



BRIEFING PAPER

Number CBP8281, 14 January 2018

Mortality in the UK

By Cassie Barton
Oliver Hawkins

Contents:

1. Understanding mortality statistics
2. Long-term trends in mortality
3. Weekly deaths since 2011
4. Age-standardised mortality rates
5. Life expectancy



Contents

Summary	3
1. Understanding mortality statistics	4
2. Long-term trends in mortality	5
2.1 England and Wales	6
2.2 Scotland	6
2.3 Northern Ireland	6
3. Weekly deaths since 2011	8
4. Age-standardised mortality rates	10
5. Life expectancy	13
5.1 Life expectancy in the UK	13
5.2 Life expectancy by country and region	13
5.3 Life expectancy in local areas	14

Summary

- In the United Kingdom, there has been a long-term downward trend in both the number of deaths and the crude death rate (the number of deaths per thousand people).
- However, since 2011, both the number of deaths and the crude death rate have increased. The number of deaths has increased more than the crude death rate, as some of the increase in the number of deaths was due to population growth.
- Provisional figures on the number of weekly deaths indicate that winter mortality was higher than usual in early 2015, 2017 and 2018.
- Age-standardised mortality rates (ASMRs) fell overall between 2001 and 2017, but there was a slowdown in the rate of improvement in the early 2010s.
- Improvements to life expectancy have slowed in recent years for both men and women, but estimates of life expectancy have not fallen compared with earlier periods.
- Among the countries and regions of the UK, in the period 2015-17 life expectancy at birth and at age 65 was highest for women in London and for men in the South East. It was lowest for both women and men in Scotland.
- At the local level, life expectancy at birth was highest for women living in Camden (86.5) and for men living in Hart (83.3). It was lowest for both women and men living in Glasgow City (78.8 and 73.3 respectively).

1. Understanding mortality statistics

Broadly speaking, mortality statistics measure the frequency of deaths within a population.

At its simplest, mortality can be measured as the **number of deaths** within a population in a given period. But as the number of deaths is affected by a population's size and its age structure, as well as the prevailing risks of dying, the raw number of deaths can be adjusted to allow for comparisons of mortality in populations of different sizes and with different age structures.

The simplest adjusted measure of mortality is the **crude death rate**, which is the number of deaths per thousand people. This measure adjusts for the size of a population but not for its age structure.

A more sophisticated measure of mortality is the **age-standardised mortality rate** (ASMR). This is a measure of the number of deaths per thousand people that is calculated by applying mortality rates for different age groups to a standard population with a fixed age structure. This measure adjusts for both the size and age structure of a population.

Another measure of mortality that is often used to compare populations with different sizes and age structures is **period life expectancy**. This is the average age to which a person would live if they experienced the age-specific mortality rates that were observed in a given period during the rest of their life. Put simply, it measures how much longer someone would live on average from a given age if mortality rates did not change.

It is not a projection of actual life expectancy for any given individual, as it does not attempt to incorporate trends in life expectancy into estimates of mortality in later years.¹ The actual lifespans of people who are alive during a given period may be longer (or shorter) on average than is suggested by the period life expectancy for people of that age during those years.

Because period life expectancy does not make any assumptions about mortality in the future it is a benchmark measure of life expectancy that allows for objective comparisons of mortality between populations at particular times and in different places.

This briefing examines data on these various measures of mortality in different parts of the UK.

¹ Cohort life expectancy is the measure of mortality that incorporates trends in mortality rates to estimate or project the average lifespans of people born in particular times and places.

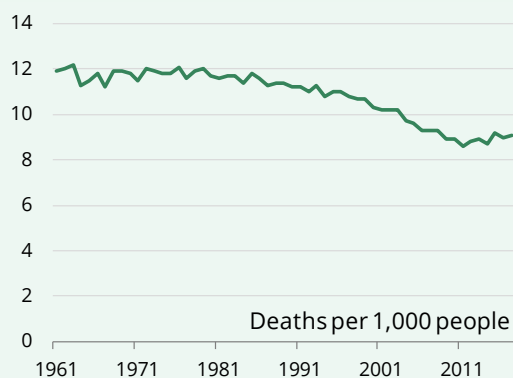
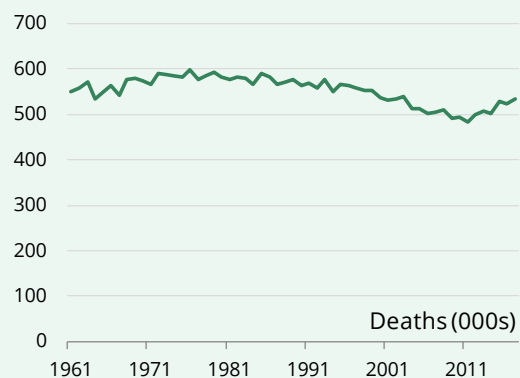
2. Long-term trends in mortality

The charts below show the number of deaths and the crude death rate in different parts of the UK, in each year from 1961 to 2017.

