General Register Office
for
SCOTLAND
information about Scotland's people

Projected Population of Scotland (2008-based)

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A National Statistics publication for Scotland

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Main Points

The Key points in this report are as follows:

Principal projection

- The population of Scotland is projected to rise from 5.17 million in 2008 to 5.36 million in 2018 and to continue to rise to 5.54 million in 2033 – an increase of 7 per cent over the 25 year period.

- Between 2008 and 2018 the number of children aged under 16 is projected to increase by 1 per cent from 0.91 to 0.92 million. It is then projected to decrease to 0.90 million in 2033 (a 1.5 per cent decrease compared to 2008).

- The number of people of working age[1] is projected to increase from 3.24 million in 2008 to 3.36 million in 2018 (an increase of 4 per cent). It is then projected to fall to 3.31 million in 2033 (an increase of around 2 per cent compared to 2008).

- The number of people of pensionable age[2] is projected to rise from 1.02 million in 2008 to 1.07 million in 2018 (an increase of 6 per cent). It is then projected to rise more rapidly, reaching 1.34 million in 2033 (an increase of around 31 per cent compared to 2008).

- The number of people aged 75 and over is projected to increase by around 23 per cent from 0.39 million in 2008 to 0.48 million in 2018. It is then projected to continue rising, reaching 0.72 million in 2033 - an increase of 84 per cent over the 25 year period.

- The dependency ratio – the ratio of persons aged under 16 or over pensionable age to those of working age – is projected to rise from around 60 per 100 in 2008 to 68 per 100 in 2033.

- The populations of the other three countries in the UK are projected to increase more than Scotland's with England's population projected to increase by 18 per cent, Wales' by 12 per cent and Northern Ireland's by 14 per cent between 2008 and 2033.

Variant projections

- Under each of the alternative scenarios illustrated by the nine available variant projections Scotland's population is projected to increase between 2008 and 2018. All but 2 of these variants also show an increase over the first 25 years of the projection.

- All the variant projections show Scotland's population ageing significantly over the next 25 years with the number of people aged 75+ projected to increase by between 72 per cent and 96 per cent under these assumptions.

[1] Working age is 16-59 for women and 16-64 for men until 2010; between 2010 and 2020 working age becomes 16-64 for women. Between 2024 and 2026 working age for both men and women becomes 16-65 and changes again, in two further steps, to 16-67 by 2046.

[2] Pensionable age is 65 for men, 60 for women until 2010; between 2010 and 2020 pensionable age for women increases to 65. Between 2024 and 2026 the pensionable age for both men and women increases to 66 and changes again, in two further steps, to 68 by 2046.

1. Background

1.1 The Office for National Statistics (ONS), on behalf of the Registrars General, prepares population projections for the United Kingdom and its constituent countries. This paper presents the main results of the latest, 2008-based, projection for Scotland and outlines the fertility, mortality and migration assumptions used in its preparation. Some additional tables showing more detailed figures for Scotland can be found on the General Register Office for Scotland (GROS) website (www.gro-scotland.gov.uk) whilst full results of the (2008-based) projections can be found on the National Statistics website (www.statistics.gov.uk).

1.2 The results in this paper concentrate on the period up to 2033, although they occasionally refer to up to 75 years ahead and ONS makes available projections up to 2108. However, projections this far ahead become increasingly uncertain.

1.3 As well as producing the main "principal" projection, ONS also produces "variant" projections using alternative plausible assumptions. At the time this paper was written (21 October 2009) ONS had published nine variant projections on the National Statistics website. Additional variants will follow in November 2009. More information on the variant projections is given in Section 7.

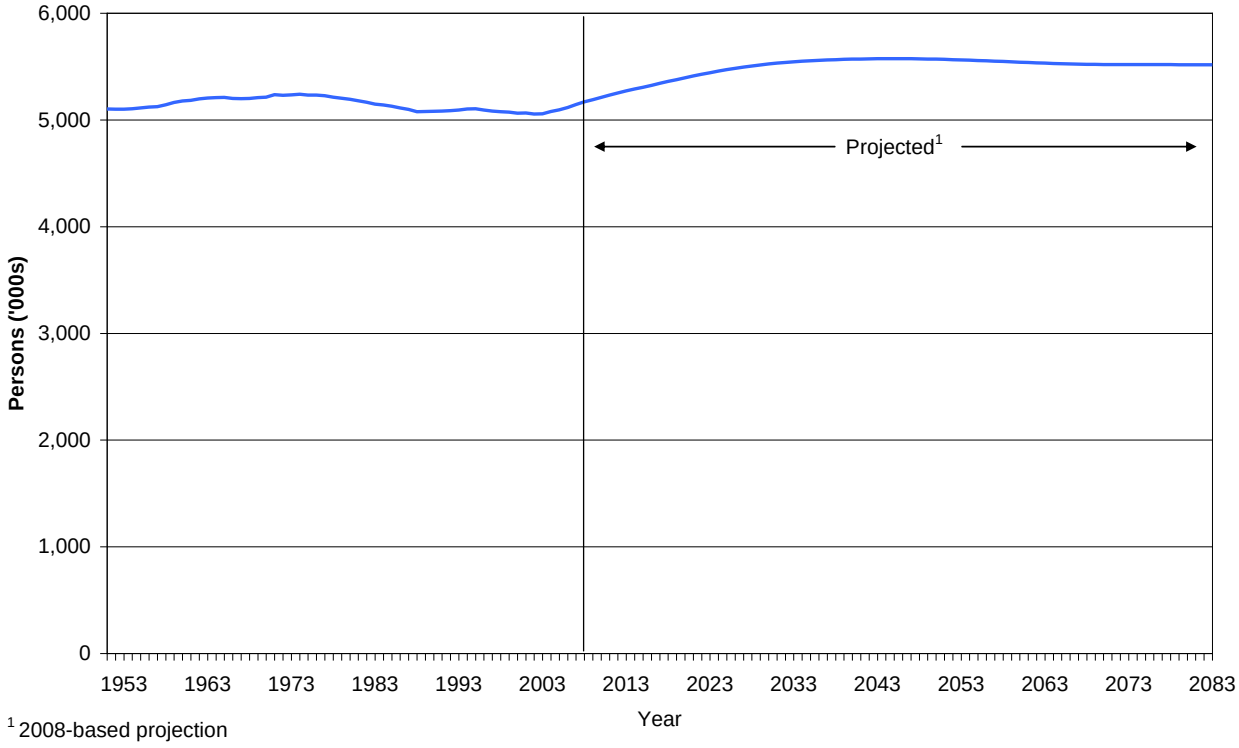
1.4 The primary purpose of the projections is to provide an estimate of the future population of Scotland as a common framework for use in national planning in a number of different fields such as education and health.

1.5 The Scottish Government has set a target to match average European (EU15) population growth over the period from 2007 to 2017. More details can be found on the Scotland Performs website at http://www.scotland.gov.uk/About/scotPerforms.

2. Summary of results

2.1 The results of this new set of projections, summarised in Table 1 and illustrated in Figure 1, show the total population of Scotland increasing from 5.17 million in 2008 and rising above Scotland's record 1974 population of 5.24 million in 2012. After this, it is projected to reach 5.36 million in 2018 (an increase of 191,000 or 4 per cent compared to 2008) and then 5.54 million by 2033 (a 7 per cent increase on the 2008 level). Looking further ahead, the population is projected to continue to rise until it peaks at around 5.57 million in the mid 2040s. It is then projected to decline slowly but to remain well above its current level.

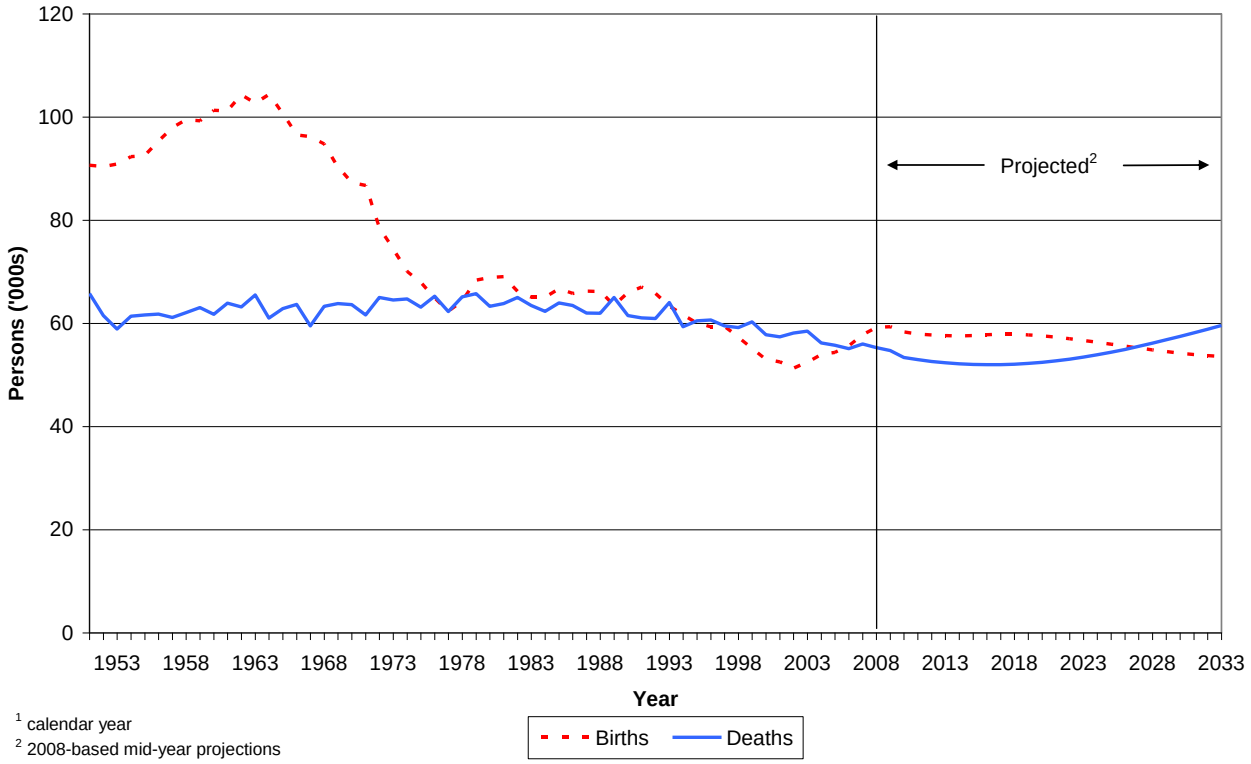
Figure 1 Estimated population of Scotland, actual and projected, 1951-2083



