Office for National Statistics

Statistical Bulletin

Death registrations by cause in England and Wales, 2009

Date: 26 October 2010
Coverage: England and Wales **Theme:** Population

This bulletin presents the number of deaths registered in England and Wales in 2009 by age, sex and selected underlying cause. In addition, causes of death have been ranked to provide a summary of leading underlying causes of death for both males and females.

Key findings

- There were 491,348 deaths registered in England and Wales in 2009 compared with 509,090 in 2008, a fall of 3.5 per cent
- The 2009 age-standardised mortality rates for both males and females were the lowest ever recorded in England and Wales at 6,573 deaths per million population for males and 4,628 deaths per million for females
- The infant mortality rate (deaths under 1 year of age) was 4.7 deaths per 1,000 live births in 2009 compared with 4.8 in 2008. The infant mortality rate in 2009 (based on registrations) is the lowest ever recorded in England and Wales
- Among males and females the highest age-standardised mortality rate was for circulatory diseases (2,078 deaths per million population for males and 1,312 deaths per million population for females)
- The female age-standardised mortality rate for circulatory disease fell by 40 per cent between 1999 and 2009 to 1,312 deaths per million population

Deaths by sex and age

There were 491,348 deaths registered in England and Wales in 2009 compared with 509,090 in 2008, a fall of 3.5 per cent. The total number of deaths in 2009 comprised 238,062 male and 253,286 female deaths. This compares with 243,014 male and 266,076 female deaths registered in 2008.

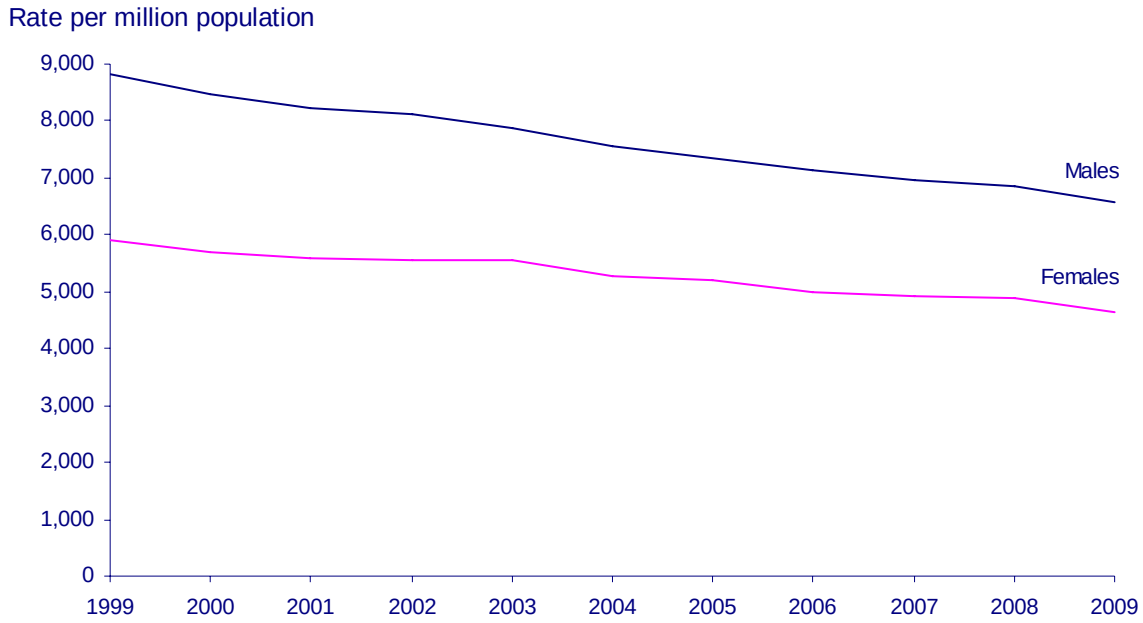
The infant mortality rate in 2009 (based on registrations) is the lowest ever recorded in England and Wales. In 2009, there were 3,312 infant deaths (under 1 year of age) registered giving a rate of 4.7 deaths per 1,000 live births compared with 4.8 in 2008.

The age-standardised mortality rates in 2009 were also the lowest ever recorded in England and Wales at 6,573 deaths per million population for males and 4,628 deaths per million for females.

