National Records of Scotland

Centenarians in Scotland, 2008 to 2018

Published on 25 September 2019

This statistical report provides population estimates of the very old, including the number of centenarians (aged 100 and over) and estimates for those aged 90 to 99 years in Scotland, by sex and age.

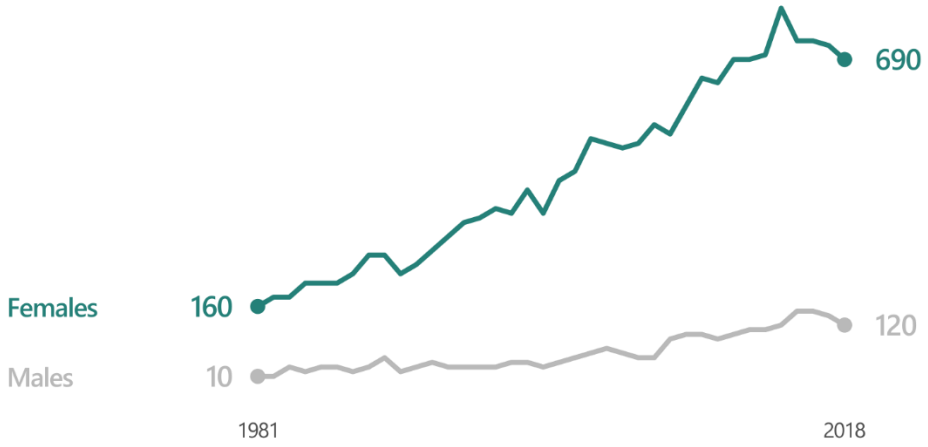
Growth has stalled in the centenarian population

In Scotland in 2018, there were an estimated 810 centenarians — those aged 100 and over.

This is a decrease from the peak of 920 in 2014, but is still a 17% increase from 2008.

The majority of centenarians are women (85% in 2018).

Number of centenarians (aged 100 and over) by sex

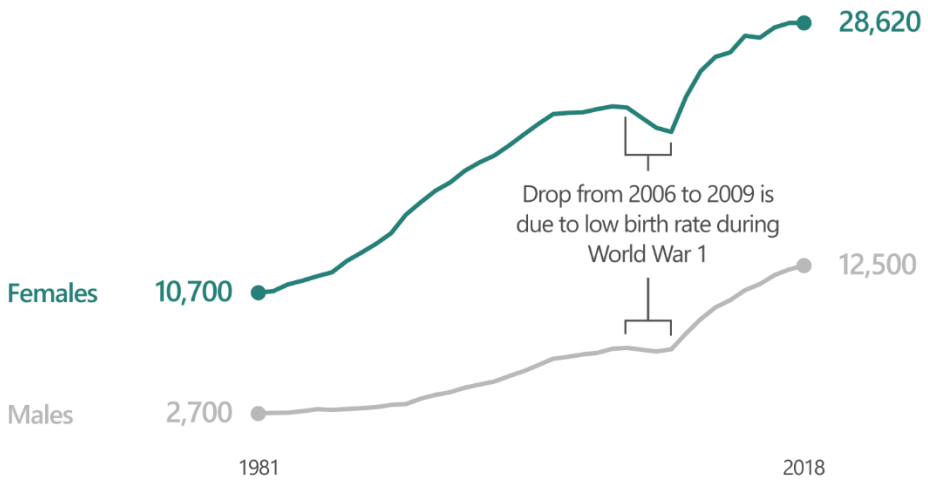


There are more people aged 90 to 99

There were 41,120 people aged 90 to 99 in Scotland in 2018, up from 28,450 in 2008 (a 45% increase).

While women remain the majority in this age group, men represented a higher proportion than ever before (30%).

Persons aged 90 to 99 by sex

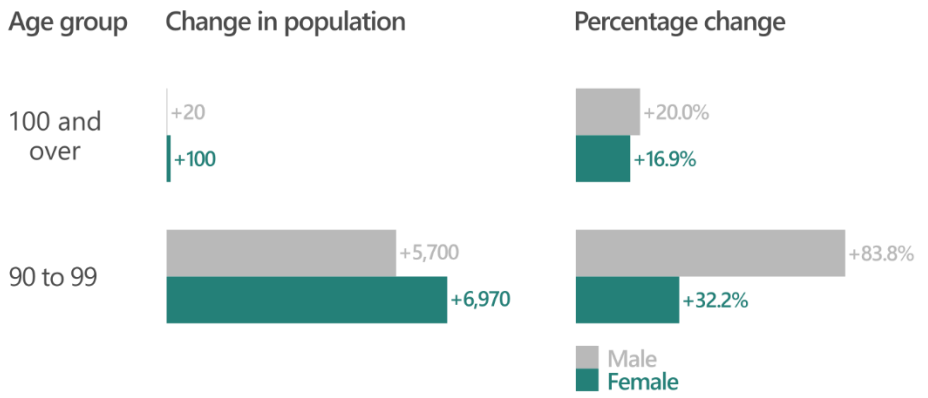


The growth rate is higher for males

Growth rates for centenarians from 2008 to 2018 are smaller than those for 90 to 99 year olds, but both are larger than those for the whole population.

