
Centenarians in Scotland, 2004 to 2014

Including mid-year population estimates for those aged 90 & over

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Contents

Main Points	3
1. Background	4
2. Methodology	5
3. Results	7
4. Notes on statistical publications	15
5. Related organisations.....	17

List of Tables

Table 1: Mid-2004 to mid-2014 population estimates of the very elderly (including centenarians), by sex, single year of age, Scotland.....	14
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List of Figures

Figure 1: Persons aged 90-99 by sex, Scotland 2004 to 2014	7
Figure 2: Centenarians by sex, Scotland 2004 to 2014	8
Figure 3: Percentage population change by age group, Scotland 2004 to 2014	9
Figure 4: Persons aged 90 to 95 as a percentage of total persons aged 90 and over, Scotland 2004 to 2014.....	10
Figure 5: Number of males and females per 100 90-99 year olds and per 100 centenarians, Scotland 2014	11
Figure 6: Ratio of male centenarians per 100 female centenarians, Scotland 2004 to 2014.....	12
Figure 7: Centenarians per 10,000 population, Scotland 2004 to 2014	13

Main Points

The main points in this report are:-

- In Scotland, the number of centenarians (people aged 100 and over) increased from 510 in 2004 to 910 in 2014, an increase of 78 per cent.
- The number of male centenarians more than doubled between 2004 and 2014 (from 50 to 130) while the number of female centenarians increased from 460 to 780 during the same period.
- The number of people aged 90 to 99 increased from 27,300 in 2004 to 38,630 in 2014, an increase of 42 per cent.
- The number of men aged 90 to 99 increased from 5,990 to 10,850 between 2004 and 2014, an increase of 81 per cent. The number of females aged 90 to 99 increased from 21,310 to 27,780 during the same period, an increase of 30 per cent.
- In 2014, women made up 72 per cent of the 90 to 99 age group and 86 per cent of centenarians.
- The ratio of male to female centenarians has increased to 17 men per 100 women in 2014 compared with 11 in 2004.
- Centenarians are still rare. But the number of centenarians in the total population increased from 1.0 per 10,000 in 2004 to 1.7 per 10,000 in 2014.

1. Background

This report details the numbers 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 2004 to 30 June 2014. For ease of presentation, 30 June 2014 is referred to as 2014 in this report as are other mid-year points.

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 2014 is available on the National Records of Scotland (NRS) website.

The data in this report uses the revised mid-year population estimates for 2002 to 2010 published on 17 December 2013 which take into account the 2011 Census results. The estimates for 2011 to 2014 are based on the population estimates for mid-2011 to mid-2014 which have been rolled-forward from the 2011 Census.

The number of centenarians (people aged 100 years and over) across the industrialised world has been growing at an increasing rate since the 1950s¹. 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 over 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 and reflect the general trends seen in today's ageing societies. These statistics therefore give an important insight into the most rapidly growing age-group of Scotland's population. In addition, these estimates are used in the calculation of life expectancy statistics for Scotland.

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 have also published estimates for the UK as a whole.

The statistics in this report have been assessed by the UK Statistics Authority and have been designated as National Statistics subject to meeting the requirements in the [assessment report](#). One of the requirements is to 'Review and update quality documentation about the 'Centenarians in Scotland' publication' and the new quality guide that accompanies this report aims to address it.

Footnote

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

2. Methodology

The National Records of Scotland (NRS) produces 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 elderly because the census itself is less reliable for populations aged 90 and over (as it becomes harder to establish firmly someone's age the older they get). So, in the standard NRS 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, NRS uses the Kannisto-Thatcher² (KT) method. This method has also been adopted by the Office for National Statistics (ONS) to produce estimates for the elderly in England and Wales. These estimates can be found in the [Population](#) section of the ONS 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 2014, 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 NRS 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 data become available to inform the age profiles. For example, the current estimate of the number of centenarians in 2014 will differ from the future estimate of centenarians in 2014 to be produced for next year's publication.

Population estimates calculated using the KT method for single year of age from 90 to 99 and 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 quality of these estimates and the data they are derived from is available in the [Methodology Report](#) on the NRS website.

