

Statistical bulletin

# National life tables, UK: 2016 to 2018

Trends in the average number of years people will live beyond their current age measured by period life expectancy, analysed by age and sex for the UK and its constituent countries.



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# 1 . Main points

- Life expectancy at birth in the UK in 2016 to 2018 was 79.3 years for males and 82.9 years for females; slight improvements were observed from 2015 to 2017 of 3.7 weeks and 4.2 weeks for males and females respectively.
- The relatively low increases in life expectancy at birth in 2016 to 2018 suggest a continuation of a trend observed since 2011, where annual life expectancy improvements have slowed down in comparison with the previous decade.
- Life expectancy at age 65 years was 18.6 years for males and 21.0 years for females, with an improvement of 4.7 weeks for both sexes in comparison with 2015 to 2017.
- In comparison with similar countries, the UK has among the lowest life expectancy improvements for both males and females.
- The probability of reaching age 90 years has remained the same in 2016 to 2018, where one in five males and one in three females born in 2016 to 2018 are likely to celebrate their 90th birthday.

## 2 . Statistician's comment

"Today's life tables show the slowdown in life expectancy improvements observed since 2011 is continuing. Between 2016 and 2018 we have seen much lower increases than experienced in previous decades. Nevertheless, life expectancy is still increasing.

"The causes behind the overall slowdown are likely to be complex. As we see another year of low life expectancy improvements, we will continue our work to understand more about the causes behind this."

Edward Morgan, Centre for Ageing and Demography, Office for National Statistics

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## 3 . Things you need to know about this release

National life tables are produced annually for the UK by the Office for National Statistics (ONS) and constituent countries; this latest release for 2016 to 2018 follows on from the [2015 to 2017 life tables](#) published last year. National life tables are based on three consecutive years of data (in this case 2016, 2017 and 2018) to reduce the effect of annual fluctuations in the number of deaths caused by seasonal events such as "flu".

The national life tables are "period" life tables and all figures referred to in this bulletin are "period" life expectancies. Period life expectancy is the average number of additional years a person would expect to live if he or she experienced the age-specific mortality rates of the given area and time period for the rest of their life. Other measures of lifespan, such as [median and modal age of death](#), give a value that is more closely associated with "typical" ages of death and is always a value higher than life expectancy at birth. This is because these measures are less influenced by infant and child mortality.

The figures published in this release will show marginal differences with those published in previous years. This is because [estimates of the very old \(EVOs\) are revised](#) each year to improve accuracy. In previous publications these revisions have not been taken into account in historical life tables. However, in this release all historical life tables have been revised to incorporate the latest EVOs and the ONS will do so in future publications.

## 4 . Life expectancy in the UK shows a continuation of the slowdown observed since 2011

Between 1991 to 1993 and 1996 to 1998, UK life expectancy at birth grew by an average 11.6 weeks for males and 7.4 weeks for females each year. Between 2001 to 2003 and 2006 to 2008, this increased to an average of 15.4 weeks for males and 10.9 weeks for females. Between 2011 to 2013 and 2016 to 2018, the improvement in life expectancy was lower at an average of 4.7 weeks for males and 3.1 weeks for females.

Since 1981 to 1983, male improvements in life expectancy have almost always been greater than female improvements. Since 2013 to 2015, the improvement gap between males and females has narrowed and in 2016 to 2018, female life expectancy improvement was greater than male

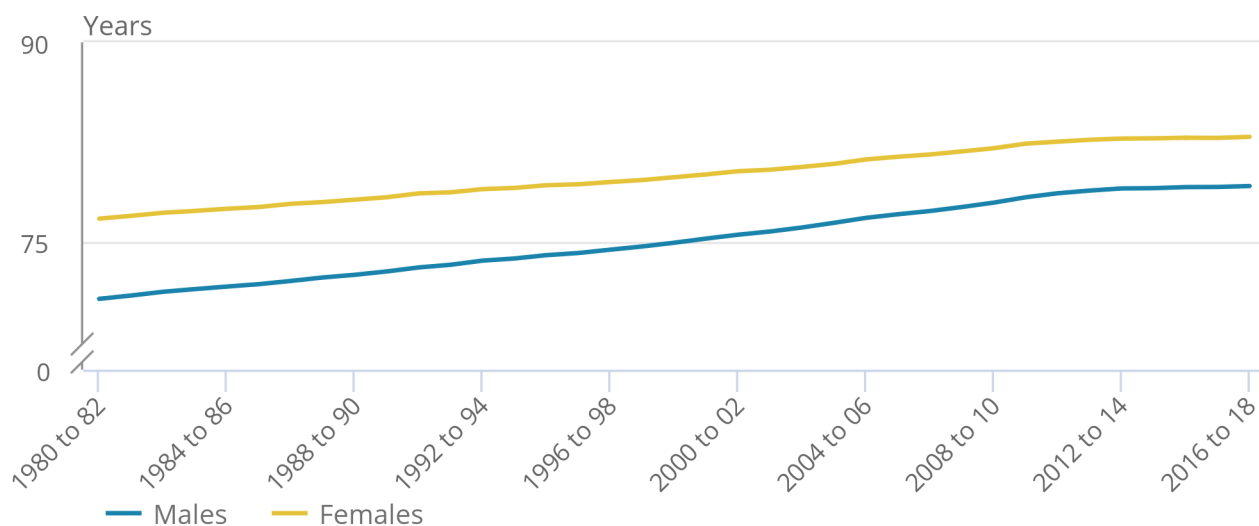
Although these improvements were low compared with the decades of higher improvements that occurred steadily until 2011, UK life expectancy has not been declining. In 2016 to 2018, UK life expectancy at birth was the highest observed for both males and females.

