21.1	16.0	18.3	21.3	54.6	19.8	25.6
1992	215.2	40.1	77.1	55.9	28.9	10.9	2.3	25.2	31.2	83.7	47.2	22.8	17.3	19.3	22.9	55.4	20.7	23.9
1993	216.5	38.2	75.0	57.5	31.4	11.9	2.5	25.5	32.2	84.8	49.4	24.4	18.4	20.2	23.5	54.8	22.0	23.2
1994	215.5	35.9	71.0	58.5	34.0	13.4	2.7	25.8	32.4	85.5	50.6	25.5	18.9	21.2	25.2	57.5	19.8	22.7
1995	219.9	36.3	69.7	59.6	37.0	14.4	3.0	26.0	33.9	86.6	53.3	27.4	20.4	22.0	26.2	58.1	20.1	21.8
1996	232.7	39.3	71.1	62.3	40.5	16.2	3.2	26.1	35.8	88.0	56.5	29.5	21.7	23.4	26.7	58.1	19.9	21.9
1997	238.2	41.1	69.5	63.4	42.2	18.2	3.7	26.2	37.0	88.7	58.6	31.3	22.5	24.3	28.6	59.5	19.3	21.2
1998	240.6	43.0	67.8	62.4	43.9	19.6	3.9	26.3	37.8	89.1	59.7	32.3	23.3	24.8	29.0	60.9	18.3	20.8
1999	241.9	43.0	67.5	61.2	45.0	20.8	4.3	26.4	38.9	89.0	61.0	33.6	24.3	25.6	30.2	61.8	18.2	19.9
2000	238.6	41.1	67.5	59.1	43.9	22.3	4.7	26.5	39.5	89.7	62.6	34.6	24.4	26.2	31.0	62.7	18.2	19.2
2001	238.1	39.5	68.1	56.8	45.2	23.3	5.1	26.7	40.0	89.5	62.6	35.5	25.3	26.9	31.6	63.2	18.4	18.4
2002	242.0	38.9	70.2	55.8	46.4	25.1	5.6	26.8	40.6	89.5	63.3	36.4	25.7	27.7	32.2	63.7	18.5	17.8
2003	257.2	39.9	75.7	58.2	49.2	27.8	6.4	26.9	41.4	90.2	64.9	37.1	26.3	28.5	33.3	63.5	19.0	17.4
2004	269.7	41.0	79.8	61.4	50.7	29.7	7.1	27.0	42.2	91.0	65.9	38.4	26.6	29.0	34.0	63.6	19.6	16.8
2005	276.5	41.2	82.1	64.4	50.8	30.3	7.7	27.0	42.8	91.8	67.2	39.2	27.0	29.1	34.8	63.5	20.2	16.3
2006	291.4	42.3	87.7	69.3	51.4	32.2	8.4	27.0	43.5	93.0	68.6	40.1	27.1	29.2	35.5	63.7	20.8	15.6
2007	305.6	41.7	91.9	76.0	53.0	34.0	9.0	27.1	44.3	93.1	70.3	41.6	27.7	29.5	35.5	65.0	20.1	15.0
2008	320.8 <sup>p</sup>	42.0 <sup>p</sup>	97.9 <sup>p</sup>	82.6 <sup>p</sup>	54.4 <sup>p</sup>	34.6 <sup>p</sup>	9.5 <sup>p</sup>	27.1 <sup>p</sup>	45.3 <sup>p</sup>	93.9 <sup>p</sup>	71.9 <sup>p</sup>	42.8 <sup>p</sup>	28.3 <sup>p</sup>	29.8 <sup>p</sup>	35.9 <sup>p</sup>	65.5 <sup>p</sup>	20.3 <sup>p</sup>	14.2 <sup>p</sup>
2003 March	61.0	9.8	18.0	13.9	11.6	6.3	1.5	26.8	41.4	90.1	64.5	37.0	26.9	29.1	33.3	63.0	18.9	18.1
2003 June	62.8	9.6	18.3	14.2	12.2	6.9	1.6	27.0	40.5	90.0	64.0	36.2	25.7	28.3	33.7	64.0	18.5	17.4
2003 Sept	67.6	10.3	20.0	15.3	13.0	7.3	1.7	26.9	41.5	90.2	65.6	38.3	26.4	28.6	33.3	63.7	19.3	18.0
2003 Dec	65.8	10.2	19.5	14.9	12.5	7.3	1.6	26.9	42.2	90.4	65.6	38.0	27.7	29.5	32.9	63.3	19.4	17.4
2004 March	65.2	10.1	19.3	14.8	12.5	7.0	1.7	26.9	42.0	91.2	65.8	38.2	26.8	28.2	34.3	63.1	19.4	17.4
2004 June	65.2	9.8	19.1	14.9	12.5	7.3	1.7	27.0	41.4	91.0	65.1	37.7	26.2	28.8	34.5	63.9	19.5	16.6
2004 Sept	70.2	10.7	20.7	16.1	13.0	7.9	1.8	27.0	42.4	91.2	66.1	38.6	26.5	30.0	33.5	63.7	19.7	16.6
2004 Dec	69.1	10.6	20.7	15.7	12.7	7.5	1.9	26.9	42.7	90.6	66.6	39.0	27.0	29.0	33.9	63.6	19.8	16.6
2005 March	66.3	10.1	19.6	15.2	12.2	7.3	1.9	27.0	43.0	92.0	67.0	39.0	27.1	29.6	35.2	63.1	20.3	16.6
2005 June	66.6	9.8	19.7	15.4	12.5	7.4	1.8	27.0	41.7	91.2	66.5	38.2	26.4	28.1	33.5	63.7	19.8	16.5
2005 Sept	73.7	10.9	22.1	17.3	13.4	7.9	2.1	26.9	43.3	92.0	68.0	39.6	27.2	29.3	35.7	63.7	20.3	16.0
2005 Dec	69.9	10.4	20.7	16.5	12.6	7.7	2.0	27.0	43.2	92.1	67.4	39.8	27.3	29.5	34.8	63.5	20.3	16.2
2006 March	68.7	10.3	20.8	16.0	12.0	7.6	1.9	26.9	43.1	93.1	68.1	39.4	26.5	28.9	34.4	63.1	20.9	16.0
2006 June	71.4	10.5	21.2	16.9	12.8	7.8	2.1	27.0	43.0	92.6	68.0	39.4	26.9	28.8	35.0	63.7	20.6	15.6
2006 Sept	76.8	11.1	23.1	18.6	13.4	8.4	2.2	27.0	43.9	92.8	69.0	40.7	27.3	29.2	36.9	64.1	20.5	15.4
2006 Dec	74.5	10.3	22.6	17.8	13.2	8.4	2.2	27.1	44.1	93.3	69.2	40.9	27.8	29.8	35.7	63.6	21.0	15.4
2007 March	72.5	10.2	21.7	17.6	12.6	8.2	2.2	27.1	44.2	93.5	69.8	41.3	27.5	29.8	35.1	64.0	20.5	15.5
2007 June	73.5	9.9	21.8	18.3	13.0	8.3	2.2	27.1	43.4	92.6	69.5	41.0	27.2	28.8	35.2	65.1	19.9	14.9
2007 Sept	80.8	11.1	24.4	20.4	13.9	8.8	2.2	27.0	44.5	93.2	70.5	41.9	27.8	29.6	35.0	65.2	20.1	14.7
2007 Dec	78.7	10.6	24.0	19.7	13.5	8.7	2.4	27.1	45.0	93.1	71.3	42.2	28.3	29.6	36.5	65.3	19.9	14.8
2008 March	78.6 <sup>p</sup>	10.5 <sup>p</sup>	23.9 <sup>p</sup>	20.0 <sup>p</sup>	13.3 <sup>p</sup>	8.6 <sup>p</sup>	2.3 <sup>p</sup>	27.1 <sup>p</sup>	45.2 <sup>p</sup>	94.3 <sup>p</sup>	71.1 <sup>p</sup>	42.8 <sup>p</sup>	28.3 <sup>p</sup>	29.9 <sup>p</sup>	35.9 <sup>p</sup>	65.3 <sup>p</sup>	20.0 <sup>p</sup>	14.7 <sup>p</sup>
2008 June	79.4 <sup>p</sup>	10.3 <sup>p</sup>	23.9 <sup>p</sup>	20.5 <sup>p</sup>	13.7 <sup>p</sup>	8.6 <sup>p</sup>	2.4 <sup>p</sup>	27.1 <sup>p</sup>	44.9 <sup>p</sup>	93.5 <sup>p</sup>	71.5 <sup>p</sup>	42.3 <sup>p</sup>	28.4 <sup>p</sup>	29.5 <sup>p</sup>	35.8 <sup>p</sup>	66.0 <sup>p</sup>	19.8 <sup>p</sup>	14.2 <sup>p</sup>
2008 Sept	83.1 <sup>p</sup>	10.8 <sup>p</sup>	25.5 <sup>p</sup>	21.6 <sup>p</sup>	13.9 <sup>p</sup>	8.9 <sup>p</sup>	2.4 <sup>p</sup>	27.0 <sup>p</sup>	45.5 <sup>p</sup>	94.0 <sup>p</sup>	72.4 <sup>p</sup>	43.0 <sup>p</sup>	28.2 <sup>p</sup>	30.1 <sup>p</sup>	36.2 <sup>p</sup>	65.8 <sup>p</sup>	20.4 <sup>p</sup>	13.8 <sup>p</sup>
2008 Dec	79.8 <sup>p</sup>	10.4 <sup>p</sup>	24.5 <sup>p</sup>	20.6 <sup>p</sup>	13.4 <sup>p</sup>	8.5 <sup>p</sup>	2.4 <sup>p</sup>	27.0 <sup>p</sup>	45.5 <sup>p</sup>	93.7 <sup>p</sup>	72.5 <sup>p</sup>	43.2 <sup>p</sup>	28.2 <sup>p</sup>	29.6 <sup>p</sup>	35.8 <sup>p</sup>	64.9 <sup>p</sup>	21.1 <sup>p</sup>	14.0 <sup>p</sup>
2009 March	77.3 <sup>p</sup>	10.3 <sup>p</sup>	23.8 <sup>p</sup>	20.1 <sup>p</sup>	12.9 <sup>p</sup>	8.0 <sup>p</sup>	2.3 <sup>p</sup>	27.0 <sup>p</sup>	46.0 <sup>p</sup>	94.3 <sup>p</sup>	72.9 <sup>p</sup>	43.9 <sup>p</sup>	28.5 <sup>p</sup>	29.4 <sup>p</sup>	35.0 <sup>p</sup>	65.0 <sup>p</sup>	21.2 <sup>p</sup>	13.8 <sup>p</sup>

1 Unstandardised and therefore takes no account of the age structure of the population.  
 2 Births outside marriage can be registered by both the mother and father (joint) or by the mother alone (sole).  
 3 Usual address(es) of parents.  
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**Table 4.1** Conceptions: age of woman at conception

England and Wales (residents)									
Numbers (thousands) and rates; and percentage terminated by abortion									
Year and quarter	Age of woman at conception								
	All ages	Under 16	Under 18	Under 20	20–24	25–29	30–34	35–39	40 and over
<b>(a) numbers (thousands)</b>									
1991	853.7	7.5	40.1	101.6	233.3	281.5	167.5	57.6	12.1
1996	816.9	8.9	43.5	94.9	179.8	252.6	200.0	75.5	14.1
1999	774.0	7.9	42.0	98.8	157.6	218.5	197.1	86.0	16.0
2000	767.0	8.1	41.3	97.7	159.0	209.3	195.3	88.7	17.0
2001	763.7	7.9	41.0	96.0	161.6	199.3	196.7	92.2	17.8
2002	787.0	7.9	42.0	97.1	167.8	199.4	204.3	98.9	19.6
2003	806.8	8.0	42.2	98.6	175.3	199.8	209.0	103.1	20.9
2004	826.8	7.6	42.2	101.3	181.3	205.1	209.6	106.8	22.8
2005	841.8	7.9	42.3	102.3	185.5	211.3	209.2	110.0	23.6
2006	870.0	7.8	41.8	103.1	191.2	222.2	212.4	115.4	25.5
2007 <sup>1,p</sup>	894.1	8.2	42.9	106.1	198.3	234.2	211.1	117.8	26.5
2005	204.6	1.9	10.4	25.1	45.4	50.8	51.0	26.6	5.7
June	204.7	2.0	10.5	25.1	45.2	51.0	50.7	26.9	5.8
Sept	210.9	2.0	10.4	25.3	45.6	53.3	53.1	27.5	6.0
Dec	221.7	2.0	11.0	26.8	49.3	56.2	54.3	29.1	6.0
2006	214.0	1.8	10.2	25.4	47.5	54.2	52.4	28.3	6.2
June	212.6	2.1	10.6	25.7	46.9	53.8	51.4	28.3	6.5
Sept	215.1	2.0	10.0	24.7	46.3	55.3	53.6	28.9	6.4
Dec	228.2	2.0	11.0	27.3	50.6	58.9	55.1	29.9	6.5
2007	221.6	2.0	10.8	26.7	49.4	57.0	52.7	29.3	6.5
March <sup>1,p</sup>	221.1	2.2	10.9	26.9	49.3	57.4	52.0	29.0	6.5
June <sup>1,p</sup>	222.2	2.0	10.3	25.6	48.5	58.8	52.9	29.7	6.7
Sept <sup>1,p</sup>	229.2	2.0	10.8	26.9	51.0	61.1	53.6	29.8	6.8
Dec <sup>1,p</sup>									
2008	224.0	2.0	10.7	26.8	49.7	59.1	52.3	29.1	6.6
March <sup>3,p</sup>	215.9	2.0	10.5	25.9	48.4	56.8	49.1	27.9	6.5
June <sup>3,p</sup>									
<b>(b) rates (conceptions per thousand women in age group)</b>									
1991	77.7	8.9	44.6	64.1	120.2	135.1	90.1	34.4	6.6
1996	76.2	9.5	46.3	63.2	110.1	127.6	96.3	40.7	8.4
1999	71.9	8.3	45.1	63.1	103.9	118.0	95.3	42.9	9.1
2000	70.9	8.3	43.9	62.5	103.2	115.7	95.3	43.2	9.4
2001	70.3	8.0	42.7	60.8	102.5	114.2	96.7	44.3	9.6
2002	72.2	7.9	42.9	60.6	104.4	119.0	101.7	47.0	10.3
2003	73.7	7.9	42.4	60.0	107.2	122.0	106.0	49.1	10.7
2004	75.2	7.5	41.8	60.3	109.0	125.1	109.6	51.0	11.4
2005	76.0	7.8	41.4	60.1	108.7	125.8	112.0	53.2	11.5
2006	78.3	7.8	40.9	60.2	109.5	129.5	117.5	56.3	12.3
2007 <sup>1,2,p</sup>	80.3	8.3	41.9	61.5	111.4	133.4	121.7	58.1	12.6
2005	75.1	7.6	41.5	60.0	108.9	123.8	109.8	51.8	11.4
June	74.2	8.0	41.1	59.1	106.7	122.1	108.5	52.0	11.4
Sept	75.5	7.8	40.5	59.0	105.7	125.6	113.3	52.8	11.7
Dec	79.3	7.9	42.8	62.4	113.6	131.7	116.7	55.9	11.5
2006	78.2	7.1	40.4	60.3	111.2	129.2	116.2	55.7	12.2
June	76.7	8.2	41.4	60.3	108.1	126.1	113.6	55.3	12.5
Sept	76.8	7.7	38.7	57.2	104.9	127.5	118.2	56.0	12.1
Dec	81.4	8.1	42.8	63.0	114.1	135.1	122.7	58.2	12.3
2007	80.8	8.1	42.9	62.9	113.4	132.8	121.2	58.4	12.6
March <sup>1,2,p</sup>	79.7	8.7	42.8	62.6	111.3	131.6	119.6	57.2	12.5
June <sup>1,2,p</sup>	79.2	8.2	40.1	59.0	107.8	132.2	121.1	58.3	12.6
Sept <sup>1,2,p</sup>	81.6	8.3	42.1	62.1	112.6	136.2	123.1	58.7	12.8
Dec <sup>1,2,p</sup>									
2008	80.8	8.1	42.4	62.9	110.4	132.5	122.1	58.4	12.7
March <sup>3,p</sup>	77.9	8.2	41.9	60.9	106.8	126.1	115.2	56.2	12.4
June <sup>3,p</sup>									
<b>(c) percentage terminated by abortion</b>									
1991	19.4	51.1	39.9	34.5	22.2	13.4	13.7	22.0	41.6
1996	20.8	49.2	40.0	36.2	25.7	15.6	14.1	21.2	37.6
1999	22.6	52.6	43.0	38.6	28.5	17.5	14.7	21.2	37.0
2000	22.7	54.0	44.2	39.3	29.2	17.7	14.5	20.5	35.4
2001	23.2	55.8	45.7	40.4	29.7	18.4	14.6	20.4	34.6
2002	22.5	55.6	45.3	39.9	28.8	17.9	13.9	19.5	34.6
2003	22.5	57.4	45.7	40.2	29.0	17.9	13.6	18.9	34.7
2004	22.4	57.2	45.6	40.1	28.9	18.2	13.2	18.3	33.0
2005	22.2	57.1	46.3	40.3	28.6	18.0	13.2	17.7	32.8
2006	22.3	59.8	48.4	41.9	28.7	18.0	13.1	17.1	31.8
2007 <sup>1,p</sup>	22.0	61.4	50.0	42.6	28.3	17.5	12.7	16.7	31.1
2005	22.5	57.5	47.3	41.1	29.2	18.1	13.1	18.0	32.6
June	22.7	57.0	45.8	40.3	28.9	18.6	13.9	17.8	33.8
Sept	21.4	56.2	45.3	39.0	27.5	17.5	12.6	17.2	32.1
Dec	22.2	57.5	46.9	40.6	28.7	17.8	13.1	17.7	32.7
2006	22.5	59.0	47.7	41.6	29.1	18.4	13.0	17.5	31.1
June	23.1	59.5	49.0	42.5	29.6	18.8	13.9	17.8	31.6
Sept	21.5	60.4	48.0	41.3	27.7	17.5	12.7	16.3	32.8
Dec	22.0	60.2	49.1	42.0	28.3	17.4	12.8	16.9	31.7
2007	22.7	62.5	50.7	43.2	29.5	18.3	13.0	16.9	31.1
March <sup>1,p</sup>	22.5	61.9	50.3	43.1	28.6	18.0	12.8	17.0	31.5
June <sup>1,p</sup>	21.1	57.9	48.6	41.4	27.0	16.6	12.3	16.1	30.8
Sept <sup>1,p</sup>	21.9	63.3	50.4	42.7	28.1	17.2	12.6	16.8	30.8
Dec <sup>1,p</sup>									
2008	22.6	62.1	50.6	43.9	29.0	17.9	13.1	16.8	31.2
March <sup>3,p</sup>	22.5	61.4	49.2	42.5	28.6	18.3	13.3	16.9	30.1
June <sup>3,p</sup>									

Note: Conception figures are estimates derived from birth registrations and abortion notifications.

Rates for women of all ages, under 16, under 18, under 20 and 40 and over are based on the population of women aged 15–44, 13–15, 15–17, 15–19 and 40–44 respectively.

For a quarterly analysis of conceptions to women under 18 for local authority areas see the ONS website, [www.ons.gov.uk](http://www.ons.gov.uk)

1 Figures for conceptions in 2007 exclude maternities relating to births in 2008 where the mother's date of birth was not stated on the registration and could not be supplied from another source. See Explanatory notes in the 2007 Conceptions report in *Health Statistics Quarterly* No. 41.

2 Rates for 2007 annual and quarterly conceptions and 2008 quarterly conceptions are calculated using 2007 mid-year population estimates.

3 Figures for conceptions by age for the March and June quarters of 2008 exclude maternities relating to births in 2008 where the mother's date of birth was not stated on the registration and could not be supplied from another source. Figures for conceptions by age for the March and June quarters of 2008 exclude maternities relating to births in 2009 where the mother's age was not recorded.

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Table 6.2 Deaths: subnational

Government Office Regions of England										Rates
Year and quarter	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West	
<b>Total deaths (deaths per 1,000 population of all ages)</b>										
1996	11.7	11.7	11.2	10.7	10.7	10.3	9.4	10.7	11.7	
1997	11.6	11.6	11.1	10.5	10.6	10.2	9.0	10.6	11.7	
1998	11.9	11.7	11.2	10.8	10.6	10.2	8.8	10.4	11.4	
1999	11.6	11.5	10.9	10.7	10.7	10.3	8.7	10.5	11.6	
2000	10.8	10.7	10.3	10.0	10.3	9.9	8.2	9.8	11.3	
2001	11.1	11.0	10.4	10.1	10.2	9.9	7.9	9.9	11.0	
2002	11.2	11.0	10.5	10.2	10.3	10.0	7.8	10.0	11.1	
2003	11.3	11.0	10.5	10.3	10.5	9.9	7.9	9.9	11.2	
2004	11.0	10.5	9.9	9.7	9.9	9.5	7.3	9.4	10.4	
2005	10.8	10.4	9.9	9.7	9.9	9.4	7.1	9.4	10.4	
2006	10.5	10.2	9.6	9.6	9.7	9.2	6.8	9.2	10.1	
2007	10.4	10.3	9.7	9.4	9.7	9.1	6.7	9.1	10.2	
2008 <sup>p</sup>	10.7	10.3	9.8	9.6	9.7	9.3	6.7	9.1	10.3	
2007	March	11.8	11.7	10.9	10.6	11.0	10.2	7.4	10.0	11.5
	June	9.9	9.9	9.5	9.1	9.4	8.8	6.5	8.8	9.8
	Sept	9.4	9.2	8.8	8.5	8.3	8.3	6.1	8.2	9.2
	Dec	10.7	10.4	10.0	9.7	9.8	9.4	6.8	9.5	10.5
2008 <sup>1</sup>	March <sup>p</sup>	11.6	11.1	10.5	10.2	10.6	10.1	7.3	9.8	11.0
	June <sup>p</sup>	10.1	10.0	9.6	9.4	9.4	9.1	6.5	8.9	10.0
	Sept <sup>p</sup>	9.6	9.3	8.6	8.5	8.7	8.2	5.8	8.2	9.4
	Dec <sup>p</sup>	11.4	10.9	10.3	10.3	10.2	9.8	7.0	9.6	10.9
2009	March <sup>p</sup>	11.4	11.1	10.6	10.5	10.7	10.4	7.3	10.4	11.7
<b>Infant mortality (deaths under 1 year per 1,000 live births)</b>										
1996	6.2	6.3	6.5	6.3	6.8	5.3	6.3	5.3	5.5	
1997	5.8	6.7	6.5	5.7	7.0	4.8	5.8	5.0	5.8	
1998	5.0	6.3	6.9	5.6	6.5	5.0	6.0	4.4	4.8	
1999	5.6	6.5	6.3	6.0	6.9	4.6	6.0	4.8	4.7	
2000	6.5	6.2	7.3	5.4	6.8	4.4	5.4	4.4	4.7	
2001	5.4	5.8	5.5	4.9	6.4	4.5	6.1	4.2	5.4	
2002	4.8	5.4	6.1	5.6	6.6	4.3	5.5	4.5	4.3	
2003	4.9	5.9	5.7	5.9	7.4	4.5	5.4	4.2	4.1	
2004	4.6	5.4	5.8	4.9	6.3	4.2	5.2	3.9	4.5	
2005	4.7	5.6	6.0	4.8	6.6	4.0	5.2	3.9	4.5	
2006	5.4	5.6	5.7	5.4	6.4	4.1	4.9	4.1	4.0	
2007	4.7	5.0	5.7	5.3	5.9	4.3	4.5	3.9	4.2	
2008 <sup>p</sup>	4.2	5.2	5.4	4.9	6.5	4.4	4.3	4.0	4.0	
2007	March	5.1	5.1	4.5	5.3	6.4	4.2	4.5	3.9	4.4
	June	4.5	5.5	7.2	6.5	6.1	3.9	5.1	4.3	3.9
	Sept	4.0	4.3	5.2	5.1	5.5	4.7	4.7	3.9	4.1
	Dec	5.3	5.2	5.7	4.3	5.7	4.4	4.0	3.5	4.2
2008	March <sup>p</sup>	4.1	5.0	5.8	4.7	7.6	4.4	4.0	4.5	4.9
	June <sup>p</sup>	4.5	4.8	4.6	4.8	6.7	4.2	3.9	3.7	3.0
	Sept <sup>p</sup>	3.8	5.6	4.8	5.7	6.4	4.4	4.4	3.6	4.1
	Dec <sup>p</sup>	4.4	5.2	6.4	4.3	5.5	4.5	4.8	4.3	3.9
2009	March <sup>p</sup>	4.3	4.8	6.4	5.8	6.1	3.9	4.6	4.5	4.2
<b>Neonatal mortality (deaths under 4 weeks per 1,000 live births)</b>										
1996	4.1	4.0	4.2	4.2	4.9	3.5	4.4	3.5	3.8	
1997	3.7	4.3	4.4	3.7	5.0	3.3	3.7	3.4	3.9	
1998	3.1	4.1	4.5	3.7	4.8	3.4	4.1	2.9	3.3	
1999	4.1	4.4	4.1	4.3	4.8	3.0	4.1	3.2	3.2	
2000	4.4	4.3	5.0	4.1	5.0	3.0	3.7	3.1	3.0	
2001	3.5	3.8	3.2	3.4	4.4	2.9	4.1	2.9	3.7	
2002	3.2	3.6	4.0	4.0	4.8	2.9	3.6	2.9	3.1	
2003	3.2	4.1	4.0	4.2	5.1	3.0	3.7	2.8	2.9	
2004	2.8	3.6	3.8	3.5	4.7	2.9	3.6	2.8	3.2	
2005	2.9	3.8	4.0	3.5	4.9	2.6	3.4	2.7	3.2	
2006	3.8	3.8	4.0	4.0	4.6	2.9	3.4	2.8	2.9	
2007	3.0	3.3	4.0	3.6	4.5	3.0	3.1	2.6	2.8	
2008 <sup>p</sup>	3.2	3.5	3.3	3.5	4.6	3.0	2.8	2.8	2.8	
2007	March	4.0	3.8	3.3	3.4	4.8	2.9	3.0	2.6	3.0
	June	1.8	3.7	5.2	4.5	4.6	2.6	3.5	3.0	2.5
	Sept	2.6	2.7	3.5	3.5	4.2	3.1	3.1	2.5	3.1
	Dec	3.7	2.9	3.8	2.8	4.6	3.6	2.7	2.4	2.7
2008	March <sup>p</sup>	3.2	3.3	4.0	3.6	5.8	3.0	2.7	2.9	3.1
	June <sup>p</sup>	2.9	3.4	2.7	3.3	4.3	2.7	2.6	2.7	2.4
	Sept <sup>p</sup>	3.1	3.6	3.1	4.1	4.8	2.9	2.9	2.6	2.8
	Dec <sup>p</sup>	3.6	3.6	3.6	3.0	3.5	3.3	3.1	3.0	2.9
2009	March <sup>p</sup>	2.7	3.0	4.0	4.0	4.5	3.0	3.1	2.7	2.6
<b>Perinatal mortality (stillbirths and deaths under 1 week per 1,000 total births)</b>										
1996	9.2	8.6	8.3	8.7	10.2	7.5	9.6	7.8	7.5	
1997	8.0	8.9	7.7	7.7	9.6	7.3	9.0	7.3	8.7	
1998	8.2	8.7	9.2	8.0	9.3	7.4	9.0	6.8	7.3	
1999	8.2	8.7	8.3	7.8	9.9	7.0	9.0	6.9	7.8	
2000	8.5	8.6	9.6	7.8	9.6	7.1	9.0	6.6	6.6	
2001	7.8	8.7	7.5	7.9	9.1	7.1	8.9	6.9	7.2	
2002	8.1	8.5	9.0	8.5	10.0	7.5	9.3	6.9	6.8	
2003	7.8	9.0	9.1	9.5	10.2	7.3	9.6	7.0	7.0	
2004	7.9	8.4	9.4	8.1	9.6	7.6	9.3	7.0	7.2	
2005	7.8	8.2	9.4	7.6	9.9	6.4	8.5	6.8	6.8	
2006	8.0	8.3	8.5	8.4	9.2	6.7	8.8	7.0	6.6	
2007	7.2	7.9	8.8	7.3	9.1	7.0	8.4	6.7	6.4	
2008 <sup>p</sup>	8.1	7.7	7.9	7.4	9.3	6.4	7.8	6.7	6.6	
2007	March	7.5	8.5	7.8	6.8	9.5	7.6	8.5	6.8	6.8
	June	6.8	7.4	9.2	8.6	9.8	6.7	9.1	7.1	6.5
	Sept	7.4	7.3	8.9	7.1	7.8	7.0	8.6	6.1	6.4
	Dec	7.2	8.5	9.1	6.7	9.5	6.8	7.6	6.7	6.1
2008	March <sup>p</sup>	6.5	8.2	9.3	7.8	11.5	6.1	7.7	6.7	6.4
	June <sup>p</sup>	7.4	8.0	7.7	7.5	9.4	6.5	7.7	6.6	6.3
	Sept <sup>p</sup>	8.3	8.0	6.8	6.8	8.3	6.3	7.4	5.9	7.3
	Dec <sup>p</sup>	10.0	6.7	7.9	7.7	8.1	6.9	8.6	7.6	6.5
2009	March <sup>p</sup>	6.4	7.6	8.1	9.7	9.5	7.6	8.0	6.8	6.9

Note: Figures represent the numbers of deaths occurring in each year with the exception of 2006, 2007 and provisional 2008 and 2009 figures which relate to registrations.