Footnote

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

The increase in the number of centenarians reflects an increase in life expectancy. ONS produces annual estimates of life expectancy for Scotland on behalf of NRS³. The latest figures (for the period 2012 to 2014 based on population estimates rolled forward from the 2011 Census) show a life expectancy at birth of 77.1 for males and 81.1 for females, which is an increase of 3.3 years for males and 2.0 years for females over the last 10 years (since the period 2002 to 2004).

With new data available from the 2011 Census, NRS are working to improve the methodology for estimating the population at elderly ages. We will also be working with ONS on a review of the method to produce the current estimates.

For the first time, we have also published mid-year population estimates for those aged 90 and over, by sex, age, and administrative area for the years 2004 to 2014 in the publication 'Sub-national Population Estimates for ages 90 and over, 2004 – 2014'. This is available in the [Centenarians](#) section of the NRS website and sits alongside this report.

Footnote

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

3. Results

Population estimates by sex and age for the years 2004 to 2014 are shown in [Table 1](#). Scotland's population has continued to age and the number of people aged 90 to 99 and 100 and over were at their highest ever level in 2014.

Figure 1 shows the increase in the number of 90-99 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](#).

The small dip between 2006 and 2009 amongst the 90-99 year olds is a representation of the lower births during the First World War, while the increase from 2010 onwards is representative of the large number of births that followed the armistice. The overall increase in the number of people aged 90 and over can be attributed to a decrease in mortality amongst older ages.