**Figure 1: Life expectancy improvements have slowed down in the UK since 2011**

Life expectancy at birth for males and females, UK, between 1980 to 1982 and 2016 to 2018

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Life expectancy at birth for males and females, UK, between 1980 to 1982 and 2016 to 2018



Source: Office for National Statistics

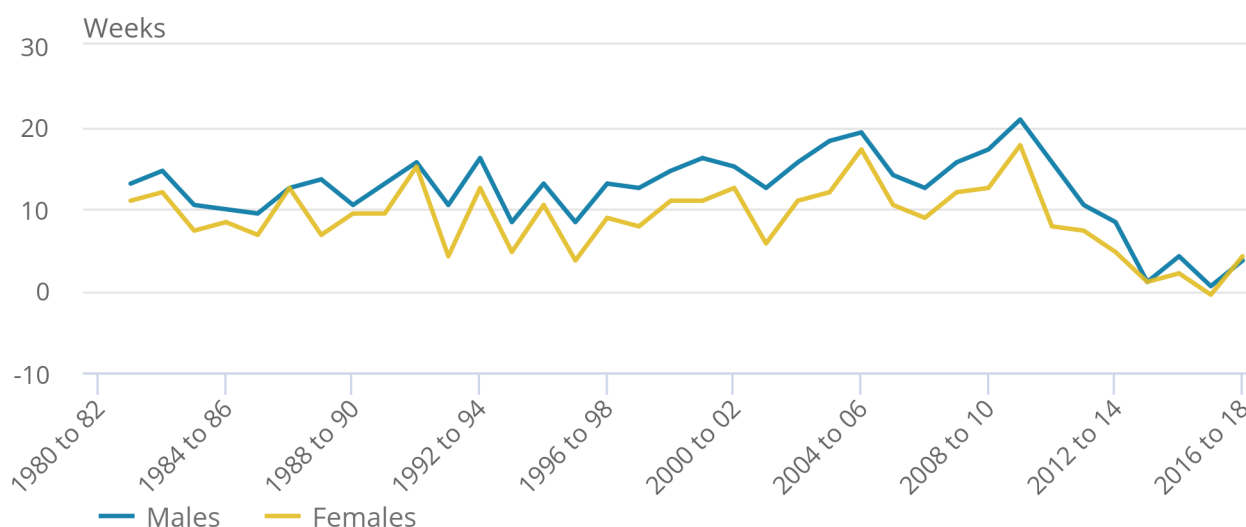
Figure 2 shows the annual increases in life expectancy at birth in the UK measured in weeks per year between 1981 to 1983 and 2016 to 2018. As shown in Figure 2, the small increases in life expectancy at birth seen in 2016 to 2018 follow low levels of improvement occurring between 2012 to 2014 and 2014 to 2016. The Office for National Statistics (ONS) has published a report examining when the slowdown in [life expectancy in the UK began](#).

## Figure 2: Improvement in life expectancy at birth has increased since 2015 to 2017 for males and females

Annual change in life expectancy at birth in weeks, males and females, UK, between 1981 to 1983 and 2016 to 2018

### Figure 2: Improvement in life expectancy at birth has increased since 2015 to 2017 for males and females

Annual change in life expectancy at birth in weeks, males and females, UK, between 1981 to 1983 and 2016 to 2018



Source: Office for National Statistics

#### Notes:

1. The revision of estimates of the very old (EVOs) and historical life tables has led to a change in the value of female life expectancy at birth improvement in 2015 to 2017 from 0.00 weeks, as reported in our 2018 publication, to -0.52 weeks as reported in this publication. The "negative" improvement in life expectancy for females of -0.52 weeks in 2015 to 2017 is a result of small changes to the historic series because of improvements to the input data used in the EVOs and subsequent revisions.

Between the periods 1991 to 1993 and 1996 to 1998, UK life expectancy at birth grew by an average 11.6 weeks for males and 7.4 weeks for females each year. Between the periods 2001 to 2003 and 2006 to 2008, this increased to an average of 15.4 weeks for males and 10.9 weeks for females. Between the periods 2011 to 2013 and 2016 to 2018, the improvement in life expectancy was lower at an average of 4.7 weeks for males and 3.1 weeks for females.

