

Life expectancy at birth and at age 65 by local areas in the UK QMI

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1 . Methodology background

National Statistic	
Frequency	Annual
How compiled	Administrative data
Geographic coverage	Local authority, region, country, combined country
Last revised	25 October 2017

2 . Executive summary

Life expectancy is an important measure of a population's health status. [Life expectancy at birth and at age 65 by local areas in the UK](#) is an annual publication presenting figures for males and females at national, regional and local level. The figures presented are three-year rolling averages to ensure they are sufficiently robust at all geographic levels.

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

3 . Output quality

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

We have developed [Guidelines for measuring statistical quality](#); these are based upon the five European Statistical System (ESS) quality dimensions. This report 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 following sections.

4 . About the output

Relevance

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

Life expectancy at birth has been used as a measure of the health status of the population of England and Wales since the 1840s. It was used in some of the earliest reports of the Registrar General to illustrate the great differences in mortality experienced by populations in different parts of the country.

This tradition of using life expectancy as an indicator of geographic inequalities in health has been continued by Office for National Statistics (ONS) in recent years with the annual publication of [Life expectancy at birth and at age 65 by local areas in the UK](#).

This output covers administrative geographical areas, including constituent countries, regions, counties, and unitary and local authorities. Figures are not calculated for City of London or Isles of Scilly because the numbers of deaths are too small to produce statistically robust estimates.

On 1 April 2009, there was a reorganisation of local governments in England, which created nine new unitary authorities (based on the merging of 37 local authorities). [Figures based on both the old and new boundaries](#) are available.

Figures are available for life expectancy at birth for 1991 to 1993 onwards (apart from counties that are available for 2000 to 2002 onwards) and for life expectancy at age 65 for 2000 to 2002 onwards (apart from areas in Scotland, which are available for 2004 to 2006 onwards).

Figures are published annually in October for the preceding three-year period, following the release of death registrations data and mid-year population estimates (usually by the end of August).

Life expectancy provides users with an indicator of health, which can be used to inform policy, planning and research in both public and private sectors in areas such as health, population, pensions and insurance. Main users include the Department of Health, primary care organisations, public health observatories, local authorities, and private pensions and insurance companies.

In 2001, the government introduced a national health inequalities Public Service Agreement (PSA) target to reduce inequalities in health outcomes by 10% as measured by infant mortality and life expectancy at birth by 2010. This was underpinned by a more detailed objective to reduce by at least 10% the gap in life expectancy between one-fifth of areas with the worst health and deprivation indicators ([the Spearhead group](#)) and the population as a whole.

The Spearhead group consists of the 70 local authority areas that are in the bottom fifth nationally for three or more of the following five factors:

- male life expectancy at birth
- female life expectancy at birth
- cancer mortality rate in under 75s
- cardiovascular disease mortality rate in under 75s
- Index of Multiple Deprivation 2004 average score

For life expectancy, the “bottom fifth” means those with the lowest figures; for mortality rates and deprivation scores, it means those with the highest figures.

Life expectancy figures are used at regional and local levels to focus on health monitoring and planning in specific areas. They are also published as part of the [Regional Health Profiles](#), which are produced by [Public Health England \(PHE\)](#). The profiles comprise an important package of indicators, which are designed to support action by local governments and primary care trusts to tackle health inequalities and improve people’s health. Life expectancy figures are also presented for local authority areas in [PHE’s Public Health Outcomes Framework](#).

In the private sector, life expectancy figures are used by pensions and insurance companies for planning their financial services.

In addition to the annual statistical bulletin, life expectancy figures are also reported in a number of other ONS publications including [Neighbourhood statistics](#), [Pension trends](#) and in [regional statistics](#).

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.)

The annual release of life expectancy figures is announced on the [GOV.UK release calendar](#) 12 months in advance. Results are published in October each year (10 months after the end of the reference period), following the release of annual death registrations data and mid-year population estimates for the previous year (usually by the end of August). Results are produced on a three-year rolling average basis, to provide large enough numbers to ensure that the figures are sufficiently robust. Life expectancy figures are released at the same time every year and have always been punctual.

In light of the 2011 Census, mid-year population estimates for the UK were revised for the period 2002 to 2010. Sub-national mid-year population estimates were not available in time for the usual publication of this bulletin in October 2012; an alternative bulletin, [Life expectancy at birth and at age 65 by local areas in England and Wales, 2009 to 2011](#) was published in July 2013, and was followed by [Life expectancy at birth and at age 65 by local areas in England and Wales, 2010 to 2012](#) in October 2013. Sub-national mid-year population estimates are now available for Scotland and Northern Ireland.