Figure 1: Persons aged 90-99 by sex, Scotland 2004 to 2014

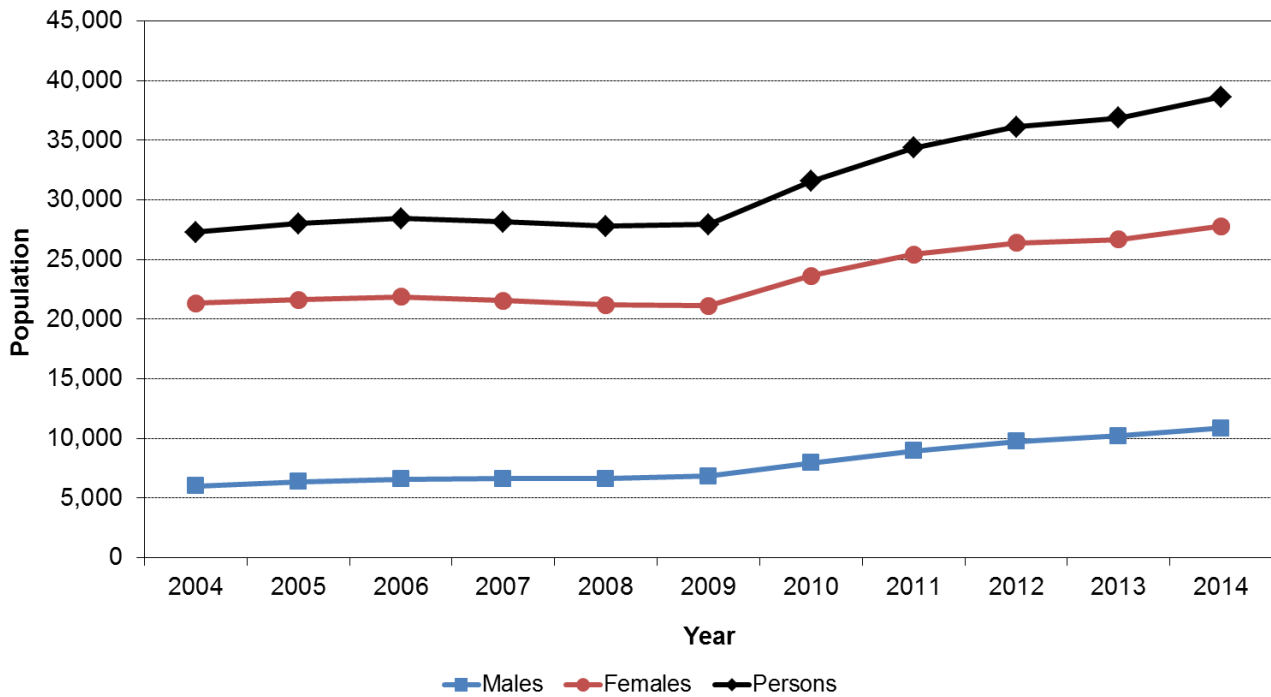
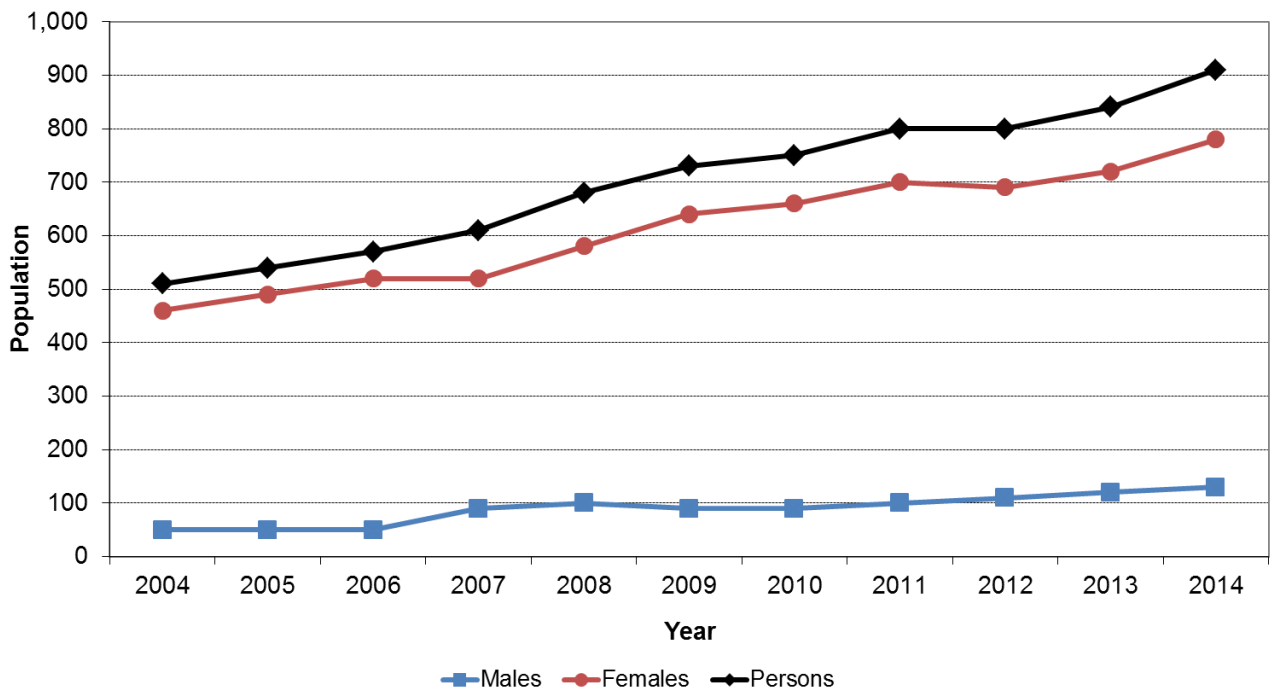