[1] 2008-based projection

2.2 Table 2 provides information on the projected components of change between 2008 and 2033. The table shows that up until around 2026 natural change and migration both act to increase the size of the population as the number of births exceeds the number of deaths and there are more immigrants than emigrants. After that point; the number of deaths exceeds the number of births whilst the net migration into Scotland continues.

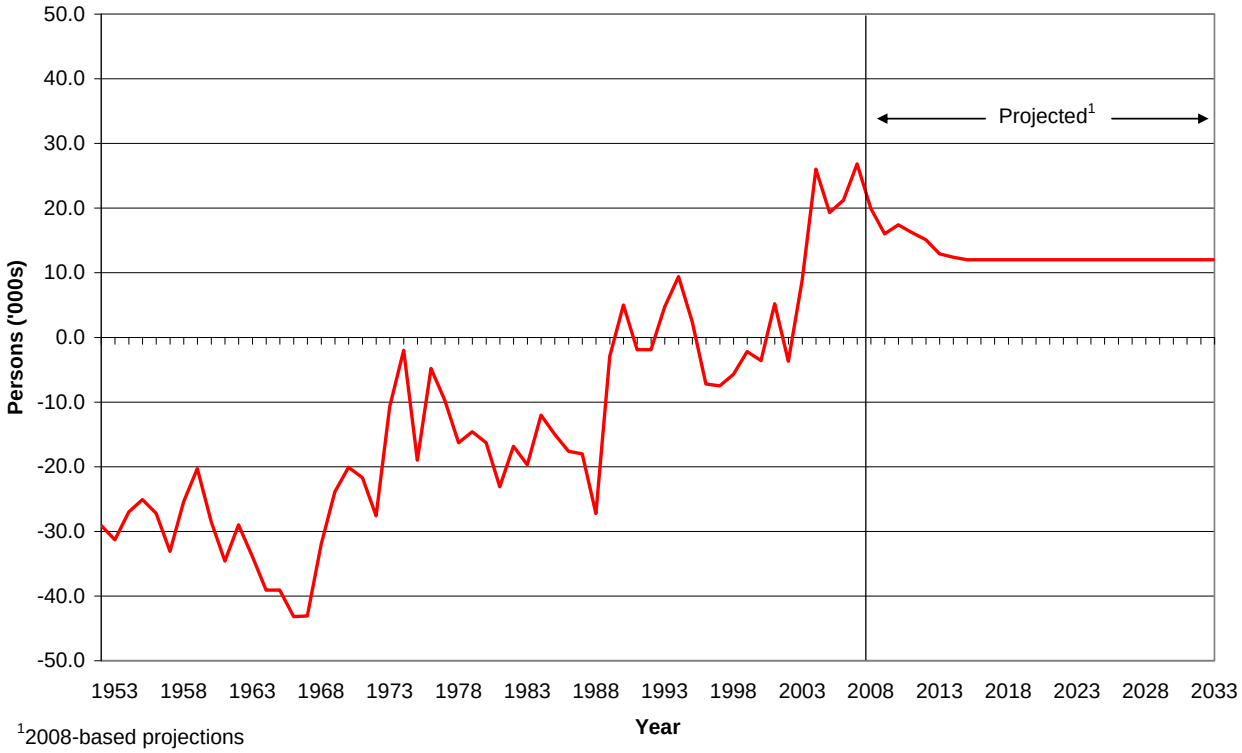
Figure 2 Births and deaths, actual[1] and projected, Scotland, 1951-2033



[1] calendar year
[2] 2008-based mid-year projections

2.3 As Figure 2 shows, the number of births in Scotland fell significantly between the early 1960s and 2002, dropping below the number of deaths in 1996. The last few years have seen an upturn in the number of births and they have exceeded the number of deaths since 2007. The projections show a further increase in the number of births in 2009. Thereafter they generally decline but continue to exceed deaths until 2027 and remain above the historically low number of births observed in 2002 throughout the first 25 years of the projection. Meanwhile, the number of deaths is projected to fall until 2016 before increasing back to the levels experienced in the mid 1990s by about 2033.

Figure 3 Estimated and projected net migration, Scotland, 1951-2033

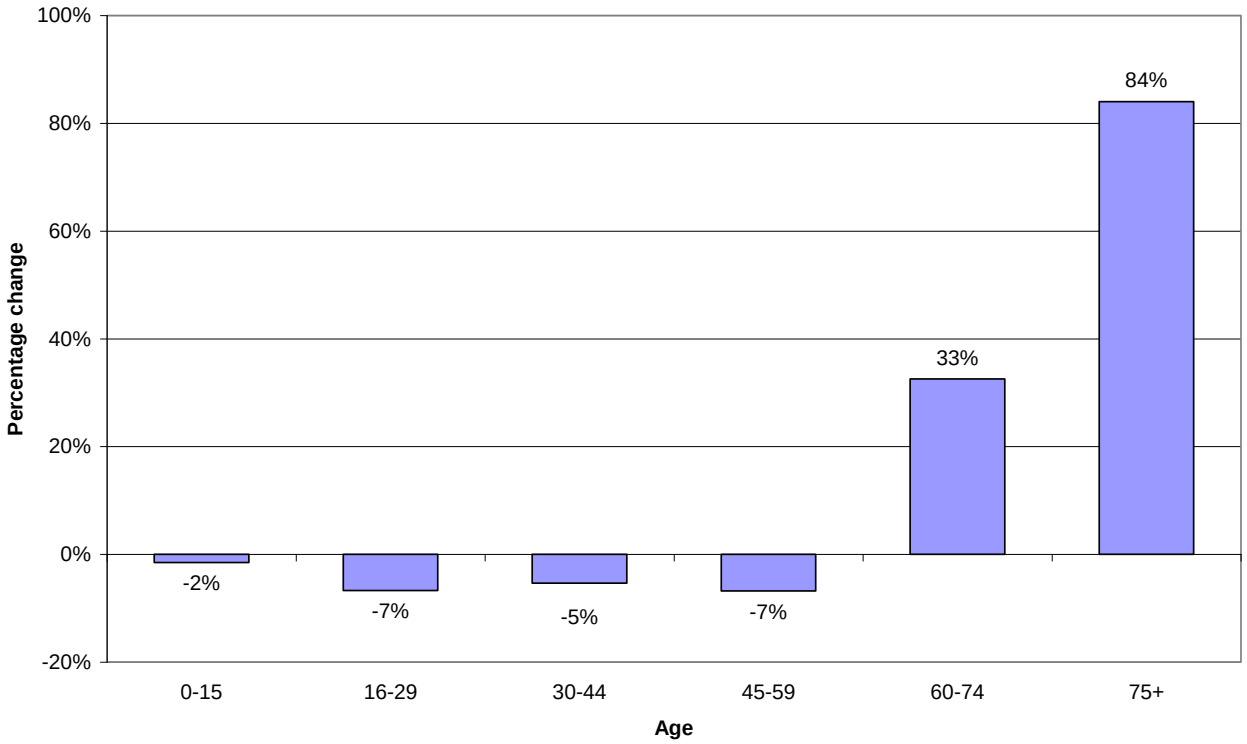


[1]2008-based projections

2.4 As Figure 3 shows, Scotland has historically been a country of net out-migration with more people leaving than coming in the other direction. However, in the last few years Scotland has experienced record levels of net in-migration. As a result of these recent trends, these projections have assumed that Scotland will experience a net inflow throughout the projection period. The size of this net inflow is assumed to fall steadily for the first six years of the projection from its 2007-08 level of 20,000 until it reaches 12,000 in 2014-15 and stays at this level for the remainder of the projection period. More detailed information on the fertility, mortality and migration assumptions leading to these results is given in Section 3 and Annex A, Annex B and Annex C.

2.5 A summary of projected populations in broad age groups is given in Table 3; projected populations by sex and five year age groups are given in Table 6. These tables and Figure 4 show that the age structure of the population is projected to change markedly between 2008 and 2033.

