

# Centenarians in Scotland, 2007 to 2017

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This statistical report provides population estimates for those aged 100 or over and those aged 90 to 99 in Scotland, by sex and age.

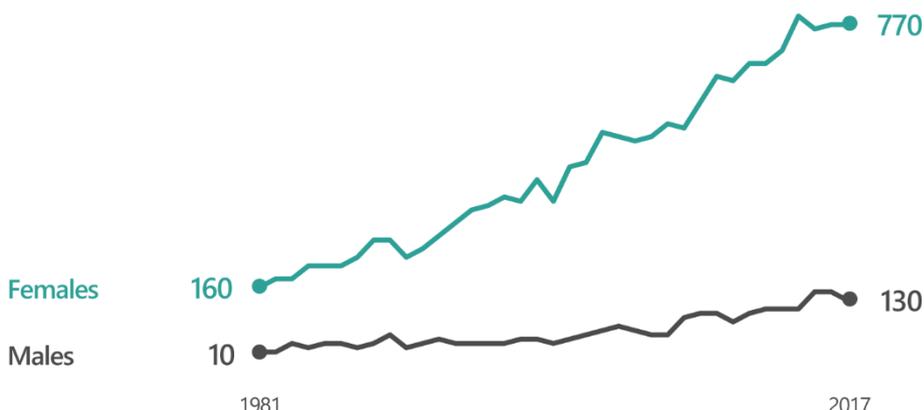
### There are more people aged 100 and over

In Scotland in 2017, there were an estimated 900 centenarians — those aged 100 and over.

This is a 45% increase from 2007 and over 5 times as many as when records began in 1981.

The majority of centenarians are women (86% in 2017).

Number of centenarians (aged 100 and over) by sex

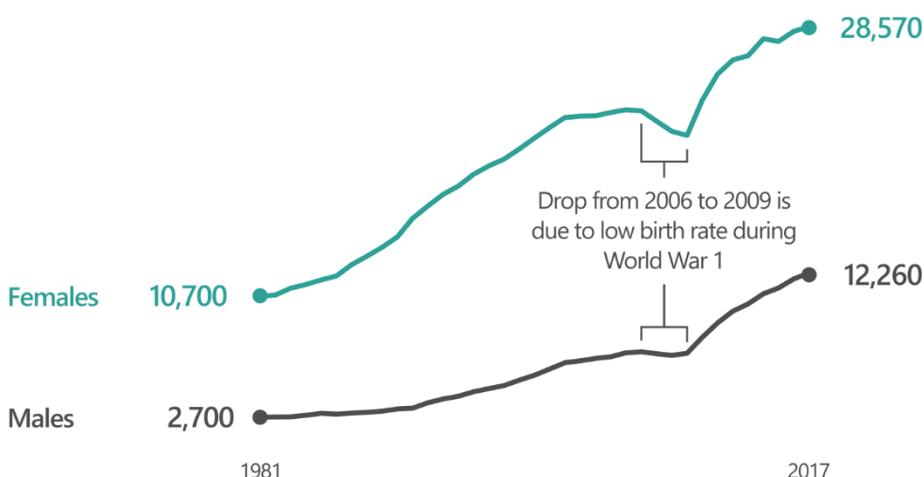


### There are also more people aged 90 to 99

There were 40,830 people aged 90 to 99 in Scotland in 2017, up from 29,230 in 2007 (a 40% 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

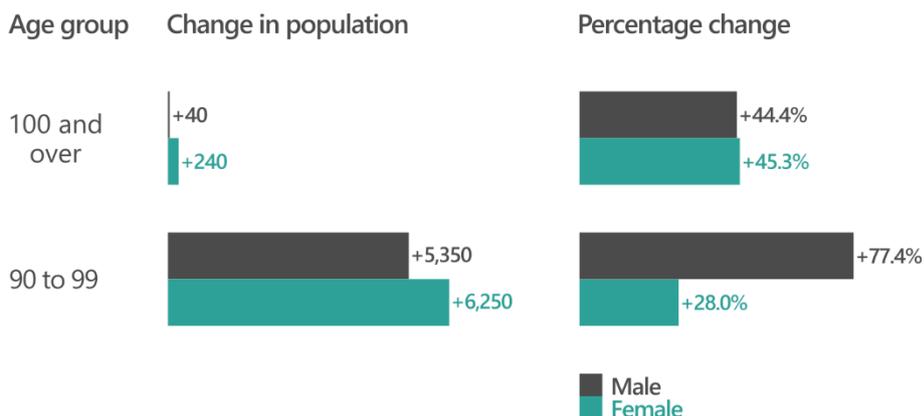


### The growth rate is higher for males

While the increase in 90 to 99 year olds from 2007 to 2017 is larger for females, the smaller male population means the growth rate for males is much larger.