Since 1981 to 1983, male improvements in life expectancy have almost always been greater than female improvements. Since 2013 to 2015, the improvement gap between males and females has narrowed and in the period 2016 to 2018, female life expectancy improvement was greater than male.

## What do the single-year life tables tell us?

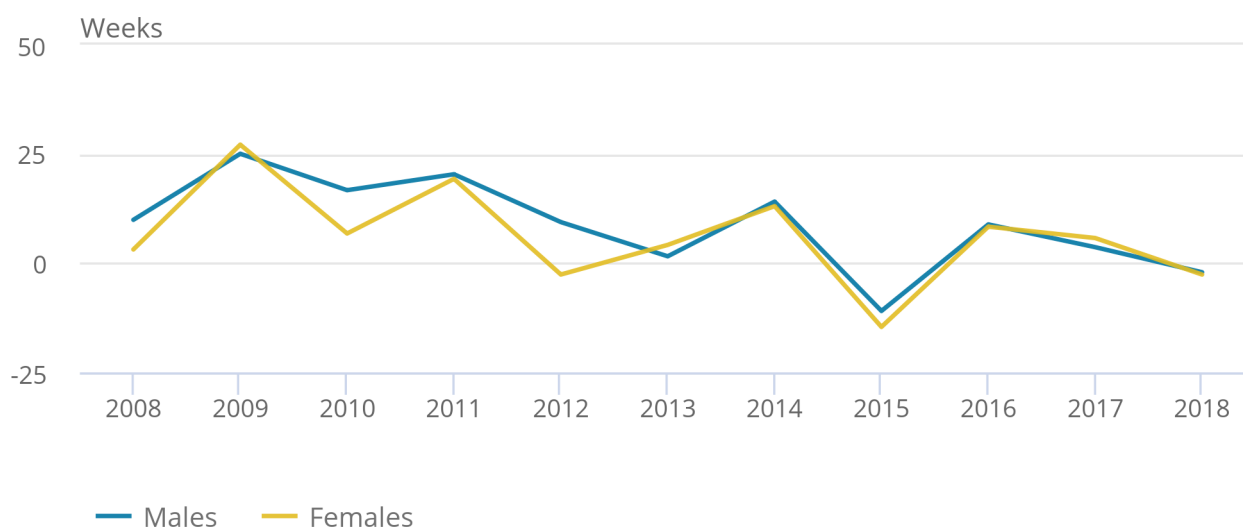
While the national life tables are based on three consecutive years of data, we have also published [single-year life tables](#). Single-year life tables give a more granular and up-to-date perspective on whether mortality patterns are improving, worsening or staying in equilibrium than three-year average life tables. However, unlike three-year life tables, single-year life tables are not National Statistics. They are considered less robust as they are more prone to annual fluctuations in deaths caused by seasonal events. Figure 3 shows annual life expectancy improvements during the period 2008 to 2018, measured in weeks.

### Figure 3: Single-year life tables show greater volatility in life expectancy data

Annual life expectancy at birth improvements, UK, 2008 to 2018

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Annual life expectancy at birth improvements, UK, 2008 to 2018



Source: Office for National Statistics

The rise in mortality rates occurring in 2015 was because of high excess winter mortality during the winter of 2014 to 2015. Deaths caused by pneumonia were higher than typical, with the disease being the [underlying cause in 19% of all winter deaths](#). This winter season continued to have an influence on the size of the improvements observed in the 2015 to 2017 life table, resulting in no overall increases for those years when the figures for 2016 and 2017 were taken into account. While positive life expectancy improvements occurred in 2016 and 2017 overall, small declines in life expectancy at birth for males and females were observed in 2018.

Compared with 2017, male life expectancy at birth fell by 2.1 weeks and female life expectancy at birth by 2.6 weeks. These declines were not as large as those observed in 2015 compared with 2014, where life expectancy fell by 11.0 weeks for males and 14.6 weeks for females.

## What explains the low life expectancy improvements since 2011?

There is much ongoing debate regarding the causes of the slowdown in life expectancy improvements.

[Public Health England's \(PHE\) review \(PDF, 2.93MB\)](#) of recent trends in mortality in England outlined specific age-groups, sexes and causes of death that have contributed to the slowdown of life expectancy improvements. In particular, the review describes demographic characteristics, such as age-groups, which have had a downward influence on life expectancy. Between 2011 and 2016, age-groups 40 to 49 years and 90 years and over for both sexes contributed negatively to changes in life expectancy more than any other age-group. The mortality rates in these age-groups have increased since 2011.

The mortality rate owing to dementia and Alzheimer's disease has increased since 2006 and reductions have been observed in the rate of improvement of heart disease-related mortality rates<sup>1</sup>. These are diseases that primarily affect older age-groups. For younger age-groups, accidental poisonings and suicides were causes of death that contributed negatively to changes in life expectancy between 2011 and 2016. This means that the prevalence of these causes of death has been rising relative to other causes.