Increases in those aged 90 and over are larger for females, but the smaller male population means the growth rate for males is larger, particularly for 90 to 99 year olds.

Change by age group and sex, 2008-2018



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Key Findings

- In Scotland in 2018, there were an estimated 810 centenarians (people aged 100 and over). This is a 17% increase from 2008 when there were an estimated 690 centenarians, and 4.8 times as many centenarians compared to 1981.
- The number of centenarians has decreased since 2014. This corresponds to lower birth rates during the First World War, and a recent stall in increases to life expectancy.
- The majority of centenarians are women. In 2018, women accounted for 690 of Scotland's centenarians (85%) while 120 centenarians were men.
- The number of male centenarians increased by 20% between 2008 and 2018 from 100 to 120, while the number of female centenarians increased by 17% from 590 to 690 during the same period.
- The ratio of male to female centenarians has remained broadly stable, with 17 men per 100 women in both 2008 and 2018.
- The number of centenarians relative to the rest of the population has increased since 2008 (when there were 1.3 per 10,000 people). But there were still less than two centenarians for every 10,000 people in 2018 (1.5 per 10,000).
- The number of people aged 90 to 99 increased from 28,450 in 2008 to 41,120 in 2018, an increase of 45%.
- The number of men aged 90 to 99 increased from 6,800 to 12,500 between 2008 and 2018, an increase of 84%. The number of females aged 90 to 99 increased from 21,650 to 28,620 during the same period, an increase of 32%.

1. Introduction

The number of centenarians (people aged 100 years and over) across the industrialised world has been growing at an increasing rate since the 1950s[1].

At the start of the 20th Century, Scottish centenarians were extremely rare, but by the start of the 21st Century there were estimated to be around 500 people aged 100 or over in Scotland. This increase in centenarians has been largely driven by increases in survival rates of older people, as the result of improvements in hygiene, sanitation, medical treatment, housing and living standards in general.

This report details the estimated number of people by sex aged 90 to 104, by single year of age, and the number of people aged 105 and over in Scotland, for 2008 to 2018. All of the estimates presented here refer to the population at 30 June, and ages relate to age at last birthday.

A time series of the number of people by sex aged 90 to 104, by single year of age, and the number of people aged 105 and over in Scotland for 1981 to 2018 is available on the National Records of Scotland (NRS) website.

These statistics give an important insight into the most rapidly growing age-group of Scotland's population and are used in the calculation of life expectancy statistics for Scotland.

More information about the estimates published in this release is available in the background notes section of this document with more detailed information on the methodology and quality in the Centenarians in Scotland Methodology Guide on the National Records of Scotland website.

How to find data

What are you looking for?	Where is it?
The data used in this publication	Excel tables
Time series data for 1981-2018	Time Series Data

Footnote

1) Kannisto, V, 1997, *The Advancing frontier of survival*. Odense Monographs on Population Aging 3. Odense University Press.

2. Population of the very old in Scotland

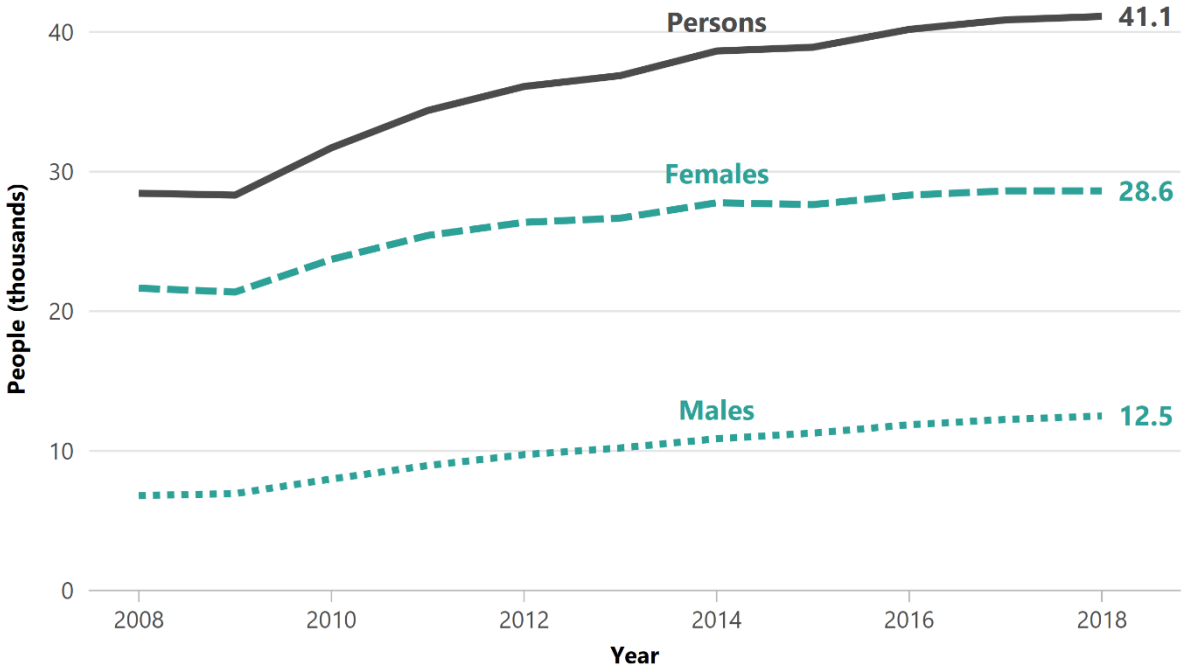
The population aged 90 to 99 has increased

The number of people aged 90 to 99 was at the highest ever level in 2018. Figure 1 shows the increase in the number of 90 to 99 year olds over the past decade.