Figure 2: Centenarians by sex, Scotland 2004 to 2014

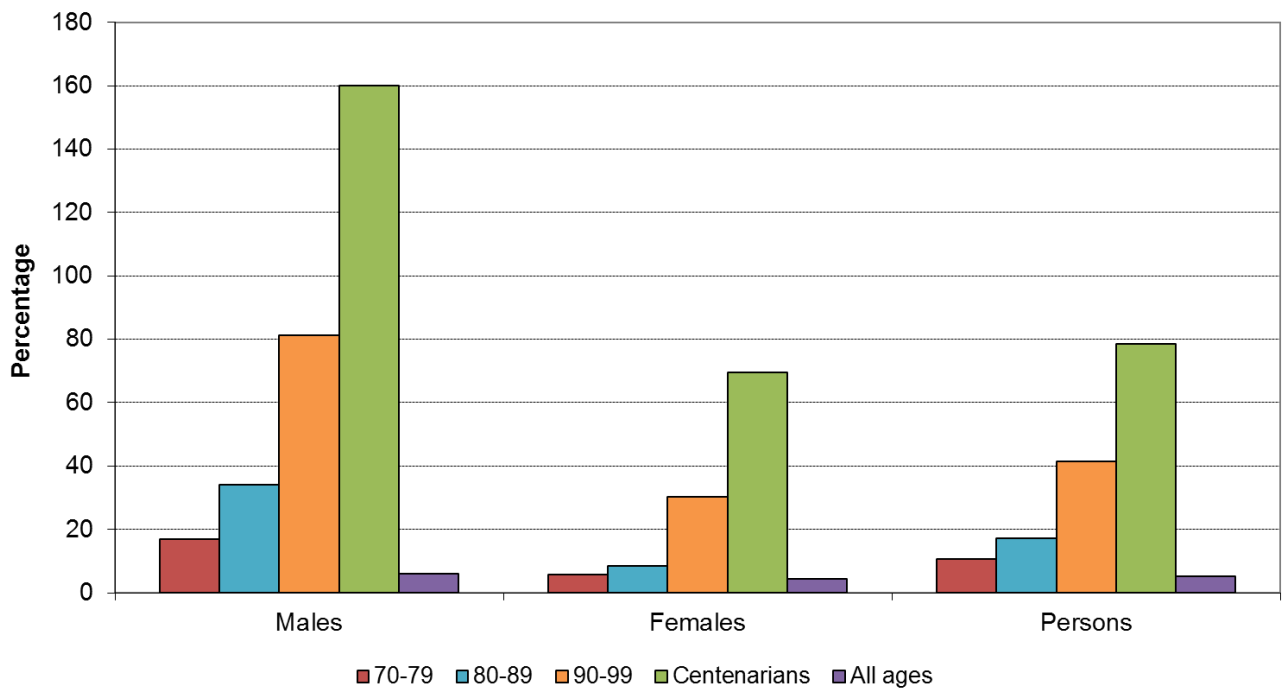


In the period 2004 to 2014 the population aged 90 to 99 increased by 42 per cent from 27,300 to 38,630; an 81 per cent increase for males (from 5,990 to 10,850) and a more modest 30 per cent increase for females (from 21,310 to 27,780).

The population aged 100+ (the centenarian population) increased by 78 per cent (from 510 in 2004 to 910 in 2014). The male centenarian population more than doubled (from 50 in 2004 to 130 in 2014), while the female population increased by 70 per cent (from 460 in 2004 to 780 in 2014).

As Figure 3 shows, the percentage increase for males is consistently higher than females at older ages. It is also clear that, over the decade, the number of people aged 80-89, 90-99, and 100+ has increased at a rate higher than the population of Scotland as a whole, an indication of the ageing population.

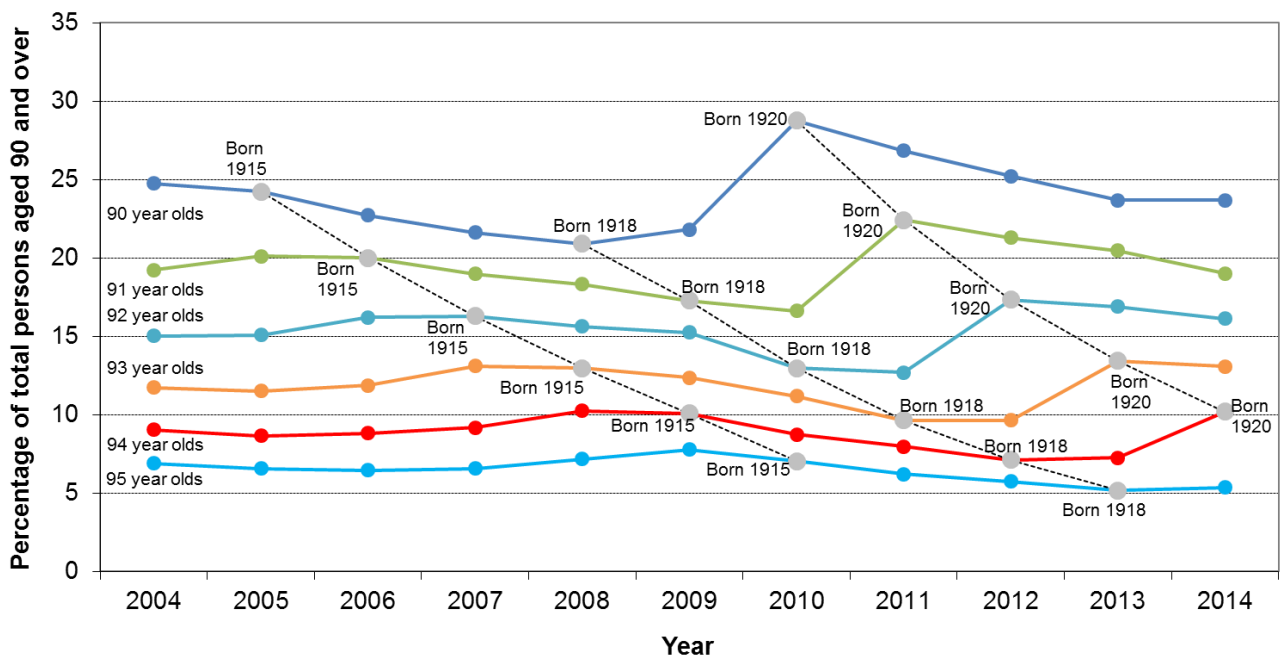
Figure 3: Percentage population change by age group, Scotland 2004 to 2014