### Notes for: Life expectancy in the UK shows a continuation of the slowdown observed since 2011

1. [There are a variety of factors](#) which have caused a rise in the mortality rate from dementia and Alzheimer's disease. One of these is that in 2011 and 2014, there was an update to the coding framework, used to code cause of death. This meant that some deaths that were otherwise classified elsewhere, are now classified as dementia and Alzheimer's.

## 5 . How has life expectancy changed for the UK constituent countries?

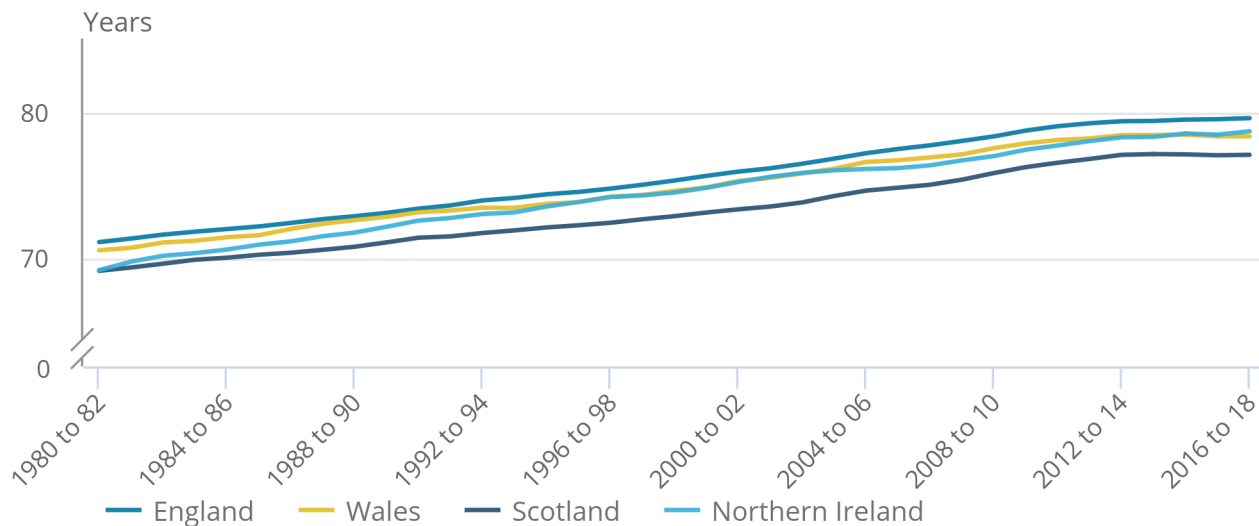
Some of the UK countries saw an increase in life expectancy at birth in 2016 to 2018 compared with 2015 to 2017. England continued to have the highest life expectancy at birth for both males and females and Scotland the lowest, with Wales and Northern Ireland just behind England. All countries continue to show a slowdown in improvement, with some variation between the constituent countries.

**Figure 4: Life expectancy at birth for males in 2016 to 2018 continues to show a slowdown of improvement throughout constituent countries**

Life expectancy at birth, males, UK countries, between 1980 to 1982 and 2016 to 2018

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Life expectancy at birth, males, UK countries, between 1980 to 1982 and 2016 to 2018