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](#).

5 . How the output is created

To calculate life expectancy, abridged (based on five-year age groups) life tables are constructed using standard methods, through procedures which have been extensively tested. Separate tables are constructed for males and females. They are created using numbers of deaths registered in calendar years and mid-year population estimates. Life expectancy figures are calculated as three-year rolling averages to provide large enough numbers to ensure that the results are sufficiently robust. Results and 95% confidence intervals are calculated using an internal Stata programme and checked using a [life table template](#) in MS Excel. The template provides a detailed description of the standard methods and notation associated with the calculation of life expectancy.

6 . Validation and quality assurance

Accuracy

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

All figures are period life expectancies. Period expectation of life at a given age for an area in a given time period is an estimate of the average number of years a person of that age would survive if he or she experienced the particular area's age-specific mortality rates for that time period throughout the rest of his or her life. The figure reflects mortality among those living in the area in each time period, rather than mortality among those born in each area. It is not therefore the number of years a person in the area in each time period could actually expect to live, both because the death rates of the area are likely to change in the future and because many of those in the area may live elsewhere for at least some part of their lives.

Period life expectancy at birth is also not a guide to the remaining expectation of life at any given age. For example, if female life expectancy at birth was 80 years for a particular area, the life expectancy of women aged 65 years in that area would exceed 15 years. This reflects the fact that survival from a particular age depends only on the mortality rates beyond that age, whereas survival from birth is based on mortality rates at every age.

The sub-national life expectancy calculations use abridged life tables (based on five-year age groups) rather than complete ones (based on single year of age). This is because the single year of age tables involves small numbers of deaths in younger ages in smaller local authorities, which can make the estimates unstable. These are more suitable than complete life tables (based on single year of age) for calculating sub-national life expectancy due to small numbers of deaths by single year of age, particularly among younger ages and in smaller local authorities.

Separate tables are constructed for males and females. They are created using numbers of deaths registered in calendar years and mid-year population estimates. Life expectancy figures are calculated as three-year rolling averages to provide large enough numbers to ensure that the results are sufficiently robust.

A [template](#) that shows how abridged life tables are calculated is available. Life expectancy is an estimate and is therefore subject to some margin of error. Consequently, 95% confidence intervals are calculated for the results to give an indication of the size of this error.

Before the annual release, life expectancy figures for local and unitary authorities are calculated as part of the process for quality assuring mid-year population estimates for England and Wales. The analyses highlight potential outliers in the distribution of new life expectancy estimates and compare results with those calculated for the previous period.

For information about the underlying mortality and population data used for life expectancy calculations, please see the following links:

- [Deaths registered in England and Wales](#)
- [Deaths registered in Scotland](#)
- [Deaths registered in Northern Ireland](#)
- [Mid-year population estimates](#)

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.)

Life expectancy is an indicator of mortality, which takes into account differences in the age structures of populations. Results for local areas can therefore be meaningfully compared, as can results for males and females.

All figures for life expectancy at birth and at age 65 for 1991 to 1993 onwards were calculated using the same method and are therefore comparable.

Life expectancy figures for 2000 to 2002 to 2006 to 2008 were revised in October 2010 following revisions in the mid-year population estimates for 2002 to 2008. Results for 1991 to 1993 onwards are all based on the latest population estimates available.

Individual deaths are assigned to geographical areas by linking the postcode of usual residence of the deceased to the latest version of the National Statistics Postcode Directory (NSPD). This means that figures for each three-year period may be based on slightly different boundaries, where, for example, postcodes are re-allocated from one area into another. The effect on life expectancy results is minimal and comparability over time is not therefore affected.

Deaths of non-residents are excluded from local area life expectancy estimates, since they cannot be assigned to a geographical area. However, when life expectancy estimates are calculated for England and Wales as a whole, non-residents are included as they do not need to be assigned to a specific geographical area.

The [national interim life tables](#) provide the definitive life expectancy figures for the UK and its constituent countries. These are calculated using complete life tables (based on single year of age) and should be used when comparing results with other countries. Life expectancy figures for European countries are published by [Eurostat](#).

To provide comparisons for regional and local area figures, national life expectancy results are also produced within this output using the same method as the sub-national results, with abridged life tables in which death and population data are aggregated into age groups. Therefore, the two sets of national figures may differ very slightly (usually around 0.1 years).