Between 2006 and 2009 there was a drop in the estimated number of 90-99 year olds (from 28,440 to 27,940). This is largely due to lower numbers of men and women at the lower end of this age-range. 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. The recent relatively big increases in the 90 to 99 year old age-group can be associated with the population of 90 to 94 year olds who represent the birth cohorts after the First World War. Births recorded in 1920 were the highest since the introduction of national registration in 1855, while the number of births in 1921 was similar to the pre-war years.

These trends can be seen clearly in Figure 4 where the proportions at age 90 to 95 remain relatively constant until the cohort born in 1915 reaches 90 years old. From then until the cohort born in 1918, the proportion of 90 to 96 year olds declines. This is then contrasted by the cohort born in 1920 which sees an increase in the proportion of 90 year olds in 2010. The proportions for 90 year olds only return to more or less the levels seen before the 1915 cohort in 2012.

Figure 4: Persons aged 90 to 95 as a percentage of total persons aged 90 and over, Scotland 2004 to 2014



Even with the substantial increase in the elderly male population, elderly women still greatly outnumber elderly men. In 2014, 28 per cent of the 90 to 99 age group and 14 per cent of centenarians were men compared with 22 per cent and 10 per cent respectively in 2004.

Figure 5 illustrates the 2014 data by looking at these ages as groups of 100 people. If we were to gather 100 90-99 year olds and 100 centenarians together then on average for the 90-99 year olds there would be 28 men and 72 women, while amongst centenarians there would be 14 men and 86 women.

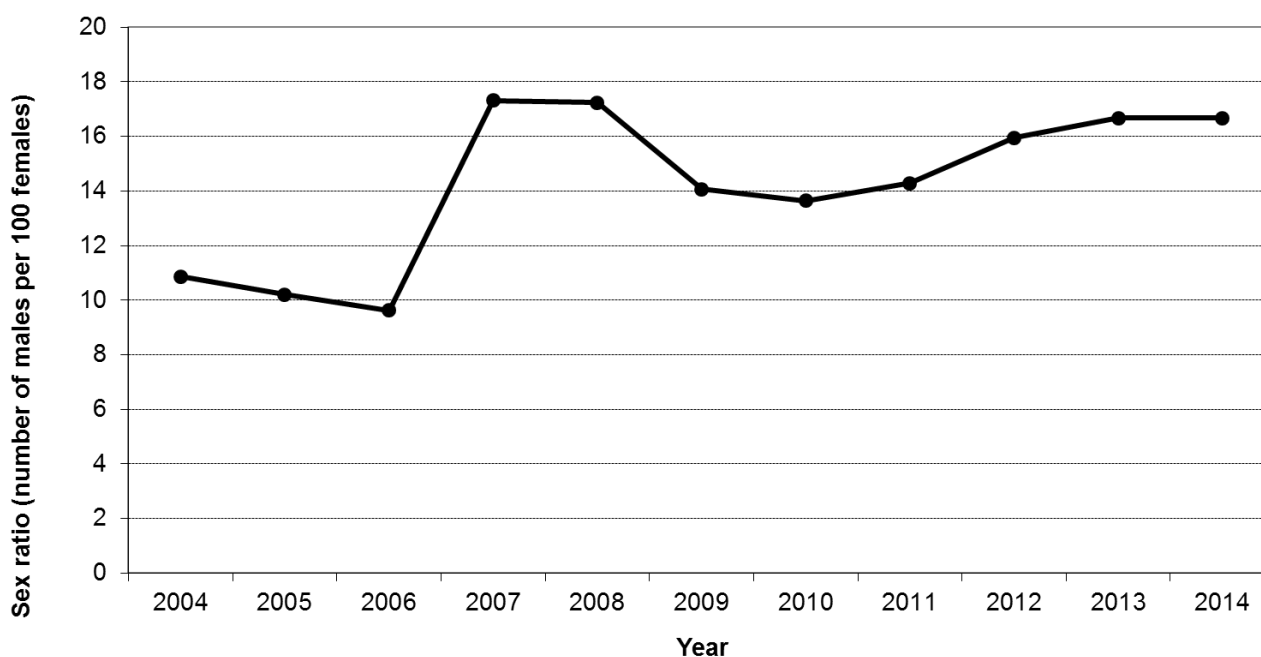
Figure 5: Number of males and females per 100 90-99 year olds and per 100 centenarians, Scotland 2014