In the period 2008 to 2018 the population aged 90 to 99 increased by 45% from 28,450 to 41,120: an 84% increase for males (from 6,800 to 12,500) and a more modest 32% increase for females (from 21,650 to 28,620).

The dip seen before 2009 amongst the 90 to 99 year olds is a representation of the lower births during the First World War, while the increase from 2010 onwards is partly related to the large number of births that followed the end of the war. The overall increase in the number of people aged 90 and over can also be attributed to a decrease in mortality amongst older ages.

Figure 1: Persons aged 90 to 99 by sex, Scotland, 2008 to 2018



Growth in the centenarian population has stalled in recent years

The number of centenarians has mainly **increased** before 2014 and **decreased** in recent years up to 2018.

The population aged 100 and over (the centenarian population) increased by 17% (from 690 in 2008 to 810 in 2018). The male centenarian population increased by 20% (from 100 in 2008 to 120 in 2018), while the female population increased by 17% (from 590 in 2008 to 690 in 2018).

However, the population has not grown in recent years. The current estimates show a slight decline in the centenarian population in the last two years, from 860 in 2017 to 810 in 2018, and the centenarian population has not increased in any year since 2014.

Figure 2: Centenarians by sex, Scotland, 2008 to 2018

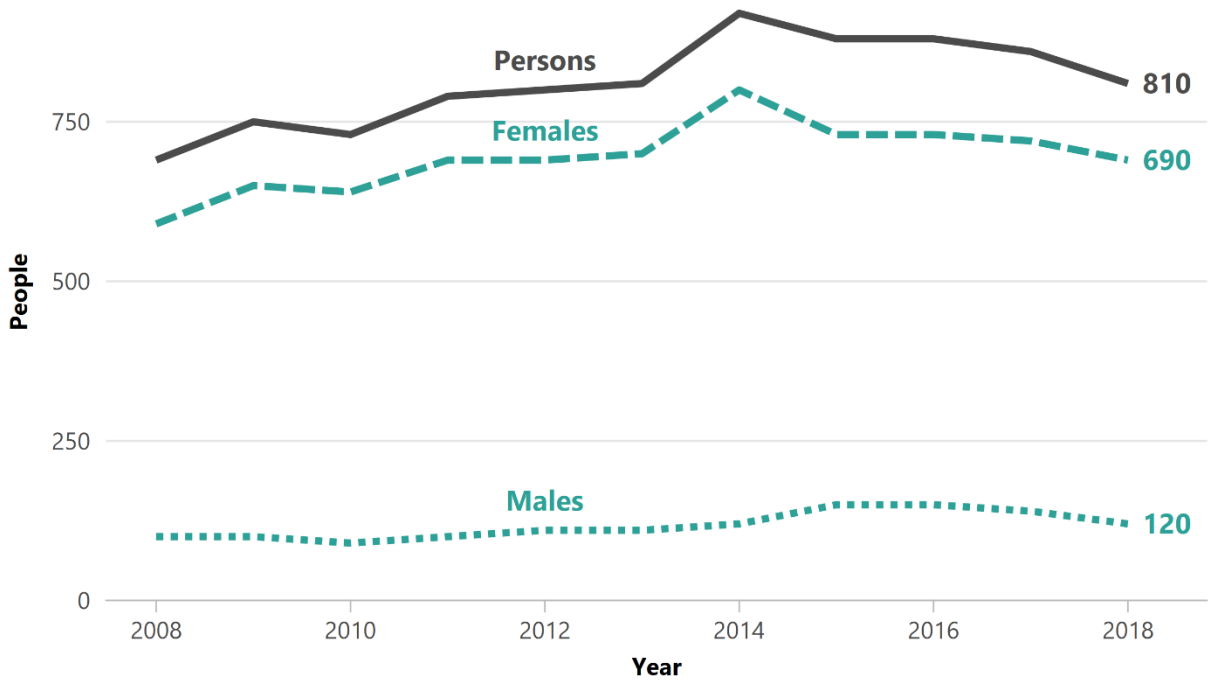
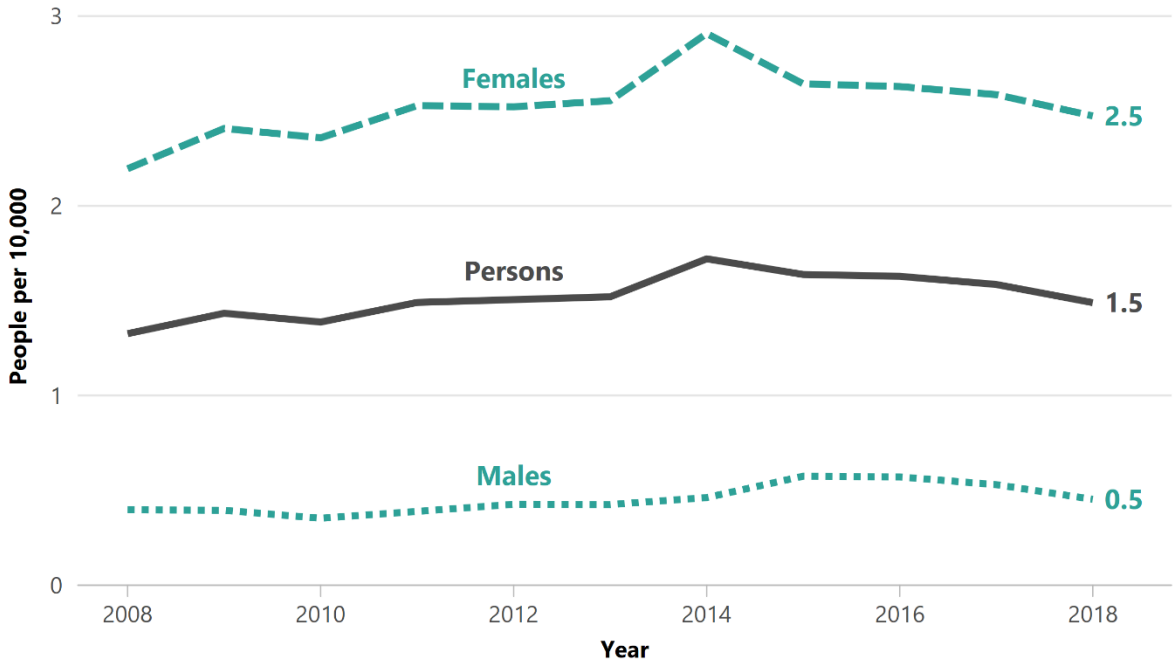


