

# Information paper

## Quality and Methodology Information

### General details

Title of output:	Mortality Statistics in England and Wales
Designation:	National Statistics
Geographic Coverage:	England and Wales
Date of last SQR or QMI*:	16 July 2014
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### Executive summary

The Births and Deaths Registration Act (1836) made it a legal requirement for all deaths to be registered from 1 July 1837. Mortality statistics for England and Wales are based on the information collected when a death occurs and is then registered. Published figures represent the number of deaths registered in a reference period (week, month, calendar year).

To meet user needs, very timely, but provisional, counts of death registrations are published as follows:

- [Provisional counts of weekly death registrations](#) by age-sex group and region for England and Wales (published 11 days after the week ends)
- [Provisional counts of monthly death registrations](#) by local authorities in England and Wales (published on the fourth Tuesday of the following month)

Provisional figures have not been subject to the full quality assurance process. Figures remain provisional until they are updated following the publication of final annual statistics.

Annual mortality statistics (based on deaths registered in a calendar year) are published in 3 separate packages to enable the timely release of statistics:

The [first release](#) (Death registration summary tables) provides the main death registration statistics for the reference year including:

- numbers and rates by age group and sex (with 1 and 10 year comparisons available)
- numbers by selected underlying cause and age group and sex
- numbers and standardised mortality ratios (SMRs) by area of usual residence (local authorities for England and Wales and local health boards for Wales)
- numbers and rates for infant deaths (under 1 year), neonatal deaths (under 28 days) and perinatal deaths (under 7 days plus stillbirths)
- numbers of deaths by single year of age and sex for England and Wales (1963 onwards) and the UK (1974 onwards). Prior to the 2012 data year, these figures were published in [Death registrations by single year of age](#) (this publication has now been discontinued)

[Series DR](#) provides detailed death registration statistics for the reference year including:

- numbers by age group, sex and detailed underlying cause (4 digit) classified using the [Tenth Revision of the International Classification of Diseases and Related Health Problems \(ICD-10\)](#)
- numbers by age group and sex, marital status and place of occurrence (for example, at home or in hospital)

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\* Quality and Methodology Information (QMI) replaced 'Summary Quality Reports (SQR)' from 04/11

- numbers of injury and poisoning deaths by external cause (the most recent 4 years of data are provided to enable comparisons)
- age-standardised rates by selected underlying cause
- years of life lost due to mortality from certain underlying causes

[Mortality statistics: area of usual residence](#) provides detailed death registration statistics by area of usual residence (down to local authority level) for the reference year including:

- numbers by age group and sex
- numbers and rates for all deaths (male and female), infant deaths, neonatal deaths and perinatal deaths. This table provides figures for all areas within the United Kingdom
- age-standardised mortality rates
- an [interactive mapping tool](#) which allows users to analyse trends in mortality at the local area level, from 2001 onwards. The tool presents age-standardised mortality rates (ASMRs), so adjusts for differences in the age structure of the population to enable comparisons over time and between areas)

These annual mortality statistics generally cover England and Wales. The Annual Time Series Data table in the [Vital statistics: population and health reference tables](#) provides a range of mortality statistics for the UK and its constituent countries, with some measures available back to 1838.

ONS also publish more detailed mortality statistics in the following releases:

- [20th Century mortality files](#)
- [21st Century mortality files](#)
- [Child mortality statistics](#)
- [Deaths involving Clostridium difficile](#) (Wales only from 2013 data year)
- [Deaths involving MRSA](#) (Wales only from 2013 data year)
- [Deaths related to drug poisoning](#)
- [Alcohol-related deaths in the UK](#)
- [Suicides in the UK](#)
- [Excess winter mortality](#)

These releases are covered by separate [Quality and Methodology Information \(QMI\)](#) reports.

This document contains the following sections:

- Output quality
- About the output
- How the output is created
- Validation and quality assurance
- Concepts and definitions
- Other information, relating to quality trade-offs and user needs
- Sources for further information or advice

## Output quality

This document provides a range of information that describes the quality of the data and details any points that should be noted when using the output.

ONS has developed [Guidelines for Measuring Statistical Quality](#); these are based upon the 5 European Statistical System (ESS) Quality Dimensions. This document addresses these quality dimensions and other important quality characteristics, which are:

- Relevance
- Timeliness and punctuality
- Coherence and comparability
- Accuracy
- Output quality trade-offs
- Assessment of user needs and perceptions
- Accessibility and clarity

More information is provided about these quality dimensions in the sections below.

## About the output

### Relevance

(The degree to which statistical outputs meet users' needs.)

Mortality statistics represent deaths registered in England and Wales in a given reference period (week, month, calendar year). ONS quality assures mortality data for England and Wales and also coordinates and publishes statistics for the whole of the UK alongside statistics for each constituent country. The statistics go through stringent quality checks prior to publication. Once published, they are freely available on our website.

All deaths that occur in England and Wales must be registered in England and Wales. Deaths of those whose usual residence is outside England and Wales are included in total figures for England and Wales but are excluded from any sub-division of England and Wales. ONS mortality statistics exclude deaths of all residents of England and Wales that occur and are registered outside England and Wales.