The small number of male centenarians compared to female centenarians can affect the ratio of males to females in this age group for any given year. This can be seen in Figure 6 where small variations in the number of male and female centenarians may have affected the ratios between 2006 and 2007, and between 2011 and 2012.

However, this has not affected the overall trend which, over the decade, has seen the number of male centenarians per 100 female centenarians increase from 11 in 2004 to 17 in 2014 indicating that the gap between men and women's mortality in this age group has decreased over the period.

Figure 6: Ratio of male centenarians per 100 female centenarians, Scotland 2004 to 2014



Centenarians make up a slightly larger proportion of the population at UK level (0.022 per cent) than in Scotland (0.017 per cent), however between 2004 and 2014 the rate of increase in the number of centenarians in Scotland (77 per cent) was greater than in the whole of the UK (72 per cent).

Although centenarians are still rare, the number of centenarians in Scotland's total population has increased from 1.0 per 10,000 in 2004 to 1.7 per 10,000 in 2014, as shown in Figure 7. For males, the number of centenarians relative to the total population increased from 0.1 per 10,000 to 0.2 per 10,000 in this period. For females, there was an increase from 0.9 per 10,000 to 1.5 per 10,000.

Figure 7: Centenarians per 10,000 population, Scotland 2004 to 2014

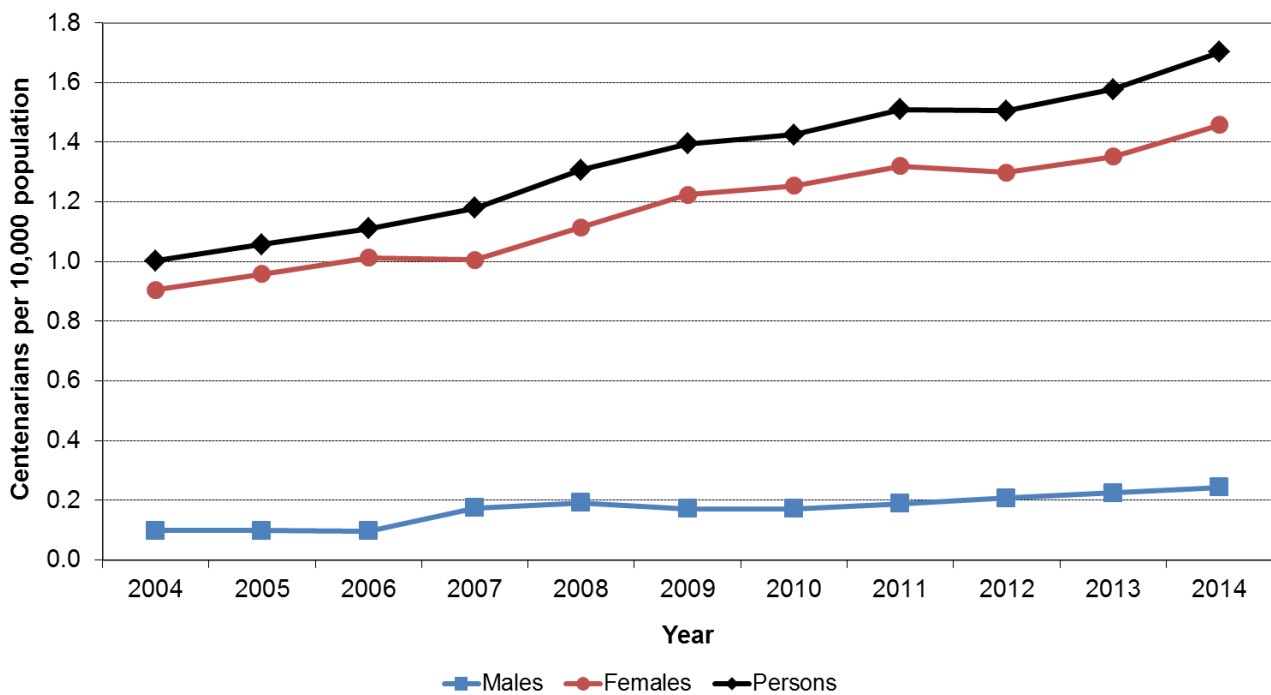


Table 1: Mid-2004 to mid-2014 population estimates of the very elderly (including centenarians), by sex, single year of age, Scotland

Rounded to the nearest ten

Mid-year population	Persons																	
	90-99	100+	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105+
2004	27,300	510	6,880	5,350	4,180	3,260	2,510	1,920	1,360	880	590	370	210	140	70	40	30	20