Figure 3: Centenarians per 10,000 population by sex, Scotland 2008 to 2018



Proportion of centenarians

Although centenarians are still rare, the number of centenarians in Scotland's total population has moderately increased in the past decade, from 1.3 per 10,000 in 2008 to 1.5 per 10,000 in 2018. This is shown in Figure 3. The number of male centenarians per 10,000 males in the total population increased from 0.4 to 0.5 per 10,000 in this period. For females, there was an increase from 2.2 per 10,000 to 2.5 per 10,000 between 2008 and 2018.

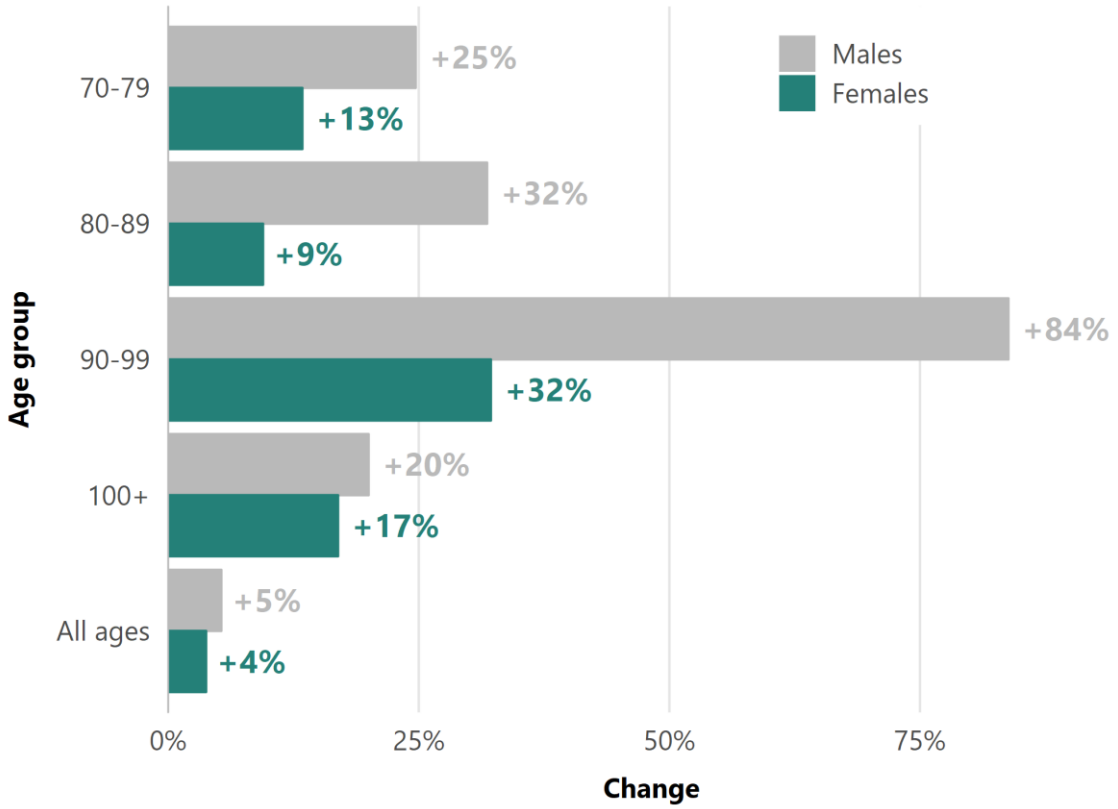
Proportionally, there are **fewer** centenarians in Scotland than in the UK as a whole.