However, this is not the case for centenarians, where the growth rates for males and females are similar.

Change by age group and sex, 2007-2017



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## Main Points

The main points in this report are:

- In Scotland in 2017, there were an estimated 900 centenarians (people aged 100 and over). This is a 45 per cent increase from 2007 when there were an estimated 620 centenarians, and five times as many centenarians compared to 1981.
- The majority of centenarians are women. In 2017, women accounted for 770 of Scotland's centenarians (86 per cent) while around 130 men had reached the milestone.
- The number of male centenarians increased by 44 per cent between 2007 and 2017 from 90 to 130, while the number of female centenarians increased by 45 per cent from 530 to 770 during the same period.
- The ratio of male to female centenarians has remained broadly stable, with 17 men per 100 women in both 2007 and 2017.
- The number of centenarians relative to the rest of the population has increased since 2007 (when there were 1.2 per 10,000 people). But there were still less than two centenarians for every 10,000 people in 2017 (1.7 per 10,000).
- The number of people aged 90 to 99 increased from 29,230 in 2007 to 40,830 in 2017, an increase of 40 per cent.
- The number of men aged 90 to 99 increased from 6,910 to 12,260 between 2007 and 2017, an increase of 77 per cent. The number of females aged 90 to 99 increased from 22,320 to 28,570 during the same period, an increase of 28 per cent.

## 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<sup>1</sup>. 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. Since the 1950s, centenarians have been growing at a faster rate than any other age group.

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.

In recent years, there has been an increased interest in estimating the population of very elderly people in Scotland, as survival rates are expected to carry on increasing in the foreseeable future. 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.

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 30 June 2007 to 30 June 2017. All of the estimates presented here refer to the population at 30 June.

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 30 June 1981 to 30 June 2016 is available on the [National Records of Scotland \(NRS\) website](#).

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 published on 25 September 2018 to account for an undercounting of those aged 90 and over and an overcounting of those aged 81-89. This recent correction means the population totals for 2002-2010 will be different from previous publications. 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.

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.

### Footnote

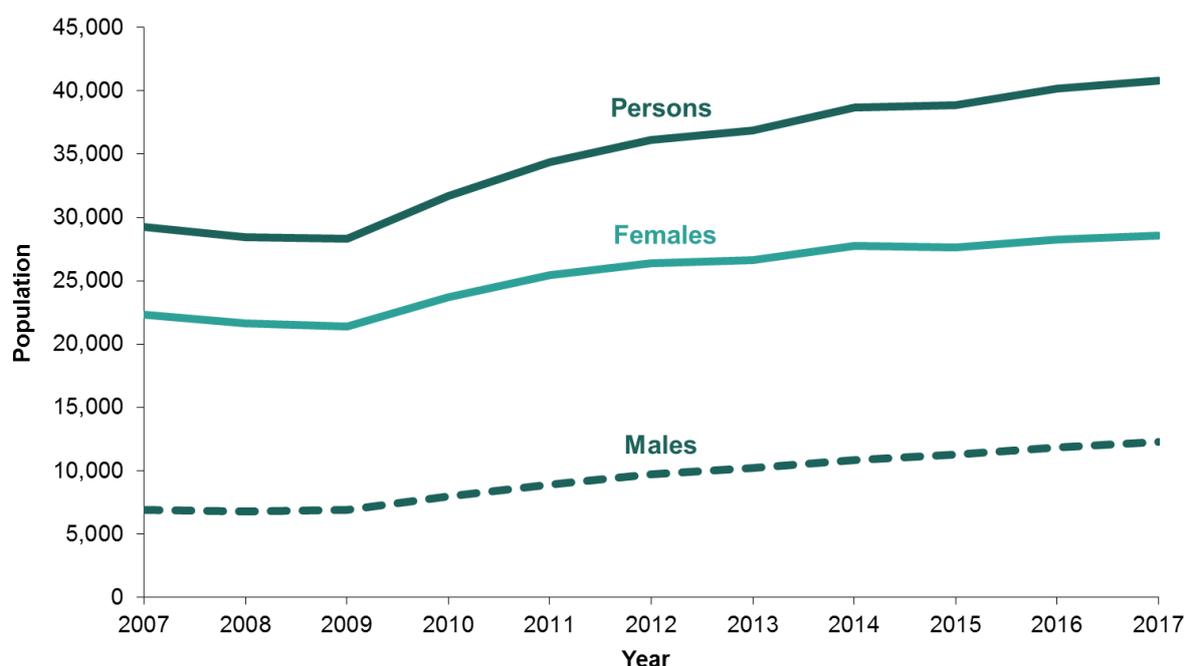
1) Kannisto, V., 1997, *The Advancing frontier of survival*. Odense Monographs on Population Aging 3. Odense University Press.