This compares with age-standardised rates of 6,852 deaths per million for males and 4,897 deaths per million for females in 2008. These age-standardised rates are for all causes and cover all ages. Between 1999 and 2009, the age-standardised rate for males fell by 26 per cent (from 8,825 deaths per million), while for females it decreased by 22 per cent (from 5,904 deaths per million).

Among the older ages, where most deaths occur, the largest percentage decrease in age-specific rates between 1999 and 2009 was in the 70–74 age group (34 per cent for males and 31 per cent for females). 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.

Age-standardised mortality rate[1], all ages, all causes, by sex, 1999–2009
England and Wales



1 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.

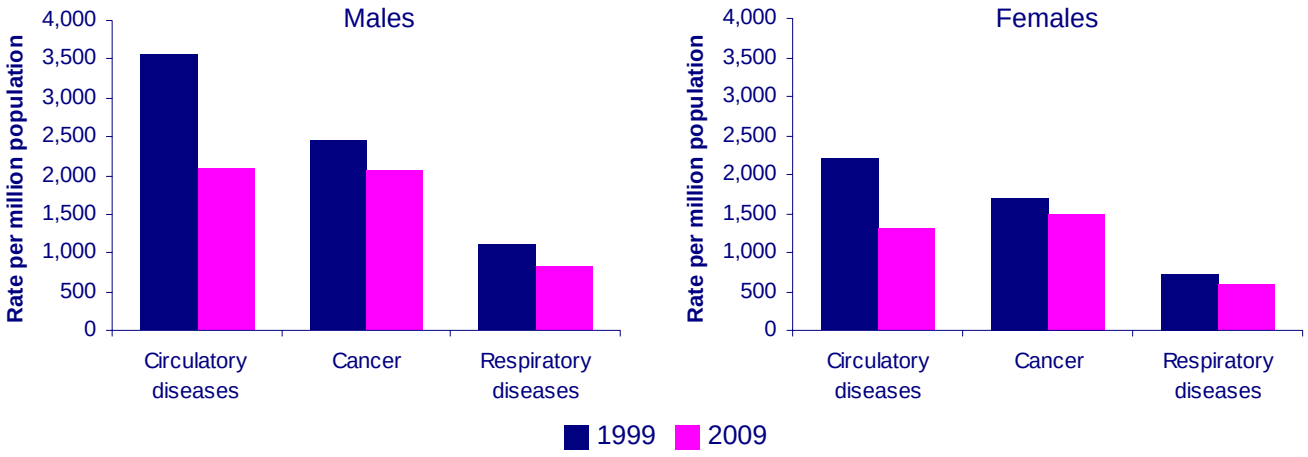
Source: Office for National Statistics

Deaths by underlying cause

Circulatory diseases, cancers (neoplasms) and respiratory diseases were the broad disease groups (chapters) of the International Classification of Diseases, Tenth Revision (ICD–10) with the largest numbers of deaths in 2009. 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 29 per cent and 14 per cent of all deaths respectively.

The chart below shows the all age mortality rates for these three cause of death groups in 1999 and 2009. Throughout the period 1999 to 2009, the highest death rate among males was for circulatory diseases, despite a fall of 42 per cent in the rate, to 2,078 deaths per million population. The female death rate for circulatory disease also fell over the same period by 40 per cent to 1,312 deaths per million population. The fall in age-standardised mortality rates for cancer has been more gradual, with death rates 15 per cent lower for males and 13 per cent lower for females in 2009 than in 1999.

Age-standardised, all age mortality rates[1], for three categories[2] of cause of death, by sex in England and Wales, 1999 and 2009



1 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.

2 These categories correspond to the three chapters of ICD–10 with the largest number of deaths in England and Wales.

Note: The Tenth Revision of the International Classification of Diseases and Related Health Problems (ICD–10) came into operation in 2001. Comparability ratios have been applied to data for 1999. See the Background notes.

Source: Office for National Statistics

The rate for respiratory diseases in males decreased by 26 per cent over the same period, while the rate for females was 20 per cent lower in 2009 than in 1999. 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 1999 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 the table and chart below show the 10 leading underlying causes of death in 2009 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. The chart also shows how mortality rates for the leading causes of death in 2009 have changed since 2004.

The leading cause of death for both sexes was ischaemic heart diseases, which accounted for approximately one in six male deaths and one in eight female deaths during 2009.