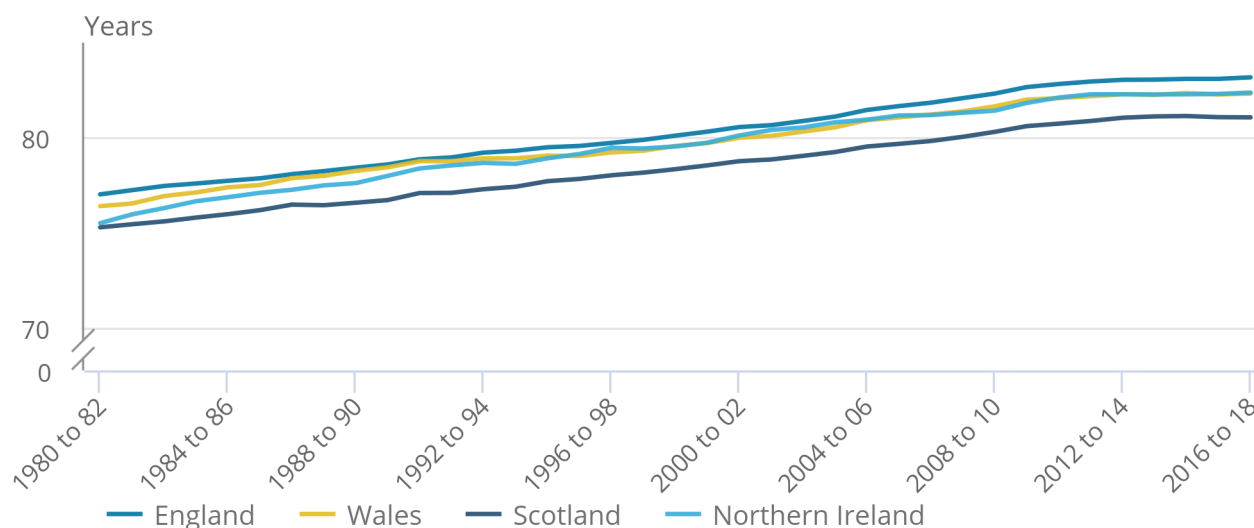
Source: Office for National Statistics

**Figure 5: Life expectancy at birth for females in 2016 to 2018 continues to show a slowdown of improvement throughout constituent countries**

Life expectancy at birth, females, UK countries, between 1980 to 1982 and 2016 to 2018

**Figure 5: Life expectancy at birth for females in 2016 to 2018 continues to show a slowdown of improvement throughout constituent countries**

Life expectancy at birth, females, UK countries, between 1980 to 1982 and 2016 to 2018



Source: Office for National Statistics

Improvements in life expectancy at birth, between 2015 to 2017 and 2016 to 2018, were observed for males and females in all constituent countries except for Welsh males and Scottish females, where life expectancy remains unchanged.

Figure 6 shows that Northern Irish males saw the greatest change in life expectancy at birth of 12 weeks between the periods 2015 to 2017 and 2016 to 2018. However, life expectancy data in Northern Ireland have historically been more volatile. This is because of the relatively small size of the Northern Irish population and number of deaths observed in the country, particularly at younger ages. The improvement in Northern Ireland came after a decline of four weeks between the periods 2014 to 2016 and 2015 to 2017.

While Northern Ireland often shows slightly different patterns of life expectancy to the rest of the UK, as Figures 4 and 5 show, the population has also experienced relatively low life expectancy improvements since 2011.

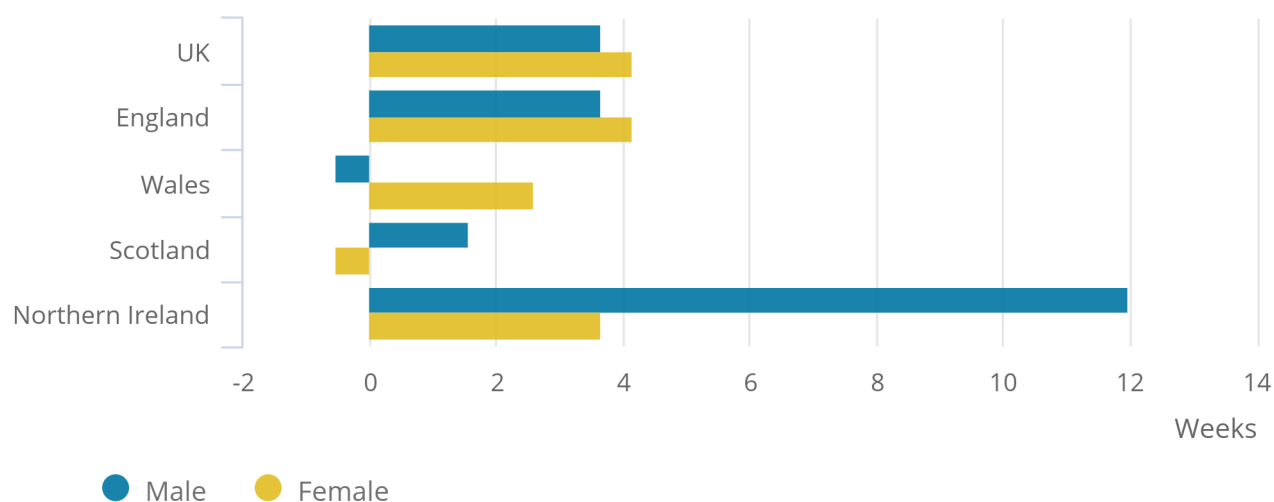
As well as variation between the UK countries, life expectancy at births varies sub-nationally and is affected by a number of localised factors.

**Figure 6: A variety of life expectancy improvements were experienced among the UK's constituent countries**

Change in life expectancy at birth in weeks, UK and UK countries, between 2015 to 2017 and 2016 to 2018

## Figure 6: A variety of life expectancy improvements were experienced among the UK's constituent countries

Change in life expectancy at birth in weeks, UK and UK countries, between 2015 to 2017 and 2016 to 2018



Source: Office for National Statistics

### Notes:

1. When considering the influence of each constituent country on the UK trend, trends in England are most dominant as England makes up the largest proportion of the UK population.