Centenarians make up a larger proportion of the population at UK level (2.0 per 10,000 population) than in Scotland (1.5 per 10,000 population). Between 2008 and 2018 the percentage increase in the number of centenarians in Scotland (17%) was lower than in the UK as a whole (27%).

Changes in elderly populations by age

Figure 4 shows that between 2008 and 2018 the percentage increase for males was higher than for females at older ages, although for centenarians the percentage increases for males and females were much closer. As seen in Figure 1 for people aged 90 to 99 and Figure 2 for people aged 100 and over, the number of females at the highest ages remains much larger than the number of males.

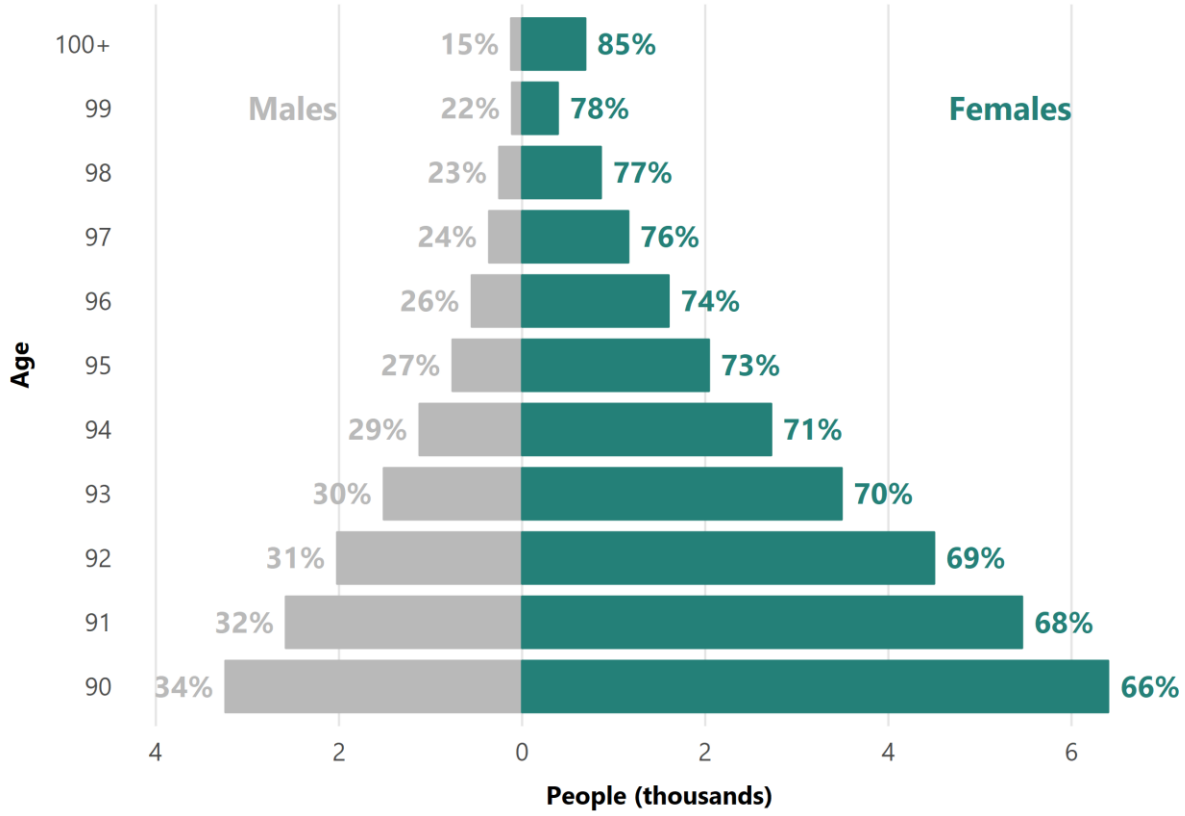
Figure 4: Percentage population change by age group and sex, Scotland, 2008 to 2018



It is also clear that, over the past 10 years, the number of people in the older age groups has increased at a higher rate than the population of Scotland as a whole, an indication of the ageing population. The total population has increased by 5% while the centenarian population has increased by 17%, the 90-99 population has increased by 45% and the 70-89 population has increased by 18%.

3. Sex structure of the very old population

Figure 5: Number and percentages of males and females aged 90 to 99 and centenarians, Scotland, 2018 (thousands)



The balance of sexes in the very old is slowly getting more even, but is still mostly **female** - especially for centenarians.

