

Statistical bulletin

# Estimates of the very old, including centenarians, UK: 2002 to 2018

Annual mid-year population estimates for people aged 90 years and over by sex and single year of age (90 to 104) and 105 years and over, and comparisons between UK countries.



Contact:  
Vasita Patel  
pop.info@ons.gov.uk  
+44 (0)1329 444661

Release date:  
25 September 2019

Next release:  
September to October 2020  
(provisional)

**Table**

## of contents

1. [Main points](#)
2. [Statistician's comment](#)
3. [Things you need to know about this release](#)
4. [Population growth of those aged 90 years and over continues to decrease](#)
5. [The sex ratio for those aged 90 years and over narrows](#)
6. [The number of centenarians in the UK continues to fall](#)
7. [Seasonal variations in births over 100 years ago drives trend in centenarians today](#)
8. [Wales had the greatest proportion of male and female centenarians](#)
9. [The proportion of female centenarians is nearly three times higher in Japan than in the UK](#)
10. [Links to related statistics](#)
11. [Quality and methodology](#)

# 1 . Main points

- In 2018, there was an increase of 0.7% in the number of people aged 90 years and over, from 579,776 in 2017 to 584,024 in 2018.
- An increase of 2.8% in the number of men aged 90 years and over from 2017 drove the overall increase seen in 2018.
- In 2018, there were 13,170 centenarians (people aged 100 years and over) in the UK; this represents a decrease of 5.0% from 2017.
- A low number of births during World War One has driven the decrease in the number of centenarians in 2018.
- In 2018, Wales had the highest proportion of both male and female centenarians in the UK with 8 males aged 100 years and over per 100,000 population of males and 37 females per 100,000 population of females.
- There are nearly three times fewer female centenarians per 100,000 population of females in the UK than in Japan, which has more people aged 100 years and over than anywhere else in the world.

## 2 . Statistician's comment

"The size of the population aged 90 years and over in the UK continued to grow in 2018 – driven by an increase in the number of men at these ages. The rise in the number of men has almost halved the gap between males and females in this age group compared with 25 years ago. However, we have seen a decrease in the number of people aged 100 years and over. This is because of the low number of births in the UK during World War One."

Vasita Patel, Centre for Ageing and Demography, Office for National Statistics.

Follow the Centre for Ageing and Demography on Twitter [@RichPereira\\_ONS](https://twitter.com/RichPereira_ONS).

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

Information about these annual mid-year estimates:

- these are by sex and single year of age for people aged 90 to 104 years and for the 105 years and over age group
- figures for 2002 to 2018 update the figures previously published in September 2018 for England, Wales and the UK
- corresponding estimates for Scotland and Northern Ireland for 2002 to 2018 are also published today by [National Records of Scotland \(NRS\)](#) and the [Northern Ireland Statistics and Research Agency \(NISRA\)](#) respectively
- estimates of the very old are calculated from death registration data using the [Kannisto–Thatcher \(KT\) method](#); they are constrained to the age 90 years and over totals in the [mid-year population estimates](#)

## 4 . Population growth of those aged 90 years and over continues to decrease

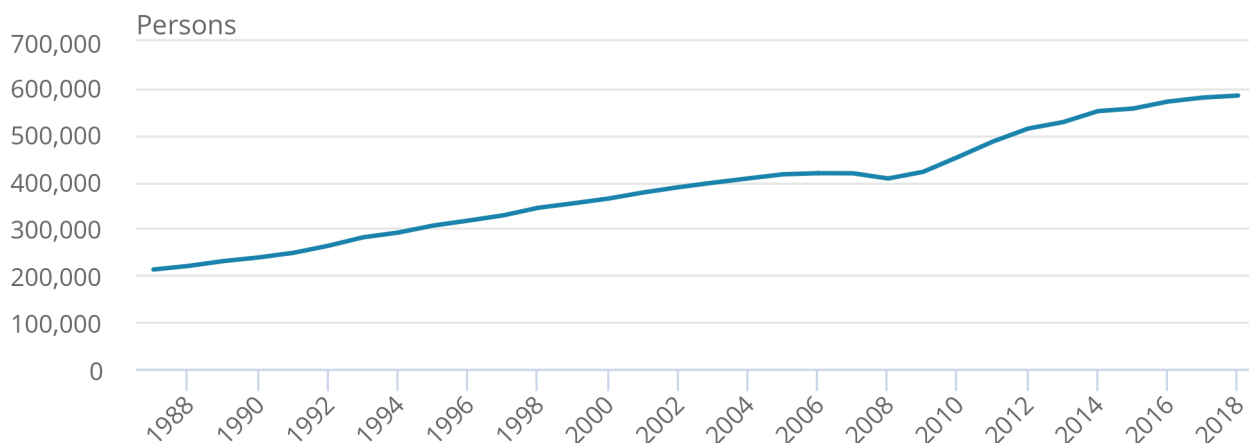
The size of the UK population aged 90 years and over continues to grow, but the rate of growth has decreased in the most recent years (Figure 1). In 2018, the total number of people aged 90 years and over increased by 0.7%, from 579,776 in 2017 to 584,024. This compares with increases of 1.5% and 2.7% in the two preceding years. There are a number of factors that have contributed to the pattern in the estimates of the 90 years and over population over the last decade.