## 2. Results

Population estimates by sex and age for the years 2007 to 2017 are shown in [Table 1](#). Scotland's population has continued to age and the number of people aged 90 to 99 was at the highest ever level in 2017.

[Figure 1](#) shows the increase in the number of 90 to 99 year olds over the past decade while the increase in the number of people reaching the age of 100 can be seen in [Figure 2](#).

**Figure 1: Persons aged 90 to 99 by sex, Scotland, 2007 to 2017**



The small dip seen in Figure 1 between 2007 and 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 be attributed to a decrease in mortality amongst older ages.

In the period 2007 to 2017 the population aged 90 to 99 increased by 40 per cent from 29,230 to 40,830: a 77 per cent increase for males (from 6,910 to 12,260) and a more modest 28 per cent increase for females (from 22,320 to 28,570).

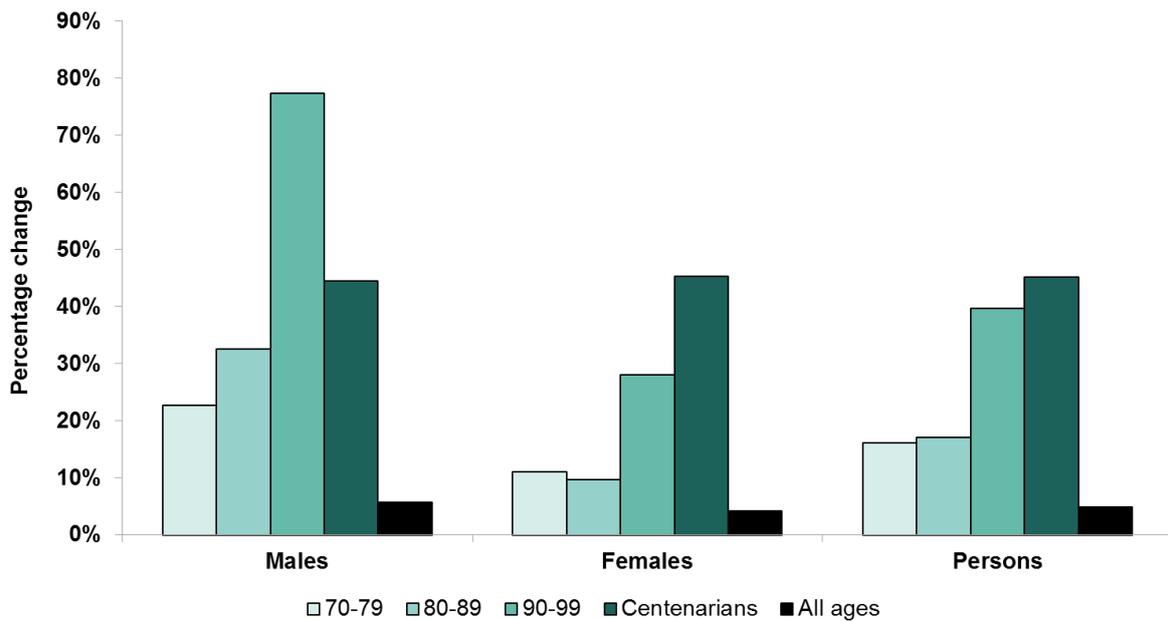
The population aged 100 and over (the centenarian population) increased by 45 per cent (from 620 in 2007 to 900 in 2017). The male centenarian population increased by 44 per cent (from 90 in 2007 to 130 in 2017), while the female population increased by 45 per cent (from 530 in 2007 to 770 in 2017).

However, in the most recent year between mid-2016 and mid-2017, there was a slight decline in the centenarian population from 920 in 2016 to 900 in 2017.