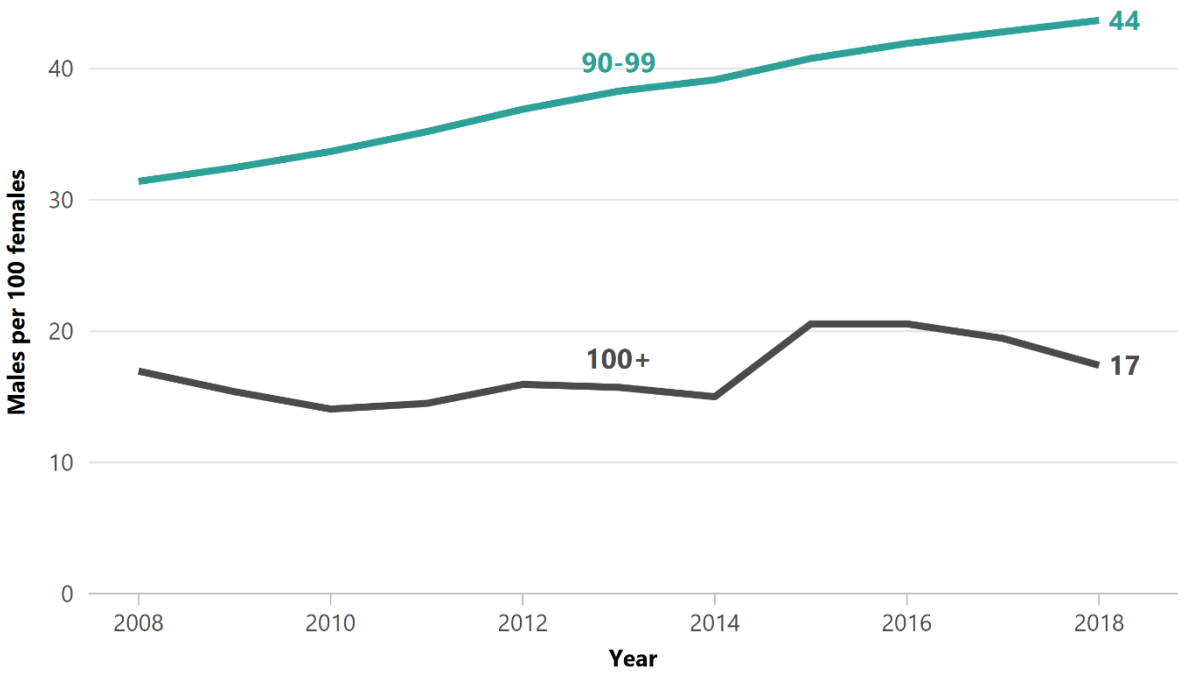
Figure 5 illustrates the age and sex structure of the population aged 90 and over. The majority of the population aged 90 and over are concentrated at the lower ages. While there were 9,640 people aged 90 in 2018, there were only 500 people aged 99, and 810 people were aged 100 and over.

The proportion of males relative to females also declines at higher ages as a result of higher male mortality amongst the very old. Males made up 34% of those aged 90 in 2018, but only made up 15% of the centenarian population.

Figure 6 shows that between 2008 and 2018, the number of male centenarians per 100 female centenarians has remained broadly stable over the last 10 years, at 17 in both 2008 and 2018 and ranging between 14 and 21 in the years in between. In

contrast, the same figure for 90-99 year olds has increased from 31 in 2008 to 44 in 2018.

Figure 6: Males per 100 females, 90-99 year olds and centenarians, Scotland, 2008 to 2018



The number of male centenarians is very small, numbering around 120 in 2018, while there were 690 females aged 100 and over. The small numbers involved mean that relatively small changes in the population can have a large effect on the sex ratio within the centenarian population.