**Figure 1: The rate of growth of the 90 years and over population decreased in 2018**

People aged 90 years and over, UK, 1987 to 2018

### Figure 1: The rate of growth of the 90 years and over population decreased in 2018

People aged 90 years and over, UK, 1987 to 2018



**Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency**

The decrease in the rate of growth of the 90 years and over population seen in recent years is related to historical birth patterns. The dip in the number of people in the population aged 90 years and over between 2007 and 2008 is driven by the low number of births that took place in the UK during World War One (Figure 2). The spike in births seen in 1920 (Figure 2), followed by a higher number of births in 1921 and 1922 compared with previous years, drove up the number of those aged 90 years and over between 2010 to 2012.

Owing to relatively few years of remaining life expectancy at age 90 years, around three-quarters of those in the population aged 90 years and over are aged under 95 years, and most of those born in the post-War birth spike were no longer alive in recent years. Also, there was a sustained decrease in the number of births in the UK following the initial high number of births in the years immediately after the World War One. This resulted in lower numbers of people who could potentially survive to age 90 and over and enter the 90 and over population.

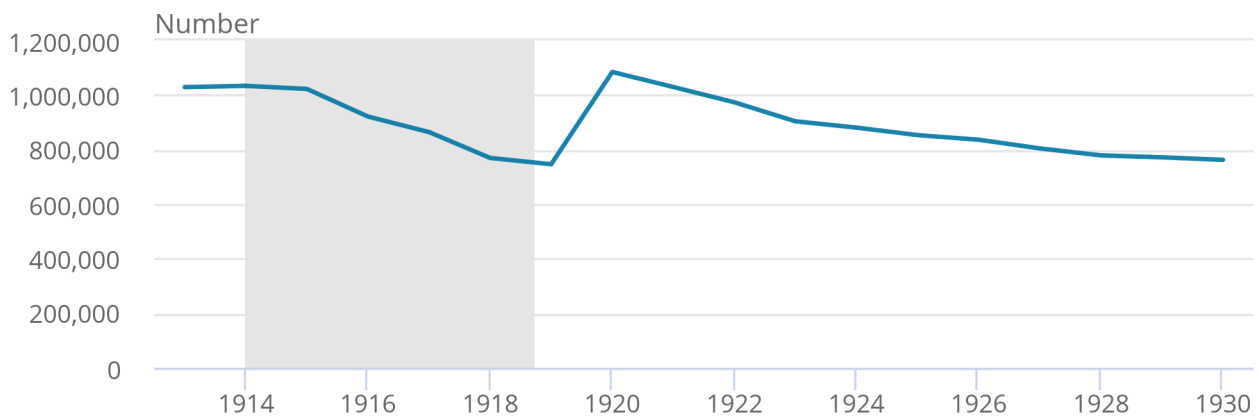
Despite this historical decrease in births, the number and proportion of people reaching 90 years and over has continued to grow. This is because of previous improvements in mortality going back many decades, related to the medical advances and improvements in public health over the 20th century.

**Figure 2: There was a peak in births following World War One**

Live births, UK, 1913 to 1930 (mid-year)

Figure 2: There was a peak in births following World War One

Live births, UK, 1913 to 1930 (mid-year)



Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency

**Notes:**

1. Births based on a mid-year to mid-year period.
2. World War One - July 1914 to November 1918.

Having survived from birth to age 90 years, life expectancy at age 90 years also impacts the size of the 90 years and over population. Since 2011, increases in life expectancy at age 90 years have slowed, which is reflected in the slower growth in the 90 years and over population in more recent years.