**Figure 2: Centenarians by sex, Scotland, 2007 to 2017**



**Figure 3: Percentage population change by age group and sex, Scotland, 2007 to 2017**



[Figure 3](#) shows that between 2007 and 2017 the percentage increase for males was higher than for females at older ages, except for centenarians where the percentage increase for males and females was about the same. 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.

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.

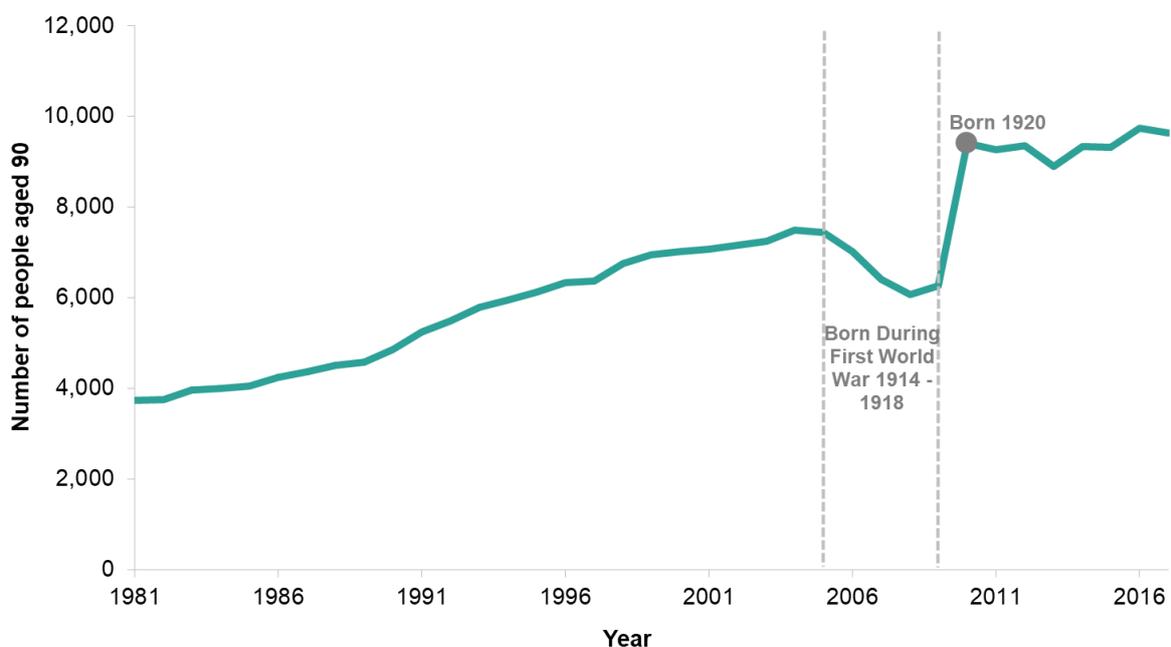
The size of cohorts can have an effect on the sizes of age groups in the population over time. [Figure 4a](#) shows the population aged 90 from 1981 to 2017 and [Figure 4b](#) shows births from 1891 to 1927: the years when those aged 90 in [Figure 4a](#) were born.

Between 2006 and 2008 there was a drop in the estimated number of 90 to 99 year olds (from 28,430 to 27,820). The decline in the population aged 90 during this period is shown in [Figure 4a](#).