ONS uses mortality statistics to:

- produce population estimates and population projections both, national and subnational
- produce life expectancy estimates
- quality assure census estimates
- report on social and demographic trends
- conduct health analysis
- further analyse mortality, for example, life expectancies and causes of death (including deaths from certain infections and drug-related deaths)
- further analyse infant mortality where infant deaths are linked to their corresponding birth record to enable more detailed analyses on characteristics, such as age of parents, birthweight and whether the child was born as part of a multiple birth

The Department of Health is a key user of mortality statistics. Data are used, for example, to inform policy decisions and monitor child mortality. The [Public Health Outcomes Framework](#) sets out the desired outcomes for public health and how these will be measured. This includes indicators related to births and deaths. Similar indicators are also included within the [NHS Outcomes Framework](#).

Other key users of the data are local authorities and other government departments for planning and resource allocation. The Department for Work and Pensions uses detailed mortality statistics to feed into statistical models for calculating pensions and benefits. Health organisations also use the data.

Users also include other public sector organisations such as the Police and the Home Office, who are interested in data on external causes of death. Private sector organisations such as banks, insurance and investment companies are particularly interested in deaths by single year of age and region, which feeds into risk estimation models.

Other users include academics, demographers and health researchers who conduct research into trends and characteristics. Lobby groups use mortality statistics to support their cause, for example, alcohol misuse or suicide. Organisations such as Eurostat and the UN use mortality statistics for making international comparisons. The media also report on trends and statistics.

Public Health England (PHE) use the weekly death figures for influenza surveillance and for monitoring the impact of cold weather and heat waves. Monthly death figures assist local authorities in public health monitoring and civil contingency planning. Funeral directors also use these figures to monitor their market share.

The [Disclosure control policy for births and death statistics](#) provides guidance for the release and publication of tables based on ONS death registration data for England and Wales.

### Timeliness and punctuality

(Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the gap between planned and actual publication dates.)

To meet user needs, very timely but provisional counts of death registrations are published:

- [Provisional counts of weekly death registrations](#) by age group, sex and region for England and Wales are published 11 days after the week ends. Weeks run from Saturday to Friday, so figures are normally published the following Tuesday. The respiratory disease counts are

updated with each weekly publication as the coding of the underlying cause is not always complete at the time of production. Other figures are not updated. Figures for the latest week are published with the 7 previous weeks

- [Provisional counts of monthly death registrations](#) by local authorities in England and Wales are published on the fourth Tuesday of the following month

The [first release](#) provides main annual summary statistics and is usually published in July, 6 months after the end of the data year. This time lag is necessary to ensure full quality assurance has been conducted on the annual dataset prior to publication. Mid-year population estimates for the reference year are also required to calculate mortality rates and these are not usually published until June.

Selected tables from the [first release](#) cannot be published until they have been laid before Parliament, pursuant to Section 19 of the Registration Services Act 1953 as amended by the Statistics and Registration Service Act 2007. The Journal Office responsible for this does not open until 9:30am. Consequently, figures are not published by ONS until 11am, following confirmation that statistics have been laid.

Following the first release, more detailed annual statistics are published between August and June in a series of topic-specific releases (cause of death, deaths by area of usual residence, winter mortality, avoidable mortality and suicides).

For more details on related releases, the [GOV.UK release calendar](#) is available online and provides 12 months' advance notice of release dates. In the unlikely event of a change to the pre-announced release schedule, public attention will be drawn to the change and the reasons for the change will be explained fully at the same time, as set out in the [Code of Practice for Official Statistics](#).

## How the output is created

Mortality statistics are based on the details collected when deaths are certified and registered. The registration of deaths occurring in England and Wales is carried out by the Local Registration Service in partnership with the General Register Office (GRO). Information collected at death registration in England and Wales is recorded on the Registration Online (RON) system by registrars. Most of the information is normally supplied by the informant (usually a close relative of the deceased), while the cause of death is usually obtained from the Medical Certificate of Cause of Death (MCCD), completed by a medical practitioner when the death is certified.

Deaths in the UK should be registered within 5 days of the date of death, with the exception of Scotland where deaths should be registered within 8 days. There are, however, a number of situations when the registration of a death will be delayed; for example, if the death is referred to a coroner.

When data are entered into RON, there are validation checks to help ensure the details entered are correct. The registrar will also ask the informant to check that the information entered is correct, before the registration is submitted. Diagnostic tests are then performed by ONS and any issues identified are resolved through contact with individual registrars.

Once on the ONS database, data are passed through a series of automatic validation processes which highlight any inconsistencies. For the majority of deaths the underlying cause is coded automatically, while the remainder are coded manually by experienced coders. The accuracy of the coding is checked routinely.

Once coding of the cause of death is complete, checks are carried out on variables such as date of death, sex, year of birth, marital status and communal establishments. These checks evolve continuously during exploratory surveillance of data quality, and some of these are later incorporated as routine checks.

Cause coding of deaths certified after inquest is performed manually since the automatic coding software cannot readily handle the free text format used by coroners when describing the circumstances of the death.