1 Total deaths rates for 2008 and 2009 have been calculated using the mid-2007 population estimates published on 21 August 2008.

p provisional.

**Table 6.3** Deaths: selected causes (International Classification)<sup>1</sup> and sex

England and Wales				Number (thousands) and rate for all deaths and age-standardised rates per million population for selected causes										
Year and quarter	All deaths		All causes (age - standardised rates per million population <sup>2</sup> )	Malignant neoplasms										
	Number (thousands)	Crude rate per 100,000 population		Oesophagus	Stomach	Colon	Rectosigmoid junction, rectum, and anus	Trachea, bronchus and lung	Melanoma of skin	Other malignant neoplasms of skin	Breast	Cervix uteri	Ovary	
			A00-R99 V01-Y89	(C15)	(C16)	(C18)	(C19-C21)	(C33-C34)	(C43)	(C44)	(C50)	(C53)	(C56)	
<b>Males</b>														
1971	288.4	1,207	13,466	76	317	187	144	1,066	10	12	4	:	:	
1981	289.0	1,196	12,189	90	251	181	135	1,028	17	9	3	:	:	
1991	277.6	1,125	10,291	117	185	194	117	842	23	10	3	:	:	
1998	264.7	1,064	8,981	129	132	169	95	643	26	8	3	:	:	
1999	264.3	1,044	8,862	127	127	161	90	611	27	7	2	:	:	
2000	255.5	1,005	8,437	128	118	158	89	592	28	7	2	:	:	
2001	252.4	987	8,188	129	111	155	89	570	26	7	3	:	:	
2002	253.1	985	8,081	131	110	151	90	559	27	8	3	:	:	
2003	253.9	982	8,000	135	102	145	90	539	28	8	2	:	:	
2004	244.1	939	7,554	129	95	143	92	521	30	9	2	:	:	
2005	243.3	929	7,356	132	93	137	92	515	28	8	2	:	:	
2006	240.9	913	7,123	131	83	132	90	509	31	7	2	:	:	
2007	240.8	906	6,949	128	82	128	88	498	31	8	3	:	:	
2008	243.0 <sup>p</sup>	907 <sup>p</sup>	6,859 <sup>p</sup>	131 <sup>p</sup>	79 <sup>p</sup>	130 <sup>p</sup>	90 <sup>p</sup>	495 <sup>p</sup>	31 <sup>p</sup>	7 <sup>p</sup>	2 <sup>p</sup>	:	:	
2007	March	65.4	998	7,616	126	88	132	86	523	33	7	2	:	:
	June	58.2	879	6,756	130	84	122	86	493	31	8	3	:	:
	Sept	55.2	824	6,340	128	80	126	87	470	29	7	3	:	:
	Dec	62.0	926	7,096	129	78	132	94	509	31	9	3	:	:
2008 <sup>3</sup>	March	64.4 <sup>p</sup>	967 <sup>p</sup>	7,288 <sup>p</sup>	135 <sup>p</sup>	80 <sup>p</sup>	132 <sup>p</sup>	88 <sup>p</sup>	508 <sup>p</sup>	29 <sup>p</sup>	5 <sup>p</sup>	1 <sup>p</sup>	:	:
	June	58.9 <sup>p</sup>	884 <sup>p</sup>	6,700 <sup>p</sup>	125 <sup>p</sup>	77 <sup>p</sup>	130 <sup>p</sup>	90 <sup>p</sup>	476 <sup>p</sup>	33 <sup>p</sup>	8 <sup>p</sup>	2 <sup>p</sup>	:	:
	Sept	55.3 <sup>p</sup>	821 <sup>p</sup>	6,252 <sup>p</sup>	126 <sup>p</sup>	79 <sup>p</sup>	129 <sup>p</sup>	91 <sup>p</sup>	483 <sup>p</sup>	30 <sup>p</sup>	8 <sup>p</sup>	2 <sup>p</sup>	:	:
	Dec	63.9 <sup>p</sup>	949 <sup>p</sup>	7,153 <sup>p</sup>	135 <sup>p</sup>	78 <sup>p</sup>	127 <sup>p</sup>	91 <sup>p</sup>	510 <sup>p</sup>	33 <sup>p</sup>	6 <sup>p</sup>	1 <sup>p</sup>	:	:
2009 <sup>3</sup>	March	65.8 <sup>p</sup>	988 <sup>p</sup>	7,302 <sup>p</sup>	129 <sup>p</sup>	70 <sup>p</sup>	131 <sup>p</sup>	84 <sup>p</sup>	480 <sup>p</sup>	28 <sup>p</sup>	7 <sup>p</sup>	2 <sup>p</sup>	:	:
<b>Females</b>														
1971	278.9	1,104	8,189	40	149	176	79	183	14	6	379	83	126	
1981	288.9	1,134	7,425	42	111	157	74	252	16	5	405	69	121	
1991	292.5	1,122	6,410	50	74	146	61	300	18	4	401	54	118	
1998	290.3	1,108	5,945	49	54	117	47	291	21	3	328	35	116	
1999	291.8	1,097	5,929	52	51	115	46	289	20	3	319	33	111	
2000	280.1	1,049	5,655	51	48	107	45	285	21	3	311	33	109	
2001	277.9	1,038	5,543	48	46	103	45	283	20	3	308	31	112	
2002	280.4	1,043	5,524	51	44	103	44	284	19	3	302	29	112	
2003	284.4	1,055	5,575	50	42	98	46	285	20	3	293	27	108	
2004	268.4	1,075	5,206	48	41	96	46	283	19	3	278	26	100	
2005	269.4	990	5,188	48	39	96	46	290	21	3	284	26	102	
2006	261.7	956	4,989	48	35	93	46	300	19	4	277	24	99	
2007	263.3	957	4,921	47	35	92	48	300	21	4	267	24	96	
2008	266.8 <sup>p</sup>	960 <sup>p</sup>	4,910 <sup>p</sup>	47 <sup>p</sup>	35 <sup>p</sup>	90 <sup>p</sup>	48 <sup>p</sup>	307 <sup>p</sup>	22 <sup>p</sup>	3 <sup>p</sup>	263 <sup>p</sup>	23 <sup>p</sup>	93 <sup>p</sup>	
2007	March	74.0	1,091	5,523	50	35	92	49	315	22	4	284	25	95
	June	62.8	916	4,757	48	31	88	45	296	22	4	267	22	97
	Sept	58.8	847	4,408	40	37	91	47	285	21	3	251	22	97
	Dec	67.7	976	5,007	51	37	96	49	306	20	4	269	25	94
2008 <sup>3</sup>	March	71.7 <sup>p</sup>	1,042 <sup>p</sup>	5,252 <sup>p</sup>	50 <sup>p</sup>	35 <sup>p</sup>	86 <sup>p</sup>	47 <sup>p</sup>	301 <sup>p</sup>	20 <sup>p</sup>	3 <sup>p</sup>	269 <sup>p</sup>	24 <sup>p</sup>	93 <sup>p</sup>
	June	63.8 <sup>p</sup>	927 <sup>p</sup>	4,758 <sup>p</sup>	46 <sup>p</sup>	36 <sup>p</sup>	86 <sup>p</sup>	47 <sup>p</sup>	297 <sup>p</sup>	21 <sup>p</sup>	3 <sup>p</sup>	259 <sup>p</sup>	23 <sup>p</sup>	91 <sup>p</sup>
	Sept	58.8 <sup>p</sup>	844 <sup>p</sup>	4,402 <sup>p</sup>	43 <sup>p</sup>	34 <sup>p</sup>	94 <sup>p</sup>	45 <sup>p</sup>	299 <sup>p</sup>	23 <sup>p</sup>	3 <sup>p</sup>	253 <sup>p</sup>	23 <sup>p</sup>	92 <sup>p</sup>
	Dec	71.4 <sup>p</sup>	1,025 <sup>p</sup>	5,202 <sup>p</sup>	48 <sup>p</sup>	33 <sup>p</sup>	93 <sup>p</sup>	50 <sup>p</sup>	329 <sup>p</sup>	24 <sup>p</sup>	2 <sup>p</sup>	269 <sup>p</sup>	23 <sup>p</sup>	96 <sup>p</sup>
2009 <sup>3</sup>	March	72.9 <sup>p</sup>	1,061 <sup>p</sup>	5,301 <sup>p</sup>	45 <sup>p</sup>	32 <sup>p</sup>	88 <sup>p</sup>	49 <sup>p</sup>	301 <sup>p</sup>	19 <sup>p</sup>	3 <sup>p</sup>	267 <sup>p</sup>	23 <sup>p</sup>	91 <sup>p</sup>

Note: Figures represent the number of deaths registered in each year up to 1992 and the number of deaths occurring in each year from 1993 to 2005. The number of deaths for 2006 onwards relate to registrations.  
 The rates by cause of death in this table are based on final underlying cause. For further details see the Explanatory Notes in the 'Report: Death registrations in England and Wales, 2004: causes' in HSQ26.  
 Death rates from 2002 to 2005 have been updated to include the latest revised mid-year population estimates that take into account improved estimates of international migration.  
 1 The Ninth Revision of the International Classification of Diseases, 1975, came into operation in England and Wales on 1 January 1979. The Tenth Revision of the International Classification of Diseases, 1992, came into operation in England and Wales on 1 January 2001. The cause descriptions and codes relate to ICD-10. For changes to this table see 'In Brief', Health Statistics Quarterly 14.  
 2 Directly age-standardised to the European Standard Population. See Notes to Tables.  
 3 Death rates for 2008 and 2009 are provisional and based on the 2006-based population projections for 2008 and 2009.  
 p Provisional.

**Table 6.3**  
**continued**  
**Deaths: selected causes (International Classification)<sup>1</sup> and sex**

England and Wales													Age-standardised rates <sup>2</sup> per million population for selected causes	
Malignant neoplasms			Diabetes mellitus	Ischaemic heart disease	Cerebrovascular diseases	Pneumonia	Bronchitis, emphysema and other chronic obstructive pulmonary disease	Asthma	Gastric and duodenal ulcer	Diseases of the liver	Land transport accidents	Intentional self-harm and events of undetermined intent	Year and quarter	
Prostate	Bladder	Leukaemia												
(C61)	(C67)	(C91–C95)	(E10–E14)	(I20–I25)	(I60–I69)	(J12–J18)	(J40–J44)	(J45–J46)	(K25–K27)	(K70–K76)	(V01–V89)	(X60–X84, Y10–Y34)		
													<b>Males</b>	
198	124	74	82	3,801	1,541	920	944	21	107	41	209	124	1971	
214	121	74	82	3,664	1,141	1,053	683	28	90	58	119	151	1981	
304	121	77	131	2,984	940	391	606	31	73	76	125	160	1991	
277	99	67	94	2,215	706	720	463	18	60	115	86	152	1998	
272	93	67	94	2,095	673	770	474	18	64	119	86	151	1999	
260	92	67	88	1,959	622	735	416	17	59	119	86	141	2000	
274	93	70	94	1,872	690	388	403	16	55	139	86	134	2001	
271	90	68	91	1,784	690	388	396	15	56	144	83	131	2002	
273	87	71	91	1,703	662	408	411	14	53	157	84	129	2003	
267	85	67	83	1,566	595	360	364	15	50	151	77	125	2004	
256	80	67	79	1,470	555	353	368	12	46	156	75	118	2005	
250	81	68	74	1,353	520	320	343	10	45	161	83	123	2006	
247	81	66	71	1,280	481	303	337	11	39	162	79	119	2007	
240 <sup>p</sup>	79 <sup>p</sup>	65 <sup>p</sup>	73 <sup>p</sup>	1,212 <sup>p</sup>	468 <sup>p</sup>	302 <sup>p</sup>	347 <sup>p</sup>	10 <sup>p</sup>	40 <sup>p</sup>	164 <sup>p</sup>	70 <sup>p</sup>	125 <sup>p</sup>	2008	
252	83	66	77	1,442	541	395	433	11	44	178	84	115	2007 March	
246	80	69	65	1,249	465	286	311	11	37	154	77	121	June	
233	78	61	65	1,146	429	226	265	9	35	152	73	116	Sept	
257	82	69	75	1,287	489	306	339	11	40	167	82	125	Dec	
239 <sup>p</sup>	75 <sup>p</sup>	64 <sup>p</sup>	75 <sup>p</sup>	1,324 <sup>p</sup>	514 <sup>p</sup>	363 <sup>p</sup>	412 <sup>p</sup>	11 <sup>p</sup>	47 <sup>p</sup>	164 <sup>p</sup>	67 <sup>p</sup>	107 <sup>p</sup>	2008 March	
228 <sup>p</sup>	78 <sup>p</sup>	65 <sup>p</sup>	72 <sup>p</sup>	1,191 <sup>p</sup>	453 <sup>p</sup>	283 <sup>p</sup>	321 <sup>p</sup>	8 <sup>p</sup>	39 <sup>p</sup>	160 <sup>p</sup>	70 <sup>p</sup>	121 <sup>p</sup>	June	
238 <sup>p</sup>	76 <sup>p</sup>	61 <sup>p</sup>	69 <sup>p</sup>	1,069 <sup>p</sup>	409 <sup>p</sup>	225 <sup>p</sup>	260 <sup>p</sup>	8 <sup>p</sup>	34 <sup>p</sup>	161 <sup>p</sup>	66 <sup>p</sup>	137 <sup>p</sup>	Sept	
254 <sup>p</sup>	86 <sup>p</sup>	69 <sup>p</sup>	75 <sup>p</sup>	1,254 <sup>p</sup>	496 <sup>p</sup>	336 <sup>p</sup>	392 <sup>p</sup>	12 <sup>p</sup>	39 <sup>p</sup>	168 <sup>p</sup>	70 <sup>p</sup>	135 <sup>p</sup>	Dec	
246 <sup>p</sup>	80 <sup>p</sup>	69 <sup>p</sup>	72 <sup>p</sup>	1,316 <sup>p</sup>	515 <sup>p</sup>	408 <sup>p</sup>	427 <sup>p</sup>	11 <sup>p</sup>	41 <sup>p</sup>	155 <sup>p</sup>	63 <sup>p</sup>	119 <sup>p</sup>	2009 March	
													<b>Females</b>	
:	32	47	89	1,668	1,352	624	193	25	44	31	82	84	1971	
:	35	47	66	1,601	1,012	740	155	30	57	43	41	81	1981	
:	34	44	95	1,407	812	325	211	30	46	49	45	51	1991	
:	32	41	65	1,055	645	546	226	22	41	64	28	43	1998	
:	30	45	65	986	629	591	241	22	39	67	28	45	1999	
:	31	39	62	907	577	546	216	20	41	68	24	45	2000	
:	29	41	62	878	620	307	220	19	39	77	23	40	2001	
:	30	43	65	843	616	316	224	20	37	79	24	41	2002	
:	30	39	66	811	606	337	244	20	36	81	24	41	2003	
:	28	39	60	736	548	296	214	17	35	78	20	38	2004	
:	28	39	57	686	519	298	224	17	32	81	22	38	2005	
:	29	36	54	629	478	261	213	16	29	87	24	39	2006	
:	27	38	53	592	455	251	218	14	26	87	23	35	2007	
:	27 <sup>p</sup>	37 <sup>p</sup>	51 <sup>p</sup>	563 <sup>p</sup>	444 <sup>p</sup>	256 <sup>p</sup>	226 <sup>p</sup>	15 <sup>p</sup>	27 <sup>p</sup>	86 <sup>p</sup>	21 <sup>p</sup>	38 <sup>p</sup>	2008	
:	29	40	58	689	517	353	298	18	28	96	23	33	2007 March	
:	29	36	49	569	439	228	204	14	27	86	27	31	June	
:	24	34	50	520	399	178	156	12	24	80	22	35	Sept	
:	26	41	56	591	464	249	217	14	26	86	20	39	Dec	
:	29 <sup>p</sup>	36 <sup>p</sup>	54 <sup>p</sup>	613 <sup>p</sup>	487 <sup>p</sup>	320 <sup>p</sup>	262 <sup>p</sup>	17 <sup>p</sup>	28 <sup>p</sup>	90 <sup>p</sup>	20 <sup>p</sup>	33 <sup>p</sup>	2008 <sup>p</sup> March	
:	27 <sup>p</sup>	36 <sup>p</sup>	51 <sup>p</sup>	547 <sup>p</sup>	432 <sup>p</sup>	237 <sup>p</sup>	206 <sup>p</sup>	14 <sup>p</sup>	26 <sup>p</sup>	85 <sup>p</sup>	22 <sup>p</sup>	39 <sup>p</sup>	June	
:	25 <sup>p</sup>	36 <sup>p</sup>	46 <sup>p</sup>	499 <sup>p</sup>	381 <sup>p</sup>	170 <sup>p</sup>	159 <sup>p</sup>	11 <sup>p</sup>	27 <sup>p</sup>	78 <sup>p</sup>	28 <sup>p</sup>	40 <sup>p</sup>	Sept	
:	27 <sup>p</sup>	37 <sup>p</sup>	53 <sup>p</sup>	591 <sup>p</sup>	474 <sup>p</sup>	297 <sup>p</sup>	276 <sup>p</sup>	17 <sup>p</sup>	27 <sup>p</sup>	92 <sup>p</sup>	18 <sup>p</sup>	40 <sup>p</sup>	Dec	
:	27 <sup>p</sup>	34 <sup>p</sup>	58 <sup>p</sup>	578 <sup>p</sup>	484 <sup>p</sup>	348 <sup>p</sup>	289 <sup>p</sup>	18 <sup>p</sup>	28 <sup>p</sup>	86 <sup>p</sup>	17 <sup>p</sup>	36 <sup>p</sup>	2009 March	

See notes opposite.

# Report:

## Deaths involving MRSA: England and Wales, 2008

Jane Carter  
Office for National Statistics

### Key findings

- The number of death certificates in England and Wales mentioning MRSA (meticillin-resistant *Staphylococcus aureus*) infection fell by 23 per cent between 2007 and 2008 to 1,230
- The number of death certificates in England and Wales mentioning *Staphylococcus aureus* (including those not specified as resistant) was 1,500 in 2008, a decrease of 27 per cent compared with 2007
- Between 2007 and 2008, age-standardised death rates for deaths involving MRSA decreased by 31 per cent among males and by 13 per cent among females, to 18 and 10 per million population respectively
- Rates of deaths involving MRSA in the period 2004 to 2008 were highest in older age groups. In the 85 and over group, there were 659 and 326 deaths per million population for males and females respectively. This compares with figures for the under 45 age group of 1 death per million population for both males and females
- Between 2004 and 2008, MRSA was involved in 3 per 1,000 deaths in England and Wales

This report presents the latest figures from the Office for National Statistics (ONS) database of deaths where meticillin-resistant *Staphylococcus aureus* (MRSA) was mentioned as a contributory factor. It includes provisional figures for 2008 (based on provisional deaths registrations for 2008) and updated rates for 2007 (based on mid-year population estimates for 2007). Figures for 2004 to 2007 are provided for comparison purposes. Provisional mortality rates for 2008 have been calculated using the population projections for 2008,<sup>1</sup> as population estimates are not yet available. Final figures and rates will be provided in the next annual report.

### Changes to this report

Reports on deaths involving MRSA which were published in 2008 included breakdowns by individual communal establishment.<sup>2,3</sup> Following feedback from users of the statistics and comparison with other sources of data, it became apparent that the figures produced at this detailed level are not of sufficient quality for routine publication as National Statistics (Background note 6). Consequently, alternative methods for the production of local-level figures on deaths involving MRSA are being investigated, and comparable figures for the 2004–08 are not included in this report.

### Results

#### Number of deaths where *Staphylococcus aureus* or MRSA contributed to the death or was the underlying cause of death

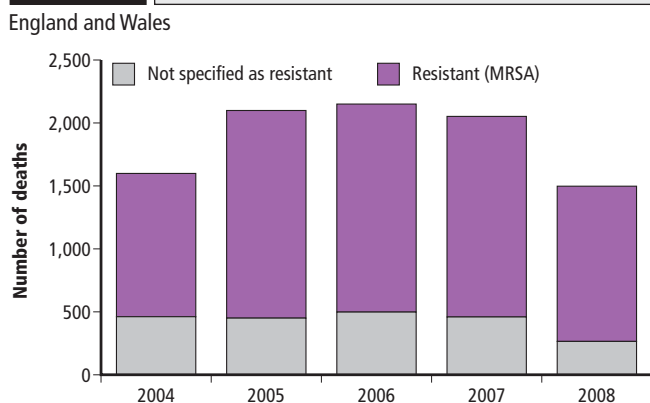
The number of death certificates in England and Wales mentioning *Staphylococcus aureus* (*S. aureus*) infection (including those specifying meticillin resistance (MRSA)) increased each year from 2004 to 2006 from 1,599 to 2,150 (Table 1). However, in 2007 the number of certificates mentioning *S. aureus* decreased slightly to 2,052, and then decreased again, by 27 per cent, to 1,500 in 2008.

- The number of death certificates mentioning MRSA increased from 1,138 in 2004 to 1,652 in 2006. It then decreased slightly to 1,593 in 2007, and fell further to 1,230 in 2008
- The number of death certificates mentioning *S. aureus* without specifying meticillin resistance remained fairly stable between 2004 and 2007, and then decreased in 2008 (Figure 1)

In 2004, 71 per cent of deaths mentioning *S. aureus* specified meticillin resistance. By 2008 this had risen to 82 per cent.

Figure 1

Number of death certificates mentioning *Staphylococcus aureus* by meticillin resistance, 2004–08<sup>1</sup>



<sup>1</sup> Figures for deaths registered in 2008 are provisional.

## Underlying cause of death

The proportion of mentions of *S. aureus* or MRSA that were selected as the underlying cause of death stayed stable between 2004 and 2007, at around one in three, and then fell to one in five in 2008 (Table 1).

## Mortality rates for all deaths mentioning *Staphylococcus aureus* or MRSA:

### Sex

Throughout the period 2004 to 2008, age-standardised rates for deaths involving *S. aureus* and MRSA were higher for males than for females.

The rates for deaths involving MRSA in males decreased by 6 per cent from 19 per million population in 2004 to 18 in 2008. In females the rate increased by 15 per cent from 9 per million population to 10, over the same period (Table 2).

The rates for deaths involving *S. aureus* in males decreased 17 per cent from 27 per million population in 2004 to 22 in 2008. In females the rate decreased by 6 per cent from 14 per million population to 13, over the same period.

Between 2007 and 2008, the age-standardised rates for MRSA among males decreased by 31 per cent, with the rate among females decreasing by 13 per cent to 18 and 10 per million population respectively. This represents the first decrease among males in England and Wales since

2004 and the third consecutive year that the rate for females has fallen during this period (Figure 2).

### Age

Most of the deaths involving *S. aureus* or MRSA are in the older age groups. For the combined period 2004–08, age-specific mortality rates for deaths involving MRSA in the 85 and over age group were 659 and 326 deaths per million population, for males and females respectively. In the under 45 age group there was 1 death per million population, for both males and females (Table 3).

## Place of death

Death certificates rarely specify the place where an infection was acquired. However, the place of death is recorded. Between 2004 and 2008, deaths involving *S. aureus* and MRSA accounted for less than 1 per cent respectively of all deaths in England and Wales (Table 4). Among deaths that occurred in NHS hospitals and NHS nursing homes, deaths involving *S. aureus* accounted for 0.6 per cent and 0.5 per cent of the totals in these institutions respectively. Deaths involving MRSA accounted for 0.4 per cent of all deaths in NHS hospitals and in NHS nursing homes.

The majority of deaths occur in hospital (56 per cent of all deaths between 2004 and 2008 occurred in NHS hospitals). We would therefore expect the majority of *S. aureus* and MRSA deaths to also occur in hospital. Many of these deaths in hospital will have been to patients who were admitted because they were already seriously ill with another

**Table 1**

**Number of death certificates with *Staphylococcus aureus* and MRSA mentioned and as the underlying cause, 2004–08<sup>1</sup>**

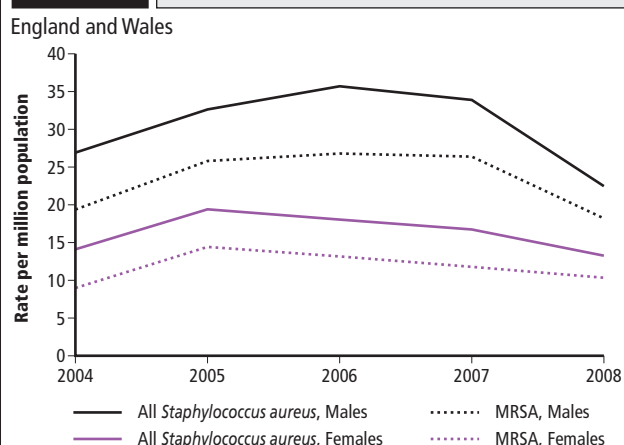
	2004	2005	2006	2007	2008
<b>England and Wales<sup>2</sup></b>					
<b>Mentions</b>					
All <i>Staphylococcus aureus</i>	1,599	2,099	2,150	2,052	1,500
MRSA	1,138	1,649	1,652	1,593	1,230
Percentage of <i>S. aureus</i> mentions that were MRSA	71	79	77	78	82
<b>Underlying cause</b>					
All <i>Staphylococcus aureus</i>	547	642	707	630	305
MRSA	357	465	519	460	228
<b>Percentage of mentions selected as underlying cause</b>					
All <i>Staphylococcus aureus</i>	34	31	33	31	20
MRSA	31	28	31	29	19
<b>England</b>					
<b>Mentions</b>					
All <i>Staphylococcus aureus</i>	1,514	1,960	2,025	1,941	1,395
MRSA	1,069	1,536	1,556	1,517	1,137
Percentage of <i>S. aureus</i> mentions that were MRSA	71	78	77	78	82
<b>Underlying cause</b>					
All <i>Staphylococcus aureus</i>	516	596	653	596	273
MRSA	334	432	480	439	200
<b>Percentage of mentions selected as underlying cause</b>					
All <i>Staphylococcus aureus</i>	34	30	32	31	20
MRSA	31	28	31	29	18
<b>Wales</b>					
<b>Mentions</b>					
All <i>Staphylococcus aureus</i>	84	134	119	103	101
MRSA	68	109	95	73	90
Percentage of <i>S. aureus</i> mentions that were MRSA	81	81	80	71	89
<b>Underlying cause</b>					
All <i>Staphylococcus aureus</i>	31	46	52	30	31
MRSA	23	33	39	20	27
<b>Percentage of mentions selected as underlying cause</b>					
All <i>Staphylococcus aureus</i>	37	34	44	29	31
MRSA	34	30	41	27	30

<sup>1</sup> Figures for deaths registered in 2008 are provisional.