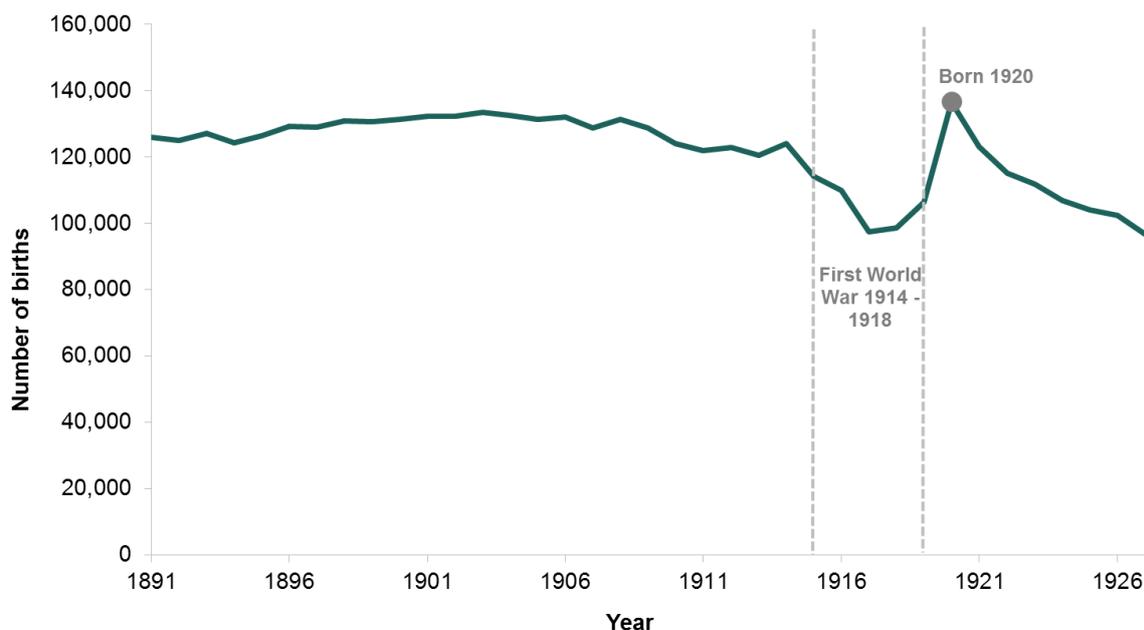
The small size of this cohort relative to previous years can be traced back to a lower number of births in the years 1915 to 1919, coinciding with the First World War, as shown in [Figure - 4b](#). After the war there was a baby boom, with the number of births recorded in 1920 the highest since the introduction of civil registration in 1855. After 1920, the number of births declined to a level generally lower than seen in the pre-war years.

The effect that the number of births in each year has on the population surviving to age 90 can be seen in [Figure 4a](#). Fewer births during the First World War resulted in fewer people aged 90 during the years 2006 to 2008 than previously. The large peak of those aged 90 in 2010 also corresponds to the post-war baby boom cohort born in 1920.

**Figure 4a: Population aged 90 from 1981 to 2017, Scotland**



**Figure 4b: Number of births from 1891 to 1927, Scotland**



However, other trends are also visible. From 1881 to 2004 there was an increase in the number of people aged 90 each year, increasing from 3,740 to 7,490 over this period. [Figure 4b](#) shows that the number of births 90 years earlier (1891 to 1914) than each of these years, however, was fairly stable at between 120,000 and 130,000 per year.

Migration will also affect the number of people reaching age 90 each year. However, the long term increase in the population aged 90 mostly reflects mortality improvements experienced by each cohort.

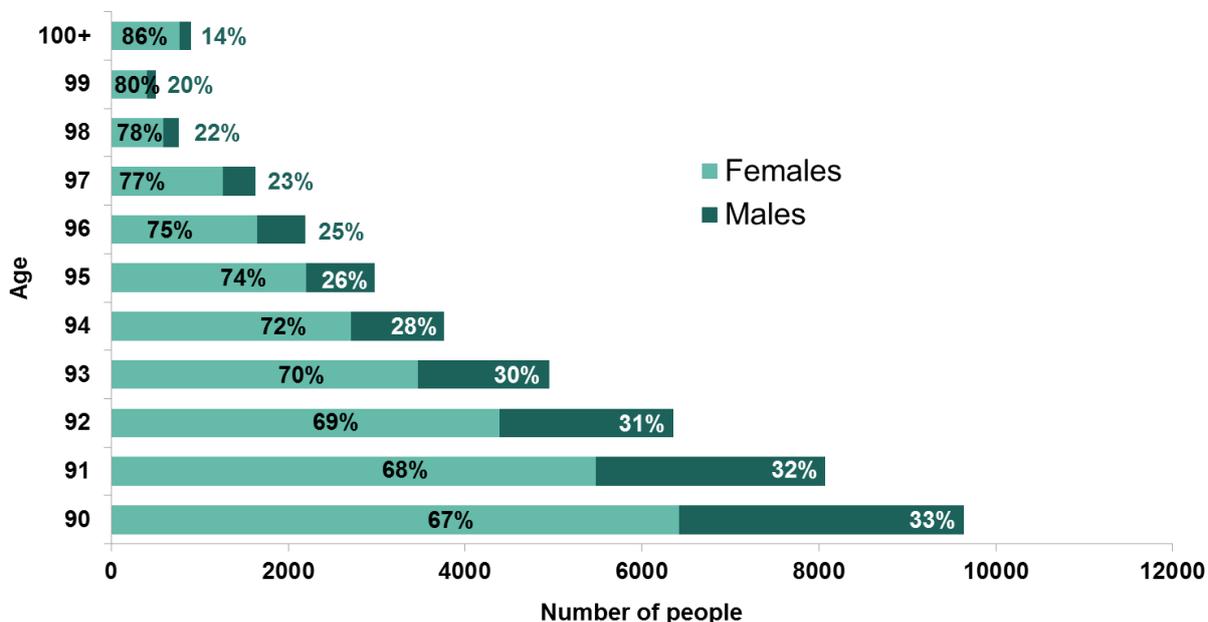
These effects can also be seen in the years from 2011 to 2017 in [Figure 4a](#). Despite a decrease in the number of births in the years after 1920, the number of people reaching age 90 in these cohorts remains fairly stable.