Completeness checks are conducted to ensure all death registrations have been received. Further checks are also carried out before the annual mortality dataset is finalised. These consist of cross tabulations of several variables in combination, for example, to check underlying cause of death is

compatible with sex, and cause fields are compatible with inquest verdicts. The validity of certain causes is also explored for very young age groups, for example, suicides. Comparisons are also made against figures for previous years to check validity and plausibility.

Information on how the statistics are compiled is included in each release. The [Mortality Metadata](#) provides more detailed contextual information about the statistics, including information on data quality, legislation and changes which have impacted the statistics.

Rates for “all causes” include deaths at all ages, while rates by cause of death for 1986 to 2013 exclude neonatal deaths (infants aged under 28 days). This is because the cause of death for neonates was recorded differently by ONS from 1986 onwards, following recommendations made by the World Health Organisation (WHO) in the International Classification of Diseases (ICD tenth revision). These changes meant that it was no longer possible to assign an underlying cause for deaths under 28 days. The calculation method for each of these rates and the recording of cause information for neonatal deaths is documented in the [Mortality Metadata](#).

In January 2014, software from the IRIS Institute was implemented by ONS to automatically code the underlying cause of death. Further information on IRIS can be found on the [ONS website](#) and in the [dual coding study](#) looking at the impact on mortality statistics.

The registration of deaths in Scotland is the responsibility of the [National Records of Scotland \(NRS\)](#). In Northern Ireland it is the responsibility of the General Register Office for Northern Ireland (NISRA). [NRS](#) and [NISRA](#) quality assure and produce regular mortality statistics for their own countries.

Mortality statistics are produced based on the deaths registered in a particular reference period, rather than deaths occurring in a particular period. This allows for more timely publication of complete statistics but means that annual figures include some deaths that occurred in years prior to the reference year (approximately 4.5%). Legislation in England and Wales means that when a coroner’s inquest takes place, the death cannot be registered until the inquest is complete. Since ONS has no information about the death until it is registered, there can be a delay between the date the death occurred and when the death is added to the ONS mortality database. The only exception is when a coroner adjourns the inquest and carries out an “accelerated registration”, while awaiting the outcome of criminal proceedings. More information of the impact of registration delays each year by specific causes is included in the appropriate statistical bulletin.

Although mortality statistics based on registrations are not entirely comparable to those based on occurrences, the differences are relatively small, since in most cases deaths occur and are registered in the same calendar year. For example, the number of death registrations in 2013 involving deaths occurring in 2013 was 482,658 while the number of 2013 death occurrences was 502,670 (a difference of 4.1%). There will always be a number of late death registrations for previous years that will be included in the annual extract of death registrations.

Statistics based on death registrations provide a timely indication of mortality trends, as statistics based on deaths occurring in a year are not available until later. The death occurrences dataset is taken some 9 months after the end of the relevant calendar period so it is acceptably complete. However, there will still be a very small number of very late death registrations which will not be included in the annual extract of death occurrences.

Although the majority of mortality publications are based on registrations, ONS continue to take an annual extract of death occurrences in the autumn following the data year, for seasonal analysis of mortality data and several infant mortality outputs. The long history of infant mortality statistics as a key indicator of the health of the nation is based on occurrence data (as defined by WHO).

## **Validation and quality assurance**

### **Accuracy**

(The degree of closeness between an estimate and the true value.)

### **Data collection**

Before submitting a death registration through the RON system, the registrar will verify that all the information provided has been entered accurately. There are some automatic validation checks within RON to help the registrar with this process. Information supplied by the informant is generally believed to be correct since knowingly supplying false information may render the informant liable to prosecution for perjury. For deaths certified after inquest, police officers or other witnesses may

supply information which cannot be checked by the registrar. However the coroner, to the best of their ability checks this information is correct. Some can be verified later with other NHS records but for other pieces of information no verification is possible.

For around three-quarters of deaths, a doctor involved in the care of a person during their last 2 weeks of life completes a medical certificate of cause of death (MCCD). In this instance, the cause of death is taken from the MCCD, which is given to the registrar by the informant when the death is being registered. Many thousands of practising doctors complete MCCDs and the nature and amount of training they have had in death certification varies greatly. "Issuing death certificates" is included as a competency that newly-qualified doctors should be able to demonstrate during their training. Doctors are required to keep their knowledge and skills up to date, but keeping abreast of constant changes in clinical knowledge, practice and guidelines is normally a higher priority.

Around 4 out of every 10 deaths need to be referred to the coroner. These include deaths where the cause is unknown, the deceased was not seen by the certifying doctor either after death or within the 14 days before the death; or the death was violent, unnatural or suspicious. Coroners have a number of possible courses of action once a death has been referred. If they are satisfied that the death was due to natural causes and the cause is correctly certified, the local registrar will be notified and they will register the death using the MCCD. In the small number of cases where no MCCD is available, the death will be registered as uncertified and the cause will be taken from the form completed by the coroner. Alternatively, coroners will certify the cause of death following a post-mortem by a pathologist, an inquest or both. In these cases the coroner sends information to the registrar and this is used instead of the MCCD. In cases where additional information is provided on Part B of the coroner's certificate, the form is forwarded to ONS by the registrar.