People aged 90 years and over today were born at least 90 years ago. The chances of surviving from birth to age 90 years today are based on current mortality levels and represent the proportion of people born today who would reach age 90 years if current mortality levels stay the same throughout their lives. We would have to wait for 90 years to see any impact of this on the size of the population aged 90 years and over.

## 5 . The sex ratio for those aged 90 years and over narrows

Despite there being twice as many females as males aged 90 years and over, the small increase in the number of people in this age group between 2017 and 2018 was driven by a 2.8% increase in the number of males.

### Figure 3: Sex ratio between males and females narrows in recent years

Males and females aged 90 years and over, and sex ratio, UK, 1987 to 2018

[Data download](#)

Women have historically had longer life expectancies than men and consequently there are more women than men living to older ages. However, the gap between female and male life expectancy has been reducing over the years owing to male life expectancy increasing at a faster rate than female life expectancy over many decades. The ratio of females to males aged 90 years and over continues to narrow, from a high of 4.4 females to males in 1990 to half this at 2.2 in 2018 (Figure 3).

## 6 . The number of centenarians in the UK continues to fall

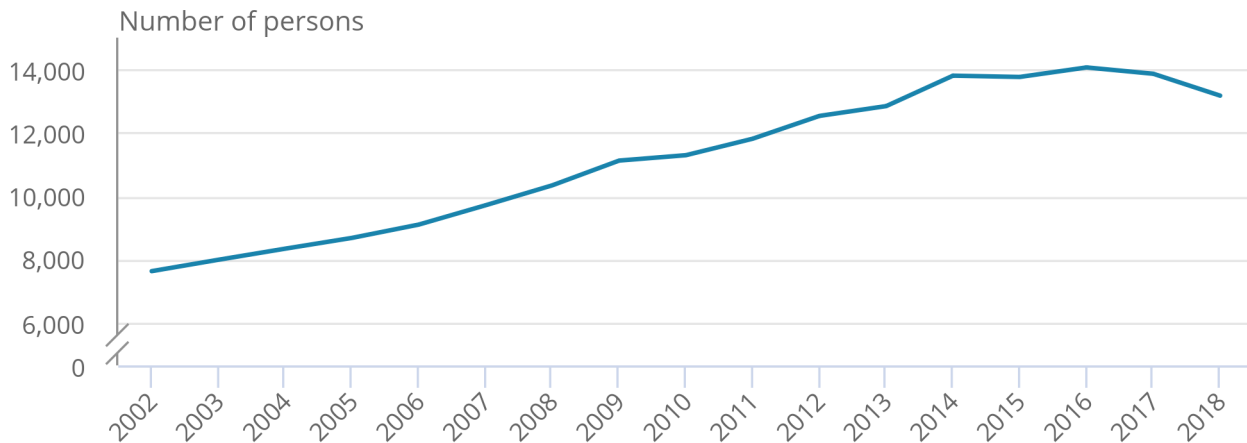
In 2018, there were an estimated 13,170 centenarians (people aged 100 years and over) in the UK, 5.0% fewer than in 2017 (Figure 4). This follows an expected downward trend resulting from the low number of births during World War One.

**Figure 4: There was a decrease in the number of centenarians in the UK in 2018**

Number of centenarians, UK, 2002 to 2018

Figure 4: There was a decrease in the number of centenarians in the UK in 2018

Number of centenarians, UK, 2002 to 2018



Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency

## 7 . Seasonal variations in births over 100 years ago drives trend in centenarians today

Following the return of soldiers after World War One, the number of births spiked in the latter half of 1919, approximately nine months after the war ended in November 1918 (Figure 5). 45.4% more babies were born across the UK between mid-1919 and mid-1920 than in the year before.