Figure 4 The projected percentage change in Scotland's population by age group, 2008-2033



2.6 Scotland's population is projected to increase by 7 per cent between 2008 and 2033. As Figure 4 shows, the number of younger people is projected to decrease during this period whilst the number of older people is projected to increase significantly.

2.7 Between 2008 and 2018, the number of children aged under 16 is projected to increase by 1 per cent from 0.91 to 0.92 million. It is then projected to decrease to 0.90 million in 2033 (a 1.5 per cent decrease compared to 2008).

2.8 The number of people of working age is projected to increase from 3.24 million in 2008 to 3.36 million in 2018 (an increase of 4 per cent). It is then projected to fall to 3.31 million in 2033 (an increase of around 2 per cent compared to 2008).

2.9 The number of people of pensionable age is projected to rise from 1.02 million in 2008 to 1.07 million in 2018 (an increase of 6 per cent). It is then projected to rise more rapidly, reaching 1.34 million in 2033 (an increase of around 31 per cent compared to 2008).

2.10 These figures take into account the increases in the state pension age which will rise from 60 to 65 for women between 2010 and 2020 and then from 65 to 66 for both men and women between 2024 and 2026. A further increase to age 68 for both men and women will occur between 2034 and 2046. Were it not for these changes the population of working age would be projected to decrease by around 6 per cent and the population of pensionable age to increase by 57 per cent by 2033.

2.11 The number of people aged 75 and over is projected to increase by around 23 per cent from 0.39 million in 2008 to 0.48 million in 2018. It is then projected to continue rising, reaching 0.72 million in 2033 - an increase of 84 per cent over the 25 year period. This is due to the ageing of the baby boomers born after the Second World War, in their mid eighties by 2033, and the effect of improved mortality rates.

2.12 A useful summary measure of the age structure of a population is the dependency ratio - the ratio of persons aged under 16 and those over pensionable age to those of working age. Table 4 shows that the dependency ratio is projected to remain more or less stable at around 60 per 100 until 2018. Between 2018 and 2023 the dependency ratio is projected to increase to 62 per 100 working age population. It then remains more or less steady until 2028 before increasing relatively rapidly to 68 by 2033. The relatively slow initial increase in the dependency ratio is mainly due to the changes to the state pension age described above. In the absence of these changes, the dependency ratio would be projected to rise to 82 per 100 by 2033.

2.13 In 2008 the 60 dependents per 100 working age population were made up relatively evenly of children (28 per 100) and pensioners (31 per 100). By 2033 this distribution is projected to have changed with 27 children and 40 pensioners per 100 population of working age.

3. The base population and assumptions used in the projections

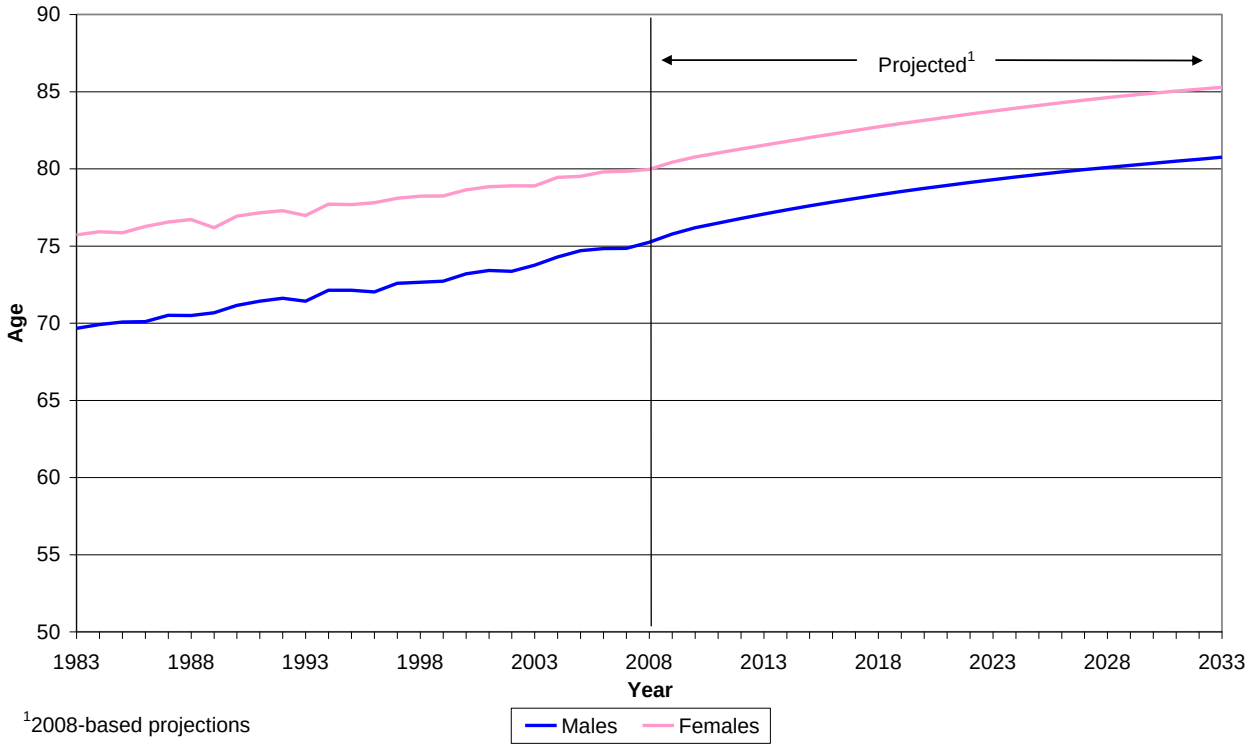
3.1 **The base population:** The projection is based on the Registrar General for Scotland's population estimates for mid-2008. The population covered includes all persons usually resident in Scotland, whatever their nationality. Members of HM and non-UK armed forces stationed in Scotland are included; HM forces stationed outside Scotland are excluded. Students are treated as being resident at their term-time address.

3.2 The assumptions about future patterns in fertility, mortality and migration are based on analysis of past trends. The final decisions on assumptions take into account the views of a range of groups who are consulted including a UK expert advisory panel and key users in Scotland. These consultations discussed the likely impact of, for example, increasing child obesity and the economic downturn.

3.3 **Fertility:** The fertility rates used in the projection are based on assumptions about the average completed family size of successive cohorts of women. It has been assumed that the average completed family size will continue to decline from around 1.85 children per woman for those born in the early 1960s and now reaching the end of their childbearing lives, before levelling off at 1.70 for those born in the 1990s and later. The number of births is expected to fall from around 60,000 in 2008 to around 53,600 in 2033. More details on the fertility assumptions are available in Annex A.

3.4 **Mortality:** Future improvements in mortality rates are based on the trend observed in the period 1961 to 2007. It is assumed that reduction in mortality rates will tend towards a common reduction at each age of 1.0 per cent a year by 2033 for most ages and then continue to improve at this constant rate thereafter. Based on these rates, expectations of life at birth are projected to increase from 74.8 in 2007 to 80.7 in 2033 for males; and from 79.8 in 2007 to 85.3 in 2033 for females as shown in Figure 5. More details on the mortality assumptions are available in Annex B.

Figure 5 Expectation of life at birth, Scotland, 1983-2033



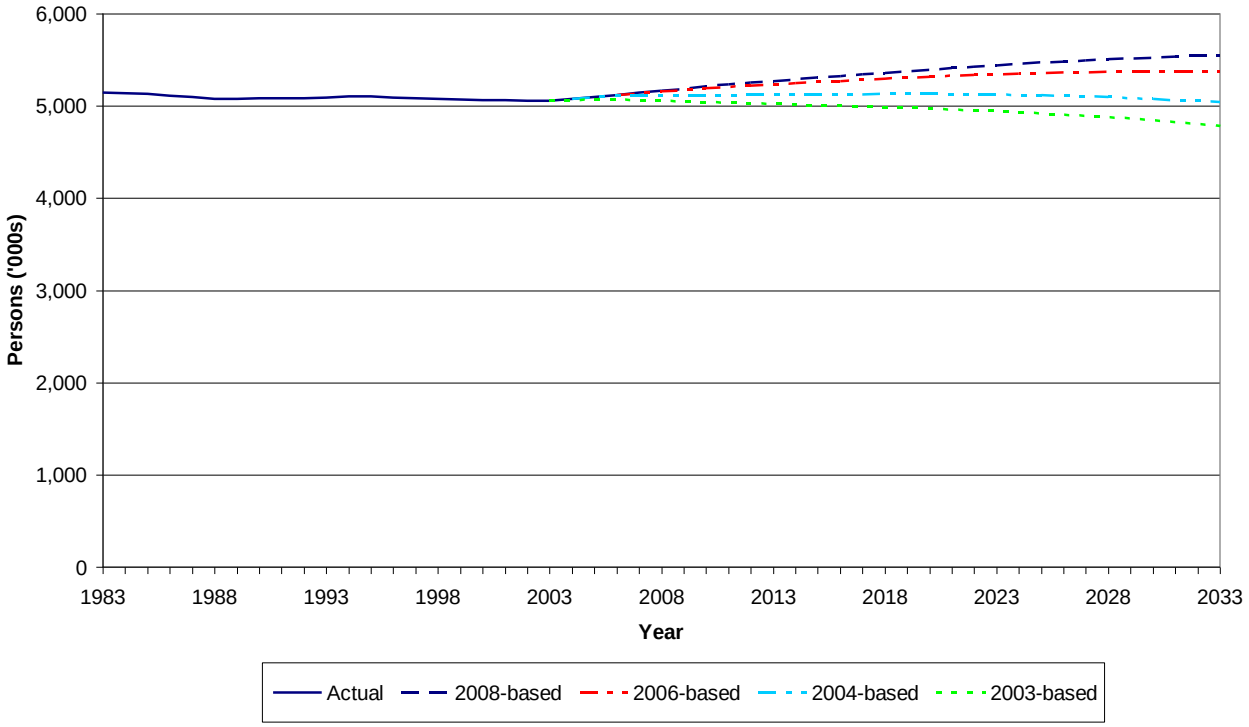
3.5 **Migration:** It is assumed that from 2014-15 onwards there will be a net inflow of 12,000 people per year to the end of the projection period, i.e. the total number of people entering Scotland as migrants is assumed to be 12,000 greater than the number leaving Scotland. This assumption has been derived from analyses of trends in civilian migration to and from the United Kingdom as well as cross-border migration between the four constituent countries. In the first six years of the projection higher net inflows are assumed, reflecting recent trends described in Section 2.4. See Annex C for more details on the migration assumptions.