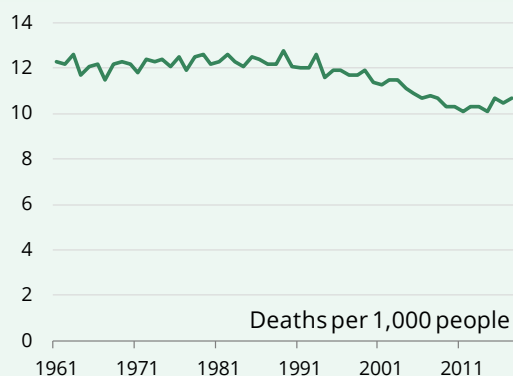
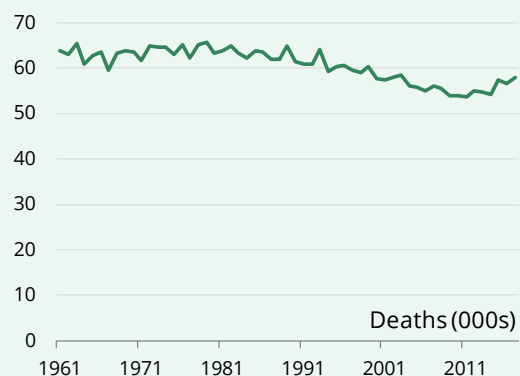
MORTALITY IN THE UK

1961-2017

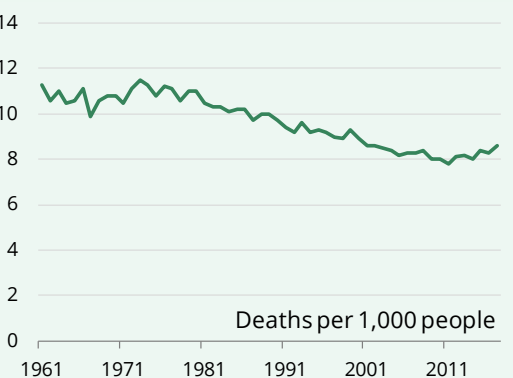
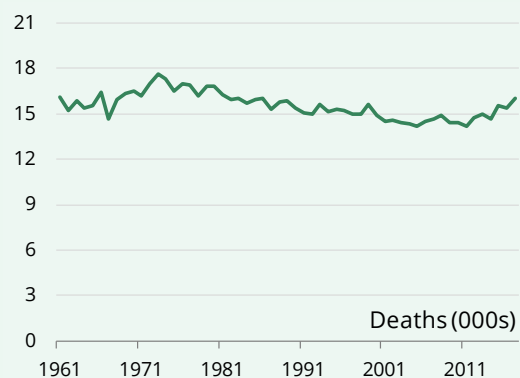
England and Wales



Scotland



Northern Ireland



Notes: Population estimates used to calculate crude death rates for England and Wales before 1981 are rounded to the nearest hundred for each single year of age. Figures based on these estimates are of a slightly lower level of accuracy.

Source: ONS (2018), [Vital statistics in the UK: births, deaths and marriages](#)

2.1 England and Wales

In England and Wales, both the number of deaths and the crude death rate reached their lowest level since 1961 in 2011, when there were 484,000 deaths and the crude death rate was 8.6 deaths per thousand people.

Since 2011 both the total number of deaths and the crude death rate have increased, to 533,000 deaths and 9.1 deaths per thousand people in 2017. This is the highest number of deaths recorded since 2011, and the highest death rate per 1,000 people apart from 2015 (where the rate reached 9.2). However, the 2017 figures are lower than during the period from 1961 to the early 2000s.

The highest number of deaths in a single year since 1961 was in 1976 when there were 599,000 deaths in England and Wales, while the highest crude death rate was in 1963, when there were 12.2 deaths per thousand people.

The overall decline in the crude death rate between 1961 and 2011 was greater than the decline in the annual number of deaths as the crude death rate adjusts for growth in the population. In this sense it is a better measure of mortality.

For the same reason, the increase in the crude death rate since 2011 (5.8%) was lower than the increase in the annual number of deaths since 2011 (10.1%).

2.2 Scotland

The trend in mortality in Scotland was similar to that in England and Wales. Both the number of deaths and the crude death rate reached their lowest level since 1961 in 2011, when there were 54,000 deaths and the crude death rate was 10.1 deaths per thousand people. Since 2011, both the number of deaths and the crude death rate have increased. There were 58,000 deaths in 2017 with a crude death rate of 10.7.

Between 1961 and 2011, the crude death rate fell more slowly in Scotland than in England and Wales. In 1961 the crude death rate in Scotland was 12.3 deaths per thousand people, compared with 11.9 deaths per thousand people in England and Wales. By 2011, Scotland's crude death rate had fallen to 10.1, compared with 8.6 in England and Wales. Between 1961 and 2011 Scotland's crude death rate fell by around 18%, compared with 28% in England and Wales.

2.3 Northern Ireland

Since 1961, Northern Ireland has seen similar trends in mortality as other parts of the UK. Both the number of deaths and the crude death rate reached their lowest level since 1961 in 2011, when there were 14,000 deaths and the crude death rate was 7.8 deaths per thousand people. Since 2011, both the number of deaths and the crude death rate have increased.