Lung cancer (malignant neoplasm of the trachea, bronchus and lung) was the second leading cause of death for males and accounted for over seven per cent of all male deaths in 2009.

Cerebrovascular diseases (strokes) was the second leading cause of death for females and accounted for over 10 per cent of all female deaths in 2009.

The difference between the top two causes of death, ischaemic heart diseases and lung cancer for males and ischaemic heart and cerebrovascular diseases for females, was greater among males (a difference of over 24,000 deaths) than females (just over 4,000 deaths).

For both sexes, lung cancer (malignant neoplasm of trachea, bronchus and lung) was the most common cancer, appearing second in the underlying cause of death list for males and fifth 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 the table and chart below 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 third 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).

Leading causes of mortality by sex in England and Wales, 2009

Rank	Underlying cause of death[1]	Number of deaths	Percentage of all deaths	Age-standardised all age mortality rate per 100,000 population
Males				
1	Ischaemic heart diseases (I20-I25)	41,455	17.4	113.0
2	Malignant neoplasm of trachea, bronchus and lung (C33, C34)	17,053	7.2	48.0
3	Cerebrovascular diseases (I60-I69)	16,888	7.1	43.2
4	Chronic lower respiratory diseases (J40-J47)	13,165	5.5	34.2
5	Influenza and Pneumonia (J10-J18)	11,108	4.7	28.4
6	Malignant neoplasm of prostate (C61)	9,402	3.9	23.9
7	Malignant neoplasm of colon, sigmoid, rectum and anus (C18-C21)	7,559	3.2	21.0
8	Dementia and Alzheimer's disease (F01, F03, G30)	6,709	2.8	16.2
9	Malignant neoplasms of lymphoid, haematopoietic and related tissue (C81-C96)	5,922	2.5	16.6
10	Diseases of the liver (K70-K76)	4,604	1.9	15.7
	All male deaths	**238,062**		
Females				
1	Ischaemic heart diseases (I20-I25)	30,725	12.1	50.4
2	Cerebrovascular diseases (I60-I69)	26,707	10.5	40.7
3	Dementia and Alzheimer's disease (F01, F03, G30)	15,909	6.3	21.5
4	Influenza and Pneumonia (J10-J18)	15,711	6.2	22.9
5	Malignant neoplasm of trachea, bronchus and lung (C33, C34)	12,965	5.1	29.8
6	Chronic lower respiratory diseases (J40-J47)	12,254	4.8	23.0
7	Malignant neoplasms of female breast (C50)	10,374	4.1	25.4
8	Diseases of the urinary system (N00-N39)	6,987	2.8	10.4
9	Heart failure and complications and ill-defined heart disease (I50-I51)	6,536	2.6	9.3
10	Malignant neoplasm of colon, sigmoid, rectum and anus (C18-C21)	6,375	2.5	13.1
	All female deaths	**253,286**		

1 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 8.