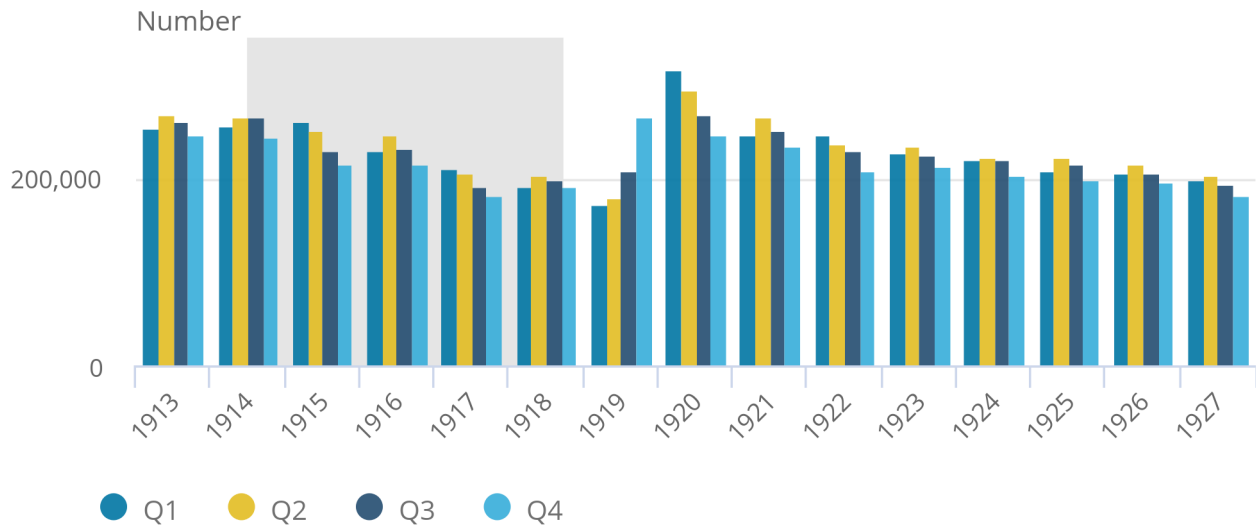
The birth rate remained high well into 1921, after which the average seasonal birth patterns returned to those seen in the pre-War years, with a greater number of births occurring between April and September. Based on the seasonal variations in births seen in the UK 100 years ago, we would expect to see a large increase in the number of centenarians from mid-2020.

**Figure 5: There was a peak in births in the latter half of 1919 following the end of World War One**

Number of live births by quarter, UK, 1913 to 1927

World War One  
**Figure 5: There was a peak in births in the latter half of 1919 following the end of World War One**

Number of live births by quarter, UK, 1913 to 1927



Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency

Notes:

1. Q1 refers to Quarter 1 (Jan to Mar), Q2 refers to Quarter 2 (Apr to June), Q3 refers to Quarter 3 (July to Sept) and Q4 refers to Quarter 4 (Oct to Dec).

Those aged 90 years by mid-2010 were born between 1 July 1919 and 1 July 1920. The spike in births during this time resulted in a greater number of individuals that had the potential to survive to very old ages and led to a 48.4% increase in the number of 90 year olds in mid-2010 compared with mid-2009. Following this trend, this same birth cohort would then be aged 100 years at the start of the mid-2020 period, when we would expect a noticeable increase in the number of centenarians.

## 8 . Wales had the greatest proportion of male and female centenarians

In 2018, Wales had the greatest proportion of both male and female centenarians in the UK, with 8 men aged 100 years and over per 100,000 men and 37 women aged 100 years and over per 100,000 women (Figure 6).

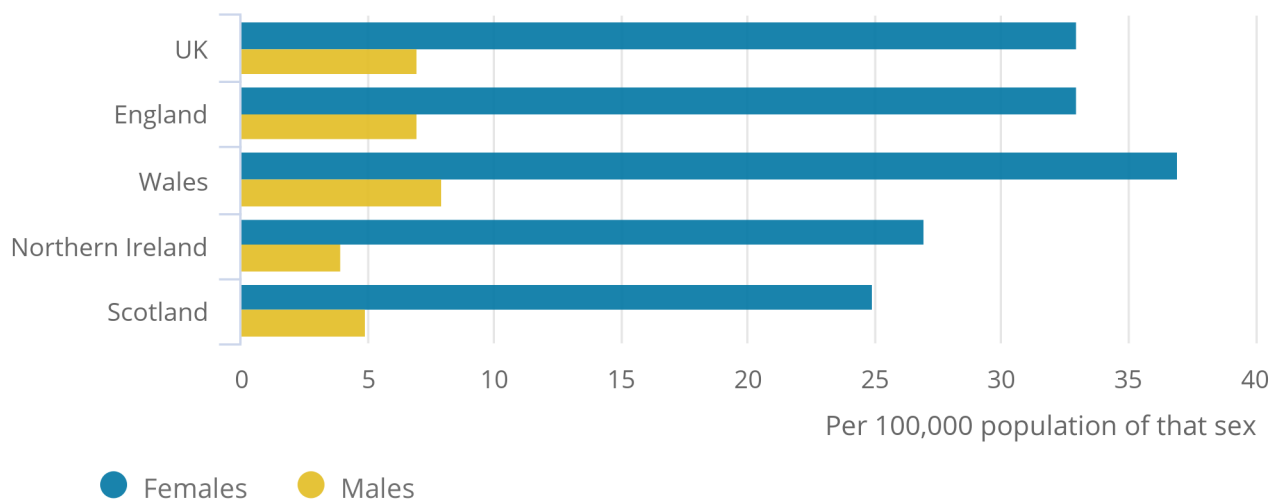
England had the second largest proportion of centenarians in the UK, with 7 males and 33 females per 100,000 population of each sex.