4. Comparison with previous projections

4.1 The last set of projections, published in October 2007, were based on the mid-year population estimates for 2006. The previous projections were based on the mid-2004 population estimates and, prior to this, an interim set of projections, using 2003 as the base year, were produced. The key changes from previously published projections in terms of births, deaths and total population are shown in Table 5a, Table 5b and Table 5c respectively. Section 4.4 looks at the differences in the migration assumptions between the projections. National projections are usually produced every two years – the next set will be 2010-based and is due to be published in October 2011.

4.2 Figure 6 compares the 2008-based projection with previous projections. It shows that the level of the population under the latest projection is higher than for earlier projections and that the population is projected to continue to rise over the next 25 years. Looking further ahead, the population is projected to rise until around 2045 before it begins to decline. However the projections do not show the population falling back to its current level. The 2003-based, 2004-based and 2006-based projections all showed the population decline occurring earlier and showed the population eventually falling below the level in the base year.

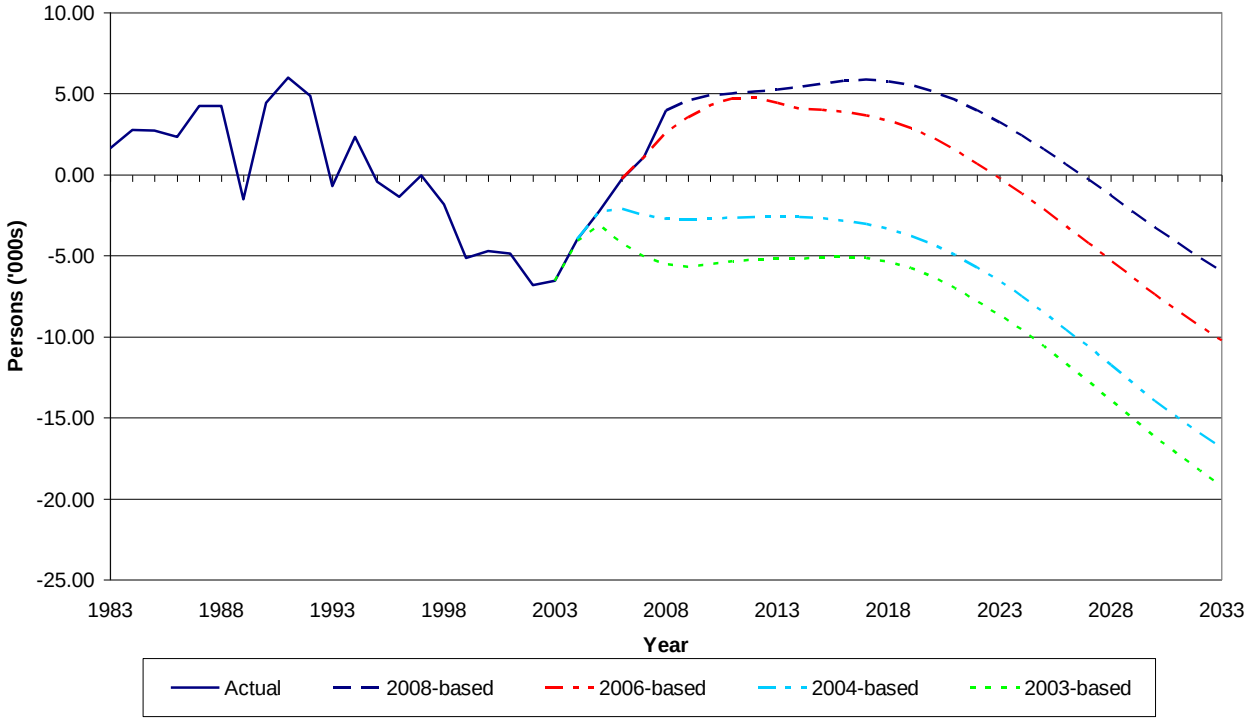
Figure 6 Actual and Projected total population compared with previous projections, 1983-2033



4.3 The difference between the projections is due in part to the fact that the population in mid-2008 (on which the projections are based) was around 11,400 higher than the 2006-based projections assumed and in part to the different assumptions about fertility, mortality and migration.

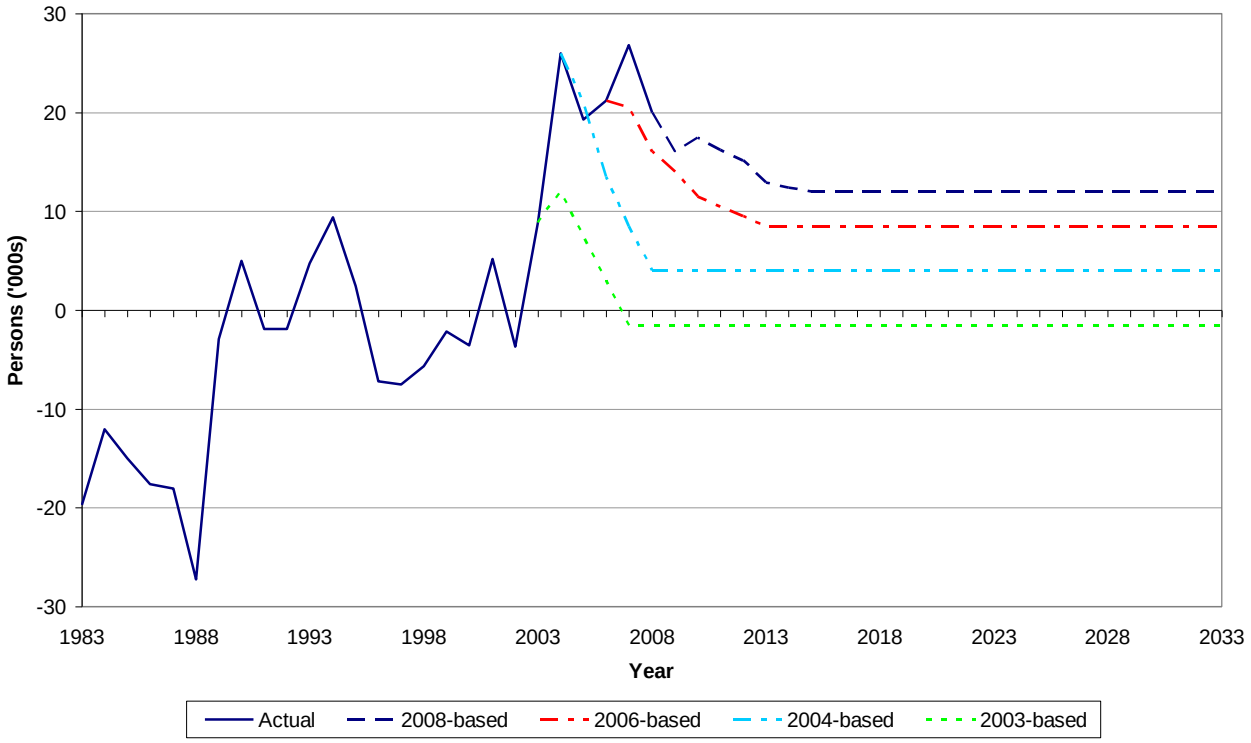
4.4 Figure 7 compares the natural change (the difference between the number of births and deaths) underlying the 2008-based projection with that underlying previous projections. In comparison with the 2006-based projections the number of births is projected to be higher (by an average of around 2,500 per year in the first 25 years of the projection) and the number of deaths very slightly lower (by an average of around 150 per year, again during the first 25 years). As a result there is a higher natural increase between 2009 and 2026 and a reduced natural decrease thereafter. More information on the reasons for the differences is given in Section 3 and in Annex A, Annex B and Annex C.

Figure 7 Actual and Projected Natural Change (Births minus Deaths) compared with previous projections, 1983-2033



4.5 As Figure 8 demonstrates, the long-term migration assumption has been increased from +8,500 in the 2006-based projections to +12,000. This is largely because, since the previous projections were published, migration has continued at a relatively high level (+27,000 in 2006-07 and +20,000 in 2007-08) and, though a reduction is assumed (notably because migration from Eastern Europe is unlikely to continue to be so strongly positive), the previous assumption no longer seems plausible. Migration levels have been so variable in recent years that a trend is hard to identify, and these figures should be treated with caution. Section 7 shows what would happen under various different levels of migration.