## 6 . How does the UK rank internationally?

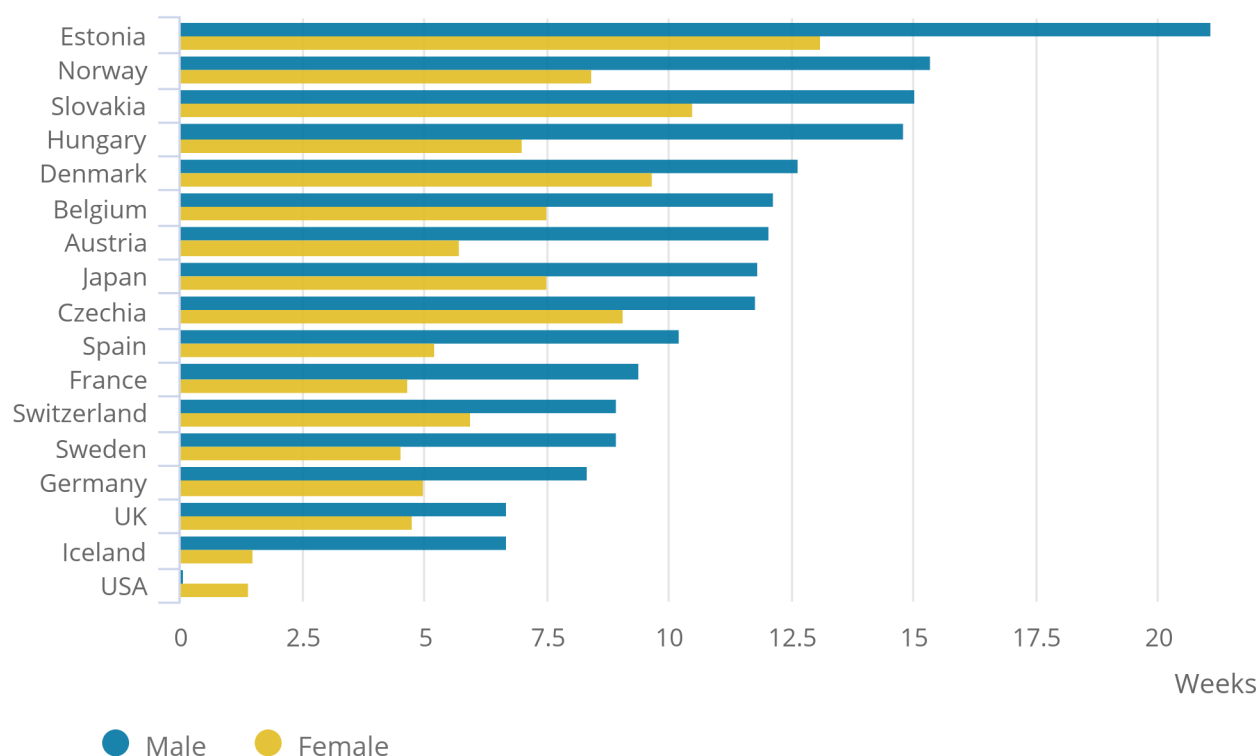
Figure 7 shows the average annual life expectancy improvements of the UK in comparison with other high-income Organisation for Economic Co-operation and Development (OECD) countries, for both males and females during the period 2011 to 2017.

**Figure 7: The UK has shown lower life expectancy improvements during 2011 to 2017 than the majority of selected Organisation for Economic Co-operation and Development (OECD) countries**

Average annual life expectancy improvement in weeks, 2011 to 2017, selected OECD countries

# Figure 7: The UK has shown lower life expectancy improvements during 2011 to 2017 than the majority of selected Organisation for Economic Co-operation and Development (OECD) countries

Average annual life expectancy improvement in weeks, 2011 to 2017, selected OECD countries



Source: Office for National Statistics, Human Mortality Database, Statistics Sweden, Statistics Norway, Statistics Denmark, Statistics Iceland, Swiss Federal Statistical Office, Spanish Statistical Office

## Notes:

1. Life expectancies were obtained from the Human Mortality Database (HMD) except for in cases where data was not available and data from National Statistic organisations were used.

The slowdown of life expectancy improvements since 2011 has been a phenomenon that has occurred in a [number of other countries](#). Figure 7 shows that the UK has experienced the third-lowest male and fifth-lowest female average annual life expectancy improvements of the 16 selected OECD countries during 2011 to 2017.