It should be noted that the scale on the Y-axis in [Figure 4a](#) is much smaller than that in [Figure 4b](#).

[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. Whilst there were 9,640 people aged 90 in 2017, there were 500 people aged 99, and 900 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. The percentage of males amongst those aged 90 was 33 per cent in 2017, but this declines to 14 per cent for centenarians.

**Figure 5: Number and percentages of males and females aged 90 to 99 and centenarians, Scotland, 2017**



**Figure 6: Number of male centenarians per 100 female centenarians, Scotland, 2007 to 2017**



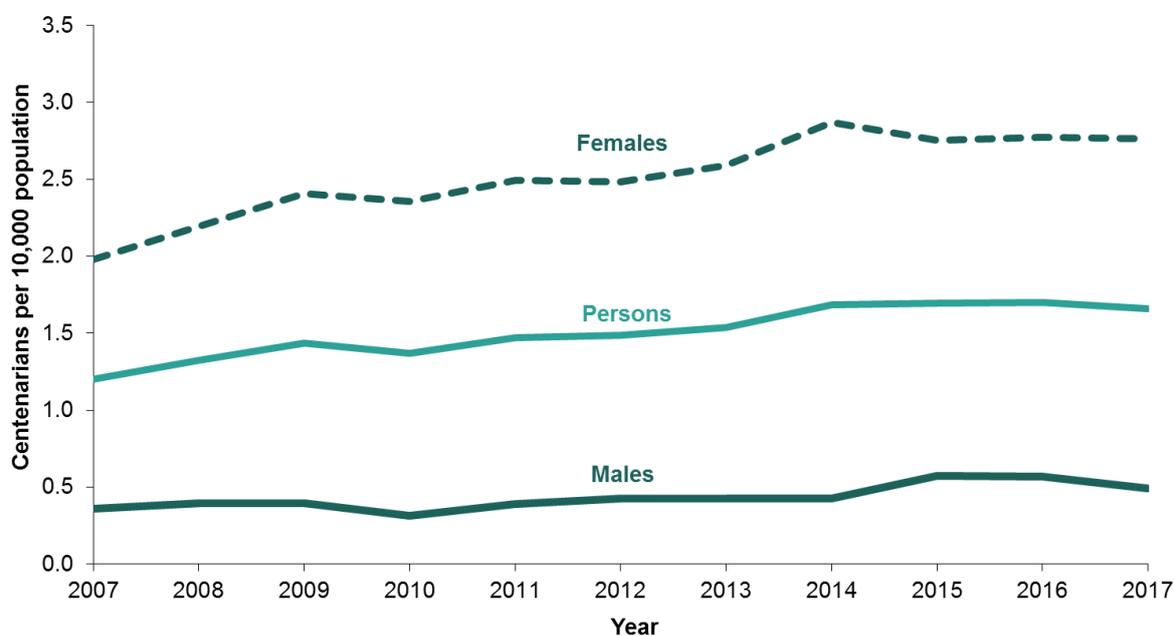
[Figure 6](#) shows that between 2007 and 2017, the number of male centenarians per 100 female centenarians has remained broadly stable over the last 10 years, at 17 in both 2007 and 2017 and staying between 13 and 20 in the years in between.

The number of male centenarians is very small, numbering around 130 in 2017, while there were 770 females aged 100 and over. The small numbers involved mean that relatively small changes in the population can have a large effect on the percentage of centenarians that are male.