Figure 8 Actual and Projected Migration compared with previous projections, 1983-2033



4.6 Table A and Table B below summarise the differences between the 2008-based and the 2006-based projections. The difference in results for the projected age structure of Scotland is small, but the 2008-based projections show a slightly smaller percentage of the population to be of pensionable age and slightly higher percentages to be children or of working age in 2033. As a result the projected number of dependents per 100 of working age is lower in 2033 in the 2008-based projections than in the 2006-based projections.

Table A Projected age structure of Scotland's population (percentage of total population)

Age Group	2006-based		2008-based	
	2008	2033	2008	2033
Children	17.6%	15.8%	17.7%	16.2%
Working age	62.6%	59.4%	62.6%	59.7%
Pension age	19.8%	24.8%	19.7%	24.1%

Table B Projected number of dependents per 100 population of working age, Scotland

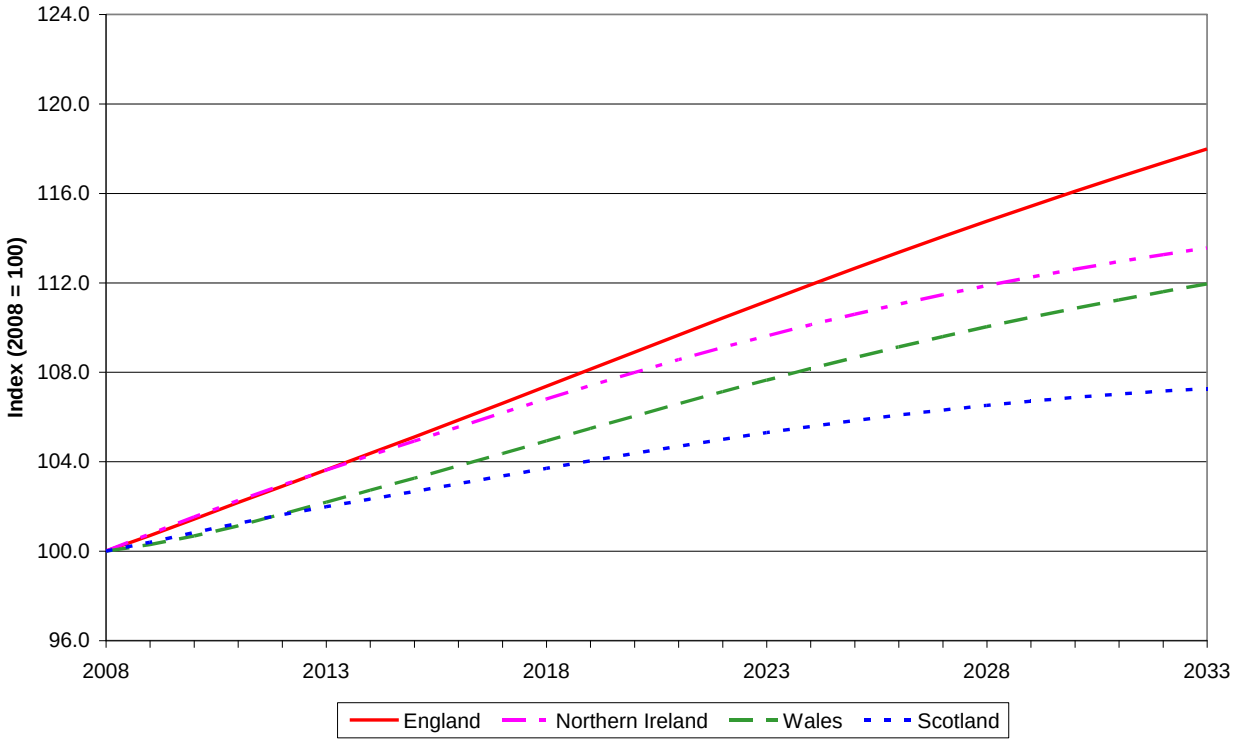
Age Group	2006-based		2008-based	
	2008	2033	2008	2033
Children	28.1	26.5	28.2	27.2
Pensioners	31.5	41.7	31.4	40.4
All dependants	59.6	68.2	59.6	67.6

5. Scotland's position within the United Kingdom

5.1 The United Kingdom population is projected to increase from an estimated 61.4 million in 2008, reaching 65.6 million in 2018, rising above 70 million in 2029 and reaching 71.6 million by 2033. Over the 25 year period this equates to a 17 per cent increase – the same as was projected in the 2006-based projections.

5.2 Figure 9 illustrates the projected change in the populations of the four countries of the United Kingdom from 2008 to 2033. It shows that the populations of England, Wales and Northern Ireland are all projected to grow more quickly than that of Scotland. By 2033 England's population is projected to be 18 per cent higher than in 2008, Northern Ireland's is projected to be 14 per cent higher and Wales' 12 per cent higher. During the same period Scotland's population is projected to grow by 7 per cent.

Figure 9 Comparison of population change for UK countries, 2008-2033

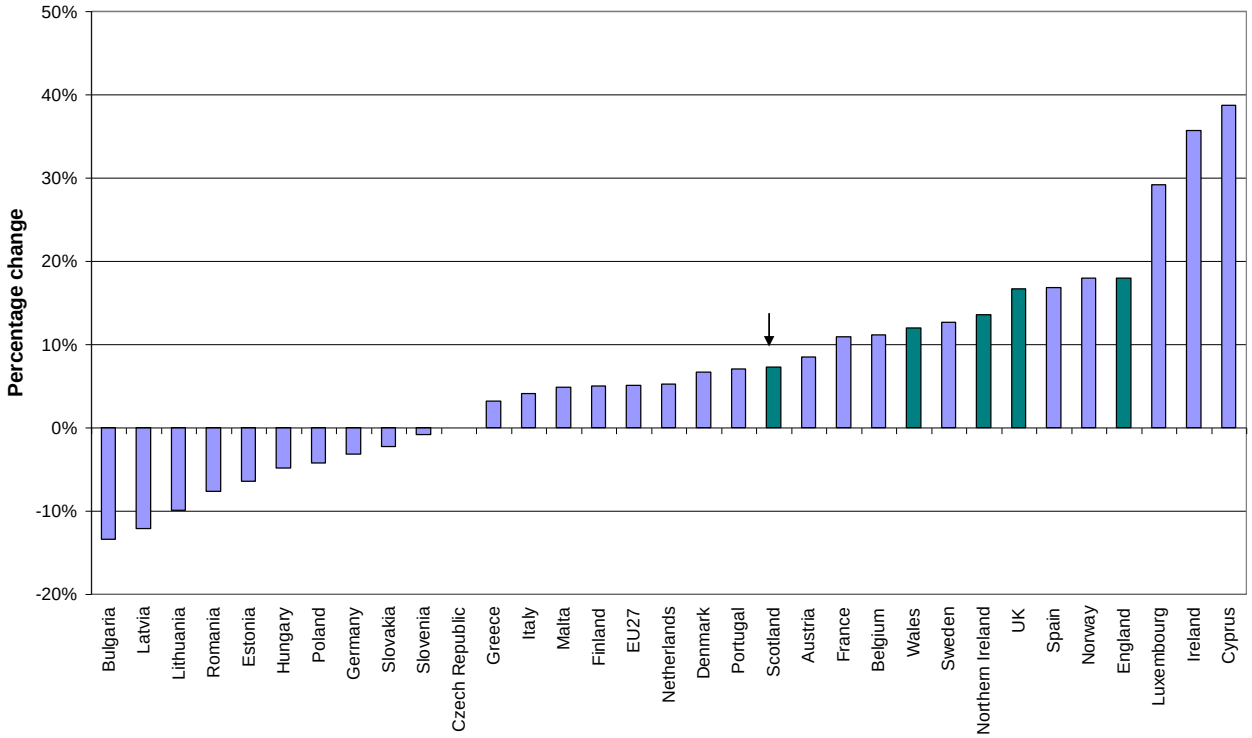


6. Scotland's position within Europe

6.1 Figure 10 shows how the projected change in Scotland's population between 2008 and 2033 compares to that for other countries in Europe. For UK countries these have been calculated using the 2008-based principal projection. For the other countries the figures are taken from Eurostat's 2008-based convergence scenario projection[3]. Countries such as Germany and most of the recent accession states in eastern Europe are projected to experience a decline in population. The populations of Greece, Italy, Malta, Finland, the Netherlands, Denmark and Portugal are all projected to increase but by less than in Scotland. The population of the remaining 10 EU member states, including the UK, are projected to increase by more than in Scotland.