The crude death rate in Northern Ireland was lower than in England and Wales during this period and fell faster. In 1961 the crude death rate in Northern Ireland was 11.3 deaths per thousand people, compared with 11.9 deaths per thousand people in England and Wales. By 2011, Northern Ireland's crude death rate had fallen to 7.8, compared with 8.6 in England and Wales. There were 16,000 deaths in 2017, with a crude death rate of 8.6.

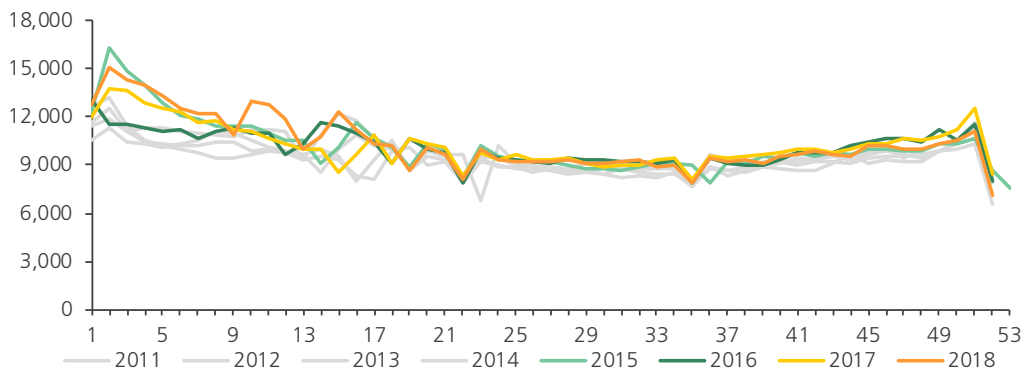
3. Weekly deaths since 2011

The charts below show the most recent data on mortality in different parts of the UK: the number of deaths registered in each week of the year, in each calendar year from 2011 to 2017, and for most of 2018.

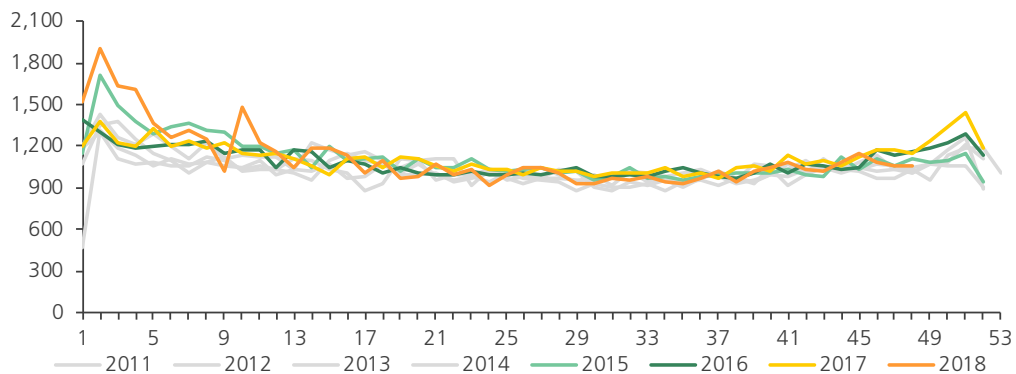
WEEKLY PROVISIONAL DEATHS IN THE UK

2011-18

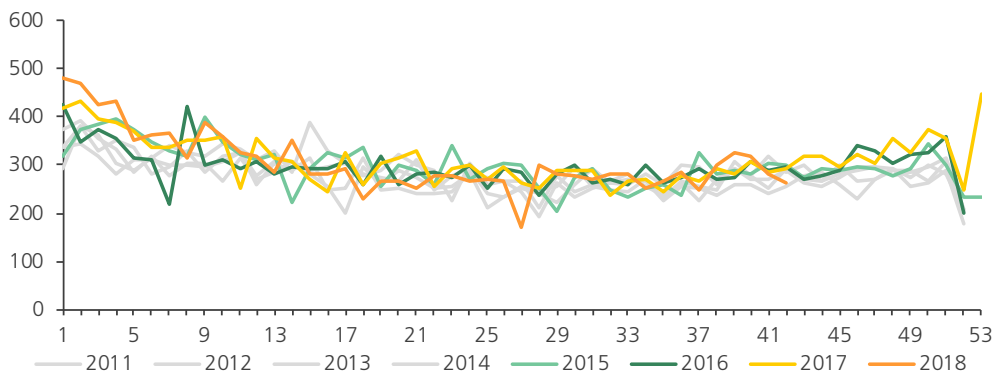
England and Wales



Scotland



Northern Ireland



Sources: ONS, [Deaths registered weekly in England and Wales, provisional](#); NRS, [Weekly data on births and deaths registered in Scotland](#), Table 1; NISRA, [Weekly deaths](#)

In these charts, the data for each year is shown with a separate line, and the lines representing the four most recent years are shaded with a colour, while those representing earlier years are shaded light grey. The lines for 2017 and 2018 are shaded yellow and orange respectively to indicate the most recent years, while the lines for 2015 and 2016 are shaded green to indicate the next most recent years.