Training for coroners is organised through the Ministry of Justice. The process of referral to a coroner and how referred deaths are dealt with varies between coroners' areas. A consultation on a charter for the [coroner service](#) which aimed to "ensure a greater level of consistency across the country" took place in 2011.

Annually, there are around 30,000 coroner's inquests held in England and Wales that conclude with a verdict. The majority of all verdict conclusions are "Short-form" verdicts such as accident or misadventure, natural causes, suicide or homicide. "Narrative" verdicts can be used by a coroner or jury instead of a short-form verdict to express their conclusions as to the cause of death following an inquest.

In cases of deaths from injury and poisoning, some narrative verdicts clearly state the intent and mechanism. However, in a proportion of injury and poisoning deaths where a narrative verdict has been returned, ONS has no indication from the information provided by the coroner of whether the fatal injury or toxic substance was self-administered or if there was deliberate intent to self-harm. These deaths are defined by ONS as "hard to code". The rules of coding cause of death dictate that, where no indication of intent has been given by the certifier, deaths from injury or poisoning must be coded as accidents. Consequently, the net effect of the increase in narrative verdicts could potentially be to inflate the number of deaths classified as accidents and decrease the number classified as intentional self-harm.

Analysis has shown that existing suicide rates at national and regional level in England and Wales have not been significantly affected by the increasing number of narrative verdicts returned by coroners ([Hill & Cook, 2011](#)).

### **Coding cause of death**

Coding for cause of death is carried out according to the WHO [ICD-10](#) and internationally agreed rules.

Part I of the MCCD used in England and Wales gives the condition or sequence of conditions leading directly to the death, while Part II gives details of any associated conditions that contributed to the death but which were not part of the causal sequence.

The selection of the underlying cause of death is generally made from the conditions entered in the lowest line Part I of the MCCD. If there is more than one cause per line, with no indication of sequence, or the conditions entered are not an acceptable causal sequence, selection rules are applied, based on the ICD. Modification rules are also used for particular conditions, combinations or circumstances to select the correct underlying cause of death, for example, when 2 or more causes may point to another cause not mentioned directly on the certificate. The purpose behind the selection and modification rules is to uniformly derive the most accurate cause of death

information to ensure comparability over time and place, and ensure each death has only 1 underlying cause.

For the majority of deaths (around 80%) ONS codes the underlying cause of death using automated cause coding software. The remainder are coded manually by experienced coders. Manual coding is necessary for deaths involving a coroner's inquest. Using an automated coding tool improves the international and temporal comparability of mortality statistics. Periodical reports on persistent coding problems are referred to a Medical Epidemiologist and to international forums.

Where the underlying cause of death is assigned to an external cause (for example, a transport accident), at least 1 code is assigned to define the nature of the injury. If multiple injuries are recorded, 1 will be selected as the secondary cause code. Again, how this selection is done is based on rules assigned by WHO to ensure accuracy and comparability of statistics. The Coroners and Justice Act 2009 will reform the process of death certification by introducing a single unified system. The introduction of medical examiners and the scrutiny they provide is expected to improve the quality (precision and completeness) of the cause of death recorded on the MCCD and, consequently, will have an impact on cause of death statistics.

The consistency of manual cause of death coding for narrative verdicts has previously been assessed by ONS ([Hill & Cook, 2011](#)). A total of 7,914 deaths were re-coded by 8 experienced ONS cause coders and comparisons made between the original underlying cause of death assigned in each case and the new underlying cause of death. The research showed that although in some cases the coders assigned a different underlying cause of death, overall they applied the ICD classification rules consistently. A total of 78% of cases matched to the fourth digit level of the ICD-10 cause of death code and 90% matched at ICD-10 chapter level.

### **Quality assurance**

Daily extracts of death registrations from RON are received by ONS then pass through a series of automatic validation processes which highlight any inconsistencies. The [Mortality Metadata](#) provides detailed information on the collection, processing and quality of mortality data for England and Wales.

Internal consistency checks are then conducted to eliminate any errors made during the recording of deaths, and to ensure the annual dataset is complete. Before becoming usable for analysis the data pass through more validation checks and processes, these include running frequency counts on a range of variables, checking the plausibility of combinations of fields, and checking inconsistencies. Suspect records are referred back to register offices. Any concerns relating to cause of death are referred to a Medical Advisor/Medical Epidemiologist. The [Mortality Metadata](#) provides more detail on all these checks.

### **Publication of statistics**

Weekly, monthly and annual mortality statistics are based on deaths registered in a particular period to ensure statistics are timely and accurate. Mortality statistics based on the year of occurrence would be much less timely (see section titled How the output is created). Registrations are not entirely comparable to occurrences, however the differences are relatively minor and figures are broadly comparable for most causes.

Revisions to mortality statistics occur infrequently. These generally only take place following revisions to the mid-year population estimates which result in mortality rates being revised. Footnotes are added to tables where revisions have taken place and information is also included in the metadata accompanying the release. Errors are rare but any identified are corrected and clearly marked on the release.