[3] More information on the Eurostat projections can be found at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-08-072/EN/KS-SF-08-072-EN.PDF

Figure 10 Projected Percentage Population Change in Selected European Countries, 2008-2033



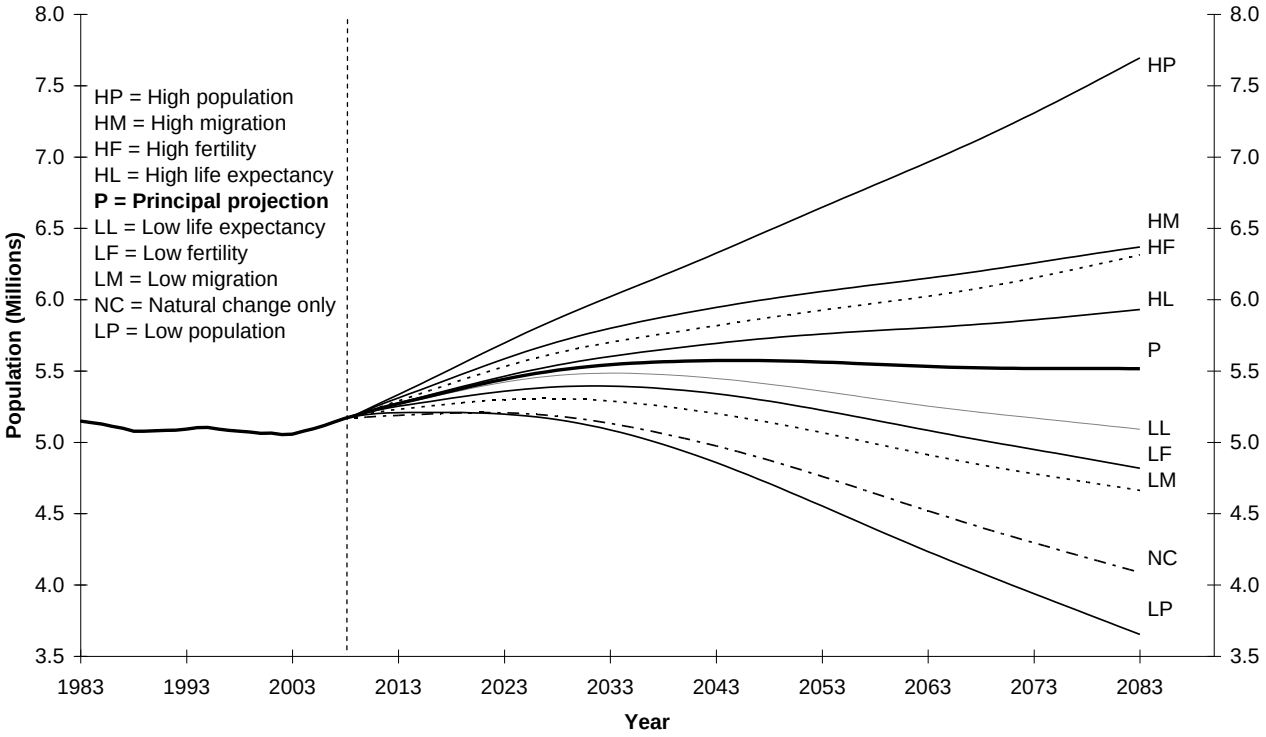
7. Long term and variant projections

7.1 The Office for National Statistics produces projections for Scotland for up to 100 years ahead. Results for the first 75 years of this period are available from the National Statistics website (http://www.statistics.gov.uk) and results beyond this are available on request. However, projections this far ahead become increasingly unreliable.

7.2 ONS also produces a number of "variant" projections as well as the "principal" projection which most of this report concentrates on. These variant projections are based on alternative assumptions of future fertility, mortality and migration. The variants are produced to give users an indication of the inherent uncertainty of demographic behaviour, especially for the long-term projections. The purpose is to illustrate plausible alternative scenarios and not to represent upper or lower limits for future demographic behaviour. These projections are simply 'scenarios' (the certain outcome of a given set of assumptions), rather than forecasts of the most likely course of future events.

7.3 The scenarios in this publication are, in addition to the principal projection, six standard high/low variants associated with the three components of fertility, life expectancy and migration, a special case 'zero migration' variant, and the combination variants which produce the high and low population. These final two variants are produced by combining the high (or low) variant assumptions for fertility, life expectancy and migration and can, for all practical purposes, be consider as giving plausible upper and lower bounds for future total population size. Annex D gives more information about these variants, and the remaining variants which will be released in November.

Figure 11 Actual and projected total population Scotland, under the 2008-based principal and selected variant projections, 1983-2083



7.4 Figure 11 and Table 7 show Scotland's population under each of the alternative variant projections.

7.5 The high fertility variant results in a 2033 population that is 0.16 million higher than the principal projection. This is due to the extra births associated with the higher fertility assumption. In contrast, the low fertility variant results in the population in 2033 being 0.15 million lower than the principal projection.

7.6 The high life expectancy variant projects fewer deaths and a population in 2033 which is 0.06 million higher than the principal projection. The low life expectancy variant, on the other hand, results in a population which is 0.06 million lower in 2033 than the principal projection.

7.7 Table 8 shows the projected components of population change in the period to 2033 in the principal projection, the high and low migration variants and the zero migration variant. This shows the effect of different migration assumptions on the size of the future population. Under each of these projections the fertility and mortality assumptions are the same but the number of births and deaths change. This highlights the fact that the numbers of births and deaths are partly dependent on the assumed level of net migration.

7.8 The principal projection shows Scotland's population increasing by 0.38 million (7.3 per cent) between 2008 and 2033. By comparison, the zero migration projection indicates a 0.04 million (0.7 per cent) decrease and the high migration variant projects a 0.63 million (12.2 per cent) increase. The total effect of migration in the principal projection is therefore to add 0.41 million people to Scotland's population by 2033 (0.38 million plus 0.04 million after the effects of rounding) and, under the high migration variant, to add 0.67 million (0.63 million plus 0.04 million). It is clear that the projected increase in Scotland's population between 2008 and 2033 under the principal projection is dependent on continuing migration into Scotland.

7.9 As Figure 12 shows, under all of the variant projections, and the principal projection, Scotland's age structure is projected to change dramatically between 2008 and 2033. In each case, the number of people aged 60 and over is projected to increase significantly, (particularly the number aged 75+) while, in most cases, the numbers in each of the age categories below 60 are projected to decrease. This is further demonstrated by Figure 13 which shows that the average age of Scotland's population increases under all of the available variant projections.

7.10 Figure 14 shows that the dependency ratio (number of dependents per 100 people of working age population) will rise under all available variant projections although the increase in the state pension age to 66 between 2024 and 2026 will result in a short term decrease. Amongst the available variants, the biggest projected increase in the dependency ratio occurs under the natural change only variant (70.3 in 2033) and the lowest occurs under the low fertility variant (65.3 in 2033).

Figure 12 Percentage change in age structure under the 2008-based principal and selected variant projections, 2008-2033

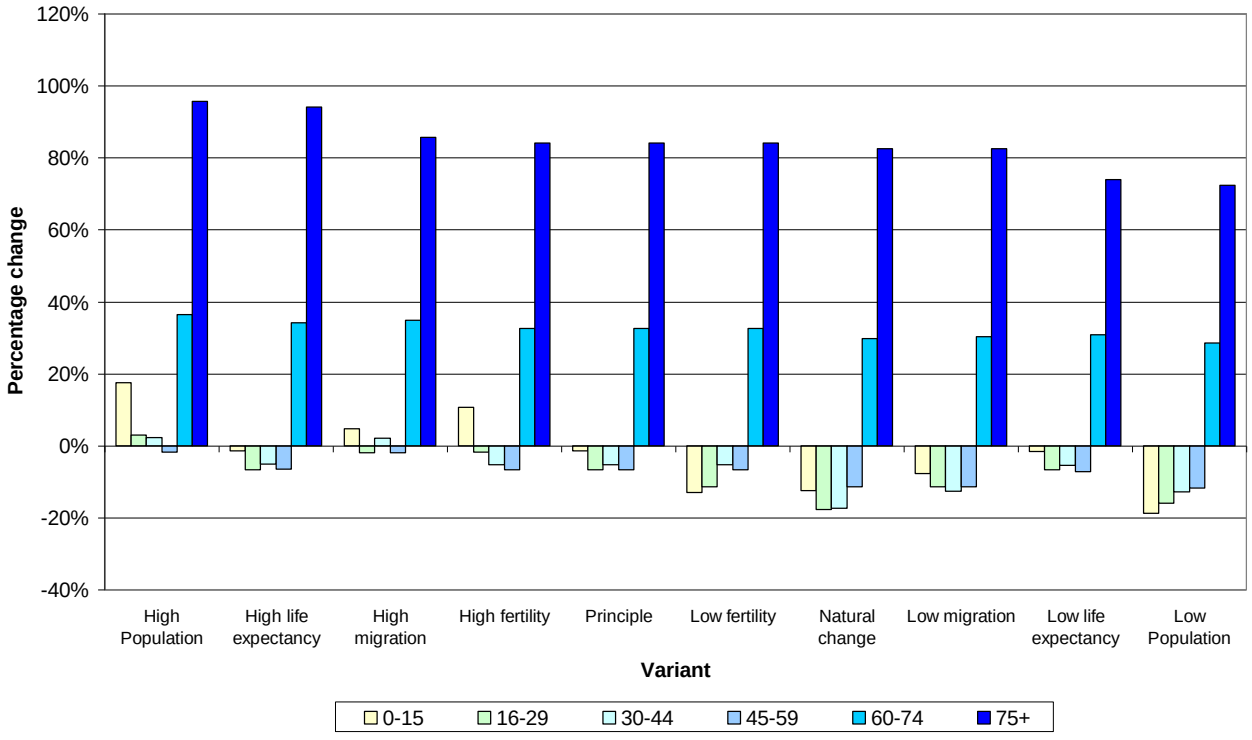


Figure 13 Average age of Scotland's population under the 2008-based principal and selected variant projections, 2008-2033