<sup>2</sup> England and Wales data include non-residents who died in England and Wales. Data for England and Wales separately exclude deaths of non-residents.



**Figure 2** Age-standardised mortality rates for *Staphylococcus aureus* and MRSA, 2004–08<sup>1</sup>



1 Mortality rates for 2008 have been calculated using provisional death registrations figures for 2008 and population projections for 2008 as estimates are not yet available. These rates are therefore provisional.

**Table 2** Age-standardised mortality rates for *Staphylococcus aureus* and MRSA by sex, 2004–08<sup>1</sup>

	Rates per million population				
	2004	2005	2006	2007	2008 <sup>1</sup>
<b>England and Wales<sup>2</sup></b>					
All <i>Staphylococcus aureus</i> , Males	26.9	32.6	35.7	33.8	22.4
All <i>Staphylococcus aureus</i> , Females	14.1	19.4	18.0	16.7	13.3
MRSA, Males	19.4	25.8	26.8	26.3	18.2
MRSA, Females	9.0	14.4	13.2	11.8	10.3
<b>England</b>					
All <i>Staphylococcus aureus</i> , Males	27.1	32.4	35.6	33.9	22.0
All <i>Staphylococcus aureus</i> , Females	14.2	19.3	18.1	16.8	13.3
MRSA, Males	19.4	25.6	26.8	26.6	17.8
MRSA, Females	8.9	14.3	13.2	11.9	10.2
<b>Wales</b>					
All <i>Staphylococcus aureus</i> , Males	23.7	34.6	33.8	30.5	26.2
All <i>Staphylococcus aureus</i> , Females	11.6	19.0	16.0	12.6	13.2
MRSA, Males	19.4	28.2	25.9	21.4	23.8
MRSA, Females	9.1	15.4	12.4	8.0	11.5

1 Mortality rates for 2008 have been calculated using provisional death registrations figures for 2008 and population projections for 2008 as estimates are not yet available. These rates are therefore provisional.  
 2 England and Wales data include non-residents who died in England and Wales. Data for England and Wales separately exclude deaths of non-residents.

condition. In England and Wales over the period 2004–08, 89 per cent of deaths that mentioned *S. aureus* and 87 per cent of deaths that mentioned MRSA occurred in NHS hospitals.

## Methods

All deaths are coded by the Office for National Statistics (ONS) according to the Tenth Revision of the International Classification of Diseases (ICD–10) supplied by the World Health Organisation. Since 1993 ONS has stored the text of death certificates on a database, along with all the ICD coding relating to causes identified on the death certificate. ONS uses a combination of ICD–10 codes and this text to identify death certificates on which MRSA infection was mentioned.

**Table 3** Age-specific mortality rates for *Staphylococcus aureus* and MRSA by sex, 2004–08<sup>1</sup>

Age group	Rates per million population			
	Males		Females	
	All <i>S. aureus</i>	MRSA	All <i>S. aureus</i>	MRSA
<b>England and Wales<sup>2</sup></b>				
Under 45	2.7	1.1	2.1	0.8
45–54	11.4	8.3	7.7	5.3
55–64	31.7	22.3	16.5	10.8
65–74	95.1	73.8	52.2	37.6
75–84	318.4	257.3	160.9	126.4
85 and over	776.0	658.9	397.7	325.6
<b>England</b>				
Under 45	2.6	1.1	2.1	0.8
45–54	11.5	8.5	7.8	5.2
55–64	31.0	21.7	16.4	10.6
65–74	94.1	72.6	52.5	37.6
75–84	316.7	255.2	160.6	126.1
85 and over	790.2	672.7	399.7	327.3
<b>Wales</b>				
Under 45	2.1	1.0	1.2	0.5
45–54	8.4	6.3	5.1	5.1
55–64	39.3	29.7	16.5	13.4
65–74	108.3	91.5	46.0	34.8
75–84	344.7	290.3	158.2	126.9
85 and over	539.0	429.2	362.9	293.8

1 Mortality rates for 2008 have been calculated using provisional death registrations figures for 2008 and population projections for 2008 as estimates are not yet available. These rates are therefore provisional.

2 England and Wales data include non-residents who died in England and Wales. Data for England and Wales separately exclude deaths of non-residents.

## Identification of deaths involving *Staphylococcus aureus* and MRSA

The ICD–10 codes used to select deaths in order to then search manually were the same as used in previous analyses. They are identified in Boxes One and Two.<sup>2</sup> Initially all deaths were extracted that had a code which specifically related to *Staphylococcus* or *S. aureus* mentioned on the death certificate. The text of these death certificates was then searched manually to identify *S. aureus* and MRSA. The codes used to identify these deaths are given in Box One.

In addition, all deaths which had non-specific codes (that is, one which could include a *Staphylococcal* or an *S. aureus* infection but could also include other infections) mentioned anywhere on the death certificate were extracted. They were then searched manually to identify both *S. aureus* and MRSA. The codes used to identify these deaths are given in Box Two.

Deaths with an underlying cause of *S. aureus* were identified by selecting those deaths with a mention of *S. aureus* that also had as the underlying cause one of the causes of death listed in Box One or Box Two. The same procedure was followed for the identification of those deaths with MRSA as the underlying cause. As in previous MRSA reports<sup>2</sup> where MRSA was mentioned on the death certificate, the code A41.9 (septicaemia, unspecified) was taken to indicate that MRSA was also the underlying cause of death. This is because this code is sometimes selected as the underlying cause of death when MRSA septicaemia is mentioned on the death certificate.

## Background notes

1. The number of deaths due to MRSA is difficult to estimate. Trends in mortality are normally monitored using the underlying cause of death (the disease which initiated the train of events leading directly to death). However MRSA, and other healthcare associated infections, are not often the underlying cause of death. Those who die with

Table 4

Number of deaths mentioning *Staphylococcus aureus* and MRSA by place of death, compared to all causes of death, 2004–08<sup>1,2</sup>

	All cause number of deaths	<i>S. aureus</i>			MRSA		
		Number of <i>S. aureus</i> deaths	Percentage of all <i>S. aureus</i> deaths	<i>S. aureus</i> as a percentage of all deaths in the establishment	Number of MRSA deaths	Percentage of all MRSA deaths	MRSA as a percentage of all deaths in the establishment
<b>England and Wales<sup>1</sup></b>							
Own home	483,226	150	1.6	0.03	122	1.7	0.03
NHS hospital	1,423,228	8,378	89.1	0.59	6,333	87.2	0.44
Non-NHS hospital	11,099	30	0.3	0.27	25	0.3	0.23
Hospice	121,799	56	0.6	0.05	55	0.8	0.05
NHS nursing home	11,950	61	0.6	0.51	44	0.6	0.37
Non-NHS nursing home	226,462	382	4.1	0.17	371	5.1	0.16
Private residential home	136,882	157	1.7	0.11	149	2.1	0.11
Local Authority residential home	32,901	31	0.3	0.09	31	0.4	0.09
Other places	95,437	155	1.6	0.16	132	1.8	0.14
Total	2,542,984	9,400	100.0	0.37	7,262	100.0	0.29
<b>England</b>							
Own home	451,697	139	1.6	0.03	111	1.6	0.02
NHS hospital	1,323,584	7,861	89.0	0.59	5,933	87.1	0.45
Non-NHS hospital	10,337	29	0.3	0.28	24	0.4	0.23
Hospice	117,398	56	0.6	0.05	55	0.8	0.05
NHS nursing home	11,843	60	0.7	0.51	43	0.6	0.36
Non-NHS nursing home	213,990	370	4.2	0.17	359	5.3	0.17
Private residential home	130,966	154	1.7	0.12	146	2.1	0.11
Local Authority residential home	31,221	31	0.4	0.10	31	0.5	0.10
Other places	86,168	135	1.5	0.16	113	1.7	0.13
Total	2,377,204	8,835	100.0	0.37	6,815	100.0	0.29
<b>Wales</b>							
Own home	31,438	11	2.0	0.03	11	2.5	0.03
NHS hospital	95,960	494	91.3	0.51	389	89.4	0.41
Non-NHS hospital	261	–	–	–	–	–	–
Hospice	4,249	–	–	–	–	–	–
NHS nursing home	103	1	0.2	0.97	1	0.2	0.97
Non-NHS nursing home	12,274	12	2.2	0.10	12	2.8	0.10
Private residential home	5,870	3	0.6	0.05	3	0.7	0.05
Local Authority residential home	1,677	–	–	–	–	–	–
Other places	7,944	20	3.7	0.25	19	4.4	0.24
Total	159,776	541	100.0	0.34	435	100.0	0.27

1 Figures for deaths registered in 2008 are provisional.

2 England and Wales data include non-residents who died in England and Wales. Data for England and Wales separately exclude deaths of non-residents.

MRSA are usually patients who were already very ill and it is their existing illness, rather than MRSA, which is often designated as the underlying cause of death. There is therefore an interest in the number of deaths where MRSA contributed to the death – only conditions which contribute directly to the death should be recorded on the death certificate. Results presented in this report identify deaths where the underlying cause was MRSA and also where MRSA was not the underlying cause but was a contributory factor in the death.

2. MRSA was first isolated in 1961, the same year that the antibiotic meticillin was first used. MRSA remained at low levels in the UK until 1992.<sup>4</sup> Since then, the number of invasive infections caused by MRSA increased each year until 2006.<sup>2</sup> Those who die with MRSA are often already very ill and vulnerable to infection. The HPA carry out a mandatory reporting scheme for all cases of MRSA. Results are published annually on the HPA website.<sup>5</sup> A 2003 Department of Health report addressed actions that should be taken to reduce levels of healthcare associated infections.<sup>6</sup> Updated guidance on death certification, with specific reference to healthcare associated infections, was issued to doctors in May 2005.<sup>7</sup> This was followed by a message from the Chief Medical Officer to all doctors reminding them of their responsibilities with respect to death certification and drawing their attention to the guidance.<sup>8</sup>

3. Since 1986 ONS has used the internationally recommended death certificate for neonatal deaths. This means that these deaths cannot be assigned an underlying cause of death.<sup>9</sup> However, as the data were based on all mentions of *S. aureus* and MRSA, neonates have been included. Neonatal deaths were extracted in the same way as described above for postneonatal deaths.

4. Provisional figures for 2008 death registrations were published on 21 May 2009. Deaths involving MRSA for 2008 have therefore been marked as provisional to allow further quality assurance before the release of final figures in the next annual report. The quality of the provisional figures is comparable with final death registration figures released in previous years.

5. Mortality rates are presented as deaths per million population, directly age-standardised to the European standard population.

6. Investigation into relevant data quality issues has revealed that the quality of the available data on place of death is not sufficient for figures, at this detailed level to be routinely published as National Statistics. The place where a death occurred is recorded in death registration and cannot always be reliably translated into a specific, known healthcare organisation or site. The registrar of births and deaths is required by law to record the name and address of the place where the death occurred, and this information is provided by a qualified informant (usually a relative of the deceased). If a death is referred to the coroner and an inquest takes place, the place of death comes directly from the coroner via 'Form 99'. In practice, the information provided by informants is of variable quality. There is no way for the registrar to know, and nowhere in the current registration system for registrars to record, the NHS or other organisation that was responsible for the patient's care. For example, different parts of one hospital site may report to different NHS Trusts. There is also no direct relationship between the textual information recorded by the registrar and any recognised list or classification of healthcare units and sites, such as the NHS Organisation Codes.

## Box one

### ICD-10 codes specifically relating to *Staphylococcus* infection

Code	Text
A05.0	Food borne staphylococcal intoxication
A41.0–A41.2	Septicaemia due to <i>staphylococcus aureus</i> /other specified staphylococcus/unspecified staphylococcus
A49.0	Staphylococcal infection, unspecified
B95.6–B95.8	<i>Staphylococcus aureus</i> /other staphylococcus/unspecified staphylococcus as the cause of diseases classified to other chapters
G00.3	Staphylococcal meningitis
J15.2	Pneumonia due to staphylococcus
L00	Staphylococcal scalded skin syndrome
M00.0	Staphylococcal arthritis and polyarthritis
P23.2	Congenital pneumonia due to staphylococcus
P36.2	Sepsis of newborn due to <i>staphylococcus aureus</i>

## Box two

### ICD-10 codes related to infection, but not specifically *Staphylococcus*

Code	Text
A04.8	Other specified bacterial intestinal infections
A38	Scarlet fever
A48.3	Toxic shock syndrome
G06.1	Intraspinal abscess and granuloma
G04.2	Bacterial meningoenkephalitis and meningomyelitis, not elsewhere classified
I30.1	Infective pericarditis
I38	Endocarditis, valve unspecified
J03.8	Acute tonsillitis due to other specified organisms
J86	Pyothorax
K12.2	Cellulitis and abscess of mouth
K14.0	Glossitis
L03	Cellulitis
L08.9	Local infection of skin and subcutaneous tissue, unspecified
M60.0	Infective myositis
M86	Osteomyelitis
M46.2	Osteomyelitis of vertebra
M71.1	Other infective bursitis
N39.0	Urinary tract infection, site not specified
T80.2	Infections following infusion, transfusion and therapeutic injection
T81.4	Infection following a procedure, not elsewhere classified
T82.6	Infection and inflammatory reaction due to cardiac valve prosthesis
T82.7	Infection and inflammatory reaction due to other cardiac and vascular devices, implants and grafts
T83.5	Infection and inflammatory reaction due to prosthetic device, implant and graft in urinary system
T83.6	Infection and inflammatory reaction due to prosthetic device, implant and graft in genital tract
T84.5	Infection and inflammatory reaction due to internal joint prosthesis
T84.6	Infection and inflammatory reaction due to internal fixation device [any site]
T84.7	Infection and inflammatory reaction due to other internal orthopaedic prosthetic devices, implants and grafts
T85.7	Infection and inflammatory reaction due to other internal prosthetic devices, implants and grafts
T87.4	Infection of amputation stump
T88.0	Infection following immunisation

## Glossary

- Staphylococcus aureus* (*S. aureus*):** This is a common germ that lives completely harmlessly on the skin and in the nose of about one third of people. It is more common on skin that is broken, for example, by a cut or sore. People who have *S. aureus* on, or in, their bodies but who are unharmed by it are described as **colonised**. *S. aureus* can cause problems when it gets the opportunity to enter the body. This is more likely to happen in people who are already unwell.
- Meticillin-resistant *Staphylococcus aureus* (MRSA):** This is a variety of *S. aureus* that is resistant to meticillin, and some of the other antibiotics that are usually used to treat *S. aureus*. This sometimes makes it more difficult to treat MRSA infections.
- Age-standardised rate:** Directly age-standardised rates make allowances for differences in the age structure of the population, over time and between sexes. The age-standardised rate for a particular disease is that which would have occurred if the observed age-specific rates for the disease had applied in a given standard population. In this report we have used the European standard population. This is a hypothetical population standard, which is the same for both males and females allowing standardised rates to be compared for each sex, and between males and females.

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# Report:

## Deaths involving *Clostridium difficile*: England and Wales, 2008

Jane Carter  
Office for National Statistics

### Key findings

- The number of death certificates in England and Wales mentioning *Clostridium difficile* (*C. difficile*) infection fell by 29 per cent between 2007 and 2008 to 5,931, after increasing every year since records began in 1999
- Age-standardised death rates for deaths involving *C. difficile* decreased by 27 and 30 per cent for males and females respectively between 2007 and 2008, after more than tripling between 2004 and 2007
- Death rates involving *C. difficile* were highest in older age groups. In the 85 and over group, there were 2,331 and 2,303 deaths per million population for males and females respectively. This compares with figures for the under 45 age group of 1 death per million population for both males and females
- Between 2004 and 2008, *C. difficile* was involved in 1 per 1,000 deaths in England and Wales

This report presents the latest figures from the Office for National Statistics (ONS) database of deaths where *Clostridium difficile* (*C. difficile*) was mentioned as a contributory factor. It includes provisional figures for 2008 (based on provisional deaths registrations for 2008) and updated rates for 2007 (based on mid-year population estimates for 2007). Figures for 2004 to 2007 are provided for comparison purposes. Provisional mortality rates for 2008 have been calculated using the population projections for 2008,<sup>1</sup> as population estimates are not yet available. Final figures and rates will be provided in the next annual report.

### Changes in this report

Reports on deaths involving *C. difficile* which were published in 2008 included breakdowns by individual communal establishment.<sup>2,3</sup> Following feedback from users of the statistics, and comparison with other sources of data, it became apparent that the quality of the available data on place of death is not sufficient for figures at this detailed level to be routinely published as National Statistics (Background note 6). Consequently, alternative methods for the production of local-level figures on deaths involving *C. difficile* are being investigated, and comparable figures for 2004–08 are not included in this report.

### Results

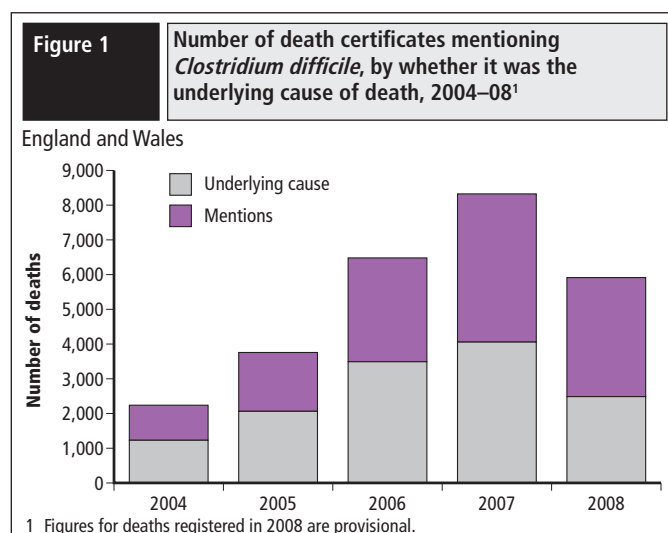
#### Number of deaths where *Clostridium difficile* contributed to the death or was the underlying cause of death

The number of death certificates mentioning *C. difficile* increased each year in England and Wales between 2004 and 2007 from 2,238 to 8,324 (Table 1 and Figure 1). However, in 2008 mentions of *C. difficile* on death certificates fell by 29 per cent, to 5,931. Among deaths with a mention of *C. difficile*, the percentage for which it was the underlying cause was similar (around 55 per cent) in each year until 2007, when it decreased to 49 per cent. This percentage decreased further in 2008 to 42 per cent.

#### Mortality rates for all deaths mentioning *Clostridium difficile*

##### Sex

Age-standardised rates for deaths involving *C. difficile* increased by 2.6 times among males, and by 2.4 times among females between 2004 and 2008. Rates increased from 24 to 62 per million population among males, and from 23 to 56 per million population among females (Table 2). However, in the latter part of this period, between 2007 and 2008, rates decreased for the first time, by 27 and 30 per cent respectively for males and females.



**Table 1**

**Number of death certificates with *Clostridium difficile* mentioned and as the underlying cause, 2004–08<sup>1</sup>**

	2004	2005	2006	2007	2008
<b>England and Wales<sup>2</sup></b>					
Certificates mentioning <i>C. difficile</i>	2,238	3,757	6,480	8,324	5,931
Certificates where <i>C. difficile</i> was the underlying cause of death	1,229	2,063	3,490	4,056	2,502
Percentage of mentions selected as underlying cause	55	55	54	49	42
<b>England</b>					
Certificates mentioning <i>C. difficile</i>	2,146	3,648	6,301	7,916	5,465
Certificates where <i>C. difficile</i> was the underlying cause of death	1,172	1,998	3,393	3,875	2,298
Percentage of mentions selected as underlying cause	55	55	54	49	42
<b>Wales</b>					
Certificates mentioning <i>C. difficile</i>	88	104	170	399	461
Certificates where <i>C. difficile</i> was the underlying cause of death	54	61	93	177	203
Percentage of mentions selected as underlying cause	61	59	55	44	44

1 Figures for deaths registered in 2008 are provisional.

2 England and Wales data include non-residents who died in England and Wales. Data for England and Wales separately exclude deaths of non-residents.

**Table 2**

**Age-standardised mortality rates for *Clostridium difficile* by sex, 2004–08<sup>1</sup>**

	Rate per million population				
	2004	2005	2006	2007	2008 <sup>1</sup>
<b>England and Wales<sup>2</sup></b>					
Males	23.7	37.0	65.5	84.7	61.9
Females	23.1	38.6	64.2	80.4	56.1
<b>England</b>					
Males	24.1	38.3	68.0	86.0	60.5
Females	23.5	39.8	66.2	81.0	54.8
<b>Wales</b>					
Males	16.2	16.2	23.3	63.2	80.8
Females	15.7	19.8	31.7	68.8	75.1

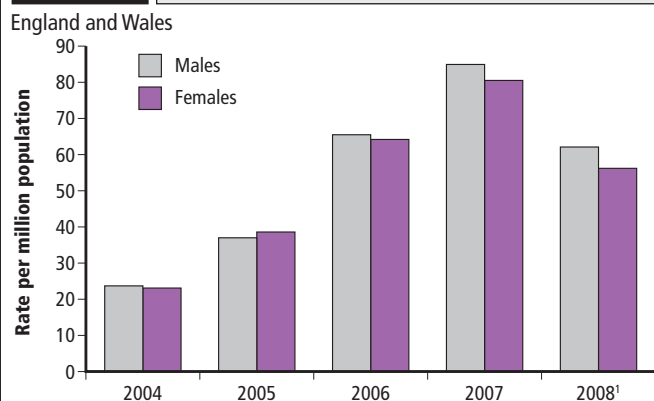
1 Mortality rates for 2008 have been calculated using provisional death registrations figures for 2008 and population projections for 2008 as estimates are not yet available. These rates are therefore provisional.

2 England and Wales data include non-residents who died in England and Wales. Data for England and Wales separately exclude deaths of non-residents.

Overall, mortality rates for deaths involving *C. difficile*, for males and females, were very similar in each year, with the biggest difference in rates being in 2008 (Figure 2).

**Figure 2**

**Age-standardised mortality rates for *Clostridium difficile* by sex, 2004–08<sup>1</sup>**



1 Mortality rates for 2008 have been calculated using provisional death registrations figures for 2008 and population projections for 2008 as estimates are not yet available. These rates are therefore provisional.

**Table 3**

**Age-specific mortality rates for *Clostridium difficile* by sex, 2004–08<sup>1</sup>**

Age group	Rates per million population					
	England and Wales <sup>2</sup>		England		Wales	
	Males	Females	Males	Females	Males	Females
Under 45	0.5	0.7	0.5	0.7	0.2	0.7
45–54	6.5	6.5	6.4	6.3	6.3	8.1
55–64	27.9	24.0	27.9	23.8	24.4	27.8
65–74	132.4	121.8	134.9	122.8	91.5	100.3
75–84	660.3	642.4	671.5	650.7	479.5	504.0
85 and over	2,331.4	2,302.6	2,365.6	2,340.7	1,746.7	1,676.4

1 Mortality rates for 2008 have been calculated using provisional death registrations figures for 2008 and population projections for 2008 as estimates are not yet available. These rates are therefore provisional.

2 England and Wales data include non-residents who died in England and Wales. Data for England and Wales separately exclude deaths of non-residents.

**Age**

Most of the deaths involving *C. difficile* occur among older people. Mortality rates in specific age groups for England and Wales are shown in Table 3. In the 85 and over age group, there were 2,331 and 2,303 deaths per million population, for males and females respectively, in the period 2004 to 2008. This compares with 1 death per million population, for both males and females in the under 45 age group.

**Place of death**

Death certificates rarely specify the place where an infection was acquired. However, the place of death is recorded. Between 2004 and 2008, deaths involving *C. difficile* accounted for 1 per cent of all deaths in England and Wales (Table 4). Among deaths that occurred in NHS hospitals and NHS nursing homes, deaths involving *C. difficile* accounted for under 2 per cent of all deaths.

The majority of deaths occur in hospital (56 per cent of all deaths between 2004 and 2008 occurred in NHS hospitals). We would therefore expect the majority of *C. difficile* deaths to also occur in hospital. Many of these deaths in hospital will have been to patients who were admitted because they were already seriously ill with another condition. In England and Wales over the period 2004–08, 91 per cent of deaths that mentioned *C. difficile* occurred in NHS hospitals.

Table 4

Number of deaths mentioning *Clostridium difficile* by place of death, compared to all causes of death, 2004–08<sup>1</sup>

	All cause number of deaths	Number of <i>C. difficile</i> deaths	Percentage of all <i>C. difficile</i> deaths	<i>C. difficile</i> as a percentage of all deaths in the establishment
<b>England and Wales<sup>2</sup></b>				
Own home	483,226	273	1.0	0.06
NHS hospital	1,423,228	24,420	91.4	1.72
Non-NHS hospital	11,099	34	0.1	0.31
Hospice	121,799	146	0.5	0.12
NHS nursing home	11,950	188	0.7	1.57
Non-NHS nursing home	226,462	700	2.6	0.31
Private residential home	136,882	348	1.3	0.25
Local Authority residential home	32,901	81	0.3	0.25
Other places	95,437	540	2.0	0.57
Total	2,542,984	26,730	100.0	1.05
<b>England</b>				
Own home	451,697	259	1.0	0.06
NHS hospital	1,323,584	23,257	91.3	1.76
Non-NHS hospital	10,337	32	0.1	0.31
Hospice	117,398	145	0.6	0.12
NHS nursing home	11,843	187	0.7	1.58
Non-NHS nursing home	213,990	683	2.7	0.32
Private residential home	130,966	339	1.3	0.26
Local Authority residential home	31,221	80	0.3	0.26
Other places	86,168	494	1.9	0.57
Total	2,377,204	25,476	100.0	1.07
<b>Wales</b>				
Own home	31,438	14	1.1	0.04
NHS hospital	95,960	1,135	92.9	1.18
Non-NHS hospital	261	–	–	–
Hospice	4,249	1	0.1	0.02
NHS nursing home	103	1	0.1	0.97
Non-NHS nursing home	12,274	17	1.4	0.14
Private residential home	5,870	9	0.7	0.15
Local Authority residential home	1,677	1	0.1	0.06
Other places	7,944	44	3.6	0.55
Total	159,776	1,222	100.0	0.76

1 Figures for deaths registered in 2008 are provisional.

2 England and Wales data include non-residents who died in England and Wales. Data for England and Wales separately exclude deaths of non-residents.

## Methods

### Identification of deaths involving *Clostridium difficile*

All deaths are coded by the Office for National Statistics (ONS) according to the International Classification of Diseases (ICD) supplied by the World Health Organisation. In the Tenth Revision (ICD–10), used by ONS from 2001 onwards, there is a specific code (A04.7) for ‘Enterocolitis due to *Clostridium difficile*’. While this code identifies the vast majority of deaths involving *C. difficile*, a small number of *C. difficile*-related deaths are not captured by this code alone. Since 1993 ONS has stored the text of death certificates on a database, in addition to all the ICD codes relating to causes identified on the death certificate. This means that it is possible to identify records where *C. difficile* is mentioned, but is not coded under the specific ICD–10 code.

In addition to extracting all deaths related to the specific A04.7 ICD–10 code, deaths mentioning a number of other ICD categories to which

diseases including *C. difficile* could be coded were also extracted. The text of these death certificates was then searched manually for mentions of *Clostridium difficile*, *C. difficile* or pseudomembranous colitis. The ICD–10 codes used to select deaths from 2001 onwards in order to search manually are shown in Box One.