### **Coherence and comparability**

(Coherence is the degree to which data that are derived from different sources or methods, but refer to the same topic, are similar. Comparability is the degree to which data can be compared over time and domain, for example, geographic level.)

Mortality statistics form an important component of public health measurement. ONS mortality statistics adhere to key international standards (for example, cause of death classification and coding) which facilitates international comparisons.

The European Standard Population (ESP) is an artificial population structure used in the weighting of Age Standardised Mortality Rates (ASMRs). Originally published in 1976 it was updated by

Eurostat in 2013. The 2013 ESP structure allocates a greater weight to the older population to better reflect the ageing population. This change has had a significant impact on ASMRs, so ASMRs based on the 1976 ESP are not comparable with those based on the 2013 ESP. The distribution of the 1976 and 2013 ESPs can be found in the [Mortality Metadata](#). Further information about the [change in ESP methods](#) can be found on the ONS website.

### Changes to the format and content of publications

Over the years, the format and content of mortality publications have changed. Prior to 1993, annual mortality statistics were based on the number of deaths registered in a year. From 1993 to 2005 the figures related to the number of deaths that occurred in a year. From 2006 onwards, annual mortality statistics reverted back to the number of deaths registered in a year. More details on these changes can be found in [Series DR](#) for 2006.

Findings from the [ONS consultation on statistical products](#) in 2013 resulted in several mortality publications being discontinued from May 2014 onwards. Provisional quarterly mortality statistics for the UK, and its constituent countries in the [Vital statistics: population and health reference tables](#) (last published February 2014) and annual data on deaths from [Injury and poisoning mortality, England and Wales](#) (last published February 2013) are no longer published. Publications, [Deaths involving Clostridium difficile](#) and [Deaths involving MRSA](#) will continue to be published for Wales only from the 2013 data year.

### Changes to definitions and classifications used in published statistics

Due to improvements in the classification and coding of communal establishments, the place of death definition used by ONS was revised in 2011. These changes were implemented for 2010 mortality statistics. In particular, the classification was changed to reflect user needs and now identifies: local authority and non-local authority care homes; NHS and non-NHS hospitals (acute or community not psychiatric) and other communal establishments (including schools; nurses' homes, hotels; aged persons' accommodation; university and college halls of residence; young offender institutions; prisons and remand homes).

The Stillbirth (Definition) Act 1992 defines a stillbirth as "a child which has issued forth from its mother after the 24th week of pregnancy, and which did not at any time after becoming completely expelled from its mother breathe or show other signs of life". This definition has been in use since 1 October 1992. Prior to this, the Births and Deaths Registration Act 1953 defined a stillbirth as above, but at 28 or more weeks completed gestation. Figures for stillbirths from 1993 are, therefore, not comparable with those for previous years. From 28 May 2012, the restriction to register a stillbirth within 3 months from the date of occurrence has been removed and stillbirths can be registered at any time.

In some cases, more information on cause of death may become available at a later stage after the death has been registered, such that the underlying cause may be subsequently amended. Around 0.2% of deaths have their underlying cause amended. This amended or final cause is used in national-level and regional-level mortality statistics. Sometimes the later information becomes available only after the annual extract has been taken. Users with access to individual records of deaths as shown in the public record (which is never amended) may consequently find some differences with published statistics.

Since 1993, a shortlist of selected underlying causes has been used in one Series DR table. This list was developed in consultation with the Department for Health and consists of around 100 conditions. The list is based on the following:

- all conditions given in the WHO basic tabulation list; with the exception of a few conditions that are so rare as certified causes of death in England and Wales that they could safely be excluded from the list
- totals for each ICD Chapter
- conditions used in monitoring public health targets
- other conditions often referred to by ONS

This shortlist provides a standard listing of conditions frequently referred to by all users of the data. For more information on the shortlist see [Mortality Metadata](#).



## Changes in the collection and coding of mortality data

Changes in the collection and coding of mortality data may affect the interpretation of trends. The main changes which have affected mortality statistics are detailed below:

- **1981 to 1982** - industrial action taken by registration officers in 1981 to 1982 affected the quality of information about deaths from injury and poisoning with the exception of suicides. This action meant that details normally supplied by coroners were not available and the statistics were significantly affected as more deaths than usual were being assigned to “unspecified” categories
- **1984, 1993, 2001 and 2011** - amendments were made to the use of the WHO Rule 3 to select the underlying cause of death in 1984, 1993, 2001 and 2011. The impact of these changes is documented in the [Mortality Metadata](#)
- **1986** - new stillbirth and neonatal death certificates were introduced in 1986. The new neonatal death certificate included both maternal and fetal conditions. This means it has not been possible to assign an underlying cause for deaths under 28 days since 1986, so neonates are excluded from cause of death tables. Details of neonatal deaths by cause are published in [Child mortality statistics](#) these figures are based on deaths occurring in a year
- **1993** - Medical Enquiries ended. These were carried out to obtain more precise information on the underlying cause of death. Cause of death coding was also automated in 1993, and coroners forms were revised in May 1993 to bring them into line with the MCCD and with WHO recommendations. The revised form no longer included specific questions about the type of injury and parts of the body injured, hence the forms often provided less detail than before. This has resulted in some deaths being assigned to residual codes for nature of injury, rather than more specific codes
- **1993 to 1997** - in 1999 ONS found that, in some circumstances, deaths from rheumatic and valvular heart diseases were wrongly coded to acute rheumatic fever by the automated cause coding system introduced in 1993. All deaths in 1998 and 1999 with any mention of acute rheumatic fever were checked and recoded manually if necessary. From 2000, routine checks were set in place to ensure correct coding. Consequently, published data on deaths between 1993 and 1997 assigned to acute rheumatic fever should be regarded as highly unreliable
- **2001** - from 1 January 2001, ICD-10 was used to code cause of death, replacing ICD-9 which had been used since 1979. Overall the vast majority of deaths in ICD-9 remained in comparable chapters in ICD-10 but some diseases and conditions did move between chapters. Causes of death most affected included leukaemia, diseases of the liver and land transport accidents. There were also some changes to the rules governing the selection of underlying cause of death, especially Rule 3, which had a large effect. ONS carried out a comprehensive study to explain the changes: [Understanding the changes to mortality statistics following the move to coding cause of death to ICD-10](#). Comparability ratios were produced to ensure trends over time could continue to be analysed. Further assessments of the change were also published in [Health Statistics Quarterly 13](#) and [Health Statistics Quarterly 19](#)
- **2007** - from 1 January 2007, a new ICD-10 code (U50.9) was introduced by ONS for deaths involving adjourned inquests that would previously have been coded to Y33.9. This has made the tabulation of deaths from undetermined intent, and estimates of intentional self-harm, easier to produce
- **2009** - following guidance from WHO, the ICD-10 code J09 “Influenza due to identified avian influenza virus” was extended to include H1N1 swine influenza from 2009. The numbers of deaths shown under ICD code J09 (Influenza due to identified avian or swine influenza virus) differ from the figures reported by Public Health England (PHE). PHE reports deaths as related to pandemic A/H1N1 using information from either the death certificate or from laboratory testing or both. The Registration Online System was also fully implemented in 2009
- **2011** - the change to using ICD-10 v2010 in 2011 from ICD-10 v2001.2. Initial assessments of [the impact on cause of death of moving to ICD10 v2010](#) and [the impact of moving to ICD v2010 for stillbirths and neonatal deaths](#) have been published. The impact of the change on specific causes is published alongside the relevant statistics for 2011
- **2014** - on 1 January 2014, ONS changed the software used to code cause of death. The new IRIS software version 2013 incorporates official updates to ICD-10 that are approved by WHO.

The use of the IRIS software will help to improve the international comparability of mortality statistics. Further information on IRIS can be found on the [ONS website](#) and in the [dual coding study](#) looking at the impact on mortality statistics

- **2014** - on 1 October 2014, the **Presumption of Death Act 2013** came into force in England and Wales. This means that an application can be made to the High Court for a declaration that a missing person is presumed to be dead where, the person who is missing is thought to have died or has not been known to be alive for a period of at least 7 years

### Comparisons across reference periods and subnational areas

The number of registration days in a reference period can impact upon mortality statistics. For example, bank holidays can affect the number of registrations within a week/month.

Weekly deaths counts cannot be summed to match the counts for monthly deaths as some weeks may span more than one month.

Annual mortality statistics by area of usual residence are produced using the boundaries that were in place during the year the death was registered. This approach means that changes in boundaries can affect the comparability of statistics over time. Since 1993, the informant has been able to decide what address to give if more than one might be applicable. Prior to 1993, there were “rules” determining the validity of 1 address over another (previous annual reference volumes contain details of these rules).

### UK and international comparability

The Births and Deaths Registration Act (1836) made it a legal requirement for all deaths to be registered from 1 July 1837. ONS quality assures mortality data for England and Wales and also co-ordinates and publishes statistics for the whole of the UK with breakdowns for each constituent country. Historical time series of annual mortality statistics for the UK and its constituent countries are available in the [Vital statistics: population and health reference tables](#). Some measures are available from 1837 while other measures have a more limited history.

Both [National Records of Scotland](#) and the [Northern Ireland Statistics and Research Agency](#) publish detailed mortality statistics for their own countries which are based on deaths registered in the reference period. The definitions, classifications and methods used to produce published death statistics are broadly comparable across the 4 countries.

In Scotland, a death must be registered within 8 days rather than 5 days as in England and Northern Ireland. The Procurator Fiscal replaces the coroner system in England, Wales and Northern Ireland and has a duty to investigate all sudden, suspicious, accidental, unexpected and unexplained deaths, and any death occurring in circumstances that give rise to serious public concern. The Procurator Fiscal may order a fatal accident inquiry, although a death can be registered (with a cause given as unascertained, pending investigations) before the investigations are completed.

Northern Ireland follows the same registration process as England and Wales. More information can be found in the [Quality Information for Northern Ireland](#).