4. Causes of changes in centenarian populations

Effect of birth rates during First World War

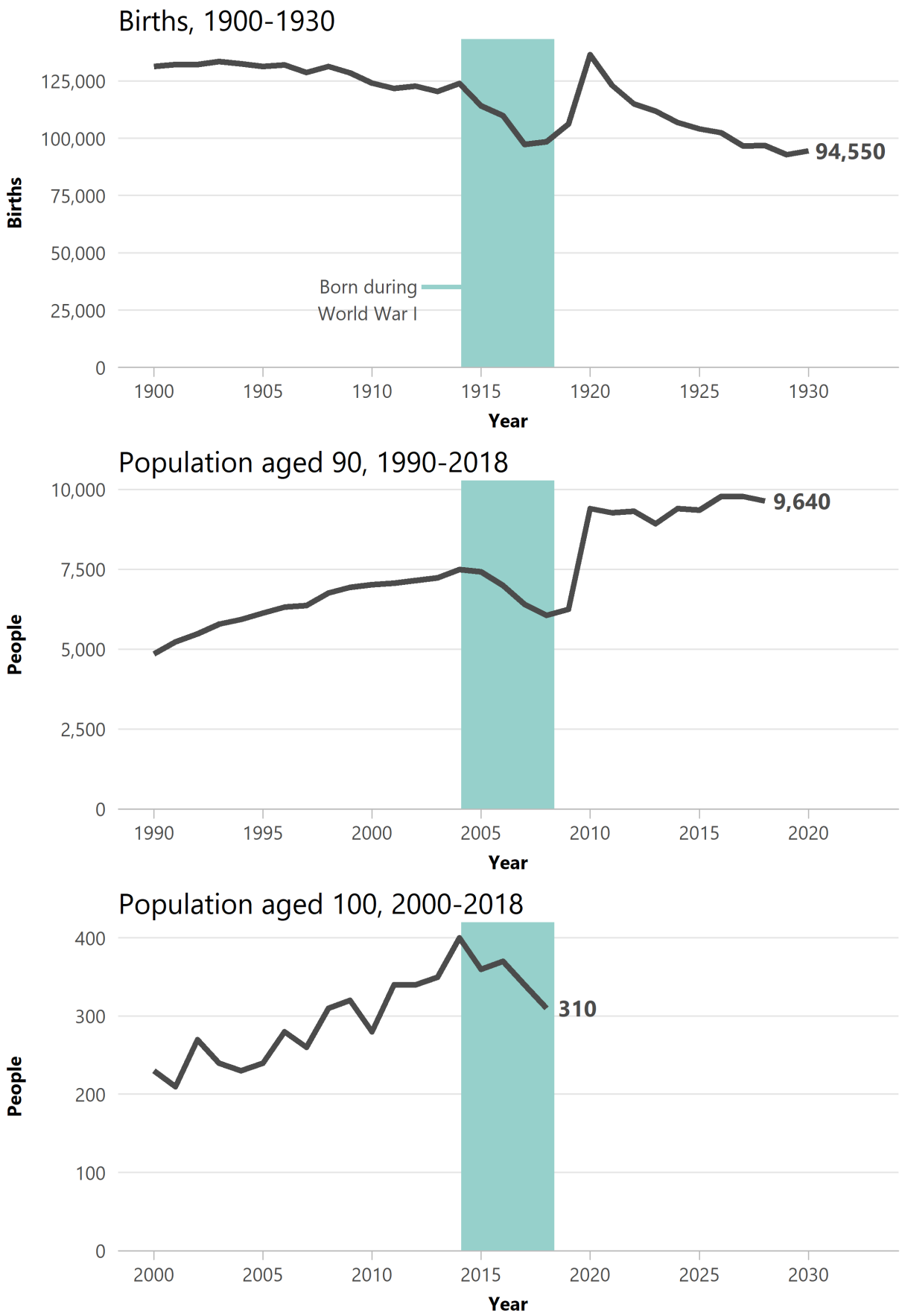
The **decrease in centenarians** in recent years corresponds to low birth rates in **1915-1919**, during the First World War.

Figure 7 shows births from 1900 to 1930 alongside the populations of those born in the same period when they were 90 and 100 years old. Note that the scale of the Y-axes are very different in each graph as the populations are of different sizes.

Between 2005 and 2009 there was a decrease in the estimated number of 90 to 99 year olds (from 30,050 to 28,320), This was driven largely by changes in the 90 year old population, which decreased each year between 2004 and 2008.

There has also been a decrease in 100+ year olds between 2014 and 2018 (from 920 to 810). This has been driven mainly by a decrease in 100 year olds each year in the same period (from 400 to 310) – the same cohort as the 90 year olds between 2004 and 2008.

Figure 7: Comparison of 1900-1930 cohort at birth, 90, and 100



A similar pattern is also present in the UK as a whole, where the population of 100 year olds has decreased every year since 2014, decreasing 15% overall.

The small size of this cohort relative to previous years can be traced back to a lower number of births in the years 1915 to 1919, coinciding with the First World War, as shown in Figure 7. After the war there was a baby boom, with the number of births recorded in 1920 the highest since the introduction of civil registration in 1855. After 1920, the number of births declined to a level generally lower than in the pre-war years.

Fewer births during the First World War resulted in fewer people aged 90 during the years 2005 to 2008, and has resulted in fewer people aged 100 since 2015. The large peak of those aged 90 in 2010 also corresponds to the post-war baby boom cohort born in 1920, which will turn 100 in 2020.

Birth rates in other years have less effect

Other trends are also visible. From 1990 to 2004 there was an increase in the number of people aged 90 each year, increasing from 4,860 to 7,500 over this period. A similar increase was seen in the number of people aged 100 from 2000 to 2014 (from 230 to 400).

However, as Figure 7 shows, the number of births for this cohort (between 1900 and 1914) was fairly stable at between 120,000 and 134,000 per year. The long term increase in the population aged 90 mostly reflects mortality improvements experienced by each cohort, though migration will also affect the number of people reaching age 90 each year.

These effects can also be seen in the years from 2011 to 2018. Despite a decrease in the number of births in the years after 1920, the number of people reaching age 90 in these cohorts remains fairly stable.

Life expectancy

The increase in the number of centenarians and 90-99 year olds reflects an increase in life expectancy over the past ten years, although this increase has stalled in recent years – particularly since the 2012 to 2014 period. The rate of increase in life expectancy in the past decade has been smaller than in previous decades. This is also true for the number of centenarians – the percentage increase in centenarians from 2008 to 2018 is smaller than in previous decades.