## Box one

### Specific and non-specific ICD–10 codes related to *Clostridium difficile*

Specific codes <sup>1</sup>	Non-specific codes <sup>1</sup>
A04.7 (Enterocolitis due to <i>Clostridium difficile</i> )	A05.8 (Other specified bacterial food borne intoxications)
	A41.4 (Septicaemia due to anaerobes, excludes gas gangrene)
	A48.0 (Gas gangrene: Clostridial; cellulites, myonecrosis)
	A49.8 (Other bacterial infections of unspecified site)
	P36.5 (Sepsis of newborn due to anaerobes)

1 Codes used to identify deaths where *C. difficile* was the underlying cause of death (on deaths where *C. difficile* was mentioned): A04.7, A41.4, and A49.8.

## Background notes

- Since 1986 ONS has used the internationally recommended death certificate for neonatal deaths. This means that these deaths cannot be assigned an underlying cause of death.<sup>6</sup> However, as the data for this report were based on all mentions of *C. difficile* or pseudomembranous colitis, neonates have been included. Neonatal deaths were extracted in the same way as described above for postneonatal deaths.
- C. difficile* was first described in the 1930s,<sup>7</sup> but it was not identified as the cause of pseudomembranous colitis following antibiotic therapy until the late 1970s.<sup>8,9,10,11</sup> Patients who have been treated with broad spectrum antibiotics (those affecting a wide range of bacteria, including intestinal bacteria) are at the greatest risk of *C. difficile* associated disease. In addition to antibiotic exposure, the risk of contracting *C. difficile* is also higher for elderly patients, those who have recently had gastrointestinal surgery, those who have a long length of stay in healthcare settings, and those who have a serious underlying illness or a condition that compromises their immune system.<sup>12,13</sup> Patients are also at risk of developing *C. difficile* disease when there are outbreaks in hospitals. Poor infection control is also an important risk factor.
- A 2003 Department of Health report addressed actions that should be taken to reduce levels of healthcare associated infections.<sup>14</sup> A report on *C. difficile* and actions to reduce the chances of outbreaks was released by the Health Protection Agency (HPA) in February 2003.<sup>15</sup> In January 2004, the HPA began to carry out a mandatory reporting scheme for all cases of *C. difficile* in people aged 65 years and over. In April 2007, the scheme was expanded to all patients aged two years and over.<sup>16</sup> Results from the surveillance scheme are published annually, on the HPA website.<sup>17</sup> Updated guidance on death certification, with specific reference to healthcare associated infections, was issued to doctors in May 2005.<sup>18</sup> This was followed by a message from the Chief Medical Officer to all doctors reminding them of their responsibilities with respect to death certification and drawing their attention to the guidance.<sup>19</sup>

4. The number of deaths due to *C. difficile* is difficult to estimate. Trends in mortality are normally monitored using the underlying cause of death (the disease which initiated the train of events leading directly to death). *C. difficile* and other infections that are often hospital-acquired, such as MRSA, are often not the underlying cause of death. Those who die with *C. difficile* are usually patients who were already very ill and it may be their existing illness, rather than *C. difficile*, which is designated as the underlying cause of death. There is therefore an interest in the number of deaths where *C. difficile* contributed to the death – only conditions which contribute directly to the death should be recorded on the medical certificate of cause of death (death certificate). Results presented in this report identify deaths where the underlying cause was *C. difficile* and those where it was mentioned on the death certificate as a contributory factor.
5. Provisional figures for 2008 death registrations were published on 21 May 2009. Deaths involving *C. difficile* for 2008 have therefore been marked as provisional to allow further quality assurance before the release of final figures in the next annual report. The quality of the provisional figures is comparable with final death registration figures released in previous years.
6. Investigation into relevant data quality issues has revealed that the quality of the available data on place of death is not sufficient for figures, at this detailed level to be routinely published as National Statistics. The place where a death occurred is recorded in death registration and cannot always be reliably translated into a specific, known healthcare organisation or site. The registrar of births and deaths is required by law to record the name and address of the place where the death occurred, and this information is provided by a qualified informant (usually a relative of the deceased). If a death is referred to the coroner and an inquest takes place, the place of death comes directly from the coroner via 'Form 99'. In practice, the information provided by informants is of variable quality. There is no way for the registrar to know, and nowhere in the current registration system for registrars to record, the NHS or other organisation that was responsible for the patient's care. For example, different parts of one hospital site may report to different NHS Trusts. There is also no direct relationship between the textual information recorded by the registrar and any recognised list or classification of healthcare units and sites, such as the NHS Organisation Codes.

## Glossary

- a. ***Clostridium difficile* (*C. difficile*):** is a spore forming bacterium which is present as one of the 'normal' bacteria in the gut of up to 3 per cent<sup>4</sup> of healthy adults. It is much more common in babies – up to two thirds of infants may have *C. difficile* in the gut, where it rarely causes problems. *C. difficile* can cause diarrhoea, ranging from a mild disturbance to very severe illness with ulceration and bleeding from the colon (colitis), and perforation of the intestine leading to peritonitis, which can be fatal.<sup>5</sup> *C. difficile* disease occurs when normal, healthy intestinal bacteria are subdued by the use of antibiotics. This allows *C. difficile* to flourish in the gut and produce a toxin that causes diarrhoea. People over the age of 65 years are more susceptible to contracting infection.
- b. **Diarrhoea:** this occurs when the lining of the small or large intestine is irritated. *C. difficile* toxins are a major cause of antibiotic-associated diarrhoea. This leads to increased water being passed in the stools. Acute diarrhoea is usually caused by a viral infection or a bacterial infection and affects almost everyone from time to time. It usually clears up in a couple of days and is not serious. However, it can be serious in babies and the frail and elderly, because of the risk of dehydration.
- c. **Pseudomembranous colitis (PMC):** is a complication of antibiotic therapy often caused by *C. difficile* infection. PMC causes severe inflammation in areas of the colon (large intestine). Almost any antibiotic can cause PMC by upsetting the balance of the bacteria in the gut and intestines.
- d. **Age-standardised rate:** directly age-standardised rates make allowances for differences in the age structure of the population, over time and between sexes. The age-standardised rate for a particular disease is that which would have occurred if the observed age-specific rates for the disease had applied in a given standard population. In this report we have used the European standard population. This is a hypothetical population standard, which is the same for both males and females allowing standardised rates to be compared over time, and between males and females.

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Department of Health: London.



# Report:

## Deaths related to drug poisoning in England and Wales, 2008

Claudia Wells  
Office for National Statistics

### Key findings

- The number of deaths related to drug poisoning, which includes deaths involving both legal and illegal drugs, for males was 2,075 in 2008, an increase of 8 per cent compared to 2007 and the highest number since 2001
- The number of female deaths rose to 853 in 2008, an increase of 17 per cent compared with 2007, after falling for the previous three years from 2005 to 2007
- There were 897 deaths involving heroin or morphine in 2008, an 8 per cent rise compared to 2007, and the highest number since 2001
- There were 235 deaths involving cocaine in 2008, an increase of 20 per cent compared with 2007 and a continuation of the upward trend
- The number of deaths involving antidepressants increased slightly from 335 in 2007 to 381 in 2008, but over the period 2004 to 2008 as a whole this figure has decreased by 19 per cent
- In 2008, the total number of drug misuse deaths rose to 1,738, the highest level recorded since 2001

The figures presented here are the latest figures from the Office for National Statistics (ONS) database of deaths from drug-related poisoning, for the period 2004 to 2008. Provisional figures for 2008 (based on provisional death registrations for 2008) are included with updated rates for 2007 (based on the mid-year population estimates for 2007). The database contains information on deaths from 1993; results based on registrations of deaths in each calendar year from 2003 to 2007 were published in 2008.<sup>1</sup> Provisional mortality rates for 2008 have been calculated using the population projections for 2008,<sup>2</sup> as population estimates are not yet available. Final figures and rates for 2008 will be presented in the next annual update.

### Results

#### Number of deaths from drug-related poisoning by underlying cause

Table 1 gives the total number of deaths from drug-related poisoning registered in each year from 2004 to 2008, presented by their underlying

cause. Each death is assigned an underlying cause of death that reflects the verdict of the coroner and the wording on the coroner's certificate. The number of deaths related to drug poisoning for males was 2,075 in 2008, an increase of 8 per cent compared with 2007 and the highest number since 2001. After three years of falling, the number of female deaths rose to 853 in 2008, an increase of 17 per cent compared with 2007.

Among males, in the period 2004 to 2008 there were broadly similar proportions of deaths due to 'mental and behavioural disorders due to drug use' (35 per cent), 'accidental poisoning by drugs' (34 per cent) and 'intentional self-poisonings and poisonings of undetermined intent' (30 per cent). However, over half of drug-related poisoning deaths among females in this period were 'intentional self-poisonings and poisonings of undetermined intent' (54 per cent).

#### Number of deaths from drug-related poisoning where selected substances were mentioned on the death certificate

Table 2 gives numbers of deaths where selected substances were mentioned on the death certificate for 2004 to 2008. These figures need to be interpreted with some caution for the following reasons.

- In around 10 per cent of deaths on the database only a general description, such as 'drug overdose', is recorded on the coroner's certificate of death. These deaths do not contribute to the count of specific substances
- Where more than one drug is mentioned on the death certificate, it is not always possible to tell which of them was primarily responsible for the death
- Some deaths may be counted in more than one category in these tables. For example, if heroin and cannabis are recorded on the death certificate, the death will be recorded once under heroin and once under cannabis. Therefore the numbers in each column cannot be added together to give a total number of deaths

As heroin (diamorphine) breaks down in the body into morphine, the latter may be detected at post mortem and recorded on the death certificate. Therefore a combined figure for deaths where heroin or morphine was mentioned on the death certificate is included in Table 2.

**Table 1** Numbers of deaths from drug-related poisoning by sex and underlying cause of death, 2004–08<sup>1</sup>

England and Wales								
Underlying cause (ICD–10 <sup>2</sup> codes)	Sex	2004	2005	2006	2007	2008	Total 2004–08	Percentage of total
All deaths from drug-related poisoning	Males	1,856	1,887	1,782	1,914	2,075	9,514	100
	Females	931	875	788	726	853	4,173	100
Mental and behavioural disorders due to drug use (excluding alcohol and tobacco) (F11–F16, F18–F19)	Males	648	700	639	662	705	3,354	35
	Females	124	127	100	119	139	609	15
Accidental poisoning by drugs, medicaments and biological substances (X40–X44)	Males	523	534	598	725	861	3,241	34
	Females	237	239	245	239	327	1,287	31
Intentional self-poisoning by drugs, medicaments and biological substances (X60–X64), and poisoning by drugs, medicaments and biological substances, undetermined intent (Y10–Y14)	Males	679	648	540	520	500	2,887	30
	Females	568	506	439	368	385	2,266	54
Assault by drugs, medicaments and biological substances (X85)	Males	6	5	5	7	9	32	–
	Females	2	3	4	–	2	11	–

1 Figures for deaths registered in 2008 are provisional.

2 International Classification of Diseases, Tenth Revision.

**Table 2** Numbers of deaths where selected substances were mentioned on the death certificate, 2004–08<sup>1</sup>

England and Wales					
	2004	2005	2006	2007	2008
<b>Total mentions</b>					
All deaths from drug-related poisoning	2,787	2,762	2,570	2,640	2,928
Heroin and morphine	751	842	713	829	897
Methadone	219	220	241	325	378
Cocaine	154	176	190	196	235
All amphetamines	80	103	92	97	99
MDMA/ecstasy	43	58	48	47	44
Cannabis	19	19	17	12	19
Gamma-hydroxybutyrate (GHB)	1	4	7	9	20
All benzodiazepines	233	190	177	207	230
Temazepam	78	45	42	45	37
Diazepam	94	101	89	123	133
Nitrazepam	13	11	8	10	–
Zopiclone/zolpidem	57	48	39	51	36
Barbiturates	16	14	17	6	13
All antidepressants	469	401	336	335	381
Tricyclic antidepressants (BNF 4.3.1)	313	272	212	203	227
Dothiepin	134	107	74	71	61
Amitriptyline	148	127	108	113	144
Monoamine-oxidase inhibitors (BNF 4.3.2)	3	2	–	1	1
Selective serotonin re-uptake inhibitors (BNF 4.3.3)	105	81	76	80	116
Other antidepressants (BNF 4.3.4)	65	56	46	62	47
Paracetamol (includes dextropropoxyphene mentioned without paracetamol) <sup>2</sup>	517	410	309	242	260
Paracetamol	448	362	287	224	242
Paracetamol and dextropropoxyphene compound formulation (includes dextropropoxyphene mentioned without paracetamol) <sup>2</sup>	287	202	97	72	48
Paracetamol and codeine compound formulation	52	42	42	48	56
Paracetamol and dihydrocodeine compound formulation	15	19	18	9	12
Paracetamol not from compound formulation	174	153	154	116	147
Codeine not from compound formulation	50	44	60	60	70
Dihydrocodeine not from compound formulation	82	106	96	85	79
Aspirin	27	19	22	12	15
Tramadol	43	53	81	79	83

1 Figures for deaths registered in 2008 are provisional.

2 Dextropropoxyphene is very rarely ingested except in combination with paracetamol.

**Table 2 cont.** Numbers of deaths where selected substances were mentioned on the death certificate, 2004–08<sup>1</sup>

England and Wales	2004	2005	2006	2007	2008
<b>Mentions without other drugs</b>					
All deaths mentioning only one drug	1,783	1,834	1,778	1,825	2,010
Heroin and morphine	491	558	496	587	587
Methadone	105	98	125	167	193
Cocaine	48	53	68	84	86
All amphetamines	45	59	47	56	44
MDMA/ecstasy	24	33	27	28	15
Cannabis	1	2	2	1	2
Gamma-hydroxybutyrate (GHB)	–	2	4	3	13
All benzodiazepines	43	31	36	36	35
Temazepam	20	16	16	17	14
Diazepam	5	6	8	9	8
Nitrazepam	7	4	2	6	–
Zopiclone/zolpidem	12	15	10	15	10
Barbiturates	13	11	10	3	10
All antidepressants	246	215	177	159	185
Tricyclic antidepressants (BNF 4.3.1)	186	167	129	108	131
Dothiepin	87	75	56	45	39
Amitriptyline	83	68	55	52	75
Monoamine-oxidase inhibitors (BNF 4.3.2)	1	1	–	1	–
Selective serotonin re-uptake inhibitors (BNF 4.3.3)	30	27	25	24	30
Other antidepressants (BNF 4.3.4)	24	19	18	24	16
Paracetamol	128	129	131	90	108
Codeine	17	19	22	26	33
Dihydrocodeine	31	43	46	33	37
Aspirin	9	6	8	5	12
Tramadol	21	26	42	26	29
<b>Mentions with alcohol</b>					
All deaths mentioning one or more drugs and alcohol	756	744	692	806	908
Heroin and morphine	250	283	252	303	353
Methadone	70	87	78	125	155
Cocaine	38	37	50	52	75
All amphetamines	18	17	15	29	25
MDMA/ecstasy	13	14	9	17	11
Cannabis	7	9	9	6	9
Gamma-hydroxybutyrate (GHB)	1	1	2	2	6
All benzodiazepines	93	88	71	82	122
Temazepam	32	20	9	15	15
Diazepam	36	50	41	52	77
Nitrazepam	4	5	–	2	–
Zopiclone/zolpidem	24	18	13	15	12
Barbiturates	2	1	5	1	2
All antidepressants	129	100	99	114	123
Tricyclic antidepressants (BNF 4.3.1)	75	65	56	58	62
Dothiepin	24	32	16	21	17
Amitriptyline	40	25	32	29	36
Monoamine-oxidase inhibitors (BNF 4.3.2)	–	–	–	–	1
Selective serotonin re-uptake inhibitors (BNF 4.3.3)	40	30	24	35	44
Other antidepressants (BNF 4.3.4)	17	9	18	21	19
Paracetamol (includes dextropropoxyphene mentioned without paracetamol) <sup>2</sup>	135	92	70	58	77
Paracetamol	112	70	64	53	74
Paracetamol and dextropropoxyphene compound formulation (includes dextropropoxyphene mentioned without paracetamol) <sup>2</sup>	96	48	33	21	12
Paracetamol and codeine compound formulation	9	14	7	11	18
Paracetamol and dihydrocodeine compound formulation	3	5	1	1	5
Paracetamol not from compound formulation	28	26	29	26	42
Codeine not from compound formulation	21	14	22	23	21
Dihydrocodeine not from compound formulation	18	31	33	19	17
Aspirin	3	3	2	2	3
Tramadol	9	6	20	12	17

<sup>1</sup> Figures for deaths registered in 2008 are provisional.

<sup>2</sup> Dextropropoxyphene is very rarely ingested except in combination with paracetamol.

The figure for cocaine in Table 2 includes deaths where cocaine was taken in the form of crack cocaine. It is not possible to separately identify crack cocaine from other forms of cocaine at post mortem. Other evidence to distinguish the form of cocaine taken is rarely provided on death certificates.

The figure for GHB (gamma-hydroxybutyrate) in Table 2 includes deaths where GBL (gamma-butyrolactone) was taken. It is not possible to separately identify GBL and GHB at post mortem as GBL is rapidly converted to GHB when ingested into the human body.

In 2008, nearly a third (31 per cent) of drug-related poisoning deaths mentioned more than one drug or, for example, a 'multiple drug overdose'. The same proportion (31 per cent) of deaths contained a mention of alcohol in addition to a drug.

There were 897 deaths involving heroin or morphine in 2008, an 8 per cent rise compared with 2007 and the highest number since 2001. The number of deaths involving methadone rose throughout 2004 to 2008, to 378 in the latest year, an increase of 16 per cent compared with 2007 (and 73 per cent higher than in 2004). There were 235 deaths involving cocaine in 2008, continuing the long-term upward trend.

There were 99 deaths involving amphetamines in 2008, with nearly half of these being accounted for by deaths mentioning ecstasy. Cannabis was mentioned in 19 deaths in 2008, while the number of deaths mentioning GHB rose to 20 in 2008 from 9 in 2007. The number of deaths that mentioned benzodiazepines rose to 230 in 2008, an increase of 11 per cent compared with 2007. The biggest impact on this rise was from diazepam, where the number of deaths rose by 8 per cent to 133 in 2008. Deaths involving zopiclone/zolpidem decreased to 36 in 2008, whereas deaths involving barbiturates rose to 13.

In 2008, the number of deaths involving antidepressants increased to 381 from 335 in 2007, although over the period from 2004 to 2008 as a whole there was a 19 per cent decrease in these deaths. There was a 27 per cent decrease in deaths involving tricyclic antidepressants over this period, although again there was an increase in the number of deaths between 2007 and 2008, from 203 to 227. The number of deaths mentioning dothiepin continued a downward trend, and more than halved between 2004 and 2008 from 134 to 61. The number of deaths involving amitriptyline, selective serotonin re-uptake inhibitors (SSRIs) and other antidepressants remained relatively stable over the period 2004 to 2008.

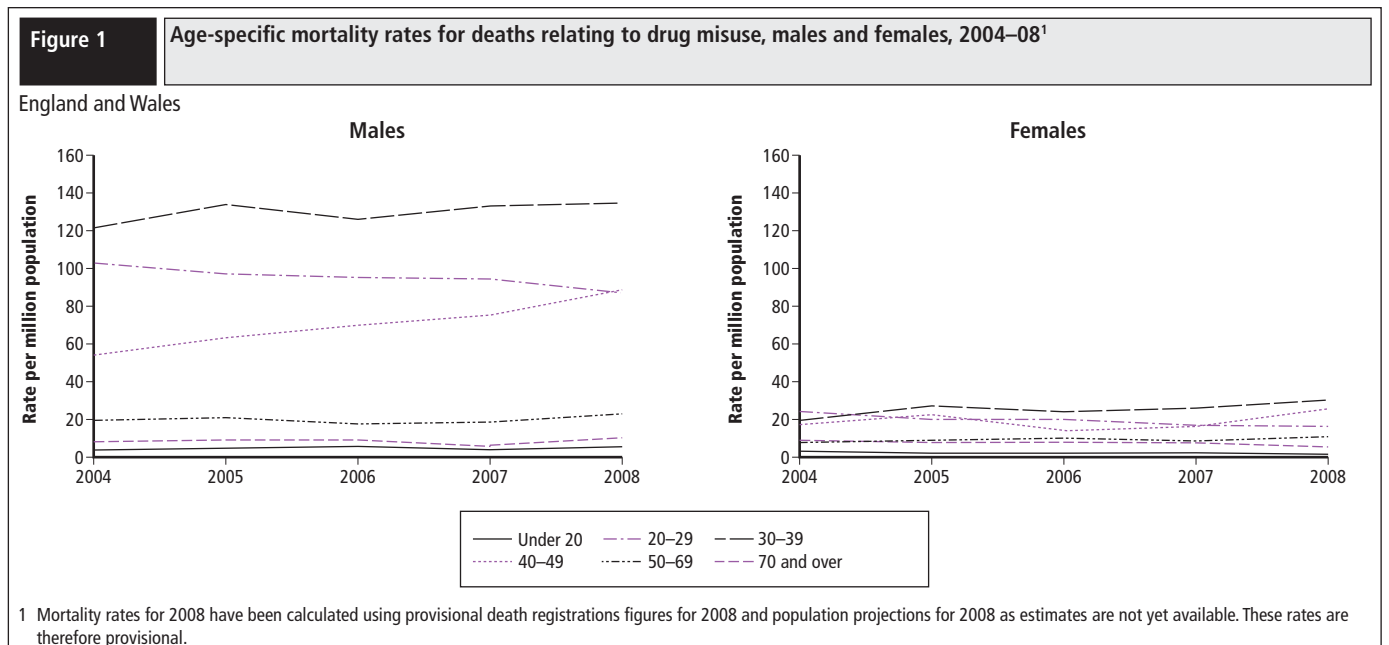
Deaths involving paracetamol and its compounds increased slightly between 2007 and 2008 to 260, but this was still almost half the number of 517 in 2004. The overall figure for paracetamol includes those deaths where dextropropoxyphene was mentioned alone on the death certificate, as this substance is very rarely ingested except in combination with paracetamol. The biggest impact on this decline was from deaths involving co-proxamol (paracetamol and dextropropoxyphene compound formulation), where the number fell by 83 per cent between 2004 and 2008, from 287 to 48.

### Deaths related to drug misuse

The definition of this indicator is 'deaths where the underlying cause is poisoning, drug abuse or drug dependence and where any of the substances controlled under the *Misuse of Drugs Act (1971)* are involved'. This definition has been adopted across the UK. Table 3 shows the numbers of deaths related to drug misuse, using this definition and the current list of drugs controlled under the *Misuse of Drugs Act*, for 2004

England and Wales					
	2004	2005	2006	2007	2008
England and Wales <sup>2</sup>	1,495	1,608	1,573	1,604	1,738
Males	1,177	1,260	1,250	1,287	1,364
Females	318	348	323	317	374
England	1,415	1,506	1,469	1,479	1,617
Males	1,110	1,182	1,161	1,194	1,267
Females	305	324	308	285	350
Wales	68	89	92	110	96
Males	55	70	78	80	72
Females	13	19	14	30	24
Drug misuse deaths as a percentage of all deaths on the database	54	58	61	61	59

- 1 As defined by the current headline indicator on drug misuse (Box Three).
- 2 Figures for England and Wales include deaths to non-residents. The separate figures for England and for Wales include only deaths to residents of those countries.
- 3 Figures for deaths registered in 2008 are provisional.



**Table 4** Numbers of deaths related to drug misuse<sup>1</sup> by sex, underlying cause of death and age group, 2004–08<sup>2</sup>

England and Wales						
	Sex	2004	2005	2006	2007	2008
<b>Underlying cause of death (ICD–10<sup>3</sup> codes)</b>						
All deaths related to drug misuse	Males	1,000	1,076	1,070	1,287	1,364
	Females	372	411	396	317	374
Mental and behavioural disorders due to drug use (excluding alcohol and tobacco) (F11–F16, F18–F19)	Males	631	682	639	552	578
	Females	117	122	100	96	107
Accidental poisoning by drugs, medicaments and biological substances (X40–X44)	Males	364	389	426	528	597
	Females	78	103	114	124	166
Intentional self-poisoning by drugs, medicaments and biological substances (X60–X64), and poisoning by drugs, medicaments and biological substances, undetermined intent (Y10–Y14)	Males	177	184	180	200	182
	Females	123	121	107	97	99
Assault by drugs, medicaments and biological substances (X85)	Males	5	5	5	7	7
	Females	–	2	2	–	2
<b>Age group</b>						
All ages	Males	1,177	1,260	1,250	1,287	1,364
	Females	318	348	323	317	374
Under 20	Males	26	29	36	25	39
	Females	18	12	14	13	12
20–29	Males	346	336	338	343	328
	Females	80	66	70	60	60
30–39	Males	480	521	481	498	490
	Females	77	107	92	98	112
40–49	Males	197	239	270	296	350
	Females	64	83	56	65	102
50–69	Males	108	114	103	110	131
	Females	47	53	63	53	68
70 and over	Males	20	21	22	15	26
	Females	32	27	28	28	20

1 As defined by the current headline indicator on drug misuse (Box Three).

2 Figures for deaths registered in 2008 are provisional.

3 International Classification of Diseases, Tenth Revision.

to 2008. The indicator is based on the current list of drugs controlled under the *Misuse of Drugs Act*, therefore data from earlier years have been updated to reflect additional substances.

In 2008, the total number of drug misuse deaths rose to 1,738, the highest number since 2001 and 8 per cent higher than in 2007. In 2008, 59 per cent of all drug poisoning deaths were drug misuse deaths. Sixty-six per cent of male deaths were related to drug misuse, a much higher proportion than for females (44 per cent).

In 2008, ‘accidental poisoning by drugs, medicaments and biological substances’ was the most common underlying cause of deaths related to drug misuse in both males and females, at 44 per cent (Table 4). Over the period 2004 to 2008, the highest numbers of drug misuse deaths occurred in the 30–39 age group for both males and females, although female deaths were more evenly distributed across this and older age groups.

The mortality rate for deaths related to drug misuse was highest among men aged 30–39 throughout 2004 to 2008. However, the fastest rise over the period occurred in the 40–49 age group, which increased by nearly

two thirds (65 per cent) (Figure 1). In 2008, rates for females were lower than for males in every age group but, as with men, the highest rate was among those aged 30–39. However, the fastest rise in mortality rates for deaths from drug misuse among females over the period 2004 to 2008 was seen in the 30–39 age group (57 per cent).

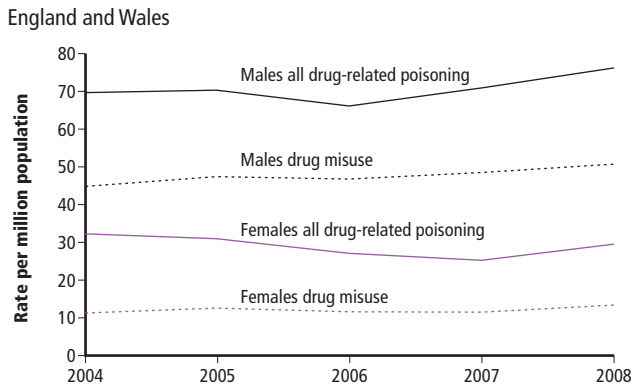
### Age-standardised death rates for all drug related poisoning, and drug misuse

The mortality rates in males for deaths related to drug poisoning and for deaths related to drug misuse increased over the period 2004 to 2008, although there was a slight decrease in rates in 2006 (Figure 2). The female mortality rate for all drug-related poisoning declined between 2004 and 2007, then increased slightly in 2008, whereas the rate for drug misuse remained relatively stable over this period.

### Age-standardised death rates for selected substances

The mortality rate for paracetamol and its compounds decreased in males by almost half (46 per cent) between 2004 and 2006 and then stabilised (Figure 3). There was a larger decrease in the mortality rate for female

**Figure 2** Mortality rates<sup>1</sup> for all drug-related poisoning, and drug misuse, by sex, 2004–08<sup>2</sup>



1 Directly age-standardised using the European standard population.  
 2 Mortality rates for 2008 have been calculated using provisional death registrations figures for 2008 and population projections for 2008 as estimates are not yet available. These rates are therefore provisional.

deaths involving paracetamol of 64 per cent between 2004 and 2007, when it stabilised. For both males and females, the mortality rate for deaths involving antidepressants decreased between 2004 and 2007, by 37 and 22 per cent respectively, before increasing by 20 and 6 per cent respectively in 2008. Paracetamol and antidepressants are the substances most commonly used in suicides (which make up the majority of drug-related poisoning deaths among females).