2005	27,990	540	6,910	5,740	4,300	3,280	2,470	1,870	1,390	1,030	590	410	230	120	90	50	20	30
2006	28,440	570	6,590	5,800	4,700	3,440	2,560	1,870	1,380	1,010	690	400	260	140	80	40	30	20
2007	28,160	610	6,220	5,460	4,690	3,770	2,640	1,890	1,370	960	700	460	250	180	80	40	30	30
2008	27,800	680	5,950	5,220	4,450	3,690	2,920	2,040	1,410	990	660	470	310	160	110	50	20	30
2009	27,940	730	6,250	4,950	4,370	3,540	2,890	2,230	1,530	1,010	710	460	310	190	110	70	20	30
2010	31,550	750	9,290	5,370	4,190	3,610	2,820	2,270	1,650	1,140	710	500	300	190	140	60	40	20
2011	34,370	800	9,440	7,880	4,460	3,390	2,800	2,180	1,700	1,190	830	500	340	180	120	80	40	40
2012	36,110	800	9,310	7,860	6,400	3,560	2,630	2,120	1,640	1,210	830	550	320	230	110	60	40	40
2013	36,850	840	8,920	7,710	6,370	5,060	2,730	1,950	1,560	1,160	820	570	360	200	130	70	40	40
2014	38,630	910	9,360	7,520	6,370	5,170	4,030	2,120	1,480	1,160	830	590	390	230	130	80	40	40

Mid-year population	Males																	
	90-99	100+	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105+
2004	5,990	50	1,700	1,330	930	680	480	350	260	140	80	40	30	10	10	<5	<5	<5
2005	6,360	50	1,830	1,400	1,020	700	490	340	240	200	90	50	20	10	10	10	<5	<5
2006	6,570	50	1,680	1,490	1,130	810	530	350	240	160	120	60	30	10	10	<5	<5	<5
2007	6,610	90	1,690	1,350	1,150	860	600	370	260	150	110	70	40	30	10	10	<5	<5
2008	6,620	100	1,620	1,370	1,050	860	660	450	270	170	100	70	40	30	20	10	<5	<5
2009	6,830	90	1,770	1,340	1,140	760	650	470	320	190	120	70	40	20	20	10	<5	<5
2010	7,940	90	2,610	1,480	1,100	920	590	480	340	210	120	90	40	20	20	10	<5	<5
2011	8,950	100	2,830	2,160	1,180	870	660	440	350	220	150	90	50	20	10	10	10	<5
2012	9,730	110	2,910	2,300	1,710	920	650	470	300	230	150	90	60	30	20	<5	<5	<5
2013	10,190	120	2,780	2,370	1,810	1,310	680	440	340	200	150	110	60	30	20	10	<5	<5
2014	10,850	130	3,050	2,250	1,870	1,400	980	490	320	240	140	110	70	30	20	10	<5	<5