ONS publishes several internationally-recognised indicators which facilitate comparisons, which include:

- crude death rates (total deaths per 1,000 population)
- infant mortality rates (deaths under 1 year per 1,000 live births)
- neonatal mortality rates (deaths under 28 days per 1,000 live births)
- perinatal mortality rates (stillbirths and deaths under 7 days per 1,000 live and stillbirths)
- age-specific death rates (deaths per 1,000 population in age-sex group)
- directly age-standardised mortality rates (ASMRs) (deaths per 100,000 population standardised to the European Standard Population), which enable comparisons between populations with different age structures, including between males and females and over time, facilitating comparisons with other European countries

To enable users to make international comparisons, the [Vital statistics: population and health reference tables](#) provide the crude death rate for different countries. ONS produces the UK death rate in the table. All other figures are obtained from the United Nations Monthly Bulletin of Statistics.

Internationally, ONS provides data to Eurostat, WHO and the UN each year to allow them to compile mortality figures to enable comparison across countries.

## Concepts and definitions

(Concepts and definitions describe the legislation governing the output and a description of the classifications used in the output.)

The existing provisions for the registration of deaths and the processing, reporting and analysis of mortality data appear in different legislation that reflects the distinct and separate roles of the Registrar General for England and Wales, and the UK Statistics Authority.

The Registrar General is guided by the following:

- Population (Statistics) Act 1938 - deals with the statistical information collected at registration
- Births and Deaths Registration Act 1953 - covers all aspects of the registration of births, stillbirths and deaths
- Population (Statistics) Act 1960 - makes further provision for collecting statistical detail at registration
- Registration of Births and Deaths Regulations 1987 - covers further aspects of the registration of births and deaths
- Coroners Act 1988 - sets out the procedures to be followed by coroners in handling deaths
- Stillbirth (Definition) Act 1992 - which altered the definition of a stillbirth to 24 or more weeks completed gestation, instead of the previous definition of 28 or more weeks
- Deregulation (Stillbirth and Death Registration) Order 1996 - allows for the registration of deaths by declaration
- National Health Service Act 2006 and National Health Service (Wales) Act 2006 - consolidates legislation relating to the health service and separate provision of the health service in Wales from that in England. The Acts require notification of a birth or death to the Director of Public Health in the Clinical Commissioning Group (Local Health Board in Wales) where the birth or death occurred. Both Acts include provision for the supply of information on individual deaths to the National Health Service by the Registrar General
- Presumption of Death Act 2013 - an application can be made to the High Court for a declaration that a missing person is presumed to be dead where, the person who is missing is thought to have died or has not been known to be alive for a period of at least 7 years

The UK Statistics Authority is guided by the following:

- Registration Service Act 1953 - in Section 19 required the Registrar General to produce annual abstracts of the number of live births, stillbirths and deaths
- Statistics and Registration Service Act 2007 - transferred some of the statistical functions of the Registrar General, including the production of an annual abstract, to the Statistics Board, also known as the UK Statistics Authority, and the Office for National Statistics which became the executive office of the UK Statistics Authority. The 2007 Act also provides the Registrar General with a power to disclose any information about a birth, death or a stillbirth to the UK Statistics Authority for statistical purposes. It also enables the UK Statistics Authority to produce and publish statistics relating to any matter. The Act also includes a provision for the UK Statistics Authority to supply individual birth and death records to the Secretary of State for Health and certain NHS bodies

When the Statistics and Registration Service Act 2007 came into force on 1 April 2008, the arrangement where the National Statistician was also the Registrar General for England and Wales ended. At the same time, the General Register Office also stopped being part of the ONS and was moved to the Identity and Passport Service. The National Health Service Central Register (NHSCR), formerly part of ONS, also transferred to the Health and Social Care Information Centre (HSCIC).

The responsibility for the production of mortality statistics is now a function of the UK Statistics Authority, which is required to produce an annual abstract of mortality statistics in order that the Minister for the Cabinet Office can lay it before Parliament.

## **Other information**

### **Output quality trade-offs**

(Trade-offs are the extent to which different dimensions of quality are balanced against each other.)

Up to 1992, publications gave numbers of deaths registered in the period concerned. From 1993 to 2005, the figures in annual reference volumes relate to the number of deaths that occurred in the reference period. From 2006 onwards, all tables in the DR series are based on deaths registered in a calendar period. Mortality statistics based on the year of occurrence are much less timely and complete due to late registrations resulting from referral to a coroner. More details on these changes can be found in the publication [Mortality Statistics: Deaths registered in 2006](#) (ONS 2008).

Although the majority of mortality publications are based on registrations, ONS continue to take an annual extract of death occurrences in the autumn following the data year, which is used for seasonal analysis of mortality data and several infant mortality outputs.

### **Assessment of user needs and perceptions**

(The processes for finding out about uses and users, and their views on the statistical products.)

The findings of the [ONS consultation on statistical products](#) from September and October 2013 have resulted in certain mortality publications being discontinued. For more information see section on changes to the format and content of publications.

A user consultation to review infant mortality statistics produced by ONS took place between 5 July 2011 and 16 August 2011. The [ONS response to the review](#) is available on the ONS website.