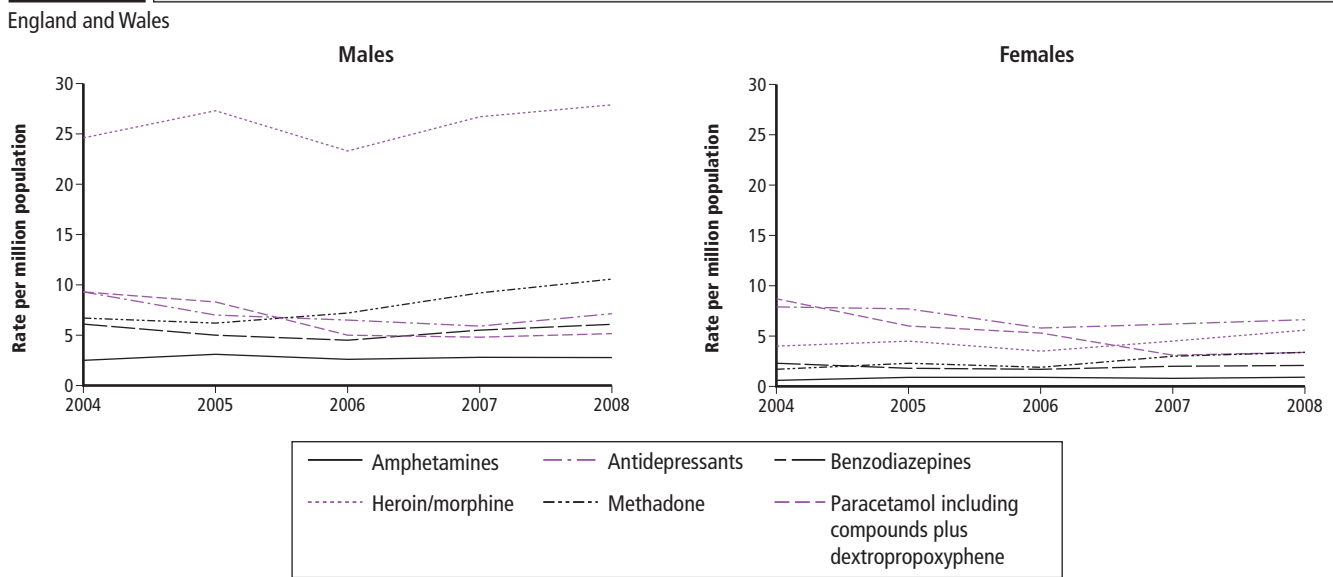
The mortality rate for deaths involving methadone for males was 10.6 per million population in 2008, an increase of 58 per cent since 2004. Over the same period the mortality rate for methadone in females more than doubled, to 3.4 per million population in 2008. The mortality rate for heroin/morphine for both males and females continued to rise in 2008, and this was by far the highest rate of any selected substance for males throughout the period 2004 to 2008.

### Methods

#### The database

The database of deaths related to drug poisoning has been developed to facilitate research into these deaths and to aid the identification of

**Figure 3** Mortality rates<sup>1</sup> for selected substances, by sex, England and Wales, 2004–08<sup>2</sup>



1 Directly age-standardised using the European standard population  
 2 Mortality rates for 2008 have been calculated using provisional death registrations figures for 2008 and population projections for 2008 as estimates are not yet available. These rates are therefore provisional.

## Box one

ICD-10 Underlying cause code	Description
F11–F16, F18–F19	Mental and behavioural disorders due to drug use (excluding alcohol and tobacco)
X40–X44	Accidental poisoning by drugs, medicaments and biological substances
X60–X64	Intentional self-poisoning by drugs, medicaments and biological substances
Y10–Y14	Poisoning by drugs, medicaments and biological substances, undetermined intent
X85	Assault by drugs, medicaments and biological substances

specific substances involved. The database is extracted from the national deaths database for England and Wales. Deaths are included if the underlying cause of death is regarded as resulting from drug-related poisoning, according to the current National Statistics definition.<sup>3</sup> The *International Statistical Classification of Diseases and Related Health Problems*, Tenth Revision (ICD–10) codes used to define these deaths are listed in Box One.

The database covers accidents and suicides involving drug poisoning, as well as poisonings due to drug abuse and drug dependence, but not other adverse effects of drugs. The range of substances it contains is wide, including legal and illegal drugs, prescription drugs and over-the-counter medications. It does not include poisoning with non-medicinal substances such as household, agricultural or industrial chemicals. For each death, the database includes every mention of a substance recorded on the death certificate or mentioned by the coroner. Almost all deaths on the database had a coroner's inquest. The underlying cause of death is recorded in addition to other information about the deceased, as described in Box Two.

## Box two

For each death the database of drug-related poisonings includes:

- the underlying cause of death
- every mention of a substance recorded by the coroner in the cause of death section or elsewhere on the Coroner's certificate after inquest (Form 99(REV))
- an indicator to show if alcohol is mentioned
- other information recorded at death registration such as age, sex, marital status, occupation and place of usual residence

## Box three

Cause of death categories included in the headline indicator of drug misuse deaths (the relevant codes from ICD–10 are given in brackets):

a) deaths where the underlying cause of death has been coded to the following categories of mental and behavioural disorders due to psychoactive substance use (excluding alcohol, tobacco and volatile solvents):

- (i) opioids (F11)
- (ii) cannabinoids (F12)
- (iii) sedatives or hypnotics (F13)
- (iv) cocaine (F14)
- (v) other stimulants, including caffeine (F15)
- (vi) hallucinogens (F16) and
- (vii) multiple drug use and use of other psychoactive substances (F19)

b) deaths coded to the following categories **and** where a drug controlled under the *Misuse of Drugs Act 1971* was mentioned on the death record:

- (i) accidental poisoning by drugs, medicaments and biological substances (X40–X44)
- (ii) intentional self-poisoning by drugs, medicaments and biological substances (X60–X64)
- (iii) poisoning by drugs, medicaments and biological substances, undetermined intent (Y10–Y14)
- (iv) assault by drugs, medicaments and biological substances (X85) and
- (v) mental and behavioural disorders due to use of volatile solvents (F18)

### Notes

1. Deaths coded to opiate abuse which resulted from the injection of contaminated heroin have been **included** in the indicator. This differs from the approach taken in Scotland, where these deaths have been **excluded**. This is because the General Register Office for Scotland (GROS) is able to identify deaths which occurred as a result of the use of contaminated heroin, whereas in England and Wales these deaths cannot be readily identified. In practice, in England and Wales, they will only be included where the drug was mentioned on the death record and the death was coded to one of the ICD codes on the ONS database of drug-related poisonings and not to an infection code.
2. Specific rules were adopted for dealing with compound analgesics which contain relatively small quantities of drugs listed under the *Misuse of Drugs Act 1971*, the major ones being dextropropoxyphene, dihydrocodeine and codeine. Where these drugs are mentioned on a death record, they have been excluded if they are part of a compound analgesic (such as *co-proxamol*, *co-dydramol* or *co-codamol*) or cold remedy. Dextropropoxyphene has been excluded on all occasions, whether or not paracetamol or a compound analgesic was mentioned. This is because dextropropoxyphene is rarely, if ever, available other than as part of a paracetamol compound. However, codeine or dihydrocodeine mentioned **alone** were included in the indicator. This is because they are routinely available and known to be abused in this form. This approach is the same as that taken by GROS.
3. Drugs controlled under the *Misuse of Drugs Act 1971* include class A, B and C drugs.
4. Information on the cause of death categories used to define the indicator in ICD–10 can be found in the report in *Health Statistics Quarterly* 39.<sup>1</sup>

In 2000 the Advisory Council on the Misuse of Drugs published a report, *Reducing Drug Related Deaths*.<sup>4</sup> In response to this report's recommendations on improving the present system for collecting data on drug-related deaths, a technical working group was set up. This group, consisting of experts across government, the devolved administrations, coroners, toxicologists and drugs agencies, proposed a headline indicator for drug-misuse-related deaths as part of the Government's Action Plan<sup>5</sup> to reduce the number of these deaths. This indicator also takes into account the information needs of the European Monitoring Centre for Drugs and Drug Addiction. The baseline year for monitoring deaths related to drug misuse was set as 1999.

The definition of the headline indicator using ICD-10 is shown in Box Three. The definition using ICD-9 was published in a previous annual report.<sup>6</sup>

## Background notes

1. Provisional figures for 2008 death registrations were published on 21 May 2009. Deaths related to drug poisoning for 2008 have therefore been marked as provisional to allow further quality assurance before the release of final figures in the next annual report. The quality of the provisional figures is comparable with final death registration figures released in previous years.

2. Mortality rates are presented as deaths per million population, directly age-standardised to the European standard population.

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# Report:

## Cancer incidence and mortality in the United Kingdom and constituent countries, 2004–06

Susan Westlake  
Office for National Statistics

### Introduction

This report presents the numbers of newly diagnosed cases of cancer (incidence) and deaths from cancer (mortality) in the UK during 2004–06, together with the age-standardised incidence and mortality rates. The report covers all cancers combined (excluding the incidence of non-melanoma skin cancer), and 21 common cancers. Results are given for the UK as a whole and for its four constituent countries. Numbers and age-standardised rates have been calculated as averages over the three-year period 2004–06 (See Background notes).

### Key findings

- Around 147,000 males and 146,000 females on average were newly diagnosed with cancer each year in the UK during 2004–06, corresponding to an incidence rate of 414 and 356 per 100,000 respectively
- Around 80,000 males and 74,000 females on average died from cancer each year in the UK, corresponding to a mortality rate of 218 and 155 per 100,000 respectively
- In females, breast cancer had the highest incidence rate in the UK (122 per 100,000), 24 per cent higher than the cancer with the highest incidence in males – prostate cancer (98 per 100,000)
- Wales had the highest overall cancer incidence rate for males, which was 11 per cent higher than the UK average, while Scotland had the highest incident rate for females (8 per cent higher than the UK average)
- Scotland had the highest overall mortality rates for both males and females, at 17 per cent and 16 per cent higher than the UK average, respectively

The major cancers included in the tables and figures presented here accounted for almost 90 per cent of all cases of cancer, and just over 80 per cent of all deaths from cancer, in the UK in 2004–06. The three most common cancers accounted for around 50 per cent of both cases and deaths from cancer.

### Incidence

There were on average around 293,000 newly diagnosed cases of cancer each year in the UK in 2004–06, with around 147,000 cases among males and 146,000 among females. Although there were almost identical numbers of cases among males and females, the overall age-standardised incidence rate was higher among males – 414 per 100,000 compared with 356 per 100,000 for females (Table 1).

The three most common cancers were prostate, lung and colorectal for males, and breast, lung and colorectal for females (Figure 1). The incidence of lung cancer was 68 per cent higher in males than in females (62 and 37 per 100,000 respectively), and the incidence of colorectal cancer was 58 per cent higher in males (55 and 35 per 100,000 for males and females, respectively). Overall, breast cancer in females had the highest incidence rate (122 per 100,000), 24 per cent higher than the cancer with the highest incidence in males – prostate cancer (98 per 100,000).

### Mortality

There were on average 154,000 deaths from cancer each year in the UK in 2004–06, with around 80,000 deaths among males and 74,000 among females. The equivalent age-standardised mortality rates were 218 and 155 per 100,000 among males and females, respectively (Table 2).

The three most common cancers for both sexes were also the most common causes of death from cancer (Figure 2). However, for females the mortality rate was slightly lower for breast than for lung cancer (28 and 31 per 100,000 respectively). For males, the mortality rate for lung cancer (53 per 100,000) was twice as high as that for prostate cancer (26 per 100,000). Overall, the highest mortality rate was for lung cancer in males. The mortality rate for lung cancer was 75 per cent higher in males than in females. The mortality rate for colorectal cancer was 59 per

Table 1

Registrations of newly diagnosed cases of cancer and directly age-standardised<sup>1</sup> incidence rates per 100,000 population: selected sites by sex and country, 2004–06<sup>2</sup>

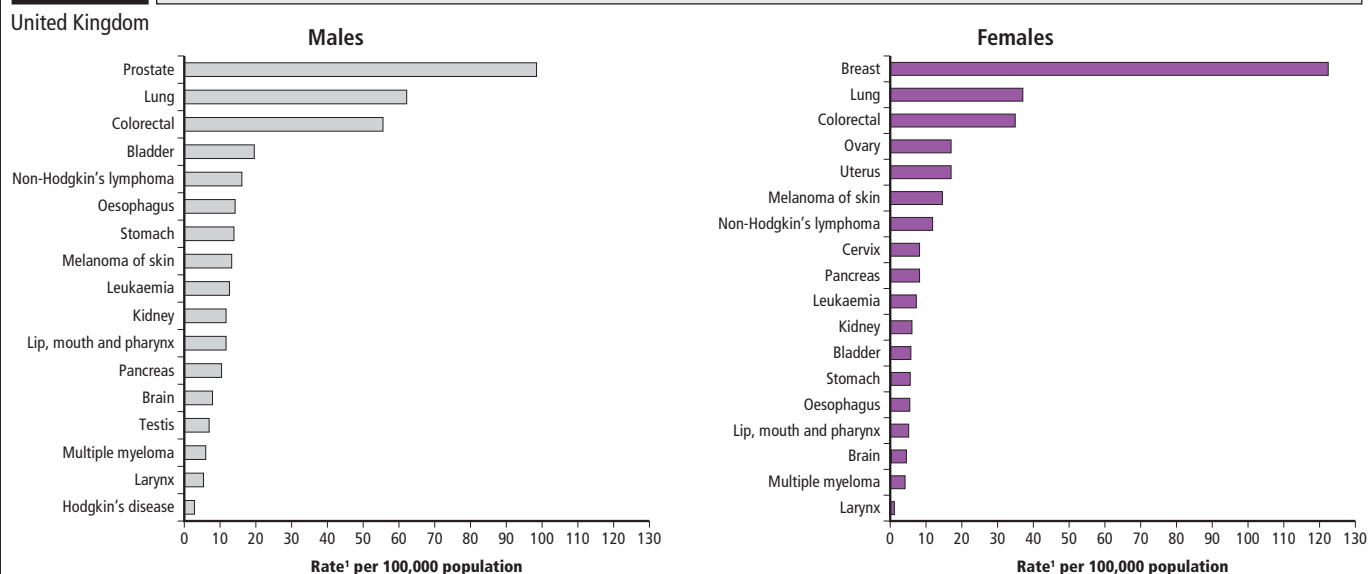
ICD-10	Site description	Sex	United Kingdom		England		Wales		Scotland		N Ireland	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
C00–C97	All malignancies <sup>3</sup>	M	146,790	414.0	121,241	407.8	8,737	459.8	13,224	446.1	3,588	411.6
		F	145,731	355.6	119,903	351.2	8,175	377.7	14,017	385.7	3,636	347.1
C00–C14	Lip, mouth and pharynx	M	3,821	11.7	3,011	11.1	228	13.5	476	16.9	107	12.7
		F	2,031	5.2	1,642	5.0	110	5.5	222	6.5	57	5.5
C15	Oesophagus	M	5,005	14.2	4,095	13.8	273	14.3	525	17.8	112	13.1
		F	2,779	5.6	2,251	5.5	157	6.1	318	7.4	53	4.4
C16	Stomach	M	5,133	14.0	4,201	13.6	313	16.2	492	16.1	127	14.3
		F	2,886	5.7	2,291	5.4	190	6.8	317	7.3	88	7.0
C18–C20	Colorectal	M	19,935	55.4	16,355	54.2	1,146	59.0	1,880	62.4	554	63.2
		F	16,398	35.0	13,452	34.3	888	36.0	1,602	39.1	456	39.9
C25	Pancreas	M	3,728	10.4	3,136	10.5	211	11.0	290	9.7	91	10.6
		F	3,945	8.2	3,312	8.2	226	8.6	321	7.9	87	7.1
C32	Larynx	M	1,809	5.3	1,429	5.0	91	5.0	232	8.1	58	6.8
		F	394	1.0	289	0.9	22	1.0	68	2.0	14	1.4
C34	Lung	M	22,637	62.3	18,254	59.9	1,280	65.6	2,537	83.7	566	64.1
		F	16,487	37.0	12,996	35.0	950	40.4	2,170	55.2	370	33.7
C43	Melanoma of skin	M	4,458	13.4	3,716	13.4	223	13.0	415	14.8	105	12.3
		F	5,298	14.7	4,403	14.6	259	13.8	496	15.7	140	14.4
C50	Breast	F	45,524	122.3	38,046	122.8	2,398	122.7	4,012	120.8	1,068	109.7
C53	Cervix	F	2,824	8.3	2,280	8.0	164	10.0	290	9.9	89	9.8
C54	Uterus	F	6,510	16.9	5,424	16.9	394	19.5	520	15.3	172	17.7
C56	Ovary	F	6,627	17.1	5,467	16.9	382	18.7	590	17.1	188	19.0
C61	Prostate	M	35,552	98.3	29,953	98.9	2,228	112.6	2,571	85.0	800	91.5
C62	Testis	M	2,070	6.9	1,697	6.8	104	7.6	206	8.3	62	7.4
C64	Kidney	M	4,041	11.8	3,303	11.5	256	14.0	385	13.3	97	11.4
		F	2,462	6.0	1,998	5.8	154	7.0	242	6.5	68	6.6
C67	Bladder	M	7,318	19.7	6,005	19.2	663	33.9	502	16.4	148	16.6
		F	2,965	5.9	2,395	5.6	256	10.1	252	5.8	62	5.2
C71	Brain	M	2,554	7.9	2,144	7.9	134	8.0	213	7.7	63	7.4
		F	1,805	4.9	1,495	4.9	108	5.9	154	4.9	47	5.0
C81–C96	Lymphomas and leukaemias	M	13,062	38.2	10,851	37.8	765	42.2	1,114	39.1	331	38.2
		F	10,624	25.5	8,751	25.2	629	28.2	957	26.2	287	26.8
C81–C85	Lymphomas	M	6,428	19.1	5,387	19.1	339	19.3	542	19.2	160	18.5
		F	5,550	13.8	4,583	13.7	297	14.0	516	14.6	154	14.6
C81	Hodgkin's disease	M	886	2.9	740	2.9	40	2.6	81	3.2	26	3.0
		F	696	2.2	582	2.2	31	2.0	64	2.3	19	2.1
C82–C85	Non-Hodgkin's lymphoma	M	5,542	16.2	4,647	16.2	299	16.7	461	16.1	134	15.5
		F	4,855	11.7	4,001	11.6	266	12.0	452	12.2	135	12.5
C90	Multiple myeloma	M	2,184	6.1	1,789	6.0	130	6.8	188	6.3	77	8.8
		F	1,842	4.0	1,499	3.9	122	4.9	165	3.9	56	5.0
C91–C95	Leukaemia	M	4,275	12.5	3,536	12.3	283	15.4	364	12.9	91	10.6
		F	3,125	7.4	2,585	7.3	201	8.8	264	7.5	75	7.1

1 Using the European standard population.

2 All numbers and rates in this table are calculated as three-year averages.

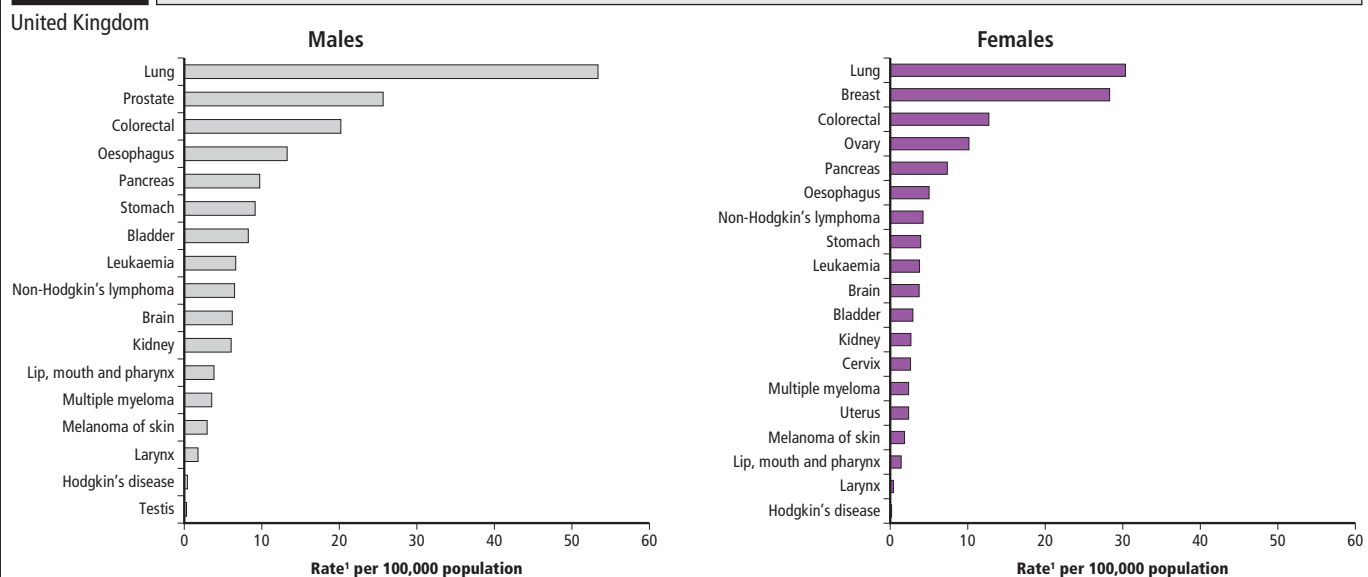
3 Figures exclude non-melanoma skin cancer (ICD-10 C44).

**Figure 1** Major cancers: age-standardised<sup>1</sup> incidence by sex, 2004–06<sup>2</sup>



1 Directly age-standardised using the European standard population.  
 2 Rates are calculated as three-year averages.

**Figure 2** Major cancers: age-standardised<sup>1</sup> mortality by sex, 2004–06<sup>2</sup>



1 Directly age-standardised using the European standard population.  
 2 Rates are calculated as three-year averages.

cent higher in males than females (20 and 13 per 100,000 for males and females respectively).

**Variations between countries**

Lung cancer incidence and mortality rates for both sexes were much higher in Scotland than in the rest of the UK (Figure 3). Rates in Wales, Northern Ireland and England were fairly similar.

For colorectal cancer, the incidence rates were similar in each country but highest in Northern Ireland. However, Scotland and Northern Ireland had much higher mortality rates than England and Wales (Figure 4).

Breast cancer incidence and mortality rates were similar in England, Wales and Scotland, but incidence was lower in Northern Ireland.

Incidence rates for prostate cancer varied, with Wales having the highest and Scotland the lowest, while mortality rates were very similar in each country (Tables 1 and 2).

Scotland had the highest incidence and mortality rates for oesophageal cancer, while Northern Ireland had the lowest (Figure 5).

For stomach cancer, Wales had the highest male incidence rate and England the lowest (Figure 6). For females, incidence was similar in Scotland, Wales and Northern Ireland but lower in England. Stomach

Table 2

Table 2 Deaths from cancer and directly age-standardised<sup>1</sup> mortality rates per 100,000 population: selected sites by sex and country, 2004–06<sup>2</sup>

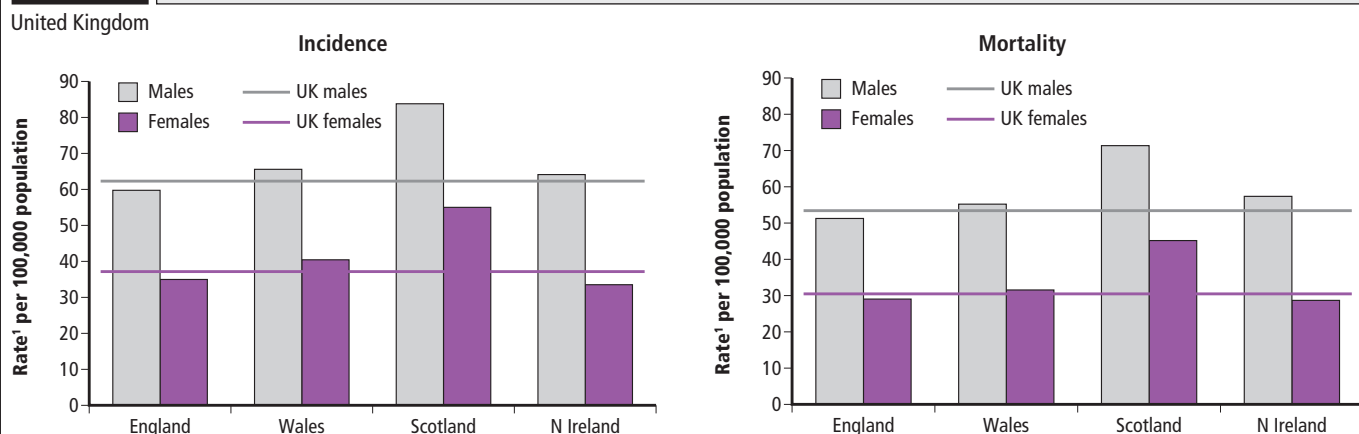
ICD-10	Site description	Sex	United Kingdom		England		Wales		Scotland		N Ireland	
			Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
C00–C97	All malignancies	M	80,047	217.6	65,987	213.5	4,426	224.3	7,685	253.8	1,949	219.7
		F	73,620	155.0	60,333	152.2	4,052	160.4	7,403	179.1	1,831	154.2
C00–C14	Lip, mouth and pharynx	M	1,323	3.9	1,042	3.7	75	4.3	171	6.0	35	4.1
		F	690	1.5	559	1.5	35	1.5	76	1.9	21	1.8
C15	Oesophagus	M	4,794	13.3	3,935	13.0	257	13.4	499	16.6	103	11.8
		F	2,566	4.9	2,080	4.8	146	5.2	289	6.5	51	3.8
C16	Stomach	M	3,464	9.2	2,804	8.9	217	10.9	345	11.2	98	11.0
		F	2,149	4.0	1,705	3.8	136	4.5	240	5.4	68	5.2
C18–C20	Colorectal	M	7,488	20.2	6,030	19.4	387	19.5	845	27.8	226	25.6
		F	6,640	12.7	5,412	12.3	327	11.6	705	15.7	196	15.4
C25	Pancreas	M	3,502	9.7	2,944	9.7	190	9.8	284	9.4	84	9.7
		F	3,726	7.6	3,129	7.6	197	7.3	311	7.5	89	7.1
C32	Larynx	M	628	1.8	492	1.7	41	2.2	76	2.6	19	2.1
		F	166	0.4	129	0.3	8	0.3	25	0.6	5	<sup>3</sup>
C34	Lung	M	19,559	53.3	15,793	51.2	1,087	55.1	2,169	71.2	511	57.4
		F	14,064	30.5	11,148	28.9	762	31.7	1,828	45.1	325	28.6
C43	Melanoma of skin	M	1,013	3.0	842	2.9	56	3.2	90	3.1	26	3.0
		F	804	1.9	674	1.9	47	2.2	66	1.7	16	1.4
C50	Breast	F	12,429	28.3	10,345	28.2	665	28.4	1,111	29.0	308	28.1
C53	Cervix	F	1,035	2.6	836	2.5	63	3.3	107	3.1	29	2.7
C54	Uterus	F	1,158	2.4	957	2.4	76	3.1	107	2.5	18	1.5
C56	Ovary	F	4,356	10.2	3,601	10.1	231	10.0	398	10.3	126	11.8
C61	Prostate	M	10,094	25.7	8,521	25.7	565	26.3	782	25.1	225	24.8
C62	Testis	M	78	0.3	60	0.2	6	<sup>3</sup>	10	0.4	2	<sup>3</sup>
C64	Kidney	M	2,126	6.0	1,752	5.9	125	6.7	194	6.5	54	6.3
		F	1,307	2.8	1,052	2.7	70	2.7	150	3.6	35	3.1
C67	Bladder	M	3,154	8.2	2,655	8.2	165	7.9	279	9.0	55	6.1
		F	1,642	2.9	1,360	2.8	88	2.7	163	3.3	32	2.2
C71	Brain	M	2,047	6.2	1,692	6.1	100	5.8	205	7.3	49	5.8
		F	1,399	3.7	1,154	3.7	75	3.9	138	4.1	32	3.3
C81–C96	Lymphomas and leukaemias	M	6,339	17.5	5,345	17.5	327	16.7	517	17.4	150	16.8
		F	5,379	10.9	4,474	10.9	282	10.9	486	11.3	136	10.8
C81–C85	Lymphomas	M	2,516	7.0	2,134	7.1	115	6.0	207	7.0	59	6.6
		F	2,243	4.6	1,862	4.6	111	4.3	210	4.9	61	4.8
C81	Hodgkin's disease	M	177	0.5	149	0.5	6	<sup>3</sup>	17	0.6	5	<sup>3</sup>
		F	133	0.3	111	0.3	7	0.4	11	0.3	4	<sup>3</sup>
C82–C85	Non-Hodgkin's lymphoma	M	2,339	6.5	1,985	6.6	109	5.7	191	6.4	54	6.1
		F	2,110	4.3	1,751	4.3	103	3.9	199	4.6	57	4.4
C90	Multiple myeloma	M	1,334	3.6	1,111	3.6	70	3.4	112	3.7	42	4.7
		F	1,212	2.4	1,005	2.4	68	2.6	108	2.3	30	2.4
C91–C95	Leukaemia	M	2,412	6.6	2,035	6.7	139	7.1	191	6.4	48	5.4
		F	1,882	3.8	1,572	3.8	101	3.9	164	4.0	45	3.5