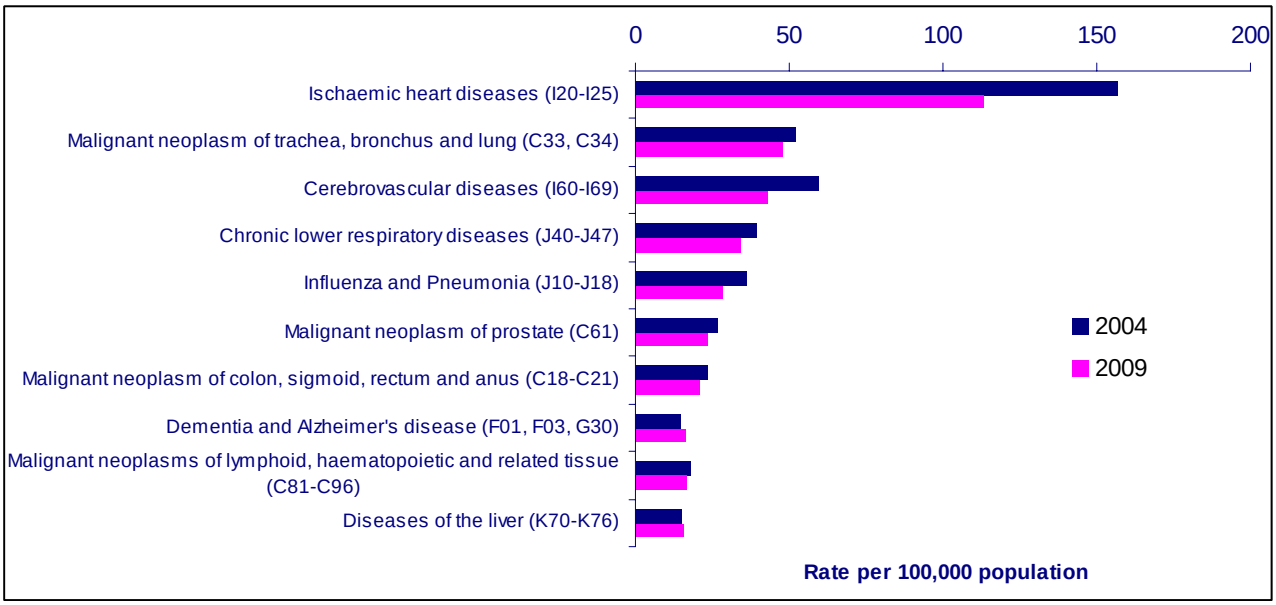
Source: Office for National Statistics

For males, there have been decreases in the majority of mortality rates for the leading underlying causes since 2004. The largest percentage falls in male mortality rates were for cerebrovascular diseases and ischaemic heart diseases which both fell by 28 per cent between 2004 and 2009. There were increases in the male mortality rates over the same period for dementia and Alzheimer's disease and for diseases of the liver (11 and 3.3 per cent respectively).

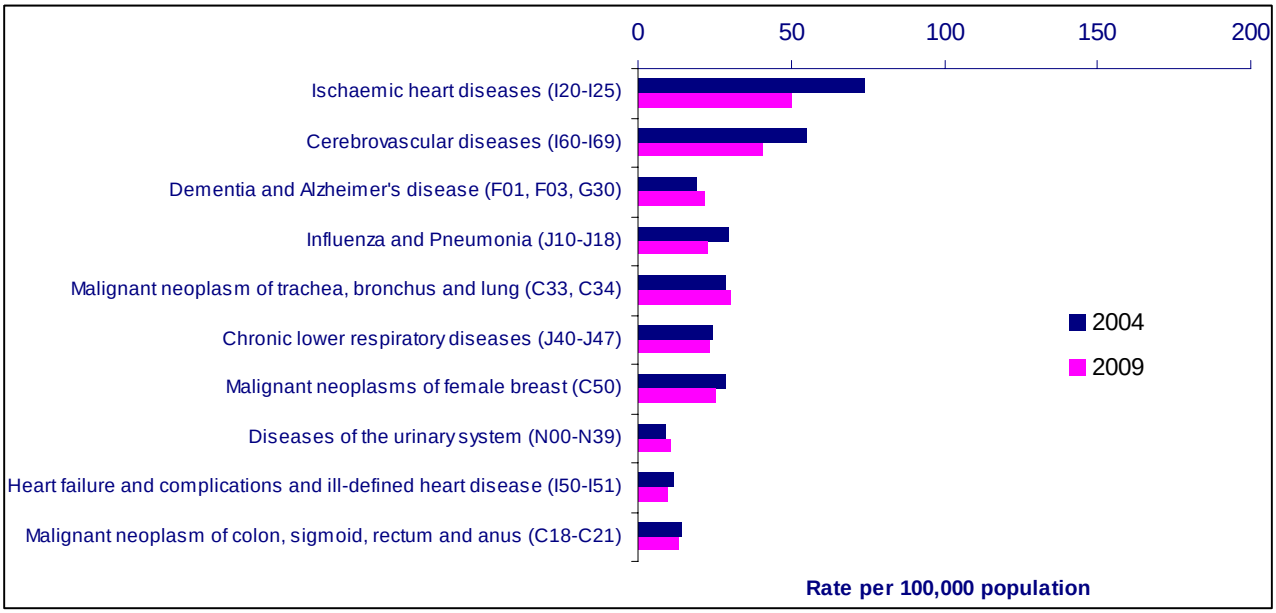
For females, the all age mortality rates for ischaemic heart diseases and cerebrovascular diseases also showed the largest falls between 2004 and 2009 (32 and 26 per cent respectively). The mortality rates of three of the leading causes increased over the same period. Diseases of the urinary system increased by 15 per cent, dementia and Alzheimer's disease increased by 14 per cent and lung cancer increased by 4.9 per cent.