A user feedback survey for the death registrations summary tables took place in July 2011. The [results and responses to this survey](#) were published in August 2012.

All mortality statistical bulletins seek feedback from users with the inclusion of a standard statement within the background notes, "We welcome feedback from users on the content, format and relevance of this release".

User feedback is requested at the bottom of all emails sent by customer service teams within Vital Statistics Output Branch (VSOB). The standard wording is, "We welcome feedback on the content, format and relevance of the data provided. Please provide any feedback and state whether you would like your contact details to be added to our list of users". All known users will be invited to participate in any consultations that are run.

ONS also receive feedback through regular attendance at user group meetings and conferences.

ONS maintains a list of known users, including which statistical outputs they use and the use made of them.

## **Sources for further information or advice**

### **Accessibility and clarity**

(Accessibility is the ease with which users are able to access the data, also reflecting the format in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the release details, illustrations and accompanying advice.)

ONS's recommended format for accessible content is a combination of HTML webpages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel. The ONS website also offers users the option to download the narrative in PDF format. In some instances other software may be used, or may be available on request. Available formats for content published on the ONS website but not produced by the ONS, or referenced on the ONS website but stored elsewhere, may vary. For further information please refer to the contact details at the beginning of this document.

For information regarding conditions of access to data, please refer to the links below:

- [Terms and conditions \(for data on the website\)](#)
- [Copyright and reuse of published data](#)

- [Pre-release access \(including conditions of access\)](#)
- [Accessibility](#)

In addition to this Quality and Methodology Information, Basic Quality Information relevant to each release is available in the background notes of the relevant statistical bulletin. An example of which can be seen for [Death registrations summary tables](#).

Special extracts and tabulations of child mortality data for England and Wales are available to order (subject to legal frameworks, disclosure control, resources and agreement of costs, where appropriate). Such enquiries should be made to:

Vital Statistics Outputs Branch  
 Life Events and Population Sources Division  
 Office for National Statistics  
 Segensworth Road  
 Titchfield  
 Fareham  
 Hants  
 PO15 5RR  
 Telephone: +44 (0) 1329 444110

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

The [ONS charging policy](#) is available on the ONS website. In line with the [ONS approach to open data](#), all [ad hoc data requests](#) will be published onto the website.

Access to microdata and disclosive data, that is, data which have the potential to identify an individual record, requires the approval of the ONS Microdata Release Procedure (MRP) before the data can be provided.

### Useful links

For information on data quality, legislation and procedures relating to mortality statistics, please see [Mortality metadata](#).

ONS releases based on death registrations include:

- [Death registrations summary tables, England and Wales](#) present data on death registrations in England and Wales. They contain data for death rates, cause of death data by sex and age and death registrations by area of residence. They also contain a detailed breakdown of the number of deaths by sex and age for the UK and England and Wales
- an [interactive mapping tool](#) which enables trends in mortality to be analysed at the local level
- [Weekly provisional deaths registered in England and Wales](#) provide provisional counts of deaths registered in England and Wales while [Monthly figures on deaths registered by area of usual residence](#) provide monthly counts of deaths
- the [Vital statistics: population and health reference tables](#) provide annual mortality data for the UK and its constituent countries. More detailed death registrations data, including number of deaths and mortality rates by cause of death, can found in [Deaths registered in England and Wales](#)
- a geographical breakdown of mortality statistics is available in [Deaths registered in England and Wales by area of usual residence](#)
- the [20th Century mortality files](#) are a record of mortality in England and Wales from 1901 to 2000. The files consist of an aggregated database of deaths by age-group, sex, year and underlying cause, and include populations for England and Wales
- the [21st Century mortality files](#) are a record of mortality in England and Wales from 2001 onwards. The files consist of an aggregated database of deaths by age-group, sex, year and underlying cause, and include populations for England and Wales
- [Excess winter mortality in England and Wales](#) presents provisional figures of excess winter deaths for the latest winter period, and final figures for the previous winter period. Figures are

presented by underlying cause, age, sex and region; national trend data are available from 1991/92 onwards

- [Deaths involving Clostridium difficile](#) (Wales only from 2013 data year) presents mortality rates and details on the number of deaths involving Clostridium difficile (C. difficile) for England and Wales; national trend data are available from 1999 onwards
- [Deaths involving MRSA](#) (Wales only from 2013 data year) provides the number and rate of deaths involving Methicillin-Resistant Staphylococcus aureus (MRSA) for England and Wales; national trend data are provided for 1993 onwards
- [Deaths related to drug poisoning](#) contains data on deaths related to drug poisoning in England and Wales from 1993 onwards, by cause of death, sex, age and substances involved in the death
- [UK alcohol related deaths](#) presents the latest alcohol-related death figures for the UK, England, Wales, and regions in England
- [UK suicides](#) present suicide numbers and rates in the UK, England and Wales, and regions in England
- for mortality data for other UK countries please see [statistics on deaths in Scotland](#) and [statistics on deaths in Northern Ireland](#)
- [Disclosure control policy for births and death statistics](#) provides guidance for the release and publication of tables based on ONS death registration data for England and Wales. (This guidance was revised in January 2014)