1 Using the European standard population.

2 All numbers and rates in this table are calculated as three-year averages.

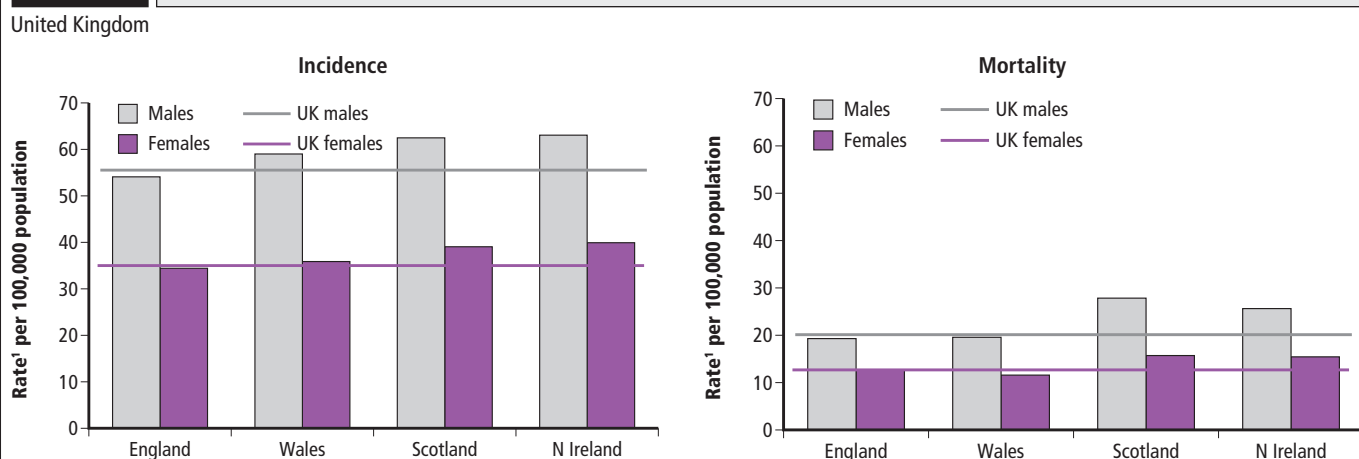
3 Directly age-standardised rates were considered unreliable and were not calculated when there were fewer than 20 deaths over three years in an area.

**Figure 3** Lung cancer: age-standardised<sup>1</sup> incidence and mortality by sex and country, 2004–06<sup>2</sup>



1 Directly age-standardised using the European standard population.  
2 Rates are calculated as three-year averages.

**Figure 4** Colorectal cancer: age-standardised<sup>1</sup> incidence and mortality by sex and country, 2004–06<sup>2</sup>



1 Directly age-standardised using the European standard population.  
2 Rates are calculated as three-year averages.

cancer mortality rates for males were similar in Scotland, Wales and Northern Ireland, but lower in England. Female mortality rates were similar in Scotland and Northern Ireland, but a little lower in Wales and England.

Overall cancer incidence and mortality rates for England were similar to those for the UK, since the cases and deaths for England accounted for more than 80 per cent of the UK total.

Wales had the highest overall cancer incidence rate for males in the UK. The incidence of prostate cancer was 15 per cent higher for Wales than for the UK as a whole, though mortality from prostate cancer was only 2 per cent higher. The apparently large difference between Wales and the UK in the incidence of bladder cancer does not necessarily reflect a true difference: certain types of bladder cancer are registered as malignant in Wales,<sup>1</sup> but classified as benign elsewhere. In both males and females, mortality from bladder cancer was slightly lower than for the UK as a whole. Mortality rates for cancers of the larynx, cervix and uterus were much higher in Wales than in the UK.

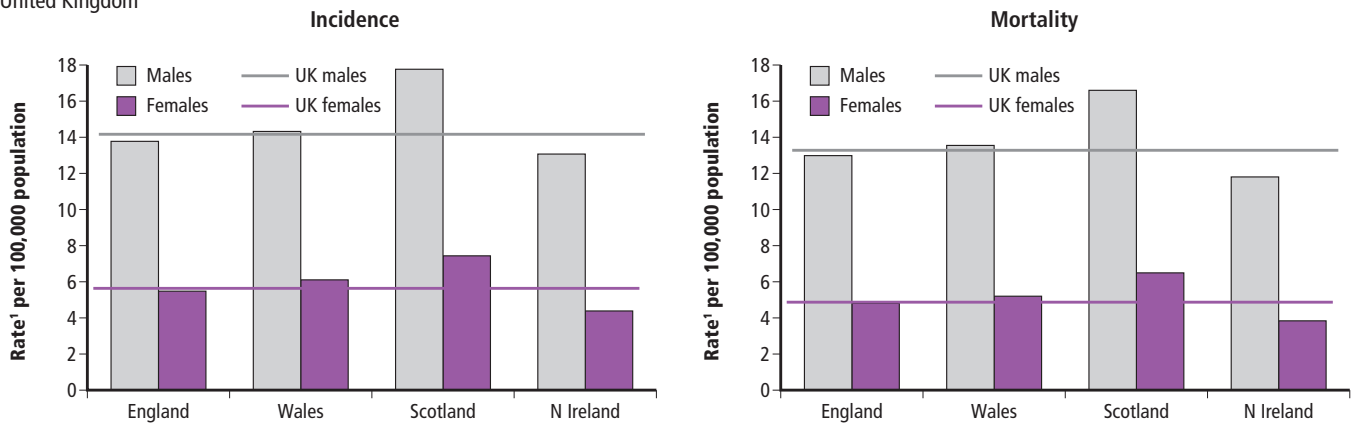
In Scotland, the overall cancer mortality rates for both sexes were around 16 per cent higher than those for the UK as a whole, and the overall cancer incidence rates were 8 per cent higher.

- The incidence of lung cancer was 34 per cent higher for males and 49 per cent higher for females than in the UK as a whole. The incidence of, and mortality from, other smoking-related cancers – oesophagus, lip, mouth and pharynx, and larynx – were also higher in Scotland than in the other countries of the UK. The incidence of prostate cancer was 14 per cent lower in Scotland than in the UK as a whole.
- The mortality rate for lung cancer in Scotland was 34 per cent higher for males and 48 per cent higher for females than in the UK as a whole. In males it was nearly three times the mortality rate for prostate cancer and in females it was 56 per cent higher than the mortality rate for breast cancer. Male mortality from colorectal cancer was 38 per cent higher in Scotland than in the UK and female mortality from cancer of the kidney and stomach was 29 and 35 per cent higher, respectively.

**Figure 5**

**Oesophageal cancer: age-standardised<sup>1</sup> incidence and mortality by sex and country, 2004–06<sup>2</sup>**

United Kingdom

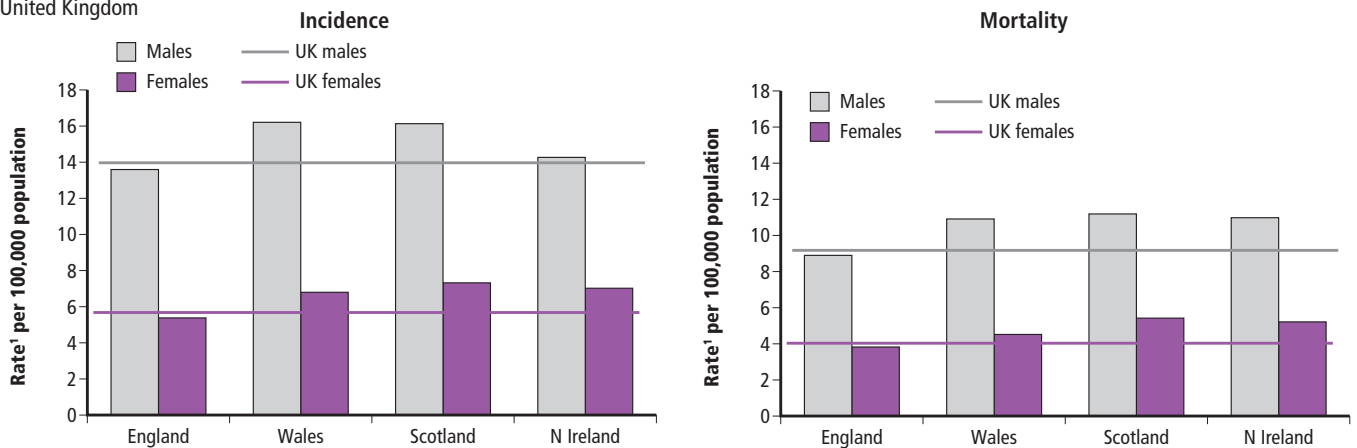


1 Directly age-standardised using the European standard population.  
2 Rates are calculated as three-year averages.

**Figure 6**

**Stomach cancer: age-standardised<sup>1</sup> incidence and mortality by sex and country, 2004–06<sup>2</sup>**

United Kingdom



1 Directly age-standardised using the European standard population.  
2 Rates are calculated as three-year averages.

In Northern Ireland, overall incidence and mortality rates were very close to those for the UK as a whole. The rates for colorectal cancer were higher than those for the UK; incidence was 14 per cent higher in both males and females while mortality was 27 per cent higher in males and 21 per cent higher in females. The mortality rate for bladder cancer was 26 per cent lower in males compared with the UK as a whole, and 24 per cent lower in females. The incidence and mortality rates for breast cancer were the lowest in the UK.

**Previously published data**

UK data for 2003–05 were published in *Health Statistics Quarterly* 40.<sup>2</sup> Additionally, ONS has analysed trends in UK incidence and mortality 1993–2004.<sup>3</sup>

**Acknowledgements**

These analyses have been produced with the assistance of the Welsh Cancer Intelligence and Surveillance Unit, the Scottish Cancer Registry and the Northern Ireland Cancer Registry. The National Cancer Intelligence Centre (NCIC) at the Office for National Statistics gratefully acknowledges their assistance. The NCIC also acknowledges the work of the regional cancer registries in England, and their close cooperation with the national registry.

**Cancer Registries in the United Kingdom**

- Welsh Cancer Intelligence and Surveillance Unit
- Scottish Cancer Registry
- Northern Ireland Cancer Registry

**Regional Registries in England**

- Northern and Yorkshire Cancer Registry
- Trent Cancer Registry
- Eastern Cancer Registration and Information Centre
- Thames Cancer Registry
- Oxford Cancer Intelligence Unit
- South West Cancer Intelligence Service
- West Midlands Cancer Intelligence Unit
- North West Cancer Intelligence Service

## Background notes

1. Incidence and mortality rates have been directly age-standardised, using the European standard population, to control for differences in the age structure of the population between countries, and over time, to allow unbiased comparisons between rates.
2. The Office for National Statistics has been advised, both by expert epidemiologists and by members of the Advisory Committee on Cancer Registration, that non-melanoma skin cancer (ICD-10 C44) is greatly under-registered. Registration varies widely depending on a registry's degree of access to out-patient records and general practitioners. Incidence figures given in this report for 'all cancers' therefore exclude non-melanoma skin cancer.
3. The incidence figures in this report are those published at the time of the annual statistical releases. The cancer registration systems are live databases. Therefore, the figures presented here may not reflect those on the live databases.
4. Numbers and rates presented in this report have been calculated as three-year averages to reduce the effects of random variation in small numbers over time.
5. These data are available on the Office for National Statistics website at: [www.statistics.gov.uk/statbase/Product.asp?vlnk=14209](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=14209)

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1. Cooper N and Cartwright R (2005) 'Bladder' in *Cancer Atlas of the United Kingdom and Ireland 1991–2000: Studies on Medical and Population Subjects no. 68*, Palgrave Macmillan: Basingstoke. Available on the Office for National Statistics website at: [www.statistics.gov.uk/statbase/Product.asp?vlnk=14059](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=14059)
2. Office for National Statistics (2008) 'Report: Cancer incidence and mortality in the United Kingdom and constituent countries, 2003–05', *Health Statistics Quarterly* 40, 91–97. Available on the Office for National Statistics website at: [www.statistics.gov.uk/statbase/Product.asp?vlnk=6725](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=6725)
3. Westlake S and Cooper N (2008) 'Cancer incidence and mortality: trends in United Kingdom and constituent countries, 1993 to 2004', *Health Statistics Quarterly* 38, 33–43. Available on the Office for National Statistics website at: [www.statistics.gov.uk/statbase/Product.asp?vlnk=6725](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=6725)

# Report:

## Unexplained deaths in infancy, England and Wales, 2007

Julie Messer  
Office for National Statistics

### Key findings

- There were 264 unexplained infant deaths in England and Wales in 2007 giving a rate of 0.38 deaths per 1,000 live births compared to the rate of 0.43 in 2006
- Of all unexplained infant deaths in 2007, 76 per cent occurred among babies born with a normal birthweight (2,500 grams and over) and 90 per cent occurred between 28 days and one year of age
- The unexplained infant death rate in 2007 was highest for babies born outside marriage where only the mother registered the birth (1.42 per 1,000 live births); this rate was nearly eight times the rate for babies born inside marriage (0.18 per 1,000 live births)
- For babies born inside marriage and outside marriage jointly registered by both parents, the unexplained infant death rate in the routine and manual occupations was over twice that in the managerial and professional group (0.33 per 1,000 live births and 0.13 per 1,000 live births respectively)
- During the period 2003–07, the unexplained infant death rate in boys was over 1.3 times the rate in girls
- Over the same five-year period, the North East government office region had the highest unexplained infant death rate in England and Wales (0.66 per 1,000 live births) and the East of England region had the lowest (0.32 per 1,000 live births)

### Box one

#### Definition of unexplained deaths in infancy

Sudden infant deaths	ICD–10 code R95 Sudden infant death syndrome: includes <b>any</b> mention of 'sudden infant death', 'cot death', 'SIDS', 'crib death', or another similar term anywhere on the death certificate
Unascertained deaths	ICD–10 code R99 Other ill-defined and unspecified causes of mortality: includes cases where the <b>only</b> mention on the death certificate is unascertained death
Unexplained deaths	Includes both sudden infant deaths and unascertained deaths
Infant deaths are divided into neonatal (less than 28 days after live birth) and postneonatal (28 days and over but under one year).	

### Results

This report on unexplained infant deaths in England and Wales from 2003 to 2007 includes both sudden infant deaths and deaths for which the cause remained unascertained after a full investigation (Box One). There is some evidence to suggest that these terms are used interchangeably by coroners certifying these deaths.<sup>1</sup> Research has also shown that the characteristics of babies dying of these two causes are very similar.<sup>2</sup> Based on this evidence it is appropriate to include both groups in any analysis of unexplained infant deaths. Figures for 2007 are provisional.

There were 264 unexplained infant deaths in England and Wales in 2007, comprising 8 per cent of all infant deaths. This was a 7 per cent decrease from the 285 unexplained infant deaths recorded in 2006. The rate however fell by 10 per cent during this period from 0.43 to 0.38 deaths per 1,000 live births (Table 1). Between 2003 and 2005 the unexplained infant death rate was fairly constant, but the rate fell by 15 per cent in 2006.

Of the 264 unexplained infant deaths in 2007, 193 were sudden infant deaths and 71 were unascertained deaths. Between 2006 and 2007, the number of sudden infant deaths increased from 184 to 193 while the number of unascertained deaths decreased from 101 to 71. This suggests that there is a diagnostic transfer from unascertained to sudden infant deaths and other causes. This change is in line with the recommendation made by Baroness Kennedy's working group for coroners to stop using the term unascertained as a final cause of death.<sup>3</sup>

During the period 2003–07, 64 per cent of all unexplained deaths occurred in babies aged less than 3 months. Of all unexplained deaths, 18 per cent occurred in the first 27 days of life and 26 per cent occurred in babies aged between 28 days and less than 2 months (Table 2).

Between 2003 and 2007, 28 per cent of unexplained deaths occurred over the winter period (December–February), whereas 21 per cent occurred over the summer (June–August) (Table 3). December had the highest number of unexplained deaths over the whole period with 146 deaths (10 per cent of the total) and August had the lowest with 82 deaths (5 per cent).

Over the same five-year period, the North East government office region had the highest unexplained infant death rate in England and Wales at 0.66 per 1,000 live births and the East of England region had the lowest at 0.32 per 1,000 live births (Table 4).



Of all unexplained infant deaths in 2007, 76 per cent occurred among babies born with a normal birthweight (2,500 grams and over) and 90 per cent occurred in the postneonatal period (Table 5).

The unexplained infant death rate in 2007 was highest for babies of mothers aged under 20 years at the time of birth (1.12 per 1,000 live births). The rate fell with increasing age of the mother (Table 6). For babies of mothers born in England and Wales the unexplained infant death rate was 0.45 per 1,000 live births compared to 0.38 per 1,000 live births for all babies (Table 7). The rate for babies of mothers born outside England and Wales was 0.18 per 1,000 live births.

For babies born within marriage the unexplained infant death rate for 2007 for babies of mothers with two or more previous births (0.31 per 1,000 live births) was three times the rate in babies of mothers with no previous births (0.10 per 1,000 live births) (Table 8).

The unexplained infant death rate in 2007 was highest for babies born outside marriage where only the mother registered the birth (1.42 per 1,000 live births); this rate was nearly eight times the rate for babies born inside marriage (0.18 per 1,000 live births) and three times the rate for babies born outside marriage jointly registered by both parents giving the same address (0.43 per 1,000 live births) (Table 8).

For births inside marriage and outside marriage jointly registered by both parents, the unexplained infant death rate for babies with fathers in routine and manual occupations was over twice that the rate for babies with fathers in the managerial and professional group (0.33 per 1,000 live births and 0.13 per 1,000 live births respectively). The figures in Table 9 exclude 'sole registrations' where only details of the mother are recorded. Less than 7 per cent of all births are sole registrations while almost 25 per cent of all unexplained deaths are sole birth registrations. It is thought that differences in death rates by marital and birth registration status reflect complex factors including mother's age and social circumstances.<sup>4</sup>

### The data

The deaths included in this report occurred in 2003–07 and 98 per cent of all infant deaths in this period have been linked to their corresponding

birth records.<sup>5</sup> Of the 2 per cent of infant deaths that remained unlinked, 165 were born outside England and Wales, and 187 were not linked because no record of the birth could be found. For this five-year period, 43 unexplained deaths remain unlinked and are omitted from this report.

From the linked records, information about parents, which was collected at birth registration, can then be used to enable analysis of the data according to certain risk factors. Data for 2007 have been analysed by these risk factors, and include birthweight (Table 5), mother's age at birth of child (Table 6), mother's country of birth (Table 7), marital status and parity (Table 8), and father's socio-economic status based on his occupation (Table 9).

The majority of unexplained deaths are certified by a coroner either with or without an inquest and therefore there can be some delay between death and registration. This report is based on data available up to 10 June 2009 and figures for 2007 are provisional.

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Table 1		Sudden infant deaths, unascertained deaths and all unexplained infant deaths by sex and age at death, 2003–07																
England and Wales		Numbers and rates																
Year	Numbers									Rates <sup>1</sup>								
	Boys			Girls			All babies			Boys			Girls			All babies		
	Neonatal deaths	Post-neonatal deaths	Infant deaths	Neonatal deaths	Post-neonatal deaths	Infant deaths	Neonatal deaths	Post-neonatal deaths	Infant deaths	Neonatal deaths	Post-neonatal deaths	Infant deaths	Neonatal deaths	Post-neonatal deaths	Infant deaths	Neonatal deaths	Post-neonatal deaths	Infant deaths
<b>Sudden infant deaths</b>																		
2003	15	89	104	14	67	81	29	156	185	0.05	0.28	0.33	0.05	0.22	0.27	0.05	0.25	0.30
2004	24	101	125	18	64	82	42	165	207	0.07	0.32	0.39	0.06	0.21	0.26	0.07	0.26	0.32
2005	15	119	134	22	67	89	37	186	223	0.05	0.36	0.41	0.07	0.21	0.28	0.06	0.29	0.35
2006	18	98	116	11	57	68	29	155	184	0.05	0.29	0.34	0.03	0.17	0.21	0.04	0.23	0.27
2007	10	110	120	7	66	73	17	176	193	0.03	0.31	0.34	0.02	0.20	0.22	0.02	0.26	0.28
<b>Unascertained deaths</b>																		
2003	13	54	67	21	42	63	34	96	130	0.04	0.17	0.21	0.07	0.14	0.21	0.05	0.15	0.21
2004	17	47	64	12	34	46	29	81	110	0.05	0.15	0.20	0.04	0.11	0.15	0.05	0.13	0.17
2005	9	43	52	12	38	50	21	81	102	0.03	0.13	0.16	0.04	0.12	0.16	0.03	0.13	0.16
2006	14	44	58	15	28	43	29	72	101	0.04	0.13	0.17	0.05	0.09	0.13	0.04	0.11	0.15
2007	5	38	43	4	24	28	9	62	71	0.01	0.11	0.12	0.01	0.07	0.08	0.01	0.09	0.10
<b>Unexplained infant deaths</b>																		
2003	28	143	171	35	109	144	63	252	315	0.09	0.45	0.54	0.12	0.36	0.48	0.10	0.41	0.51
2004	41	148	189	30	98	128	71	246	317	0.13	0.46	0.59	0.10	0.31	0.41	0.11	0.38	0.50
2005	24	162	186	34	105	139	58	267	325	0.07	0.49	0.56	0.11	0.33	0.44	0.09	0.41	0.50
2006	32	142	174	26	85	111	58	227	285	0.09	0.41	0.51	0.08	0.26	0.34	0.09	0.34	0.43
2007	15	148	163	11	90	101	26	238	264	0.04	0.42	0.46	0.03	0.27	0.30	0.04	0.34	0.38

<sup>1</sup> Rates per 1,000 live births.

Note: Neonatal deaths under 28 days after live birth; Postneonatal deaths at least 28 days but under one year after live birth; Infant deaths under one year after live birth. Rates based on less than 10 deaths are in italics.

Table 2

## Sudden infant deaths, unascertained deaths and all unexplained deaths by age at death, 2003–07

England and Wales																Numbers and percentages	
Year	Numbers								Percentages								
	Age at death								Age at death								
	Under 28 days	28 days and over but less than 2 months	2 completed months	3 completed months	4 completed months	5 completed months	Between 6 and 11 completed months	All babies	Under 28 days	28 days and over but less than 2 months	2 completed months	3 completed months	4 completed months	5 completed months	Between 6 and 11 completed months	All babies	
<b>Sudden infant deaths</b>																	
2003	29	57	30	20	12	10	27	185	15.7	30.8	16.2	10.8	6.5	5.4	14.6	100.0	
2004	42	53	38	30	19	10	15	207	20.3	25.6	18.4	14.5	9.2	4.8	7.2	100.0	
2005	37	58	47	29	17	11	24	223	16.6	26.0	21.1	13.0	7.6	4.9	10.8	100.0	
2006	29	48	36	32	14	9	16	184	15.8	26.1	19.6	17.4	7.6	4.9	8.7	100.0	
2007	17	54	48	24	29	11	10	193	8.8	28.0	24.9	12.4	15.0	5.7	5.2	100.0	
<b>Unascertained deaths</b>																	
2003	34	26	32	16	6	3	13	130	26.2	20.0	24.6	12.3	4.6	2.3	10.0	100.0	
2004	29	27	18	10	9	4	13	110	26.4	24.5	16.4	9.1	8.2	3.6	11.8	100.0	
2005	21	18	24	13	7	5	14	102	20.6	17.6	23.5	12.7	6.9	4.9	13.7	100.0	
2006	30	32	15	8	2	6	8	101	29.7	31.7	14.9	7.9	2.0	5.9	7.9	100.0	
2007	9	22	11	5	9	4	11	71	12.7	31.0	15.5	7.0	12.7	5.6	15.5	100.0	
<b>Unexplained infant deaths</b>																	
2003	63	83	62	36	18	13	40	315	20.0	26.3	19.7	11.4	5.7	4.1	12.7	100.0	
2004	71	80	56	40	28	14	28	317	22.4	25.2	17.7	12.6	8.8	4.4	8.8	100.0	
2005	58	76	71	42	24	16	38	325	17.8	23.4	21.8	12.9	7.4	4.9	11.7	100.0	
2006	59	80	51	40	16	15	24	285	20.7	28.1	17.9	14.0	5.6	5.3	8.4	100.0	
2007	26	76	59	29	38	15	21	264	9.8	28.8	22.3	11.0	14.4	5.7	8.0	100.0	

Table 3

## Sudden infant deaths, unascertained deaths and all unexplained infant deaths by month of occurrence, 2003–07

England and Wales														Numbers
Year	Month													
	January	February	March	April	May	June	July	August	September	October	November	December	Total	
<b>Sudden infant deaths</b>														
2003	30	15	16	14	15	14	10	12	12	16	14	17	185	
2004	15	19	23	15	16	15	19	12	19	13	24	17	207	
2005	20	19	20	16	27	8	17	12	14	25	25	20	223	
2006	12	13	10	12	14	19	19	9	25	16	13	22	184	
2007	13	14	18	16	15	18	9	12	10	23	22	23	193	
<b>Unascertained deaths</b>														
2003	10	8	11	16	9	12	16	7	9	10	7	15	130	
2004	15	12	7	12	10	7	10	3	5	9	7	13	110	
2005	11	7	13	9	6	4	11	4	11	10	9	7	102	
2006	13	10	5	9	5	10	8	6	10	9	7	9	101	
2007	5	12	9	6	5	6	8	5	5	5	2	3	71	
<b>Unexplained infant deaths</b>														
2003	40	23	27	30	24	26	26	19	21	26	21	32	315	
2004	30	31	30	27	26	22	29	15	24	22	31	30	317	
2005	31	26	33	25	33	12	28	16	25	35	34	27	325	
2006	25	23	15	21	19	29	27	15	35	25	20	31	285	
2007	18	26	27	22	20	24	17	17	15	28	24	26	264	

**Table 4 All unexplained infant deaths by Government Office Regions in England, and Wales, 2003–07**

England and Wales											Numbers and rates
Year	England and Wales	Government Office Region									Wales
		North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West	
<b>Numbers</b>											
2003	315	17	55	34	26	46	22	45	32	21	17
2004	317	20	64	28	20	28	20	42	46	20	29
2005	325	20	62	23	23	40	22	57	35	28	15
2006	285	18	46	30	23	21	19	43	32	27	26
2007	264	18	34	32	20	27	21	35	31	31	15
<b>Rates<sup>1</sup></b>											
2003	0.51	0.63	0.71	0.59	0.55	0.72	0.35	0.41	0.35	0.41	0.54
2004	0.50	0.72	0.79	0.47	0.41	0.42	0.31	0.37	0.49	0.38	0.90
2005	0.50	0.71	0.76	0.38	0.47	0.61	0.34	0.49	0.37	0.53	0.46
2006	0.43	0.62	0.55	0.48	0.45	0.31	0.28	0.36	0.32	0.49	0.77
2007	0.38	0.61	0.40	0.50	0.38	0.39	0.30	0.28	0.31	0.54	0.44

<sup>1</sup> Rates per 1,000 live births.