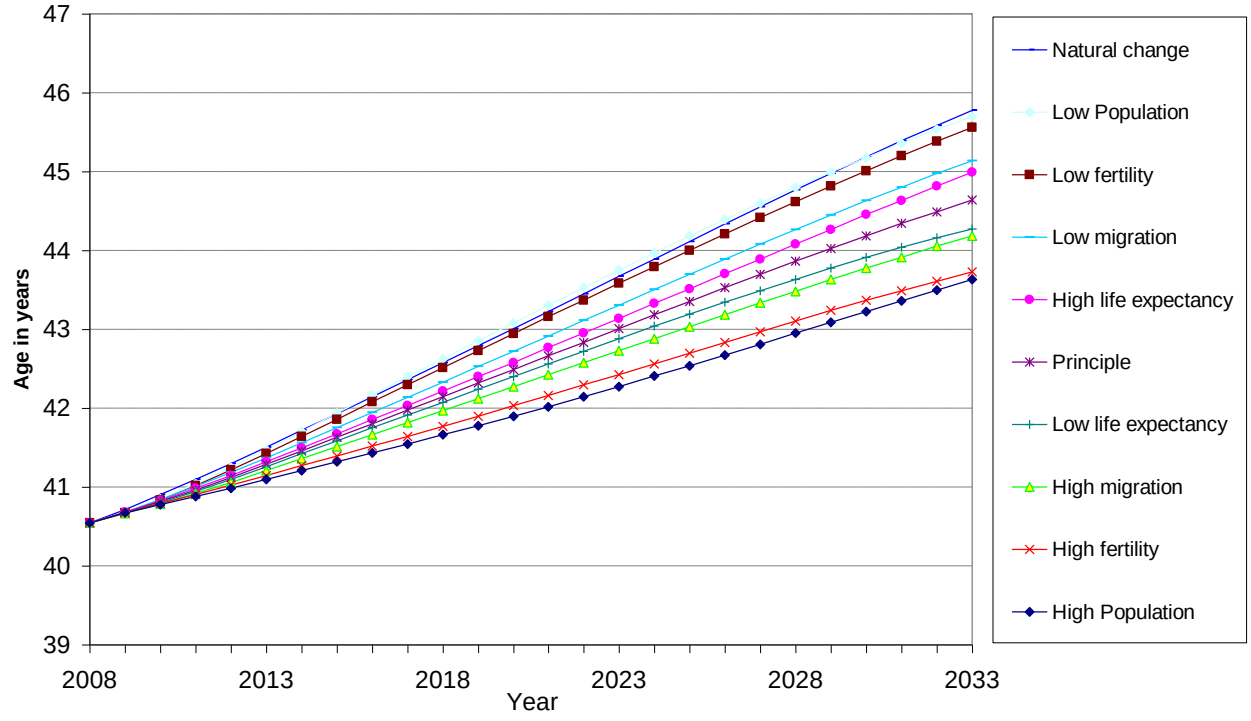
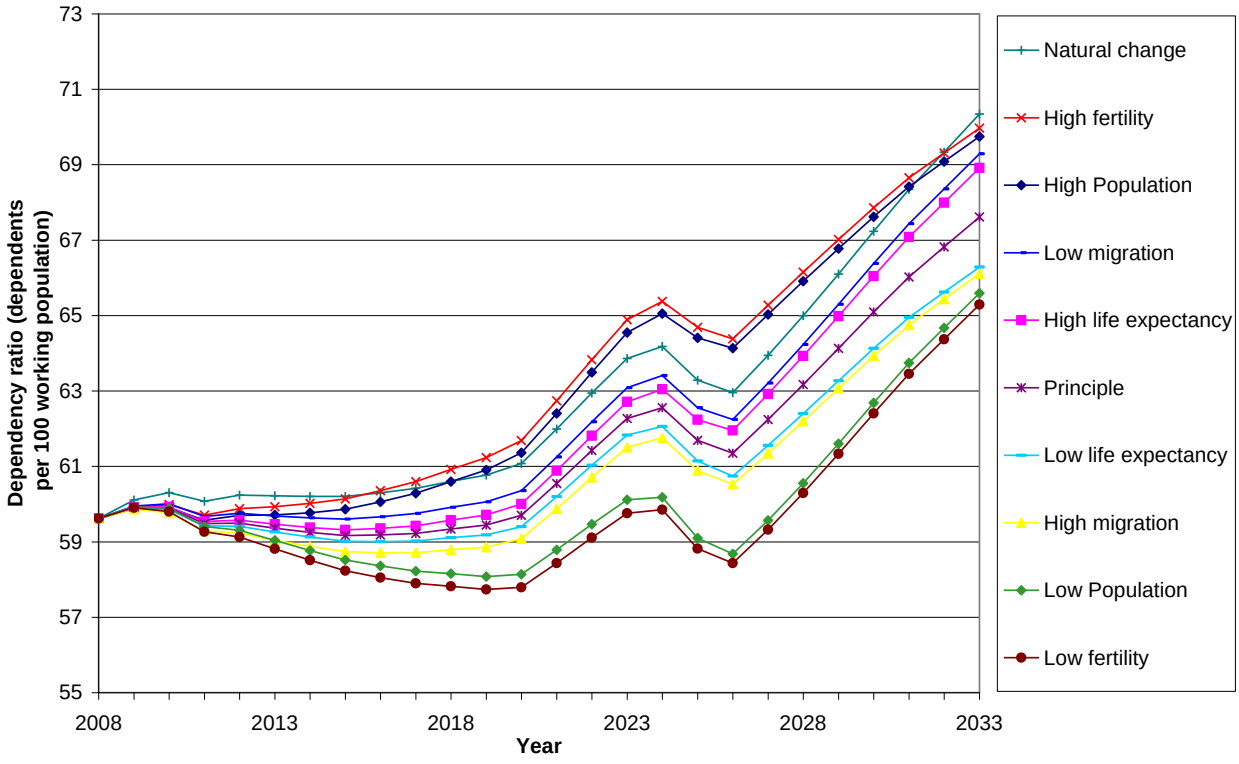


Figure 14 Dependency Ratios (dependents per 100 working age population) under the 2008-based principal and selected variant projections, 2008-2033



8. Further information

Corresponding data for the United Kingdom and its constituent countries, along with detailed information on the assumptions which are made, is available from the National Statistics website (http://www.statistics.gov.uk) or by contacting ONS at:

Office for National Statistics
National Population Projections Branch
Room 2300
Segensworth Road
Titchfield PO15 5RR

Tel: 01329 444652
E-mail: natpopproj@ons.gov.uk

More detailed age and sex breakdowns of the Scottish results are available from the GROS website at www.gro-scotland.gov.uk, from our customer services team or from the National Statistics web site (http://www.statistics.gov.uk).

The next set of sub-national projections for Council and NHS board areas in Scotland are due to be released in January 2010. These will be consistent with the latest 2008-based projection for Scotland. Further details can be obtained from:

Customer Services
General Register Office for Scotland
Census Analysis and Dissemination Branch
Ladywell House
Ladywell Road
Edinburgh EH12 7TF
Telephone: 0131 314 4299
E-mail: customer@gro-scotland.gsi.gov.uk

Table 1 Projected population of Scotland (2008-based): 2008-2078

('000s)

							Longer term projections				
	2008 (base)	**2013**	**2018**	**2023**	**2028**	**2033**	**2038**	**2048**	**2058**	**2068**	**2078**
All Ages	5,169	5,271	5,360	5,442	5,505	5,544	5,564	5,572	5,547	5,521	5,518

Table 2 Projected components of population change, Scotland: 2008-2033

('000s)

	2008 -2009	2009 -2010	2010 -2011	2011 -2012	2012 -2013	2013 -2014	2014 -2015
Population at start	**5,169**	**5,189**	**5,211**	**5,233**	**5,253**	**5,271**	**5,289**
Births	59	58	58	58	58	58	58
Deaths	55	53	53	53	52	52	52
Natural change	5	5	5	5	5	5	6
Migration	16	17	16	15	13	12	12
Population at end	**5,189**	**5,211**	**5,233**	**5,253**	**5,271**	**5,289**	**5,306**
Total change	21	22	21	20	18	18	18

Table 2 Projected components of population change, Scotland, 2008-2033 (continued)

('000s)

	2015 -2016	2016 -2017	2017 -2018	2018 -2019	2019 -2020	2020 -2021	2021 -2022
Population at start	**5,306**	**5,324**	**5,342**	**5,360**	**5,377**	**5,394**	**5,411**
Births	58	58	58	58	58	57	57
Deaths	52	52	52	52	52	53	53
Natural change	6	6	6	6	5	5	4
Migration	12	12	12	12	12	12	12
Population at end	**5,324**	**5,342**	**5,360**	**5,377**	**5,394**	**5,411**	**5,427**
Total change	18	18	18	18	17	17	16

Table 2 Projected components of population change, Scotland, 2008-2033 (continued)

('000s)

	2022 -2023	2023 -2024	2024 -2025	2025 -2026	2026 -2027	2027 -2028	2028 -2029
Population at start	**5,427**	**5,442**	**5,457**	**5,470**	**5,483**	**5,495**	**5,505**
Births	57	56	56	56	55	55	55
Deaths	53	54	54	55	56	56	57
Natural change	3	2	2	1	-0	-1	-2
Migration	12	12	12	12	12	12	12
Population at end	**5,442**	**5,457**	**5,470**	**5,483**	**5,495**	**5,505**	**5,515**
Total change	15	14	14	13	12	11	10