As these charts show, the number of weekly deaths has tended to be higher in more recent years than in previous years. Mortality was unusually high relative to the same period in earlier years during the start of 2015, 2017 and 2018, and towards the end of 2016 and 2017.

In an analysis of mortality in England and Wales in 2015, the Office for National Statistics said that the spike in the number of deaths in 2015 was principally explained by higher mortality among people aged 75 and older.

The majority of the increase in deaths in 2015 happened during the first few months of the year, coinciding with an increase in hospital admissions for flu and reports of numerous outbreaks of the virus in care homes. Respiratory diseases, such as flu, were also mentioned in a third of deaths from dementia and Alzheimer's last year ... The number of deaths where dementia and Alzheimer's were listed as the underlying cause have been steadily increasing over the last 15 years, but were well above the 5 year average in 2015.²

Provisional weekly death statistics

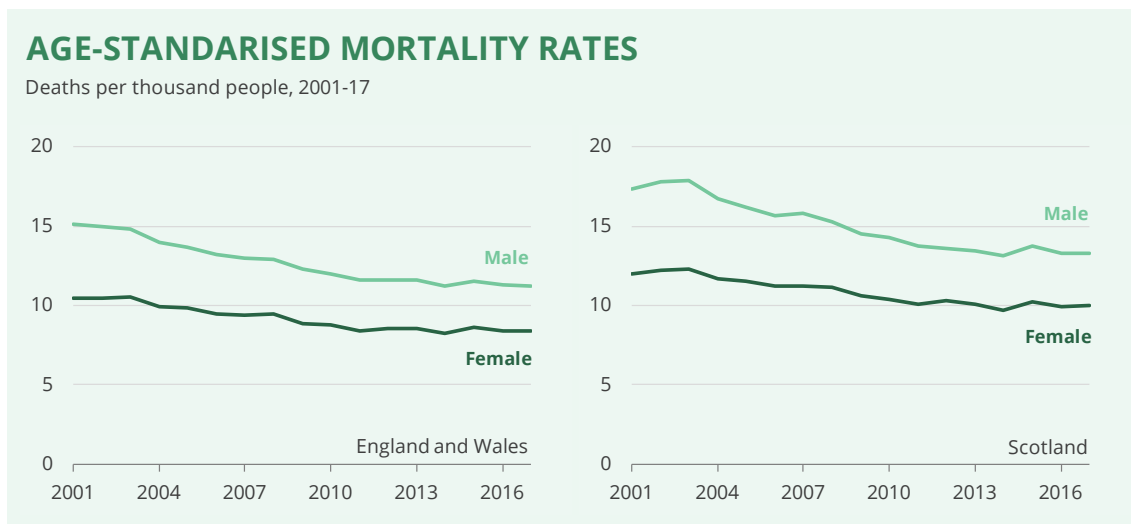
The underlying source of data for mortality statistics in the UK are death registrations. Provisional statistics on the number of weekly deaths are based on the number of deaths registered in each week, irrespective of the date of the death. Public holidays, when register offices are closed, can therefore affect the number of deaths recorded in the weeks in which they fall.

² ONS, [Spike in number of deaths in 2015 driven by increased mortality in over 75s](#), April 2016

4. Age-standardised mortality rates

The increase in the number of deaths and the crude death rate may reflect changes in the age structure of the population. As age-specific death rates are higher among older people, the number of deaths may increase with the proportion of the population in older age groups.

Age-standardised mortality rates (ASMRs) provide a measure of mortality that takes account of the age structure and size of the population. The chart below shows annual estimates of ASMRs for men and women in England and Wales, and in Scotland in each year from 2001 to 2017.³



Notes: Rates are standardised to the 2013 European Standard Population.

Sources: ONS, [Death registrations summary tables – England and Wales](#), 2017, Table 3; NRS, [Age-standardised Death Rates Calculated Using the European Standard Population](#), Table 1

In both England and Wales and in Scotland, ASMRs fell between 2001 and 2014. ASMRs increased in 2015 and then fell again slightly in 2016, remaining at a similar level in 2017.

ASMRs were higher in Scotland than in England and Wales. In 2017, ASMRs in England and Wales were 8.4 deaths per thousand people for women and 11.2 for men, while in Scotland they were 10.0 for women and 13.3 for men.

The historic trend of falling mortality rates has been slower from about the early 2010s onward. In June 2018, the ONS published an [analysis](#) of whether the changes in ASMRs were statistically significant, based on data for England and Wales. Testing for statistical significance means assessing whether we can be confident that there is a real difference between the trends before and after the early 2010s. The ONS concluded that:

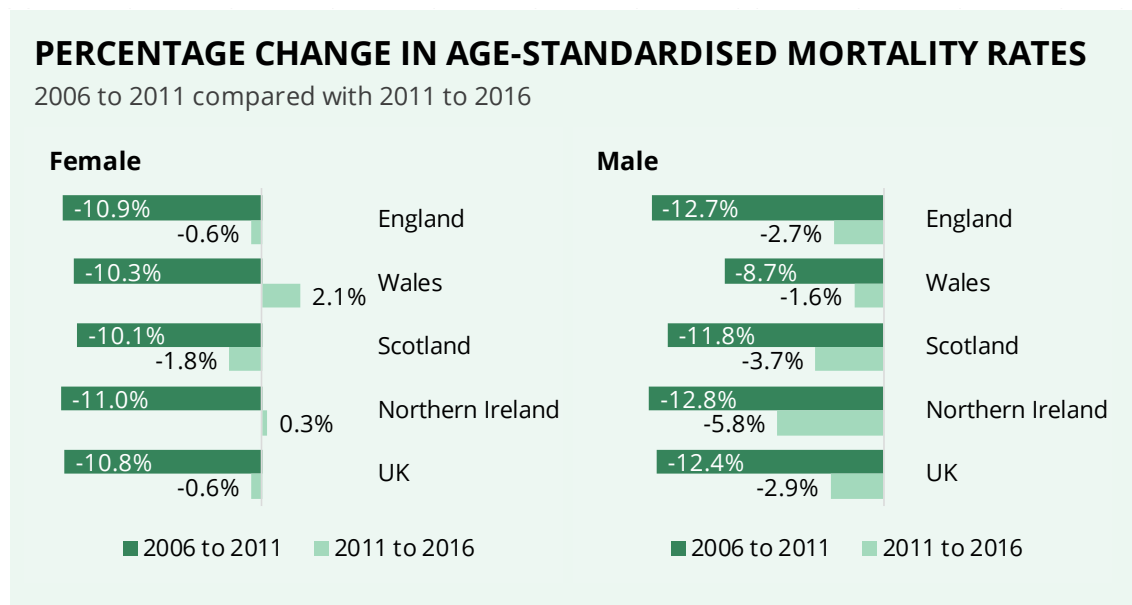
³ Comparable figures are not available for Northern Ireland.

- A statistically significant slowdown in the long-term improvement in age-standardised mortality rates for England and Wales took place around the early 2010s.
- This was true for England and Wales, for both sexes, and for older and younger people, with some variations in the timing and extent of the change in trend.⁴

The analysis was carried out using ‘segmented linear regression’, an approach that looks for points in a time series where the trend has changed. The analysis found that, for almost all age groups, a slowdown in improvement in ASMRs took place in the early 2010s. Their analysis also suggests that for some age groups, there were additional slowdowns in the 1990s or early 2000s.

The ONS followed this with a [more detailed analysis](#) of ASMRs across age groups and nations of the UK, published in August 2018.⁵

The analysis compares the percentage change in ASMRs between 2006 and 2011 with change between 2011 and 2016 for each nation, shown in the chart below. For males, the slowdown in improvement in mortality rates was greatest in England and Wales. For females, there was a slight increase in ASMRs in Wales and no improvement in Northern Ireland, while there was a slowdown in England and Scotland.



Source: ONS (2018), [Changing trends in mortality: a cross-UK comparison, 1981 to 2016](#)

The ONS note that in some groups, there may be less of a slowdown because that group has historically had higher mortality, and is to some extent still making gains as it “catches up” with groups that made gains earlier.

The analysis also looked at ASMRs across different age groups. It found that there has been a slowdown in improvement in the oldest age

⁴ ONS, [Changing trends in mortality in England and Wales: 1990 to 2017 \(Experimental Statistics\)](#), 18 June 2018

⁵ ONS, [Changing trends in mortality: a cross-UK comparison, 1981 to 2016](#), 7 August 2018

12 Mortality in the UK

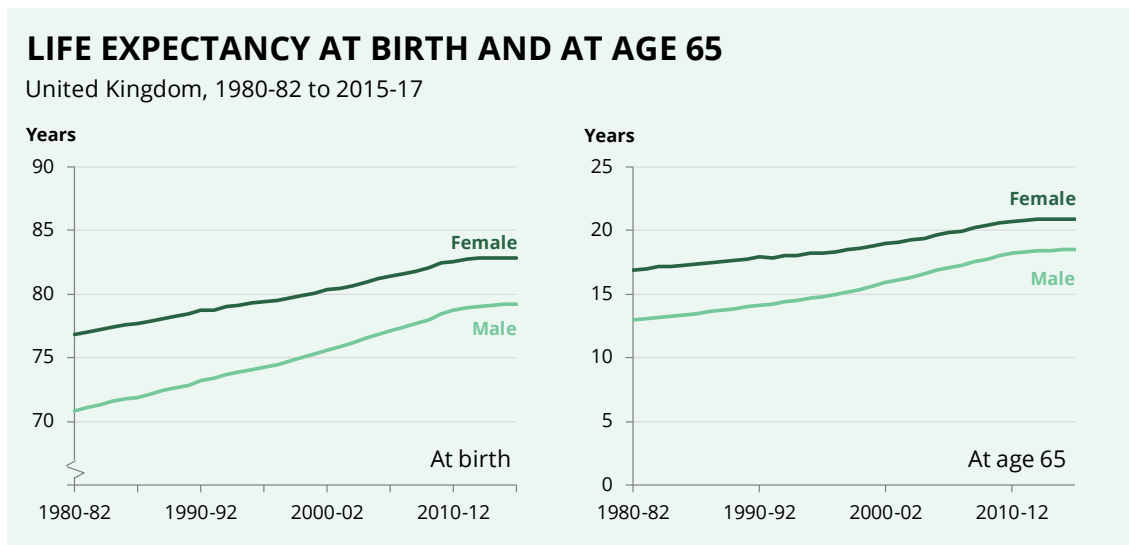
groups (55 to 74 year olds, 75 to 89 year olds, and 90+ year olds) and in 0-14 year olds. There has been a rise in mortality rates amongst 15-34 year olds from 2012 onwards. Because the majority of people who die are older, deaths amongst older age groups have more of an influence on the overall trend.