The Office for National Statistics produce annual estimates of life expectancy for Scotland on behalf of National Records of Scotland[2]. The latest figures available are for the period 2016 to 2018, based on population estimates rolled forward from the 2011 Census. These show life expectancy at birth of 77.1 years for males and 81.1 years for females, which is an increase of 2.1 years for males and 1.3 years for females over the last 10 years (since the period 2006 to 2008).

Footnote

2) Life expectancy at Scotland level – available on the National Records of Scotland website.

Life expectancy at age 65 has also increased over the last 10 years to 17.5 years for males and 19.8 years for females, an increase of 1.4 years for males and 1.0 years for females compared to 2006-2008.

5. Background notes

Methodology

National Records of Scotland (NRS) produce population estimates by single year of age from 0 to 89 using the 'cohort component' method. Starting with the census, each year the population of a given area is aged on by one year, births in the area are added to the population, deaths in the area are subtracted and estimates of migration are used to allow for people moving in and moving out. More information on the cohort component method can be found in the Mid-Year Population Estimates methodology guide on the NRS website.

However this method is not currently reliable for single year of age populations for the very old because the census estimates are less reliable for populations aged 90 and over (as it becomes harder to firmly establish someone's age the older they get). In the mid-year population estimates, people aged 90 and over are aggregated together into one group.

To produce single year of age estimates of the population aged 90 and over, NRS use the Kannisto-Thatcher[3] (KT) method. Details of this methodology, as well as information on the quality of the data, can be found in the Centenarians in Scotland Methodology Guide on the NRS website.

Differences with previously published estimates

One consequence of the method is that each year the estimates for earlier years become more accurate as more death records are available to inform the age profiles. For example, the current estimate of the number of people aged 90 in 2016 (9,790) is different from the initial estimate that was calculated in the 2016 publication (9,740). This means the most recently published data will be the most reliable.

Revisions to Mid-Year Estimates

The data in this report use the revised mid-year population estimates for 2002 to 2010 which take into account the 2011 Census results. These were originally published on 17 December 2013, and a corrected version significantly affecting estimates of 90+ year olds published on 25 September 2018. Further details on this correction can be found in the report provided on the NRS website.

The estimates for 2012 to 2014 are based on corrected population estimates published on 28 April 2016. More details are available in the papers of the Population and Migration Statistics Committee (PAMS) available on the NRS website.

Publication of future Centenarians estimates

Footnote

3) Thatcher, R, 1999, The demography of centenarians in England and Wales. Population Trends 96.

Population estimates for the very old and centenarians in 2019 will be published in autumn 2020.

6. Links to related statistics

Similar estimates for Northern Ireland and England & Wales are available on the Northern Ireland Statistics & Research Agency and the Office for National Statistics websites respectively. The Office for National Statistics also publish estimates for the UK as a whole.

The methodology for the estimates of the very old uses statistics on annual deaths in Scotland and the mid-year population estimates for those aged 90 and over. Time series data for deaths in Scotland are available on the Vital Events section of the NRS website. The mid-year population estimates for Scotland are available in the Population section of the NRS website.

Life expectancy figures for Scotland, which use the Centenarians estimates, are available in the Scottish National Life Tables publication on the NRS website.

7. Notes on statistical publications

National Statistics

The United Kingdom Statistics Authority (UKSA) has designated these statistics as National Statistics, in line with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics (available on the UKSA website).

National Statistics status means that official statistics meet the highest standards of trustworthiness, quality and public value.

All official statistics should comply with all aspects of the Code of Practice for Official Statistics. They are awarded National Statistics status following an assessment by the Authority's regulatory arm. The Authority considers whether the statistics meet the highest standards of Code compliance, including the value they add to public decisions and debate.

It is National Records of Scotland's responsibility to maintain compliance with the standards expected of National Statistics. If we become concerned about whether these statistics are still meeting the appropriate standards, we will discuss any concerns with the Authority promptly. National Statistics status can be removed at any point when the highest standards are not maintained, and reinstated when standards are restored.

Information on background and source data

Further details on data source(s), timeframe of data and timeliness, continuity of data, accuracy, etc can be found in the About this Publication document that is published alongside this publication on the NRS website.

National Records of Scotland

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Preserving the past – We look after Scotland's national archives so that they are available for current and future generations, and we make available important information for family history.

Recording the present – At our network of local offices, we register births, marriages, civil partnerships, deaths, divorces and adoptions in Scotland.

Informing the future – We are responsible for the Census of Population in Scotland which we use, with other sources of information, to produce statistics on the population and households.

You can get other detailed statistics that we have produced from the Statistics section of our website. Scottish Census statistics are available on the Scotland's Census website.

We also provide information about future publications on our website. If you would like us to tell you about future statistical publications, you can register your interest on the Scottish Government ScotStat website.

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Enquiries and suggestions

Please contact our Statistics Customer Services if you need any further information.
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If you have comments or suggestions that would help us improve our standards of service, please contact:

Alan Ferrier
Senior Statistician
National Records of Scotland
Room 1/2/12
Ladywell House
Ladywell Road
Edinburgh
EH12 7TF

Phone: 0131 314 4530
Email: alan.ferrier@nrscotland.gov.uk