## 7 . How has life expectancy at older ages changed?

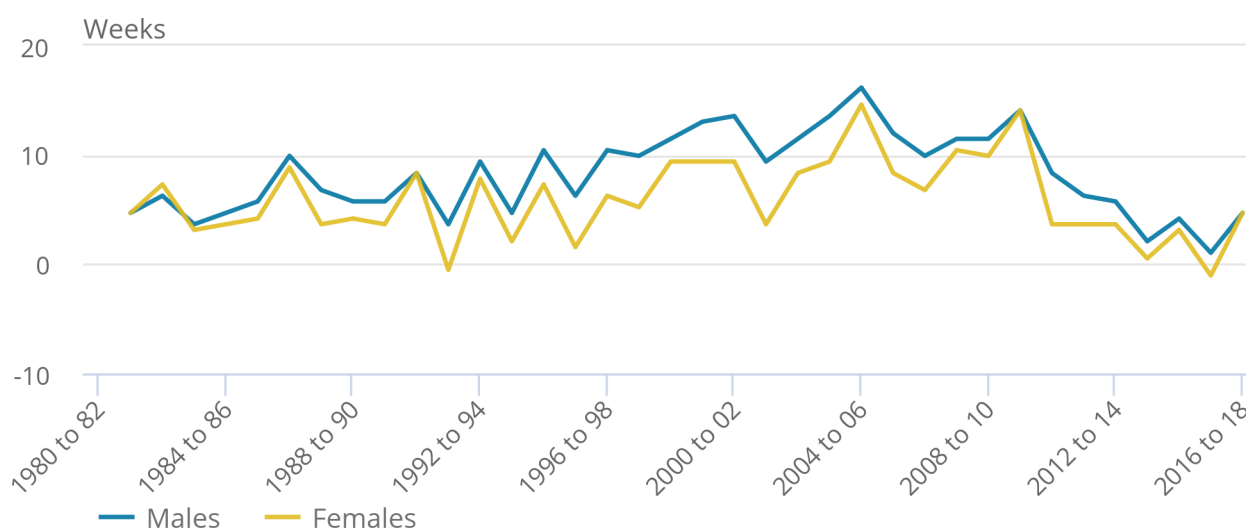
Life expectancy at age 65 years in the UK has seen a pattern of slowing improvements similar to life expectancy at birth. Compared with the period 2015 to 2017, where there was no improvement, life expectancy at age 65 years in the UK has increased by 4.7 weeks for both males and females in 2016 to 2018. A male in 2016 to 2018 could expect to live on average for a further 18.6 years and a female for 21.0 years.

**Figure 8: Improvements in life expectancy at age 65 years have risen since 2015 to 2017, but remain low in comparison with previous decade**

Life expectancy at age 65 years, males and females, UK, between 1980 to 1982 and 2016 to 2018

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Life expectancy at age 65 years, males and females, UK, between 1980 to 1982 and 2016 to 2018



Source: Office for National Statistics

UK life expectancy improvements at age 65 years were slightly higher than the increases in life expectancy at birth seen in 2016 to 2018. This indicates mortality improvements were greater at older ages than younger ages between 2015 to 2017 and 2016 to 2018.

### How has life expectancy at age 65 years changed in the UK constituent countries?

Life expectancy at age 65 years in 2016 to 2018 showed improvements for some of the UK constituent countries compared with 2015 to 2017. There were varying levels of improvement for different countries and different sexes (Figure 9).

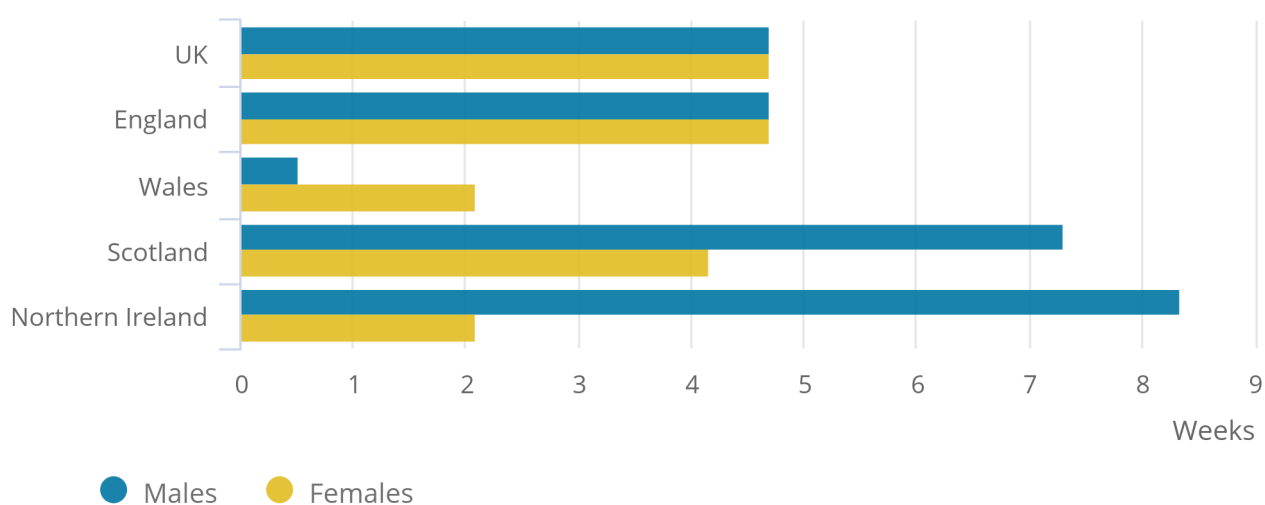
Scottish and Northern Irish males saw the largest improvements at seven and eight weeks respectively, whereas females from these countries saw much lower improvements in comparison with males, at four and two weeks respectively. Wales saw virtually no improvement for both males (0.5 weeks) and females (2.1 weeks) at age 65 years in this period. England saw higher improvements of 4.7 weeks for both sexes. UK saw higher improvements of 4.7 weeks for both sexes.