## Figure 6: The highest proportion of female centenarians is in Wales and the lowest is in Scotland

Number of centenarians per 100,000 population, by sex and UK country, 2018

### Figure 6: The highest proportion of female centenarians is in Wales and the lowest is in Scotland

Number of centenarians per 100,000 population, by sex and UK country, 2018



Source: Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency

Northern Ireland had a higher proportion of female centenarians at 27 per 100,000 population of females, than Scotland (25 per 100,000 population of females). In comparison, Scotland had a greater proportion of male centenarians (5 per 100,000 population of males) than Northern Ireland (4 per 100,000 population of males) in 2018.

Northern Ireland had the greatest difference between the proportion of female and male centenarians, with almost 6.5 times as many females reaching 100 years and older than males.

The relatively small size of the population of Wales and Northern Ireland can produce more volatility in the data used to estimate the number of centenarians.

## 9 . The proportion of female centenarians is nearly three times higher in Japan than in the UK

The [UN](#) has estimated there were 499,198 centenarians in the world in 2018, comprised of 106,013 males and 393,185 females.

In the UK in 2018, there were 7 male centenarians per 100,000 population of males and 33 female centenarians per 100,000 population of females (Figure 7).

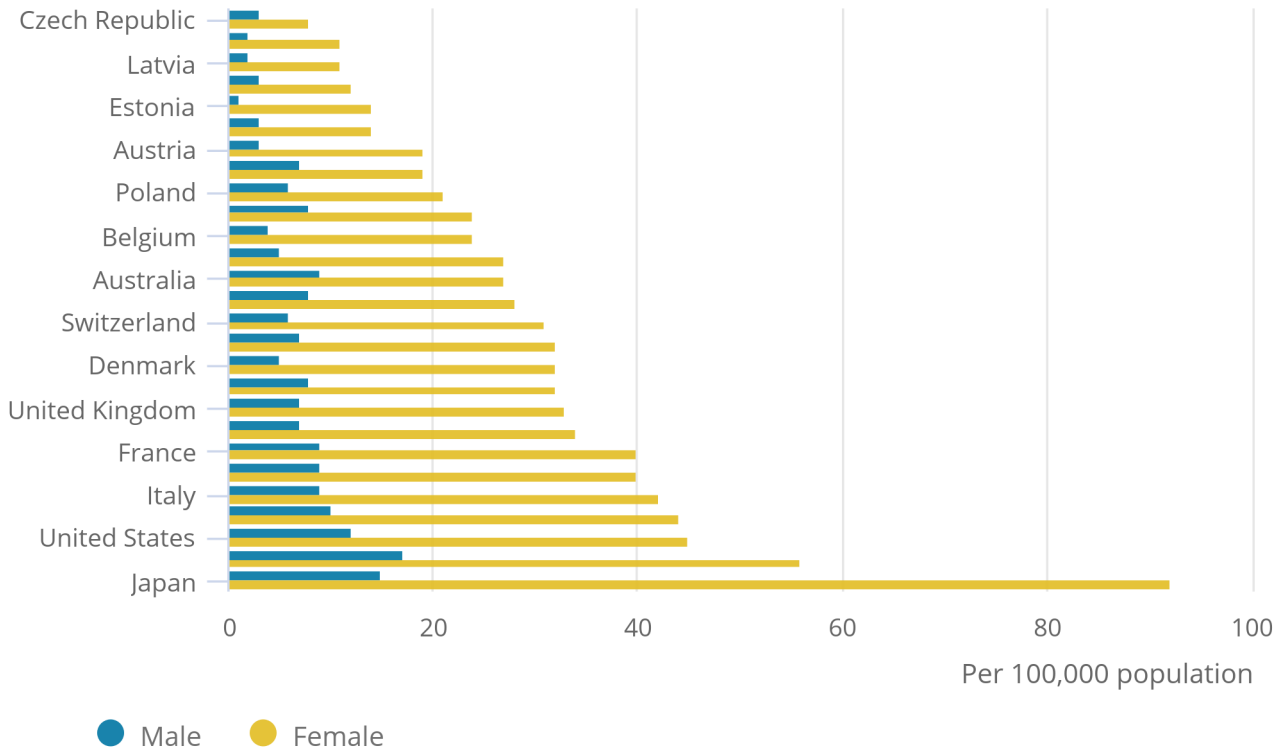


**Figure 7: Japan had the highest proportion of female centenarians in 2018**

Number of centenarians per 100,000 population, by sex, in the UK and other selected countries, 2018<sup>2</sup>

**Figure 7: Japan had the highest proportion of female centenarians in 2018**

Number of centenarians per 100,000 population, by sex, in the UK and other selected countries, 2018<sup>2</sup>



Source: See Footnote 3

Notes:

1. Organisation for Economic Co-operation and Development (OECD) countries with available data are included.
2. Data for Lithuania are for 2019.
3. Office for National Statistics, National Records of Scotland, Northern Ireland Statistics and Research Agency, Federal Statistical Office Switzerland, Central Statistical Bureau of Latvia, Statistics Korea, Statistics Estonia, Statistics Belgium, Statistics Austria, Official Statistics of Japan, Statistics Sweden, French National Institute of Statistics and Economic Studies, Italian National Institute of Statistics, Statistics Norway, National Statistics Institute Spain, Statistics Finland, Statistics Denmark, Statistics Canada, United States Census Bureau, Australian Bureau of Statistics, Statistics Iceland, Statistical Office of the Republic of Slovenia, Czech Statistical Office, Stats NZ Tatauranga Aotearoa, Statistics Lithuania, Turkish Statistical Institute, Statistics Poland, Institute of National Statistics Chile, Central Statistics Office Ireland