Centenarians make up a larger proportion of the population at UK level (2.2 per 10,000 population) than in Scotland (1.7 per 10,000 population). Between 2007 and 2017 the percentage increase in the number of centenarians in Scotland (45 per cent) was similar to that in the UK as a whole (44 per cent).

Although centenarians are still rare, the number of centenarians in Scotland's total population has increased from 1.2 per 10,000 in 2007 to 1.7 per 10,000 in 2017, as shown in [Figure 7](#). 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 2.0 per 10,000 to 2.8 per 10,000 between 2007 and 2017.

**Figure 7: Centenarians per 10,000 population by sex, Scotland 2007 to 2017**



### 3. Background notes

National Records of Scotland 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 National Records of Scotland website.

However this method is not currently reliable for single year of age populations for the very elderly 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 National Records of Scotland mid-year estimate of the Scottish population, 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, National Records of Scotland use the Kannisto-Thatcher<sup>2</sup> (KT) method. This method has also been adopted by the Office for National Statistics to produce population estimates of the very old (including centenarians) in England and Wales and for the UK as a whole. These estimates can be found in the [Ageing](#) section of the Office for National Statistics website.

The KT method uses 'age at death' data to build up distribution profiles of the numbers of elderly people in Scotland in previous years. For example, if someone dies in 2006 aged 105, then this means that they were alive and aged 104 in 2005, 103 in 2004, and so on. By collating 'age at death' data for a series of years, it becomes possible to make an estimate of the number of people of a given age alive in any particular year and so create age distribution profiles, assuming that migration at these oldest ages is minimal.

To make estimates for the latest year, it is not possible to use death data, as we are interested in the population who are currently or very recently alive. So the KT method uses an average of the last five years of age at death information to produce an estimate of the number of survivors for the most current year. Estimates are then made consistent with the mid-year estimate of people aged 90 and over.

One consequence of this 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 2015 (9,300) is different from the initial estimate that was calculated in the 2015 publication (9,370).

Population estimates calculated using the KT method for single year of age from 90 to 99 and for the 100 plus age group were found to be broadly similar to comparable data available from the Department for Work and Pensions (DWP) and broadly consistent with data published from the 2011 Census. More information about the

#### Footnote

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

quality of these estimates and the data they are derived from is available in the [Methodology Report](#) on the National Records of Scotland website.

The increase in the number of centenarians reflects an increase in life expectancy. The Office for National Statistics produce annual estimates of life expectancy for Scotland on behalf of National Records of Scotland<sup>3</sup>. The latest figures (for the period 2015 to 2017 based on population estimates rolled forward from the 2011 Census) show a life expectancy at birth of 77.0 for males and 81.1 for females, which is an increase of 2.2 years for males and 1.4 years for females over the last 10 years (since the period 2005 to 2007). Life expectancy at age 65 has also increased over the last 10 years to 17.4 years for males and 19.7 years for females, an increase of 1.5 years for males and 1.0 years for females compared to 2005-2007.

With new data available from the 2011 Census, National Records of Scotland are working to improve the methodology for estimating the elderly population. We will also be working with the Office for National Statistics on a review of the method to produce the current estimates.

**Footnote**

3) [Life expectancy at Scotland level](#) – available on the National Records of Scotland website.

**Table 1: Population estimates of centenarians (and people aged 90 and over), by sex and single year of age, Scotland mid-2007 to mid-2017**

Mid-year population	Persons 90-99	Persons 100+	Persons 90	Persons 91	Persons 92	Persons 93	Persons 94	Persons 95	Persons 96	Persons 97	Persons 98	Persons 99	Persons 100	Persons 101	Persons 102	Persons 103	Persons 104	Persons 105+
2007	29,230	620	6,410	5,730	4,870	3,910	2,740	1,970	1,400	990	730	480	260	180	80	40	30	30
2008	28,450	690	6,070	5,300	4,620	3,780	3,000	2,080	1,450	1,010	660	480	310	170	110	50	20	30
2009	28,320	750	6,260	5,030	4,400	3,670	2,950	2,270	1,550	1,030	710	450	320	200	110	70	20	30
2010	31,720	720	9,400	5,310	4,200	3,590	2,900	2,290	1,660	1,150	730	490	280	200	120	60	40	20
2011	34,390	780	9,270	8,000	4,400	3,400	2,780	2,260	1,730	1,210	830	510	340	160	120	70	50	40
2012	36,110	790	9,360	7,690	6,520	3,470	2,640	2,100	1,710	1,230	850	540	340	220	100	60	30	40
2013	36,870	820	8,900	7,770	6,210	5,180	2,660	1,970	1,540	1,230	840	570	350	220	130	50	40	30
2014	38,660	900	9,330	7,510	6,450	5,010	4,170	2,050	1,500	1,130	900	610	400	230	140	70	20	40
2015	38,880	910	9,310	7,640	6,040	5,020	3,850	3,120	1,500	1,050	760	590	370	240	140	80	50	30
2016	40,150	920	9,740	7,780	6,220	4,820	3,940	2,960	2,290	1,110	740	550	380	240	140	80	50	30
2017	40,830	900	9,640	8,070	6,350	4,950	3,760	2,980	2,190	1,630	760	500	350	250	140	80	40	40