Figures for England will also differ slightly from the national interim life table results because of a difference in the handling of deaths of non-residents. For this output, the deaths of non-residents are included in the mortality figures for England and Wales, but are excluded from the figures for England and Wales separately. However, for the national interim life tables, the deaths of non-residents in England and Wales are included in the mortality data for England, but not in Wales.

7 . Concepts and definitions

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

Expectations of life can be calculated in two ways: period life expectancy (as used in this output) and cohort life expectancy. Cohort life expectancies are calculated using age-specific mortality rates, which allow for known or projected changes in mortality in later years and are therefore regarded as a more appropriate measure of how long a person of a given age would be expected to live, on average, than period life expectancy. For example, period life expectancy at age 65 in 2000 would be worked out using the mortality rate for age 65 in 2000, for age 66 in 2000, for age 67 in 2000, and so on. Cohort life expectancy at age 65 in 2000 would be worked out using the mortality rate for age 65 in 2000, for age 66 in 2001, for age 67 in 2002, and so on.

Period life expectancies are a useful measure of mortality rates actually experienced over a given period and, for past years, provide an objective means of comparison of the trends in mortality over time, between areas of a country and with other countries. Official life tables in the UK and in other countries which relate to past years are generally period life tables for these reasons. Cohort life expectancies, even for past years, usually require projected mortality rates for their calculation and so, in such cases, involve an element of subjectivity. More information on the differences between [period and cohort life expectancies](#) is available.

8 . Other information

Output quality trade-offs

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

Life expectancy figures are not routinely calculated by Office for National Statistics (ONS) for areas smaller than local authorities due to small numbers of deaths and populations. More information can be found in a report titled [Life expectancy at birth: methodological options for small populations](#).

Assessment of user needs and perceptions

(The processes for finding out about use and users, and their views on the statistical products. are maintained with a range of users including those from government, academics)

Understanding user needs is important to us, and we invite feedback from users regarding both the statistical bulletin and this Quality and Methodology Information report. Face- to- face meetings and email and telephone correspondence is maintained with a range of users including government users, academics, students and interested individuals.

This statistical bulletin was included in the [2013 ONS consultation on statistical products](#).

9 . 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.)

The [Life expectancy at birth and at age 65 by local areas in the UK](#) statistical bulletin is released annually, containing commentary and tables showing the areas with the highest and lowest life expectancies at birth and at age 65 for males and females. Supporting reference tables contain life expectancy figures at birth and at age 65 for males and females for the UK, constituent countries, regions, counties, and unitary and local authorities (including the rank order of unitary and local authorities from 1 to 404), for the latest period.

The bulletin includes details about the methods used to calculate life expectancy figures and how to interpret them, as well as information on how they differ from the [national interim life table](#). Life expectancy figures for the whole time series (with and without confidence intervals) are available for the UK, England and Wales, Scotland, and Northern Ireland. The UK and England and Wales datasets contain notes relating to the revisions of mid-year population estimates and the local government re-organisation, which came into effect on 1 April 2009. Figures based on the old and new local and unitary authorities are available within the England and Wales dataset.

Life expectancy at birth figures for males and females are available as a set of [interactive animated maps](#), which compare results for local areas with those for the UK and show changes over time from 1991 to 1993 onwards.

An annotated [life table template](#), which shows how life expectancy figures and confidence intervals are calculated, is available.

[Previous releases](#) of life expectancy figures, which include those for 2000 to 2002 to 2006 to 2008 based on the superseded mid-year population estimates, are also available.

For further information about life expectancy at birth and at age 65 for local areas in the UK, please contact the Life Events Analysis team via email at mortality@ons.gsi.gov.uk, or by telephone on +44 (0) 1633 456491.

Our recommended format for accessible content is a combination of HTML web pages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel. We also offer 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 our website but not produced by us, or referenced on our website but stored elsewhere, may vary. For further information, please contact us via email at mortality@ons.gsi.gov.uk, or by telephone on +44 (0) 1633 456491.

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

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

In addition to this Quality and Methodology Information, basic quality information relevant to each release is available in the relevant [statistical bulletin](#).

We welcome user feedback. Please send any feedback to mortality@ons.gsi.gov.uk.

Useful links

More information on the topic of life expectancy is available:

- [Life expectancy figures for Scotland](#)
- [Life tables](#)