**Table 5 Live births and all unexplained infant deaths by birthweight, 2007**

England and Wales								Numbers and percentages
Birthweight (grams)	Numbers					Percentages		
	Births	Deaths			Deaths			
		Live births	Neonatal	Postneonatal	Infant	Neonatal	Postneonatal	Infant
All	690,013	26	238	264	9.8	90.2	100.0	
Under 1,500	7,860	1	15	16	6.3	93.8	100.0	
1,500–1,999	9,905	1	14	15	6.7	93.3	100.0	
2,000–2,499	31,540	1	27	28	3.6	96.4	100.0	
2,500–2,999	114,429	11	65	76	14.5	85.5	100.0	
3,000–3,499	244,555	5	67	72	6.9	93.1	100.0	
3,500 and over	274,147	7	45	52	13.5	86.5	100.0	
Not stated	7,577	–	5	5	–	100.0	100.0	

Note: Neonatal deaths under 28 days after live birth; Postneonatal deaths at least 28 days but under one year after live birth; Infant deaths under one year after live birth.

**Table 6 Live births and all unexplained infant deaths by mother's age, 2007**

England and Wales								Numbers and rates
Mother's age	Numbers					Rates <sup>1</sup>		
	Births	Deaths			Deaths			
		Live births	Neonatal	Postneonatal	Infant	Neonatal	Postneonatal	Infant
All	690,013	26	238	264	0.04	0.34	0.38	
Under 20	44,805	4	46	50	<i>0.09</i>	1.03	1.12	
20–24	130,784	8	73	81	<i>0.06</i>	0.56	0.62	
25–29	182,570	7	61	68	<i>0.04</i>	0.33	0.37	
30–34	191,124	4	30	34	<i>0.02</i>	0.16	0.18	
35 and over	140,730	3	28	31	<i>0.02</i>	0.20	0.22	

<sup>1</sup> Rates per 1,000 live births.

Note: Neonatal deaths under 28 days after live birth; Postneonatal deaths at least 28 days but under one year after live birth; Infant deaths under one year after live birth. Rates based on less than 10 deaths are in italics.

**Table 7** Live births and all unexplained infant deaths by mother's country of birth, 2007

England and Wales								Numbers and rates
Country of birth	Numbers				Rates <sup>1</sup>			
	Births	Deaths			Deaths			
		Live births	Neonatal	Postneonatal	Infant	Neonatal	Postneonatal	Infant
All	690,013	26	238	264	0.04	0.34	0.38	
England and Wales	519,449	25	208	233	0.05	0.42	0.45	
Outside England and Wales	170,564	1	30	31	0.01	0.17	0.18	

1 Rates per 1,000 live births.

Note: Neonatal deaths under 28 days after live birth; Postneonatal deaths at least 28 days but under one year after live birth; Infant deaths under one year after live birth. Rates based on less than 10 deaths are in italics.

**Table 8** Live births and all unexplained infant deaths by marital status, parity (within marriage) and type of registration, 2007

England and Wales								Numbers and rates
Marital status Parity/type of registration	Numbers				Rates <sup>1</sup>			
	Births	Deaths			Deaths			
		Live births	Neonatal	Postneonatal	Infant	Neonatal	Postneonatal	Infant
All	690,013	26	238	264	0.04	0.34	0.38	
<b>Inside marriage</b>								
All	384,463	9	59	68	0.02	0.15	0.18	
0	164,771	4	12	16	0.02	0.07	0.10	
1	134,984	1	25	26	0.01	0.19	0.19	
2 and over	84,708	4	22	26	0.05	0.26	0.31	
<b>Outside marriage</b>								
All	305,550	17	179	196	0.06	0.59	0.64	
Joint registration/same address	198,470	12	73	85	0.06	0.37	0.43	
Joint registration/diff address	61,379	4	42	46	0.07	0.68	0.75	
Sole registration	45,701	1	64	65	0.02	1.40	1.42	

1 Rates per 1,000 live births.

Note: Neonatal deaths under 28 days after live birth; Postneonatal deaths at least 28 days but under one year after live birth; Infant deaths under one year after live birth. Rates based on less than 10 deaths are in italics.

**Table 9** Live births<sup>1</sup> and unexplained infant deaths<sup>2</sup> by National Statistics Socio-economic Classification (NS-SEC), 2007

England and Wales								Numbers and rates
NS-SEC Three-class version	Numbers				Rates <sup>3</sup>			
	Births	Deaths			Deaths			
		Live births	Neonatal	Postneonatal	Infants	Neonatal	Postneonatal	Infant
All <sup>4</sup>	644,312	25	174	199	0.04	0.27	0.31	
<b>Inside marriage</b>								
All <sup>5</sup>	384,463	9	59	68	0.02	0.15	0.18	
Managerial and professional	18,136	5	15	20	0.03	0.08	0.11	
Intermediate	7,317	2	7	9	0.03	0.10	0.12	
Routine and manual	11,238	2	22	24	0.02	0.20	0.21	
<b>Outside marriage joint registration</b>								
All <sup>5</sup>	259,849	16	115	131	0.06	0.44	0.50	
Managerial and professional	6,103	1	11	12	0.02	0.18	0.20	
Intermediate	5,082	4	12	16	0.08	0.24	0.31	
Routine and manual	12,802	6	50	56	0.05	0.39	0.44	
<b>Inside marriage and outside marriage joint registration</b>								
All <sup>5</sup>	644,312	25	174	199	0.04	0.27	0.31	
Managerial and professional	24,239	6	26	32	0.02	0.11	0.13	
Intermediate	12,399	6	19	25	0.05	0.15	0.20	
Routine and manual	24,040	8	72	80	0.03	0.30	0.33	

1 Information on father's occupation is not collected for births outside marriage if the father does not attend the registration of the baby's birth. Figures for live births in NS-SEC groups are a 10 per cent sample coded for father's occupation.

2 NS-SEC based on father's occupation at death registration.

3 Rates per 1,000 live births.

4 Inside marriage and outside marriage/joint registration only, including cases where father's occupation was not stated.

5 Includes cases where father's occupation was not stated.

Note: Neonatal deaths under 28 days after live birth; Postneonatal deaths at least 28 days but under one year after live birth; Infant deaths under one year after live birth. Rates based on less than 10 deaths are in italics.

# Report:

## Death registrations in England and Wales, 2008, causes

Christopher Hill

Office for National Statistics

### Key findings

- There were 509,090 deaths registered in England and Wales in 2008, compared with 504,052 in 2007, an increase of 1.0 per cent
- The provisional 2008 age-standardised mortality rates for both males and females were the lowest ever recorded in England and Wales at 6,860 per million population for males and 4,910 per million for females
- The infant mortality rate (deaths under 1 year of age) was 4.8 per 1,000 live births in 2008. This rate is unchanged from 2007 and remains the lowest ever recorded in England and Wales
- Among males, the highest age-standardised mortality rate was for circulatory diseases (2,216 per million population), despite a fall of 40 per cent in the rate between 1998 and 2008
- The female age-standardised mortality rate for circulatory disease fell by 38 per cent between 1998 and 2008 to 1,422 per million population, and since 2006 has been lower than the female death rate for cancer

This report presents provisional numbers of deaths registered in England and Wales in 2008 by age, sex and selected underlying causes of death. It also compares mortality rates in 2008 with those for previous years. In addition, causes of death have been ranked to provide a summary of the ten leading causes of death for both males and females.

### Deaths by sex and age

There were 509,090 deaths registered in England and Wales in 2008, compared with 504,052 in 2007, an increase of 1.0 per cent. The total number of deaths in 2008 comprised 243,014 male and 266,076 female deaths. This compares with 240,787 male and 263,265 female deaths registered in 2007.

In 2008, there were 3,370 infant deaths (under 1 year of age) registered, giving a rate of 4.8 per 1,000 live births. This rate is unchanged from 2007 and remains the lowest infant mortality rate ever recorded in England and Wales.

**Table 1** Death rates by sex and age, 1998, 2007 and 2008

England and Wales

Age group	1998 <sup>1</sup>		2007 <sup>1</sup>		2008 <sup>2</sup>		Percentage change 1998–2008	
	Males	Females	Males	Females	Males	Females	Males	Females
<b>Age-standardised mortality rate,<sup>3</sup> all ages, all causes, per million population</b>	<b>8,967</b>	<b>5,928</b>	<b>6,949</b>	<b>4,921</b>	<b>6,860</b>	<b>4,910</b>	<b>-23.5</b>	<b>-17.2</b>
<b>Age-specific mortality rates per 1,000 population</b>								
Under 1 <sup>4</sup>	6.3	5.0	5.3	4.3	5.3	4.2	-16.2	-16.0
1–4	0.3	0.2	0.3	0.2	0.2	0.2	-31.6	-11.1
5–9	0.1	0.1	0.1	0.1	0.1	0.1	-19.5	-15.9
10–14	0.2	0.1	0.1	0.1	0.1	0.1	-37.1	-30.5
15–19	0.6	0.3	0.4	0.2	0.4	0.2	-28.6	-25.7
20–24	0.9	0.3	0.6	0.3	0.7	0.3	-28.7	-18.5
25–29	1.0	0.4	0.8	0.3	0.8	0.3	-22.8	-14.5
30–34	1.1	0.5	1.0	0.5	1.0	0.5	-9.4	-0.8
35–39	1.3	0.8	1.3	0.7	1.3	0.7	1.5	-8.4
40–44	2.0	1.3	1.8	1.1	1.8	1.1	-7.4	-10.2
45–49	3.1	2.0	2.6	1.8	2.7	1.8	-11.2	-12.8
50–54	4.9	3.2	4.3	2.8	4.3	2.9	-12.7	-10.9
55–59	8.5	5.2	6.9	4.4	6.7	4.3	-21.8	-17.0
60–64	14.2	8.4	10.7	6.8	10.4	6.7	-26.5	-20.3
65–69	24.3	14.4	17.8	11.0	17.1	10.8	-29.6	-25.3
70–74	41.7	25.4	28.0	18.4	27.7	18.0	-33.5	-28.8
75–79	65.9	40.9	48.7	32.8	47.6	32.1	-27.8	-21.5
80–84	109.1	72.7	84.0	60.1	82.0	59.4	-24.8	-18.4
85 and over	192.7	158.4	161.0	143.6	162.3	146.8	-15.8	-7.3

1 Figures may vary from previous rates published. For 2007, the population projections used to calculate rates have been replaced with 2007 mid-year population estimates. For 1998, the mid-year estimates used in the rates have been revised following the 2001 Census.

2 Provisional rates based on 2006-based population projections for 2008 and 2008 live births.

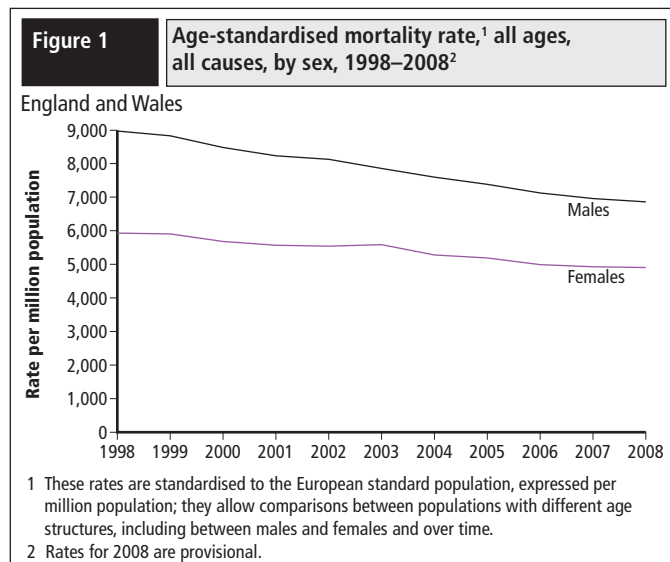
3 These rates are standardised to the European standard population, expressed per million population; they allow comparisons between populations with different age structures, including between males and females and over time.

4 Deaths per 1,000 live births.

Table 1 shows death rates by age and sex, for the years 1998, 2007 and 2008, together with percentage changes between 1998 and 2008. The provisional age-standardised mortality rates were 6,860 per million population for males and 4,910 per million for females in 2008 which are the lowest ever recorded in England and Wales. This compares with age-standardised rates of 6,949 per million for males and 4,921 per million for females in 2007. These age-standardised rates are for all causes and cover all ages. Between 1998 and 2008, the age-standardised rate for males fell by 24 per cent (from 8,967 deaths per million), while for females it decreased by 17 per cent (from 5,928 deaths per million).

Among the older ages, where most deaths occur, the largest percentage decrease in age-specific rates between 1998 and 2008 was in the 70–74 age group (34 per cent and 29 per cent for males and females respectively). It should be noted that the age-specific rates for the younger age groups are based on small numbers of deaths, and relatively small changes in such numbers can result in large percentage changes.

Figure 1 shows the trend in age-standardised mortality rates for both males and females by year, between 1998 and 2008.



## Deaths by underlying cause

Table 2 presents deaths by age and sex for selected underlying causes of death, grouped according to the International Classification of Diseases, Tenth Revision (ICD–10). The chapters (broad disease groups) of ICD–10 with the largest numbers of deaths in 2008 were circulatory diseases, cancers (neoplasms) and respiratory diseases. Circulatory diseases, which include deaths from ischaemic heart disease and strokes, accounted for 33 per cent of all deaths, while cancers and respiratory diseases (including deaths from pneumonia) accounted for 28 per cent and 14 per cent of all deaths respectively.

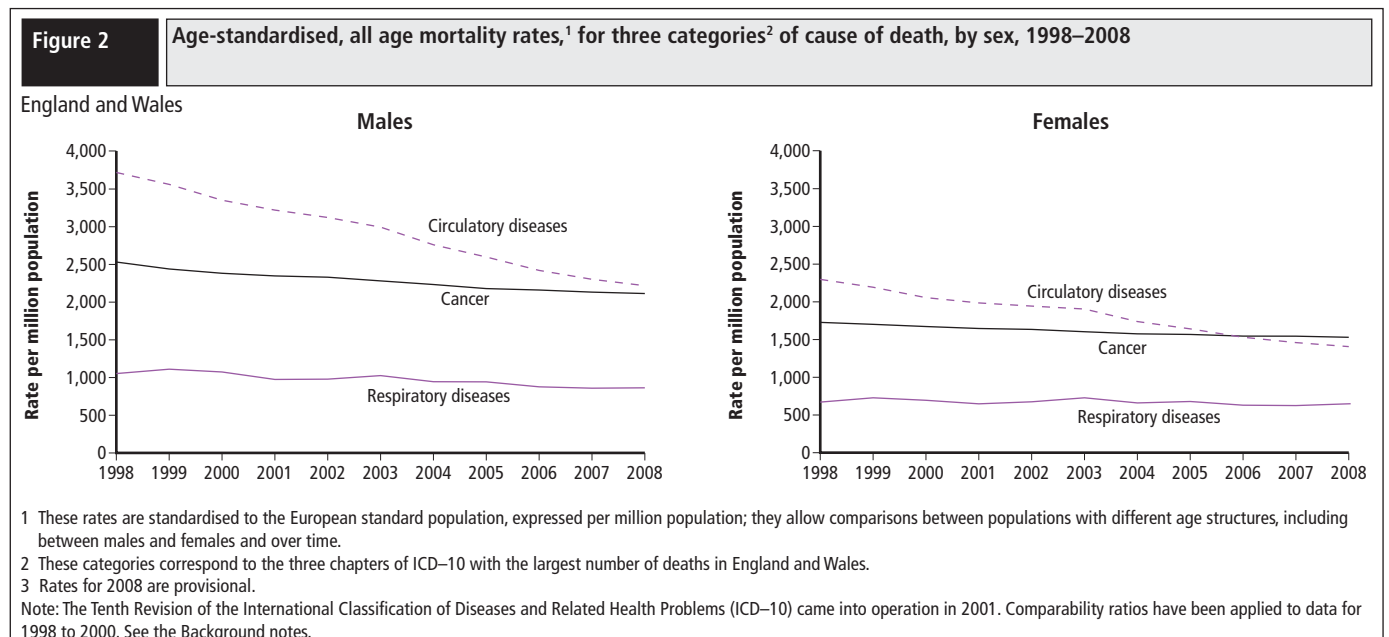
Figure 2 shows the trends in all age mortality rates for these three cause of death groups between 1998 and 2008. Throughout the period, the highest death rate among males was for circulatory diseases, despite a fall of 40 per cent in the rate, to 2,216 per million population. The female death rate for circulatory disease also fell over the same period by more than a third (38 per cent) to 1,422 per million population, and since 2006 has been lower than the female death rate for cancer. The fall in age-standardised mortality rates for cancer has been more gradual, with death rates 17 and 11 per cent lower in 2008 than in 1998 for males and females respectively.

The rate for respiratory diseases in males decreased by 17 per cent over the same period, while the rate for females was 4 per cent lower in 2008 than in 1998. Respiratory disease mortality rates in a given year are strongly influenced by the seasonal pattern of mortality in that year and so differences between two years should always be examined in the context of long-term trends. Comparability ratios have been applied to the figures for each of the three cause of death groups for 1998 to 2000 in order to produce a consistent trend that adjusts for the change to ICD–10 in 2001; see the Background notes.

## Leading causes of death

Both Table 3 and Figure 3 show the ten leading underlying causes of death in 2008 for males and females. These are ranked according to a World Health Organisation (WHO) list which categorises causes using ICD–10 groups specifically designed for determining the leading causes of death; see the Background notes. Figure 3 also shows how mortality rates for the leading causes of death in 2008 have changed since 2003.

The leading cause of death for both sexes was ischaemic heart diseases, which accounted for approximately one in six male deaths and one in



**Table 2** Deaths by age, sex and underlying cause, 2008<sup>1</sup> registrations

England and Wales

ICD-10 code	Causes of death <sup>1</sup>	Sex	Age group												
			All ages	Under 1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85 and over	
A00-R99, U509, V01-Y89	All causes, all ages	M	243,014	1,920	284	370	2,034	3,088	6,419	12,269	27,093	47,862	79,799	61,876	
		F	266,076	1,450	270	277	809	1,445	3,811	8,291	18,187	33,883	77,827	119,826	
	All causes, ages under 28 days	M	1,309	1,309	-	-	-	-	-	-	-	-	-	-	
		F	990	990	-	-	-	-	-	-	-	-	-	-	
A00-R99, U509, V01-Y89	All causes, ages 28 days and over	M	241,705	611	284	370	2,034	3,088	6,419	12,269	27,093	47,862	79,799	61,876	
		F	265,086	460	270	277	809	1,445	3,811	8,291	18,187	33,883	77,827	119,826	
A00-B99	Certain infectious and parasitic diseases	M	2,919	43	35	10	19	56	142	206	285	442	874	807	
		F	3,580	40	22	12	21	42	87	93	171	404	1,053	1,635	
A00-A09	Intestinal infectious diseases	M	974	-	1	1	1	2	2	12	43	122	371	419	
		F	1,716	1	-	1	-	-	6	11	33	134	528	1,002	
A15-A16	Respiratory tuberculosis	M	157	-	-	-	-	4	6	19	24	37	39	28	
		F	103	-	-	-	-	5	6	9	11	16	35	21	
A17-A19	Other tuberculosis	M	50	-	-	-	-	4	4	6	8	9	9	10	
		F	35	-	1	-	4	1	2	3	3	12	3	6	
A39	Meningococcal infection	M	43	9	14	-	7	1	1	2	3	2	4	-	
		F	34	10	5	3	2	1	3	2	2	-	1	5	
A40-A41	Septicaemia	M	943	13	4	4	2	14	21	40	78	157	333	277	
		F	1,211	11	9	3	8	9	21	26	77	164	380	503	
B15-B19	Viral hepatitis	M	150	-	-	-	-	2	14	55	45	21	13	-	
		F	68	-	-	-	1	-	6	15	14	13	16	3	
B20-B24	Human immunodeficiency virus [HIV] disease	M	168	-	1	1	3	16	68	41	24	8	5	1	
		F	81	-	-	-	2	22	30	16	6	4	1	-	
B90	Sequelae of tuberculosis	M	16	-	-	-	-	-	-	2	1	1	8	4	
		F	23	-	-	-	-	-	-	-	-	2	12	9	
C00-D48	Neoplasms	M	73,702	3	31	86	177	316	1,029	3,509	11,290	20,035	25,077	12,149	
		F	67,437	6	38	64	104	378	1,536	4,097	9,822	15,146	21,193	15,053	
C00-C97	Malignant neoplasms	M	72,092	1	30	82	166	299	992	3,450	11,120	19,710	24,489	11,753	
		F	65,735	3	32	58	99	370	1,512	4,043	9,718	14,918	20,639	14,343	
C00-C14	Malignant neoplasms of lip, oral cavity and pharynx	M	1,140	-	-	1	4	4	39	190	326	318	176	82	
		F	675	-	2	1	4	4	12	58	147	129	170	148	
C15	Malignant neoplasm of oesophagus	M	4,399	-	-	-	3	11	75	306	977	1,240	1,262	525	
		F	2,210	-	-	-	-	5	24	77	295	450	799	560	
C16	Malignant neoplasm of stomach	M	2,827	-	-	-	2	7	44	107	344	751	1,117	455	
		F	1,719	-	-	1	-	13	31	74	132	328	651	489	
C18	Malignant neoplasm of colon	M	4,587	-	-	-	4	15	57	183	649	1,217	1,647	815	
		F	4,371	-	-	-	2	11	52	176	484	878	1,462	1,306	
C19-C21	Malignant neoplasm of rectosigmoid junction, rectum and anus	M	3,109	-	-	-	3	10	35	177	538	897	978	471	
		F	2,208	-	-	-	4	9	38	121	297	439	686	614	
C22	Malignant neoplasm of liver and intrahepatic bile ducts	M	1,788	-	1	1	2	14	27	100	376	537	546	184	
		F	1,202	1	1	-	1	8	15	68	159	273	425	251	
C23-C24	Malignant neoplasm of gallbladder and biliary tract	M	208	-	-	-	-	-	3	10	30	44	84	37	
		F	351	-	-	-	-	1	1	17	54	73	119	86	
C25	Malignant neoplasm of pancreas	M	3,379	-	-	-	-	4	42	205	659	1,037	1,079	353	
		F	3,550	-	-	-	-	3	30	154	466	937	1,211	749	
C32	Malignant neoplasm of larynx	M	575	-	-	-	1	1	4	36	128	162	169	74	
		F	140	-	-	-	-	1	-	13	24	45	31	26	
C33-C34	Malignant neoplasm of trachea, bronchus and lung	M	17,231	-	-	-	-	10	123	728	2,921	5,378	5,932	2,139	
		F	13,093	-	-	-	1	5	120	661	2,206	3,591	4,598	1,911	
C43	Malignant melanoma of skin	M	1,008	-	-	-	7	22	63	110	222	237	255	92	
		F	839	-	-	-	6	18	59	88	167	164	202	135	
C44	Other malignant neoplasms of skin	M	261	-	-	-	-	-	2	3	24	42	90	100	
		F	156	-	-	-	1	-	2	7	5	20	39	82	
C45	Mesothelioma	M	1,609	-	-	-	-	-	8	32	284	575	572	138	
		F	351	-	-	-	-	2	2	10	65	98	125	49	
C46	Kaposi's sarcoma	M	4	-	-	-	1	-	1	-	-	-	1	1	
		F	4	-	-	-	-	1	-	1	-	-	1	1	
C50	Malignant neoplasm of breast	M	62	-	-	-	-	-	2	2	11	12	24	11	
		F	10,716	-	-	-	1	74	542	1,179	1,917	2,113	2,554	2,336	

1 Figures for 2008 are provisional.

2 The figures for individual cause categories exclude deaths at ages under 28 days.

3 Including sequelae of transport accidents.

**Table 2 cont. Deaths by age, sex and underlying cause, 2008<sup>1</sup> registrations**

England and Wales

ICD-10 code	Causes of death <sup>1</sup>	Sex	Age group												
			All ages	Under 1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85 and over	
C53	Malignant neoplasm of cervix uteri	F	830	-	-	-	4	51	97	137	131	145	163	102	
C54-C55	Malignant neoplasm of other and unspecified parts of uterus	F	1,544	-	-	-	-	3	17	83	259	430	449	303	
C56	Malignant neoplasm of ovary	F	3,733	-	-	-	3	21	85	273	734	1,070	1,049	498	
C61	Malignant neoplasm of prostate	M	9,157	-	-	-	-	2	73	553	1,901	3,738	2,890		
C62	Malignant neoplasm of testis	M	60	-	-	-	5	14	8	11	7	6	2	7	
C64	Malignant neoplasm of kidney, except renal pelvis	M	1,865	-	1	1	-	8	35	129	372	507	581	231	
		F	1,220	-	2	6	2	4	22	87	173	289	400	235	
C67	Malignant neoplasm of bladder	M	2,935	-	-	-	-	3	11	56	286	652	1,118	809	
		F	1,521	-	-	-	-	4	12	23	108	216	535	623	
C71	Malignant neoplasm of brain	M	1,895	1	8	31	29	50	147	270	465	498	335	61	
		F	1,312	-	9	22	12	34	76	156	298	321	283	101	
C81	Hodgkin's disease	M	157	-	-	2	6	8	14	17	34	28	38	10	
		F	124	-	-	-	6	7	15	12	11	28	30	15	
C82-C85	Non-Hodgkin's lymphoma	M	2,164	-	1	4	15	16	59	128	314	570	763	294	
		F	1,836	-	-	-	8	11	20	69	242	415	655	416	
C90	Multiple myeloma and malignant plasma cell neoplasms	M	1,267	-	-	-	-	8	54	183	351	479	192		
		F	1,080	-	-	-	1	11	34	132	282	360	260		
C91-C95	Leukaemia	M	2,234	-	8	18	28	45	51	103	273	643	731	334	
		F	1,690	-	8	9	16	32	59	60	153	350	546	457	
C97	Malignant neoplasms of independent (primary) multiple sites	M	571	-	-	1	-	1	5	11	52	139	230	132	
		F	448	-	1	1	-	-	6	24	61	109	150	96	
D00-D48	In situ and benign neoplasms, and neoplasms of uncertain or unknown behaviour	M	1,610	2	1	4	11	17	37	59	170	325	588	396	
		F	1,702	3	6	6	5	8	24	54	104	228	554	710	
D50-D89	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	M	400	2	5	6	10	7	24	35	46	77	84	104	
		F	552	6	4	7	8	15	16	26	44	80	126	220	
D50-D64	Anaemias	M	149	-	2	3	4	2	5	7	12	21	30	63	
		F	273	1	1	4	4	3	4	6	7	20	57	166	
E00-E90	Endocrine, nutritional and metabolic diseases	M	3,425	20	22	21	33	68	127	186	336	646	1,116	850	
		F	4,001	12	9	19	46	48	78	154	214	515	1,193	1,713	
E10-E14	Diabetes mellitus	M	2,649	-	1	1	10	37	61	107	241	519	964	708	
		F	2,892	-	-	1	7	16	32	92	119	374	939	1,312	
F00-F99	Mental and behavioural disorders	M	5,965	-	-	-	97	271	367	230	203	403	1,779	2,615	
		F	12,472	-	-	2	24	66	98	106	100	389	2,873	8,814	
F01, F03	Vascular and unspecified dementia	M	4,690	-	-	-	-	-	-	4	53	332	1,729	2,572	
		F	11,919	-	-	-	-	-	-	3	44	347	2,805	8,720	
F10-F19	Mental and behavioural disorders due to psycho-active substance use	M	1,175	-	-	-	94	270	363	220	142	61	21	4	
		F	359	-	-	-	17	59	92	95	51	30	12	3	
G00-G99	Diseases of the nervous system	M	8,127	57	27	55	135	135	252	394	707	1,309	3,023	2,033	
		F	9,394	30	42	40	83	79	153	312	649	1,124	2,946	3,936	
G00-G03	Meningitis (excluding meningococcal)	M	86	2	2	3	7	3	10	16	15	5	15	8	
		F	72	4	1	-	3	2	5	11	17	11	9	9	
G12.2	Motor neuron disease	M	936	-	-	-	-	4	12	67	175	319	289	70	
		F	802	-	-	-	-	1	7	34	145	248	273	94	
G20	Parkinson's disease	M	2,781	-	-	-	-	-	-	3	59	386	1,447	886	
		F	1,963	-	-	-	-	-	-	2	17	208	883	853	
G30	Alzheimer's disease	M	1,997	-	-	-	-	-	1	5	58	207	873	853	
		F	4,235	-	-	-	-	-	2	7	56	272	1,339	2,559	
G35	Multiple sclerosis	M	369	-	-	-	-	6	32	78	112	84	49	8	
		F	681	-	-	-	1	3	51	129	206	145	106	40	
G40	Epilepsy	M	575	2	5	9	43	69	106	105	86	49	65	36	
		F	404	2	13	8	42	36	37	38	51	36	65	76	
H00-H59	Diseases of the eye and adnexa	M	3	-	-	-	-	-	-	-	-	2	-	1	
		F	8	-	-	-	-	-	-	-	-	-	2	6	
H60-H95	Diseases of the ear and mastoid process	M	11	-	-	-	1	1	1	2	1	1	2	2	
		F	13	-	-	1	-	-	1	1	1	2	3	4	