5. Life expectancy

The Office for National Statistics (ONS) publishes data on trends in life expectancy. The statistics shown below are **period** life expectancies. These are the most appropriate statistics for comparing mortality at different times and in different places, but they should not be used to infer the age to which a particular individual might expect to live.⁶

5.1 Life expectancy in the UK

The chart below shows estimates of life expectancy at birth and at age 65 in the UK in three-year periods from 1980-82 to 2015-17.



Note: The vertical axis (y-axis) on the first chart has been truncated to illustrate the trends.

Source: ONS (2018), [National life tables: UK](#)

Improvements to life expectancy have slowed in recent years for both men and women, but overall estimates of life expectancy have not fallen compared with earlier periods.

Across the UK, life expectancy at birth increased from 76.8 years for women and 70.8 for men in the period 1980-82 to 82.9 for women and 79.2 for men in the period 2015-17.

Life expectancy at age 65 increased from 16.9 years for women and 13.0 for men in the period 1980-82 to 20.9 for women and 18.6 for men in the period 2015-17.

5.2 Life expectancy by country and region

The chart below shows estimates of life expectancy at birth and at age 65 for men and women living in each country and region of the UK in the period 2015-17

⁶ See the guidance in Section 1 of this briefing for further information.

LIFE EXPECTANCY BY COUNTRY AND REGION

United Kingdom, 2015-17

Country or region	At birth		Age 65	
	Female	Male	Female	Male
North East	81.6	77.9	19.9	17.9
North West	81.8	78.2	20.2	18.0
Yorkshire and the Humber	82.4	78.7	20.6	18.2
East Midlands	82.9	79.4	20.8	18.6
West Midlands	82.7	78.8	20.9	18.5
East	83.7	80.4	21.4	19.2
London	84.3	80.5	21.9	19.3
South East	84.0	80.6	21.7	19.3
South West	83.7	80.2	21.6	19.2
England	83.1	79.6	21.1	18.8
Wales	82.2	78.3	20.5	18.2
Scotland	81.1	77.0	19.7	17.4
Northern Ireland	82.3	78.5	20.6	18.2
United Kingdom	82.9	79.2	20.9	18.6

Notes: Figures exclude deaths of non-residents.

Source: ONS (2018), [Life expectancy at birth and at age 65 by local areas, UK](#)

In the period 2015-17, life expectancy at birth and at age 65 was highest for women in London and for men in the South East. It was lowest for both women and men in Scotland.

More broadly, life expectancy was higher in London, the South and the East than in Scotland and the North. Life expectancy was similar in Wales and Northern Ireland, where it was slightly lower than the national average. Life expectancy in the East Midlands and West Midlands was similar to the national average.

5.3 Life expectancy in local areas

The table overleaf shows the district and unitary local authorities with the highest and lowest life expectancy at birth in the period 2015-17.⁷

During this period life expectancy at birth was highest for women living in Camden (86.5) and for men living in Hart (83.3). It was lowest for both women and men living in Glasgow City (78.8 and 73.3 respectively).

The maps overleaf shows life expectancy at birth for women and men in each district and unitary local authority in the UK in the period 2015-17.

⁷ Estimates of life expectancy are not published for Parliamentary constituencies.