**Figure 9: UK constituent countries experienced a variety of life expectancy improvements at age 65 years between 2015 to 2017 and 2016 to 2018**

Change in life expectancy, UK and UK constituent countries, between 2015 to 2017 and 2016 to 2018

Figure 9: UK constituent countries experienced a variety of life expectancy improvements at age 65 years between 2015 to 2017 and 2016 to 2018

Change in life expectancy, UK and UK constituent countries, between 2015 to 2017 and 2016 to 2018



Source: Office for National Statistics

### Little change in the chances of reaching age 90 years

In the three-year period in 2016 to 2018, the probabilities of a new-born male or female reaching the age of 90 years in the UK saw very small improvements, but overall these remain the same as those seen in 2015 to 2017, with one in five males reaching age 90 years and one in three females reaching age 90 years.

UK life expectancy at age 90 years saw little change from figures seen in 2015 to 2017, and remained at 4.1 years for males, and 4.6 years for females. Since the period 2006 to 2008, UK life expectancy at age 90 years has increased by 10 weeks for males and 9 weeks for females.

Despite low improvements in life expectancy at age 90 years, we are still seeing an increase in the number of people aged 90 years and over. This is because of previous improvements in mortality going back many decades, which have resulted in an increasing proportion (and number) of people reaching age 90 years over time.

## 8 . Related links

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

[Changing trends in mortality: an international comparison: 2000 to 2016](#)

[Health state life expectancies, UK](#)

[Health state life expectancies by national deprivation deciles, England and Wales](#)

[Estimates of the very old \(including centenarians\)](#)

[Past and projected data from the period and cohort life tables, 2016-based, UK](#)

[What is my life expectancy? And how might it change?](#)

[Period and cohort life expectancy explained: December 2017](#)

[Life Expectancy releases and their different uses](#)

[Deaths registered in England and Wales](#)

[Scottish National Life Tables 2016 to 2018](#)

[Quarterly mortality report, England](#)

## 9 . What's changed within this publication

The 2016 to 2018 national life tables have been calculated using the latest [revised estimates of the very old \(EVOs\)](#). In contrast to previous national life tables, the most recently published EVOs have been used for all life tables in the series and therefore will have small differences when compared with previously published national life tables. EVOs are revised annually from the most recent year back to 1993. The impact of the change to the format of the deaths input data for England and for Wales has been assessed and found to have a small but positive effect on the distribution of the resulting estimates. This change has resulted in improved quality of estimates of the very old for both England and Wales and, by implication, for the UK.

We have also published single year life tables alongside our three-year average life tables. These have been published as a result of evidence of user need for single-year data. Single-year life tables are suited for analyses that require annual data and need more detailed information about mortality patterns. They can give a more granular and up-to-date perspective on whether mortality patterns are improving, worsening or staying in equilibrium than three-year average life tables.

However, single-year life tables show figures which are typically more volatile than three-year average life tables. This is often because of one-off events, such as a flu epidemic, can affect mortality rates dramatically for only a short period. In this respect, single-year life tables are less robust an indicator of mortality trends.

For this reason, they should not be used alone to draw conclusions about longer-term trends. Furthermore, smaller populations such as the UK constituent nations other than England are more prone to short-term volatility as single events can have a large effect on an already small population.

## 10 . Quality and methodology

The 2018 deaths data used in the production of the 2016 to 2018 life table for Northern Ireland are “provisional”.

Estimates of the very old (EVOs) for Northern Ireland prior to 2001 are not published separately. This is because of changes in the mid-year population estimates methodology since mid-2001, which gives rise to inconsistencies in the resulting Kannisto-Thatcher EVOs for some earlier years. At the time of publication, the current EVOs are the most accurate currently available.

For Figure 7, life expectancies were obtained from the Human Mortality Database (HMD) and in cases where data was not available, data from National Statistic organisations were used. Further explanation of the methods used to produce these data can be found in [HMD Method protocol \(PDF, 1.01MB\)](#).

Figures in the commentary in this bulletin are rounded to one decimal place. Calculations in this bulletin have been made using unrounded figures and life expectancy estimates to two decimal places can be found in the datasets for this release.

Further explanation of the methodology used to create the national life tables is available in our [guide to calculating national life tables](#).

The [National life tables Quality and Methodology Information report](#) contains important information on:

- the strength and limitations of the data
- the quality of the output: including the accuracy of the data and how it compares with related data
- uses and users
- how the output was created