	Males 90-99	Males 100+	Males 90	Males 91	Males 92	Males 93	Males 94	Males 95	Males 96	Males 97	Males 98	Males 99	Males 100	Males 101	Males 102	Males 103	Males 104	Males 105+
2007	6,910	90	1,750	1,450	1,200	890	620	380	260	160	120	80	40	30	10	10	<5	<5
2008	6,800	100	1,670	1,390	1,110	880	680	450	270	180	100	70	40	30	20	10	<5	<5
2009	6,940	100	1,790	1,380	1,140	820	660	470	310	180	120	70	40	30	20	10	<5	<5
2010	8,000	80	2,650	1,480	1,110	900	630	480	330	210	120	90	40	20	10	10	<5	<5
2011	8,950	100	2,760	2,210	1,180	880	650	480	350	220	140	80	50	20	10	10	10	<5
2012	9,730	110	2,850	2,250	1,780	920	670	460	340	230	150	80	60	30	20	<5	<5	<5
2013	10,210	110	2,780	2,300	1,770	1,380	690	470	330	240	150	100	50	30	20	10	<5	<5
2014	10,880	110	3,010	2,260	1,820	1,360	1,060	500	350	230	180	110	60	30	10	10	<5	<5
2015	11,270	150	3,070	2,420	1,770	1,390	1,000	770	350	240	150	110	70	40	20	10	10	<5
2016	11,870	150	3,210	2,470	1,920	1,390	1,070	750	540	250	160	110	60	50	20	10	10	<5
2017	12,260	130	3,220	2,590	1,960	1,480	1,050	780	540	370	170	100	60	40	20	10	<5	<5

	Females 90-99	Females 100+	Females 90	Females 91	Females 92	Females 93	Females 94	Females 95	Females 96	Females 97	Females 98	Females 99	Females 100	Females 101	Females 102	Females 103	Females 104	Females 105+
2007	22,320	530	4,660	4,280	3,670	3,020	2,120	1,590	1,140	830	610	400	220	150	70	30	30	30
2008	21,650	590	4,400	3,910	3,510	2,900	2,320	1,630	1,180	830	560	410	270	140	90	40	20	30
2009	21,380	650	4,470	3,650	3,260	2,850	2,290	1,800	1,240	850	590	380	280	170	90	60	20	30
2010	23,720	640	6,750	3,830	3,090	2,690	2,270	1,810	1,330	940	610	400	240	180	110	50	40	20
2011	25,440	680	6,510	5,790	3,220	2,520	2,130	1,780	1,380	990	690	430	290	140	110	60	40	40
2012	26,380	680	6,510	5,440	4,740	2,550	1,970	1,640	1,370	1,000	700	460	280	190	80	60	30	40
2013	26,660	710	6,120	5,470	4,440	3,800	1,970	1,500	1,210	990	690	470	300	190	110	40	40	30
2014	27,780	790	6,320	5,250	4,630	3,650	3,110	1,550	1,150	900	720	500	340	200	130	60	20	40
2015	27,610	760	6,240	5,220	4,270	3,630	2,850	2,350	1,150	810	610	480	300	200	120	70	40	30
2016	28,280	770	6,530	5,310	4,300	3,430	2,870	2,210	1,750	860	580	440	320	190	120	70	40	30
2017	28,570	770	6,420	5,480	4,390	3,470	2,710	2,200	1,650	1,260	590	400	290	210	120	70	40	40

## **4. 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**

We, the National Records of Scotland, are a non-ministerial department of the devolved Scottish Administration. Our aim is to provide relevant and reliable information, analysis and advice that meets the needs of government, business and the people of Scotland. We do this as follows:

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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.

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