Mid-year population	Females																	
	90-99	100+	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105+
2004	21,310	460	5,180	4,020	3,250	2,580	2,030	1,570	1,100	740	510	330	180	130	60	40	30	20
2005	21,630	490	5,080	4,340	3,280	2,580	1,980	1,530	1,150	830	500	360	210	110	80	40	20	30
2006	21,870	520	4,910	4,310	3,570	2,630	2,030	1,520	1,140	850	570	340	230	130	70	40	30	20
2007	21,550	520	4,530	4,110	3,540	2,910	2,040	1,520	1,110	810	590	390	210	150	70	30	30	30
2008	21,180	580	4,330	3,850	3,400	2,830	2,260	1,590	1,140	820	560	400	270	130	90	40	20	30
2009	21,110	640	4,480	3,610	3,230	2,780	2,240	1,760	1,210	820	590	390	270	170	90	60	20	30
2010	23,610	660	6,680	3,890	3,090	2,690	2,230	1,790	1,310	930	590	410	260	170	120	50	40	20
2011	25,420	700	6,610	5,720	3,280	2,520	2,140	1,740	1,350	970	680	410	290	160	110	70	30	40
2012	26,380	690	6,400	5,560	4,690	2,640	1,980	1,650	1,340	980	680	460	260	200	90	60	40	40
2013	26,660	720	6,140	5,340	4,560	3,750	2,050	1,510	1,220	960	670	460	300	170	110	60	40	40
2014	27,780	780	6,310	5,270	4,500	3,770	3,050	1,630	1,160	920	690	480	320	200	110	70	40	40

Notes

These figures are provisional estimates. The survivorship rate methodology used in these estimates means that previous years' estimates may change when a new year of data is added. Although these figures are quoted to the nearest 10 people, they may not be accurate to the level that might otherwise be inferred by rounding. Figures may not add exactly because of rounding.

4. Notes on statistical publications

National Statistics

The UK 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).

Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods; and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

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.

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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.
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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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Revisions and Corrections

We, the National Records of Scotland, also label any revisions and corrections that have applied to any of our statistics. These revisions or corrections are clearly marked on the webpage of the publication as well on our [revisions and corrections](#) page located on the NRS website.

Enquiries and suggestions

Please contact our Statistics Customer Services if you need any further information.

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5. Related organisations

Organisation	Contact
<p>The Scottish Government (SG) forms the bulk of the devolved Scottish Administration. The aim of the statistical service in the SG is to provide relevant and reliable statistical information, analysis and advice that meets the needs of government, business and the people of Scotland.</p>	<p>Office of the Chief Statistician Scottish Government 3WR, St Andrews House Edinburgh EH1 3DG</p> <p>Phone: 0131 244 0442</p> <p>Email: statistics.enquiries@scotland.gsi.gov.uk</p> <p>Website: www.scotland.gov.uk/Topics/Statistics</p>
<p>The Office for National Statistics (ONS) is responsible for producing a wide range of economic and social statistics. It also carries out the Census of Population for England and Wales</p>	<p>Customer Contact Centre Office for National Statistics Room 1.101 Government Buildings Cardiff Road Newport NP10 8XG</p> <p>Phone: 0845 601 3034 Minicom: 01633 815044</p> <p>Email: info@statistics.gsi.gov.uk</p> <p>Website: www.ons.gov.uk/</p>
<p>The Northern Ireland Statistics and Research Agency (NISRA) is Northern Ireland's official statistics organisation. The agency is also responsible for registering births, marriages, adoptions and deaths in Northern Ireland, and the Census of Population.</p>	<p>Northern Ireland Statistics and Research Agency McAuley House 2-14 Castle Street Belfast BT1 1SA</p> <p>Phone: 028 9034 8100</p> <p>Email: info.nisra@dfpni.gov.uk</p> <p>Website: www.nisra.gov.uk</p>

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