Age-standardised, all age mortality rates for the 10 leading causes of death[1] by sex in England and Wales, 2009 and comparison rates for 2004[2]

Males:



Females:



1 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 8.

2 For 2004 the mortality rates are given for the top ten causes of death in 2009 as a comparison.

Source: Office for National Statistics

Further information

This bulletin accompanies tables published in the annual reference volume Mortality statistics, deaths registered in 2009 (DR 09) which is available at: www.statistics.gov.uk/statbase/Product.asp?vlnk=15096

Deaths registered in England and Wales in 2009 by area of usual residence, will be published in February/March 2011. This release will present mortality data by area of usual residence and includes mortality rates and death registrations by age and sex, and cause of death.

References

1. World Health Organisation (1992–94) *International Statistical Classification of Diseases and Related Health Problems,* Tenth Revision, Volumes 1, 2 and 3, World Health Organisation: Geneva.
2. World Health Organisation (1977–78) *International Statistical Classification of Diseases, Injuries and Causes of Death,* Ninth Revision, Volumes 1 and 2, World Health Organisation: Geneva.
3. Rooney C and Smith S (2000) 'Implementation of ICD–10 for mortality in England and Wales from January 2000', *Health Statistics Quarterly* 08, 40–50. Available on the Office for National Statistics website at: www.statistics.gov.uk/statbase/Product.asp?vlnk=6725
4. Rooney C, Griffiths C and Cook L (2002) 'The implementation of ICD–10 for cause of death coding – some preliminary results from the bridge coding study', *Health Statistics Quarterly* 13, 31–41. Available on the Office for National Statistics website at: www.statistics.gov.uk/statbase/Product.asp?vlnk=6725
5. Office for National Statistics, International classification of diseases- Tenth Revision ICD–10 for mortality. Available on the Office for National Statistics website at: www.ons.gov.uk/about-statistics/classifications/international/icd-10
6. Office for National Statistics (2002) 'Report: Results of the ICD–10 bridge coding study, England and Wales, 1999', *Health Statistics Quarterly* 14, 75–83. Available on the Office for National Statistics website at: www.statistics.gov.uk/statbase/Product.asp?vlnk=6725
7. Office for National Statistics Population estimates. Available on the Office for National Statistics website at: www.statistics.gov.uk/statbase/Product.asp?vlnk=601
8. Griffiths C, Rooney C and Brock A (2005) 'Leading causes of death in England and Wales – how should we group causes?', *Health Statistics Quarterly* 28, 6–17. Available on the Office for National Statistics website at: www.statistics.gov.uk/statbase/Product.asp?vlnk=6725

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. Following guidance from the World Health Organisation (WHO), the ICD-10 code J09 'Influenza due to identified avian influenza virus' has been used to record H1N1 swine influenza. For ease of use J09 has been renamed to 'Influenza due to identified avian or swine influenza virus' in the tables. There was one death due to avian flu in 2009. The number of deaths shown under J09 differs from the figures reported by the Chief Medical Officer (CMO). The CMO reported deaths as related to pandemic A/H1N1 using information from either the death certificate or from laboratory testing or both.
3. Coding underlying cause of death: the cause of death data 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).[1] This was introduced on the recommendation of the WHO and replaced the Ninth Revision (ICD–9),[2] 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[3] and 13,[4] and on the ONS website.[5] Cause of death is assigned by an automated coding system with the exception of deaths due to external causes (ICD–10 codes U50–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.
4. 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.[6] 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.

5. Population estimates: the population figures used to calculate all mortality rates are ONS mid-year population estimates. Population estimates for mid-2009 were published on 24 June 2010. Revised population estimates for 2002 to 2008 were published on 13 May 2010. 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. 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.[7]
6. Leading causes of death in England and Wales: the cause of death groups used here are based on a list developed by the World Health Organisation 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.[8]
7. Details of the policy governing the release of new data are available from the Media Relations Office.
8. National Statistics are produced to high professional standards set out in the Code of Practice for Official Statistics. They undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political interference.

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

Media contact:

Tel **Media Relations Office 0845 6041858**
Emergency on-call 07867 906553
E-mail **press.office@ons.gsi.gov.uk**

Statistical contact:

Tel **Elizabeth McLaren 01329 444553**
E-mail **elizabeth.mclaren@ons.gsi.gov.uk**

Website:

www.ons.gov.uk