When comparing the OECD countries, Japan had the highest proportion of female centenarians at 92 per 100,000 population of females. This was followed by South Korea and the United States at 56 and 45 per 100,000 population of females respectively.

In 2018, Korea had the highest proportion of male centenarians at 17 per 100,000 population of males. This was followed by Japan and the United States at 15 and 12 per 100,000 population of males respectively.

The greatest difference between the male and female proportions can be seen in Estonia where there are over 11 times more females than males aged 100 years old and over. The smallest difference is in Iceland where there are just over 2.5 times more females than males aged 100 years old and over.

## 10 . Links to related statistics

More information on the topic of the UK population is available:

- [Population estimates for the UK, England and Wales, Scotland and Northern Ireland: mid-2018](#)
- [Overview of population statistics](#)
- [National life tables](#)

## 11 . Quality and methodology

In 2011, the estimates were assessed by the UK Statistics Authority and have since been published as [National Statistics](#). The estimates were re-assessed in 2016 and their National Statistics status was retained.

Estimates for the UK, England, and Wales are produced by the Office for National Statistics (ONS) while estimates for Scotland and Northern Ireland are produced by [National Records of Scotland \(NRS\)](#) and the [Northern Ireland Statistics and Research Agency \(NISRA\)](#) respectively. The 2018 deaths data used in the production of the Northern Ireland 90 years and over single year of age estimates are provisional.

From this production year onwards, the data used to calculate these estimates have changed from deaths on a calendar year basis by age at death, to deaths on a mid-year to mid-year basis by age at the start of the mid-year period. This has been done to improve the precision of the estimates, reduce the use of assumptions, and harmonise with the methodology used by NRS and the NISRA. Further details can be found in an accompanying [methodology paper](#). A report has also been published on the [comparability of estimates of the very old](#) produced by the ONS, NRS and the NISRA.

The [Population estimates of the very old, including centenarians, Quality and Methodology Information \(QMI\) report](#) contains important information on:

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

The underlying pledge of the [UN Sustainable Development Goals](#) is to leave no-one behind, which by definition includes the very old. Availability of data is key to delivery of the goals. This dataset provides an accurate estimate of the very old population in the UK aged 90 to 105 years and over disaggregated by single year of age.

We published an [evaluation of official high-age population estimates](#) in December 2016.