LIFE EXPECTANCY AT BIRTH BY LOCAL AUTHORITY: TOP TEN

District and unitary local authorities in the UK, 2015-17

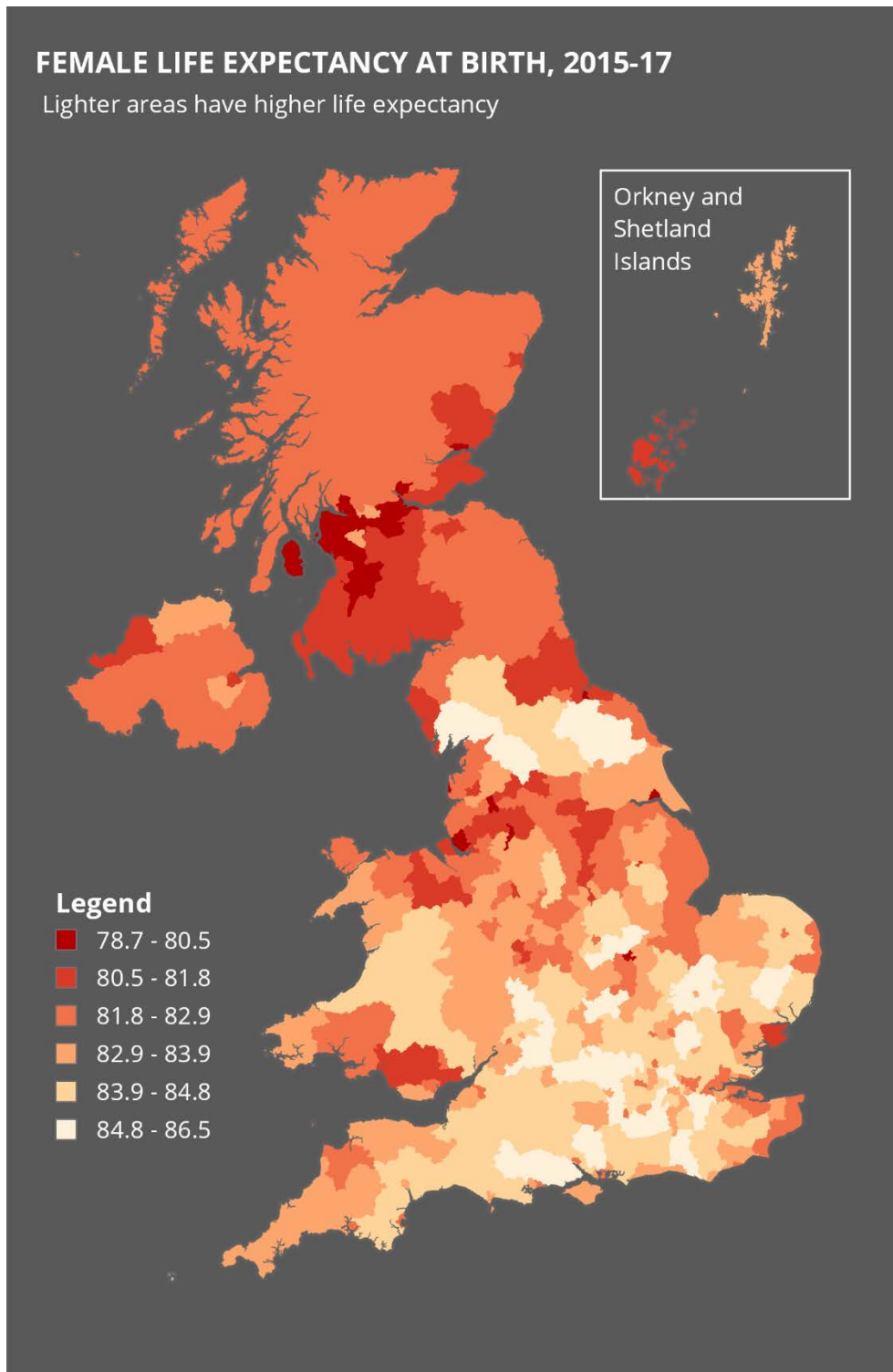
Highest					
Female			Male		
1	Camden	86.5	1	Hart	83.3
2	Kensington and Chelsea	86.2	2	Kensington and Chelsea	83.2
3	Westminster	86.0	3	Chiltern	82.9
4	Chiltern	86.0	4	Harrow	82.7
5	Harrow	85.9	5	Westminster	82.7
6	Rutland	85.8	6	Vale of White Horse	82.5
7	Epsom and Ewell	85.8	7	East Dorset	82.5
8	Richmond upon Thames	85.7	8	Elmbridge	82.4
9	East Dorset	85.7	9	Rutland	82.4
10	Wokingham	85.6	10	Richmond upon Thames	82.3

Lowest					
Female			Male		
1	Glasgow City	78.8	1	Glasgow City	73.3
2	West Dunbartonshire	78.9	2	Dundee City	73.9
3	Dundee City	79.4	3	Blackpool	74.2
4	North Lanarkshire	79.5	4	West Dunbartonshire	75.0
5	Manchester	79.6	5	Inverclyde	75.2
6	Blackpool	79.6	6	North Lanarkshire	75.3
7	Inverclyde	79.6	7	Middlesbrough	75.7
8	Middlesbrough	79.8	8	Manchester	75.7
9	Kingston upon Hull	80.1	9	Belfast	75.8
10	East Ayrshire	80.1	10	Kingston upon Hull	75.9

Notes: Figures exclude deaths of non-residents.