1 Figures for 2008 are provisional.

2 The figures for individual cause categories exclude deaths at ages under 28 days.

3 Including sequelae of transport accidents.



**Table 2 cont.** Deaths by age, sex and underlying cause, 2008<sup>1</sup> registrations

England and Wales

ICD-10 code	Causes of death <sup>1</sup>	Sex	Age group											
			All ages	Under 1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85 and over
I00-I99	Diseases of the circulatory system	M	80,846	28	11	24	98	316	1,286	3,627	8,128	15,356	28,831	23,141
		F	87,392	21	18	21	56	145	514	1,307	3,220	8,557	27,334	46,199
I05-I09	Chronic rheumatic heart diseases	M	309	-	-	-	1	4	4	5	31	75	122	67
		F	706	-	-	-	2	6	8	14	40	118	265	253
I10-I15	Hypertensive diseases	M	1,805	-	-	-	1	11	40	117	177	326	570	563
		F	2,668	-	-	-	-	3	15	43	120	238	751	1,498
I20-I25	Ischaemic heart diseases	M	43,462	4	1	2	7	88	680	2,343	5,414	9,365	15,066	10,492
		F	33,523	-	1	-	2	18	153	490	1,460	4,109	11,060	16,230
I21-I22	Acute myocardial infarction	M	16,691	2	-	1	4	31	304	1,012	2,253	3,651	5,690	3,743
		F	12,639	-	-	-	2	10	95	206	606	1,729	4,388	5,603
I26-I51	Other heart diseases	M	10,166	18	8	14	58	105	269	423	815	1,431	3,302	3,723
		F	14,543	17	16	10	29	53	114	215	486	1,133	3,946	8,524
I60-I69	Cerebrovascular diseases	M	17,805	5	2	5	22	65	186	475	1,061	2,535	6,876	6,573
		F	28,641	2	1	11	14	44	162	396	798	2,026	8,691	16,496
I60-I62	Intracranial haemorrhage	M	3,285	2	-	3	20	46	138	321	487	676	1,016	576
		F	4,212	-	1	7	9	34	131	293	476	634	1,425	1,202
I63	Cerebral infarction	M	1,824	-	-	1	2	8	21	67	157	277	675	616
		F	2,568	1	-	-	3	5	11	37	70	184	823	1,434
I64	Stroke, not specified as haemorrhage or infarction	M	7,925	-	1	1	-	7	21	66	329	1,118	3,274	3,108
		F	13,927	-	-	-	-	4	14	55	199	895	4,314	8,446
I70	Atherosclerosis	M	198	-	-	-	-	-	-	1	6	33	74	84
		F	369	1	-	-	-	-	-	1	2	15	101	249
I71	Aortic aneurysm and dissection	M	4,415	-	-	3	1	8	48	88	276	1,035	1,917	1,039
		F	2,958	-	-	-	3	3	8	24	95	410	1,239	1,176
J00-J99	Diseases of the respiratory system	M	32,801	44	34	30	41	72	236	584	2,208	5,506	11,961	12,085
		F	38,950	25	29	19	40	71	205	489	1,615	4,205	11,717	20,535
J10-J11	Influenza	M	14	2	-	2	1	1	-	1	-	1	3	3
		F	25	3	2	-	-	-	-	1	1	1	5	12
J12-J18	Pneumonia	M	11,531	20	13	6	15	36	120	215	538	1,269	3,602	5,697
		F	17,396	9	10	6	17	30	102	158	370	907	4,060	11,727
J40-J44	Bronchitis, emphysema and other chronic obstructive pulmonary disease	M	13,032	1	-	-	1	1	34	191	1,134	2,876	5,402	3,392
		F	11,784	-	-	-	1	3	24	163	885	2,385	4,947	3,376
J45-J46	Asthma	M	322	-	2	15	12	9	19	33	35	47	69	81
		F	749	-	-	6	11	15	29	48	55	68	197	320
K00-K93	Diseases of the digestive system	M	12,305	18	8	10	30	189	807	1,621	2,123	2,223	3,065	2,211
		F	13,692	11	5	8	25	97	423	842	1,255	1,815	4,029	5,182
K25-K27	Gastric and duodenal ulcer	M	1,417	-	-	1	2	11	36	92	194	252	485	344
		F	1,495	-	-	-	4	3	16	38	100	207	477	650
K40-K46	Hernia	M	373	-	1	1	-	-	3	10	33	69	139	117
		F	523	1	-	-	1	-	2	5	28	61	159	266
K57	Diverticular disease of intestine	M	467	-	-	-	-	1	2	13	32	91	182	146
		F	1,358	-	-	-	-	-	3	15	49	123	516	652
K70-K76	Diseases of the liver	M	4,726	3	2	1	10	137	660	1,249	1,359	828	377	100
		F	2,791	1	-	-	9	68	324	617	727	531	373	141
L00-L99	Diseases of the skin and subcutaneous tissue	M	572	-	1	-	-	3	7	26	50	99	207	179
		F	1,324	-	-	-	1	3	9	18	58	118	407	710
M00-M99	Diseases of the musculoskeletal system and connective tissue	M	1,354	1	2	2	6	6	23	35	91	232	489	467
		F	3,044	1	2	3	9	10	23	54	152	346	880	1,564
M05-M06, M08	Rheumatoid arthritis and juvenile arthritis	M	183	-	-	-	-	1	-	7	19	47	86	23
		F	570	-	-	-	1	-	2	6	41	126	215	179
M80-M81	Osteoporosis	M	321	-	-	-	-	-	-	-	2	15	93	211
		F	1,099	-	-	-	-	1	-	1	7	22	268	800
N00-N99	Diseases of the genitourinary system	M	4,823	4	2	4	6	21	33	63	179	489	1,710	2,312
		F	7,064	1	1	1	6	12	38	76	207	546	2,037	4,139
N00-N15	Glomerular and renal tubulo-interstitial diseases	M	365	3	2	1	2	5	11	20	28	49	126	118
		F	430	-	1	-	1	4	8	15	30	68	135	168
N17-N19	Renal failure	M	1,417	-	-	2	3	9	7	20	43	154	513	666
		F	1,571	1	-	-	1	-	11	15	56	134	469	884

1 Figures for 2008 are provisional.

2 The figures for individual cause categories exclude deaths at ages under 28 days.

3 Including sequelae of transport accidents.

**Table 2 cont.** Deaths by age, sex and underlying cause, 2008<sup>1</sup> registrations

England and Wales

ICD-10 code	Causes of death <sup>1</sup>	Sex	Age group												
			All ages	Under 1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75-84	85 and over	
N40	Hyperplasia of prostate	M	184	-	-	-	-	-	-	-	-	5	11	63	105
O00-O99	Pregnancy, childbirth and the puerperium	F	44	-	-	-	11	16	15	2	-	-	-	-	-
P00-P96	Certain conditions originating in the perinatal period	M	125	116	6	-	1	1	-	-	-	-	-	-	1
		F	110	97	9	3	1	-	-	-	-	-	-	-	-
Q00-Q99	Congenital malformations, deformations and chromosomal abnormalities	M	555	100	37	23	34	38	53	74	89	49	36	22	
		F	584	103	41	15	27	29	48	60	111	50	64	36	
Q20-Q28	Congenital malformations of the circulatory system	M	210	48	12	6	21	16	29	27	18	18	11	4	
		F	234	46	16	5	11	14	20	24	26	18	34	20	
R00-R99	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	M	2,749	148	12	5	33	72	128	166	173	114	258	1,640	
		F	8,400	88	9	4	11	29	56	76	76	59	564	7,428	
R54	Senility	M	1,737	-	-	-	-	-	-	-	-	2	177	1,558	
		F	7,583	-	-	-	-	-	-	-	-	4	446	7,133	
R95	Sudden infant death syndrome	M	102	97	4	1	-	-	-	-	-	-	-	-	
		F	74	70	3	1	-	-	-	-	-	-	-	-	
R99	Other ill-defined and unspecified causes of mortality	M	767	49	8	4	21	65	119	155	161	102	61	22	
		F	373	17	5	3	9	22	52	68	70	49	66	12	
U509, V01-Y89	External causes of morbidity and mortality	M	11,023	27	51	94	1,313	1,516	1,904	1,511	1,184	879	1,287	1,257	
		F	7,025	19	41	58	336	405	511	578	492	527	1,406	2,652	
V01-X59	Accidents	M	6,754	16	36	77	795	795	875	747	624	579	1,062	1,148	
		F	5,477	11	28	40	211	181	256	290	285	374	1,246	2,555	
V01-V99, Y85	Transport accidents <sup>3</sup>	M	2,021	-	14	42	536	350	328	236	184	131	134	66	
		F	689	1	11	23	145	77	64	77	55	60	109	67	
V01-V89	Land transport accidents involving pedestrians, pedalcyclists, motor cyclists and occupants of motor vehicles	M	1,954	-	14	42	533	343	310	221	173	122	130	66	
		F	672	1	11	23	143	76	63	72	52	57	107	67	
W00-W19	Falls	M	1,680	-	1	5	34	36	78	154	182	241	513	436	
		F	1,779	-	1	1	8	11	19	62	93	159	535	890	
W65-W74	Accidental drowning and submersion	M	161	1	9	5	28	23	26	26	25	7	5	6	
		F	34	-	2	-	-	2	5	4	11	3	7	-	
X00-X09	Exposure to smoke, fire and flames	M	160	-	3	2	3	9	21	22	33	26	23	18	
		F	122	-	3	2	5	7	12	15	16	17	22	23	
X40-X49	Accidental poisoning by and exposure to noxious substances	M	1,034	-	-	5	116	283	319	186	73	23	12	17	
		F	395	-	2	1	28	60	116	84	46	23	20	15	
X41	Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified	M	95	-	-	1	12	16	30	18	13	2	2	1	
		F	73	-	-	-	4	11	21	14	14	5	3	1	
X42	Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified	M	472	-	-	2	51	162	168	72	14	3	-	-	
		F	108	-	1	-	13	18	49	17	3	3	2	2	
X44	Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances	M	251	-	-	-	33	78	74	33	13	6	6	8	
		F	116	-	-	-	9	20	29	26	12	7	9	4	
X59	Accidental exposure to unspecified factor	M	1,117	1	1	2	11	20	28	44	54	89	315	552	
		F	2,098	-	-	1	6	7	8	22	33	79	466	1,476	
X60-X84	Intentional self-harm	M	2,663	-	-	3	238	465	664	511	405	182	136	59	
		F	775	-	-	5	61	121	153	169	114	71	64	17	
X85-Y09	Assault	M	233	4	4	3	55	53	53	31	18	9	3	-	
		F	105	3	8	1	11	24	17	17	5	7	8	4	
Y10-Y34	Event of undetermined intent	M	836	2	4	3	126	143	233	162	75	55	26	7	
		F	336	-	-	6	27	56	59	72	51	30	20	15	
X60-X84, Y10-Y34	Intentional self-harm and event of undetermined intent	M	3,499	2	4	6	364	608	897	673	480	237	162	66	
		F	1,111	-	-	11	88	177	212	241	165	101	84	32	
U509, X85-Y09	Assault; death from injury and poisoning, event awaiting determination of intent	M	535	7	10	10	146	109	117	68	44	17	5	2	
		F	223	8	12	5	35	44	36	30	13	15	18	7	

1 Figures for 2008 are provisional.

2 The figures for individual cause categories exclude deaths at ages under 28 days.

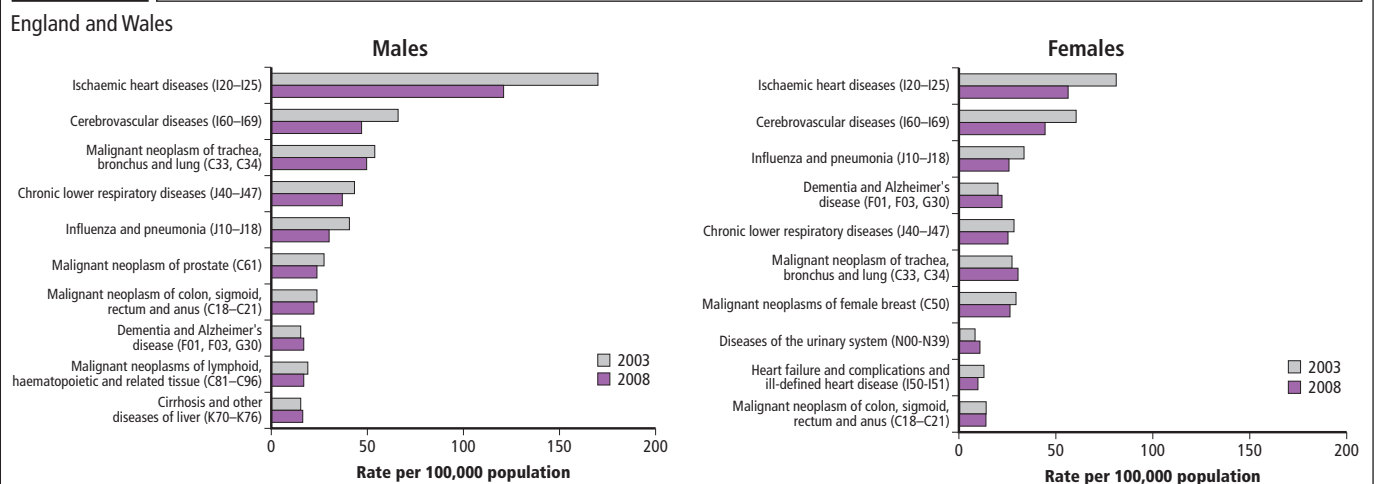
3 Including sequelae of transport accidents.

**Table 3** Leading causes of mortality by sex, 2008<sup>1</sup>

England and Wales				
Rank	Underlying cause of death <sup>2</sup>	Number of deaths	Percentage of all deaths	Age-standardised all age mortality rate per 100,000 population
<b>Males</b>				
<b>Rank</b>				
1	Ischaemic heart diseases (I20–I25)	43,462	17.9	121.2
2	Cerebrovascular diseases (I60–I69)	17,805	7.3	46.8
3	Malignant neoplasm of trachea, bronchus and lung (C33–C34)	17,231	7.1	49.5
4	Chronic lower respiratory diseases (J40–J47)	13,777	5.7	36.8
5	Influenza and pneumonia (J10–J18)	11,545	4.8	30.3
6	Malignant neoplasm of prostate (C61)	9,157	3.8	24.0
7	Malignant neoplasm of colon, sigmoid, rectum and anus (C18–C21)	7,696	3.2	22.0
8	Dementia and Alzheimer's disease (F01, F03, G30)	6,687	2.8	16.7
9	Malignant neoplasms of lymphoid, haematopoietic and related tissue (C81–C96)	5,905	2.4	17.0
10	Cirrhosis and other diseases of liver (K70–K76)	4,726	1.9	16.4
	<b>All deaths</b>	<b>243,014</b>		
<b>Females</b>				
<b>Rank</b>				
1	Ischaemic heart diseases (I20–I25)	33,523	12.6	56.3
2	Cerebrovascular diseases (I60–I69)	28,641	10.8	44.4
3	Influenza and pneumonia (J10–J18)	17,421	6.5	25.7
4	Dementia and Alzheimer's disease (F01, F03, G30)	16,154	6.1	22.2
5	Chronic lower respiratory diseases (J40–J47)	13,125	4.9	25.3
6	Malignant neoplasm of trachea, bronchus and lung (C33–C34)	13,093	4.9	30.7
7	Malignant neoplasms of female breast (C50)	10,716	4.0	26.3
8	Diseases of the urinary system (N00–N39)	6,921	2.6	10.7
9	Heart failure and complications and ill-defined heart disease (I50–I51)	6,877	2.6	10.0
10	Malignant neoplasm of colon, sigmoid, rectum and anus (C18–C21)	6,579	2.5	13.8
	<b>All deaths</b>	<b>266,076</b>		

1 Figures for 2008 are provisional.  
 2 The cause of death groups used here are based on a list developed by the WHO, modified for use in England and Wales. For more information see Reference 9.

**Figure 3** Age-standardised, all age mortality rates for the ten leading causes of death<sup>1</sup> by sex, 2008 and comparison rate for 2003<sup>2</sup>



1 The cause of death groups used here are based on a list provided developed by the WHO, modified for use in England and Wales. For more information see Reference 9.  
 2 Rates for 2008 are provisional.  
 3 For 2003 the mortality rates are given for the top ten causes of death in 2008 as a comparison.

eight female deaths during 2008. Cerebrovascular diseases (strokes) was the second leading cause of death for both sexes and accounted for a higher proportion of female deaths (11 per cent) than males (7 per cent). The difference between the top two causes of death, ischaemic heart and cerebrovascular diseases, was greater among males (a difference of around 26,000 deaths) than females (just over 5,000 deaths). A further five causes of death appear in both the male and female top ten underlying causes but not at the same ranks.

For both sexes, lung cancer (malignant neoplasm of trachea, bronchus and lung) was the most common cancer, appearing third in the underlying cause of death list for males and sixth for females. The list also contained three other cancers for males and two for females, including ones which are sex-specific (prostate cancer and female breast cancer).

In Table 3 and Figure 3, the leading causes are ranked by number of deaths. If causes were ranked by their age-standardised mortality rates instead, the rankings would change. For example, dementia and Alzheimer's disease among females is ranked fourth on number of deaths but would be ranked seventh on mortality rates. This is because the age-standardisation process gives less weight to deaths at older ages (where most of the dementia and Alzheimer's disease deaths occur).

For males, there have been decreases in the majority of mortality rates for the leading underlying causes since 2003. The largest percentage falls in male mortality rates were for cerebrovascular diseases and ischaemic heart diseases which both fell by 29 per cent between 2003 and 2008. There were increases in the male mortality rates over the same period for dementia and Alzheimer's disease and for cirrhosis and other diseases of liver (8.7 and 5.3 per cent respectively).

For females, the all age mortality rates for ischaemic heart diseases and cerebrovascular diseases also showed the largest falls between 2003 and 2008 (31 and 28 per cent respectively). The mortality rates of three of the leading causes increased over the same period. Diseases of the urinary system increased by just over a fifth (22 per cent), dementia and Alzheimer's disease increased by 11 per cent and lung cancer increased by 12 per cent.

## Background notes

1. Registrations and occurrences: the year in which a death is registered may not correspond to the year in which the death occurred. Up to 1992, Office for National Statistics (ONS) publications gave numbers of deaths registered in the data year. Between 1993 and 2005 the majority of ONS's published figures represented the number of deaths that occurred in the data year. For 2006 onwards, ONS changed the reporting of death figures back to deaths registered in a reference year. In most years (and for most causes of death), this change has little effect on annual totals but allows the output of more timely mortality data. For an annual extract of death occurrences to be acceptably complete, it must be taken some months after the end of the data year to allow for any late registrations.
2. Coding underlying cause of death: the cause of death data in this report are based on the **final** underlying cause of death, which takes account of any additional information provided by medical practitioners or coroners after the death has been registered. The **original** underlying cause of death only changes in a very small number of deaths (around 0.2 per cent) in a given year. Since January 2001 cause of death has been coded to the Tenth Revision of the *International Classification of Diseases and Related Health Problems* (ICD-10).<sup>1</sup> This was introduced on the recommendation of the WHO and replaced the Ninth Revision (ICD-9),<sup>2</sup> which had been in use since 1979. ICD-10 represents the largest change in the ICD in over 50 years. The major changes have been described in detail in *Health Statistics Quarterly* 08<sup>3</sup> and 13,<sup>4</sup> and on the ONS website.<sup>5</sup> Cause of

death is assigned by an automated coding system with the exception of deaths due to external causes (ICD-10 codes V01–Y89). These are coded clerically using information from coroners' certificates (including inquest verdicts) to produce consistent figures on suicides, homicides and other deaths not from natural causes.

3. Comparability ratios: in order to help quantify the changes arising as a result of the change to ICD-10, ONS carried out a bridge coding study.<sup>6</sup> All deaths registered in 1999 were independently coded to both ICD-9 and ICD-10 and the causes in each revision were compared using internationally agreed groups of equivalent codes. Comparability ratios were produced for selected causes of death, including each ICD cause chapter, to indicate the net effect of the change in classification on a particular cause. The ratios were calculated by dividing the number of deaths coded to a particular cause in ICD-10 by the number coded to that cause in ICD-9. These ratios can then be applied to England and Wales data (from 1993 onwards) coded to ICD-9 in order to examine trends over time. For a particular cause, the number of deaths coded to the equivalent cause in ICD-9 is multiplied by the comparability ratio in order to give an 'expected' number of deaths that would have been coded to this cause in ICD-10. The ratios can also be applied directly to rates, to give an 'expected' rate.
4. Population estimates: in this report, the population figures used to calculate mortality rates for 2008 are the 2006-based population projections for 2008. These are available on the ONS website.<sup>7</sup> The population figures used to calculate mortality rates for 2007 and earlier years are ONS mid-year population estimates. Population estimates for mid-2007 were published on 21 August 2008. Population estimates for 2006 were published on 22 August 2007 alongside revised population estimates for 2002 to 2005. Revised estimates for mid-2001 were published on 9 September 2004, and revised estimates for 1992 to 2000 were published on 7 October 2004. These population estimates were the most up-to-date at the time of publication of this report. All these estimates incorporate the findings of the Local Authority Population Studies, the results of which were published in July 2004. Further information on population estimates and their methodology can be found on the ONS website.<sup>8</sup>
5. Leading causes of death in England and Wales: the cause of death groups used here are based on a list developed by the WHO which categorises causes using ICD-10 groups specifically designed for determining the leading causes of death. The list has been modified for use in England and Wales and further information on the rationale behind ranking leading causes of death and how causes are grouped can be found in an article published on this subject in *Health Statistics Quarterly* 28.<sup>9</sup>

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[www.statistics.gov.uk/statbase/Product.asp?vlnk=6725](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=6725)

## Contact points

### ONS Customer Contact Centre

Tel: 0845 601 3034

Email: [info@statistics.gsi.gov.uk](mailto:info@statistics.gsi.gov.uk)

### ONS Health Statistics Quarterly

Tel: 020 7014 2389

Email: [hsq@ons.gsi.gov.uk](mailto:hsq@ons.gsi.gov.uk)

### ONS Population Trends

Tel: 01329 444683

Email: [population.trends@ons.gsi.gov.uk](mailto:population.trends@ons.gsi.gov.uk)

### ONS media enquiries

Tel: 0845 604 1858

Email [press.office@ons.gsi.gov.uk](mailto:press.office@ons.gsi.gov.uk)

### Department of Health Customer Service Centre

Tel: 020 7210 4850

Email: [dhmail@dh.gsi.gov.uk](mailto:dhmail@dh.gsi.gov.uk)

### National Health Service Information Centre

Tel: 0845 300 6016

Email: [enquiries@ic.nhs.uk](mailto:enquiries@ic.nhs.uk)

### Department of Health, Social Services and Public Safety Northern Ireland

Tel: 028 9052 2804

Email: [statistics@dhsspsni.gov.uk](mailto:statistics@dhsspsni.gov.uk)

### Information Services Division, NHS National Services Scotland

Tel: 0131 275 7777

Email: [csd@isd.csa.scot.nhs.uk](mailto:csd@isd.csa.scot.nhs.uk)

## For statistical information on England and Wales

### Abortions

(Department of Health)

Tel: 020 7972 5537

Email: [abortion.statistics@dh.gsi.gov.uk](mailto:abortion.statistics@dh.gsi.gov.uk)

### Births

Tel: 01329 444110

Email: [vsob@ons.gsi.gov.uk](mailto:vsob@ons.gsi.gov.uk)

### Cancer registrations

Tel: 01329 444110

Email: [vsob@ons.gsi.gov.uk](mailto:vsob@ons.gsi.gov.uk)

### Clostridium difficile

Tel: 01633 455654

Email: [mortality@ons.gsi.gov.uk](mailto:mortality@ons.gsi.gov.uk)

### Conceptions

Tel: 01329 444110

Email: [vsob@ons.gsi.gov.uk](mailto:vsob@ons.gsi.gov.uk)

### Congenital anomalies

Tel: 01329 444110

Email: [vsob@ons.gsi.gov.uk](mailto:vsob@ons.gsi.gov.uk)

### Death registrations

see Mortality

### Divorces

Tel: 01329 444110

Email: [vsob@ons.gsi.gov.uk](mailto:vsob@ons.gsi.gov.uk)

### Health expectancy

Tel: 01633 455925

Email: [hle@ons.gsi.gov.uk](mailto:hle@ons.gsi.gov.uk)

### Health inequalities

Tel: 01633 455243

Email: [healthineq@ons.gsi.gov.uk](mailto:healthineq@ons.gsi.gov.uk)

### Life expectancy

Tel: 01633 455867

Email: [healthgeog@ons.gsi.gov.uk](mailto:healthgeog@ons.gsi.gov.uk)

### Mortality

Tel: 01329 444110

Email: [vsob@ons.gsi.gov.uk](mailto:vsob@ons.gsi.gov.uk)

### MRSA

Tel: 01633 455654

Email: [mortality@ons.gsi.gov.uk](mailto:mortality@ons.gsi.gov.uk)

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2006-based marital status and cohabitation projections for England and Wales

Marriages and divorces during 2006 and adoptions in 2007; England and Wales

Individual articles are available from the ONS data and publications website at: [www.statistics.gov.uk/cci/articlesearch.asp](http://www.statistics.gov.uk/cci/articlesearch.asp)

Complete back editions of *Health Statistics Quarterly* and *Population Trends* are available at:

Health Statistics Quarterly: [www.statistics.gov.uk/statbase/Product.asp?vlnk=6725](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=6725)

Population Trends: [www.statistics.gov.uk/statbase/Product.asp?vlnk=6303](http://www.statistics.gov.uk/statbase/Product.asp?vlnk=6303)