Source: ONS (2018), [Life expectancy at birth and at age 65 by local areas, UK](#)

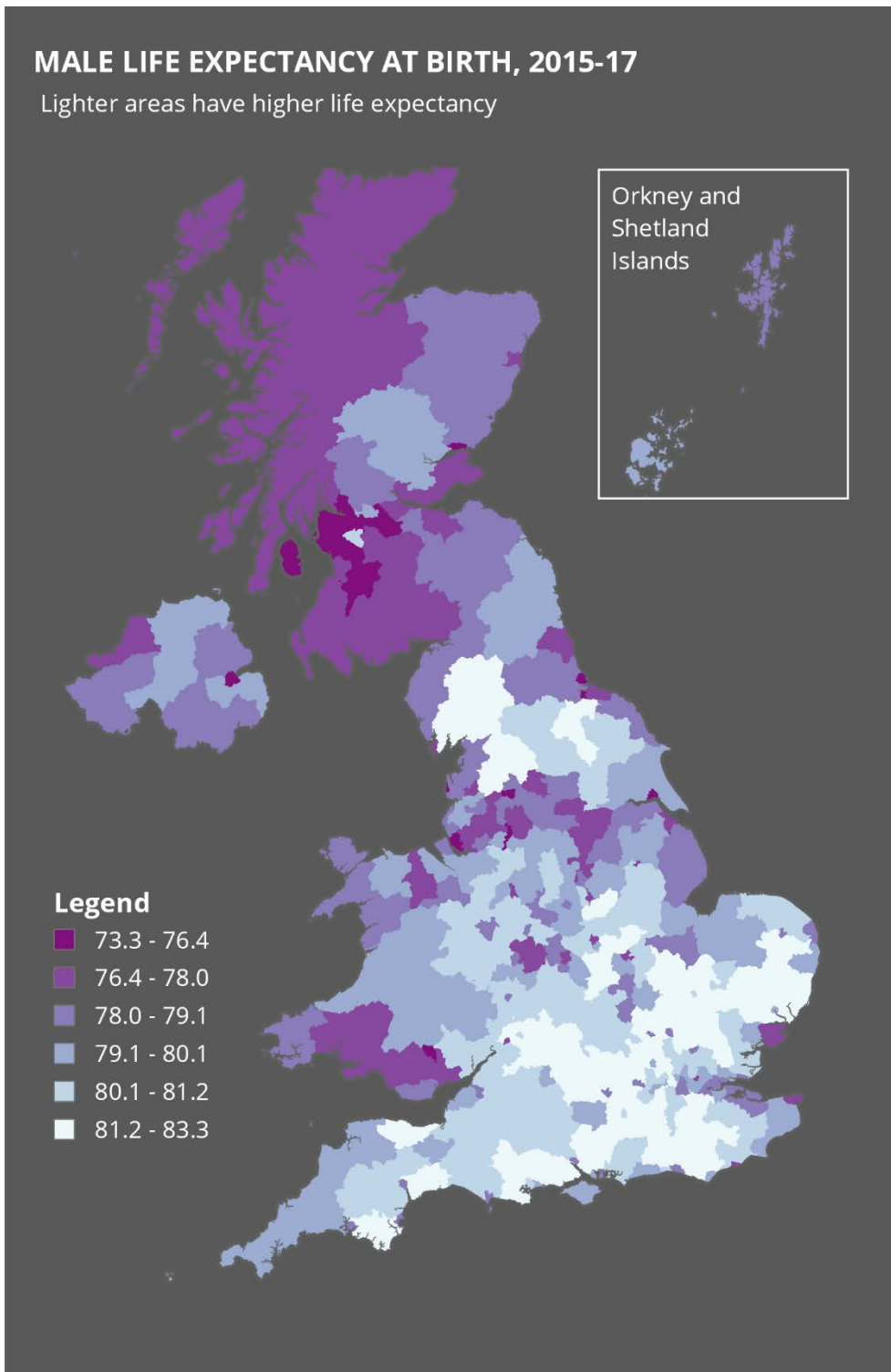
Individual local authority data is published by the ONS in their [Life expectancy at birth and at age 65 by local areas](#) data download. An interactive tool for exploring trends at local authority level is included in the ONS' publication [Health state life expectancies, UK: 2015 to 2017](#).



Notes: Figures exclude deaths of non-residents.

Source: ONS (2018), [Life expectancy at birth and at age 65 by local areas, UK](#)

Maps © Crown copyright. All rights reserved. House of Commons Library
100040654 (2018)



Notes: Figures exclude deaths of non-residents.

Source: ONS (2018), [Life expectancy at birth and at age 65 by local areas, UK](#)

Maps © Crown copyright. All rights reserved. House of Commons Library 100040654 (2018)

About the Library

The House of Commons Library research service provides MPs and their staff with the impartial briefing and evidence base they need to do their work in scrutinising Government, proposing legislation, and supporting constituents.

As well as providing MPs with a confidential service we publish open briefing papers, which are available on the Parliament website.

Every effort is made to ensure that the information contained in these publicly available research briefings is correct at the time of publication. Readers should be aware however that briefings are not necessarily updated or otherwise amended to reflect subsequent changes.

If you have any comments on our briefings please email papers@parliament.uk. Authors are available to discuss the content of this briefing only with Members and their staff.

If you have any general questions about the work of the House of Commons you can email hcenquiries@parliament.uk.

Disclaimer

This information is provided to Members of Parliament in support of their parliamentary duties. It is a general briefing only and should not be relied on as a substitute for specific advice. The House of Commons or the author(s) shall not be liable for any errors or omissions, or for any loss or damage of any kind arising from its use, and may remove, vary or amend any information at any time without prior notice.

The House of Commons accepts no responsibility for any references or links to, or the content of, information maintained by third parties. This information is provided subject to the [conditions of the Open Parliament Licence](#).