Table 2 Projected components of population change, Scotland, 2008-2033 (continued)

('000s)

	2029 -2030	2030 -2031	2031 -2032	2032 -2033
Population at start	**5,515**	**5,524**	**5,532**	**5,538**
Births	54	54	54	54
Deaths	57	58	59	60
Natural change	-3	-4	-5	-6
Migration	12	12	12	12
Population at end	**5,524**	**5,532**	**5,538**	**5,544**
Total change	9	8	7	6

Table 3 Projected population of Scotland (2008-based), by age group: 2008-2033

('000s)

	2008 (base)	2013	2018	2023	2028	2033
All Ages	**5,169**	**5,271**	**5,360**	**5,442**	**5,505**	**5,544**
0-15	914	906	923	933	918	900
16-29	953	965	912	869	868	889
30-44	1,065	1,006	1,009	1,068	1,064	1,008
45-59	1,068	1,132	1,139	1,049	990	995
60-74	776	830	894	954	1,019	1,028
75+	393	433	484	570	647	724
Children	914	906	923	933	918	900
Working ages	3,238	3,308	3,364	3,354	3,374	3,308
Pensionable ages	1,017	1,058	1,073	1,155	1,213	1,337

[1] Pensionable age is 65 for men, 60 for women until 2010; between 2010 and 2020 pensionable age for women increases to 65. Between 2024 and 2046, state pension age will increase in three stages from 65 years to 68 years for both sexes.
* Note: Not all figures will sum due to rounding.

Table 4 Projected number of dependents per 100 population: 2008-2033

Age group	2008 (base)	2013	2018	2023	2028	2033
All dependants	60	59	59	62	63	68
Children under 16	28	27	27	28	27	27
Pensionable ages						
65/60[1] & over	31	32	32	34	36	40
65/60[1] - 74	19	19	18	17	17	19
75 & over	12	13	14	17	19	22

[1] Pensionable age is 65 for men, 60 for women until 2010; between 2010 and 2020 pensionable age for women increases to 65. Between 2024 and 2046, state pension age will increase in three stages from 65 years to 68 years for both sexes.
* Note: Not all figures will sum due to rounding.

Table 5a Projected number of births[1] (2008-based), Scotland: 2013-2033

	2012-13	2017-18	2022-23	2027-28	2032-33
2008 based	57,600	57,900	56,700	54,900	53,600
2006 based	56,700	55,600	53,600	51,300	49,800
2004 based	51,400	51,300	50,100	47,700	45,400
2003 based	48,900	49,400	48,000	45,300	42,600

1. Rounded to nearest 100

Table 5b Projected number of deaths[1] (2008-based), Scotland: 2013-2033

	2012-13	2017-18	2022-23	2027-28	2032-33
2008 based	52,400	52,100	53,500	56,200	59,600
2006 based	52,300	52,300	53,800	56,600	60,100
2004 based	54,000	54,700	56,700	59,400	62,300
2003 based	54,100	54,800	56,600	59,200	61,800

1. Rounded to nearest 100

Table 5c Projected population (2008-based), Scotland: 2013-2033

('000s)

	2013	2018	2023	2028	2033
2008 based	5,271	5,360	5,442	5,505	5,544
2006 based	5,233	5,294	5,344	5,370	5,371
2004 based	5,122	5,128	5,122	5,094	5,040
2003 based	5,020	4,987	4,944	4,878	4,784

Table 6 Projected population of Scotland (2008-based), by sex and age group: 2008-2033

('000s)

Age	Sex	Estimated population	Projection year				
		30 June 2008	2013	2018	2023	2028	2033
All ages	**Persons**	**5,169**	**5,271**	**5,360**	**5,442**	**5,505**	**5,544**
	Males	**2,500**	**2,559**	**2,608**	**2,652**	**2,684**	**2,703**
	Females	**2,668**	**2,712**	**2,752**	**2,791**	**2,822**	**2,842**
0-4	**Persons**	283	291	289	287	278	270
	Males	145	149	148	147	142	138
	Females	138	142	141	140	136	132
5-9	**Persons**	269	285	293	291	289	280
	Males	138	146	150	149	147	143
	Females	132	139	144	142	141	137
10-14	**Persons**	298	271	287	295	292	290
	Males	152	139	147	151	149	148
	Females	145	132	140	144	143	142
15-19	**Persons**	327	305	278	293	301	299
	Males	168	156	142	150	154	153
	Females	160	149	136	143	147	146
20-24	**Persons**	354	354	329	302	317	325
	Males	180	180	167	153	161	165
	Females	174	173	162	149	156	160
25-29	**Persons**	335	365	359	335	308	323
	Males	170	186	184	171	157	165
	Females	165	179	176	164	151	158
30-34	**Persons**	299	339	366	361	336	310
	Males	147	172	186	184	171	157
	Females	152	168	180	177	165	152
35-39	**Persons**	363	302	340	367	362	337
	Males	174	148	171	185	183	170
	Females	189	155	169	181	179	167
40-44	**Persons**	403	364	303	340	366	362
	Males	193	174	147	170	184	182
	Females	210	190	155	170	182	179
45-49	**Persons**	392	400	361	301	338	364
	Males	189	191	172	145	168	182
	Females	203	209	189	155	170	182
50-54	**Persons**	351	388	396	359	299	336
	Males	171	187	188	170	144	167
	Females	180	202	208	189	155	170
55-59	**Persons**	325	344	381	389	353	295
	Males	159	166	182	184	166	142
	Females	166	177	199	205	186	154
60-64	**Persons**	312	313	332	369	378	343
	Males	152	152	159	175	177	160
	Females	160	162	173	194	201	183
65-69	**Persons**	248	292	295	314	350	359
	Males	116	140	141	149	164	166
	Females	132	152	154	165	186	193
70-74	**Persons**	216	225	267	272	291	326
	Males	97	103	126	128	136	150
	Females	118	122	141	144	155	176
75-79	**Persons**	173	185	196	236	242	261
	Males	73	80	88	109	111	119
	Females	101	104	109	127	131	142
80-84	**Persons**	119	132	148	161	197	204
	Males	45	52	62	69	87	90
	Females	74	80	86	92	109	113
85-89	**Persons**	69	76	90	106	120	149
	Males	22	27	33	42	49	63
	Females	47	49	56	64	71	86
90 & over	**Persons**	31	40	51	66	88	110
	Males	8	11	16	22	32	41
	Females	24	29	35	44	57	69

Note: Not all figures will sum due to rounding

Table 7 Principal and selected variant projections (2008-based), Scotland: 2008-2078

('000s)

							Longer-term projections			
	2008 (base)	**2013**	**2018**	**2023**	**2028**	**2033**	**2038**	**2048**	**2058**	**2068**	**2078**
Principal projection	**5,169**	**5,271**	**5,360**	**5,442**	**5,505**	**5,544**	**5,564**	**5,572**	**5,547**	**5,521**	**5,518**
High Migration	5,169	5,311	5,449	5,585	5,704	5,800	5,877	6,005	6,105	6,201	6,315
High Fertility	5,169	5,290	5,413	5,530	5,627	5,701	5,760	5,874	5,975	6,082	6,232
High Life expectancy	5,169	5,276	5,371	5,463	5,541	5,602	5,651	5,730	5,783	5,828	5,894
High population	5,169	5,335	5,515	5,697	5,866	6,021	6,171	6,487	6,805	7,130	7,499
Low Migration	5,169	5,231	5,270	5,299	5,307	5,289	5,251	5,139	4,990	4,842	4,721
Low Fertility	5,169	5,253	5,309	5,358	5,389	5,394	5,376	5,288	5,154	5,015	4,885
Low Life expectancy	5,169	5,266	5,349	5,421	5,469	5,485	5,475	5,408	5,305	5,210	5,131
Low population	5,169	5,208	5,209	5,197	5,158	5,087	4,984	4,711	4,392	4,084	3,795
Natural change only	5,169	5,189	5,205	5,207	5,183	5,133	5,061	4,873	4,641	4,404	4,191

Table 8 Projected population change for selected variant projections (2008-based), Scotland: 2008-2033

('000s)

	High migration variant	Principal projection	Low migration variant	Natural change only variant
Population at mid-2008	**5,169**	**5,169**	**5,169**	**5,169**
Population change (2008-2033)				
Births	1,470	1,414	1,359	1,309
Deaths	1,365	1,356	1,348	1,345
Migration	526	318	110	0
Population at mid-2033	**5,800**	**5,544**	**5289**	**5133**
Total population change between 2008 and 2033	**631**	**376**	**121**	**-36**

Annex A Fertility assumptions

Fertility assumptions are agreed in two stages. The long term assumption is decided as part of the consultation process between the UK countries and the Office for National Statistics. Then there is detailed assumption setting to produce the age-specific fertility rates for each year of the projection period that are consistent with this long-term assumption.

The fertility assumption of long term average completed family size is slightly higher for Scotland in the 2008-based projection than it was in the 2006-based projection. However it is still lower than the assumptions for other UK countries. The assumptions for Scotland and other constituent countries of the UK are given in Table A1.

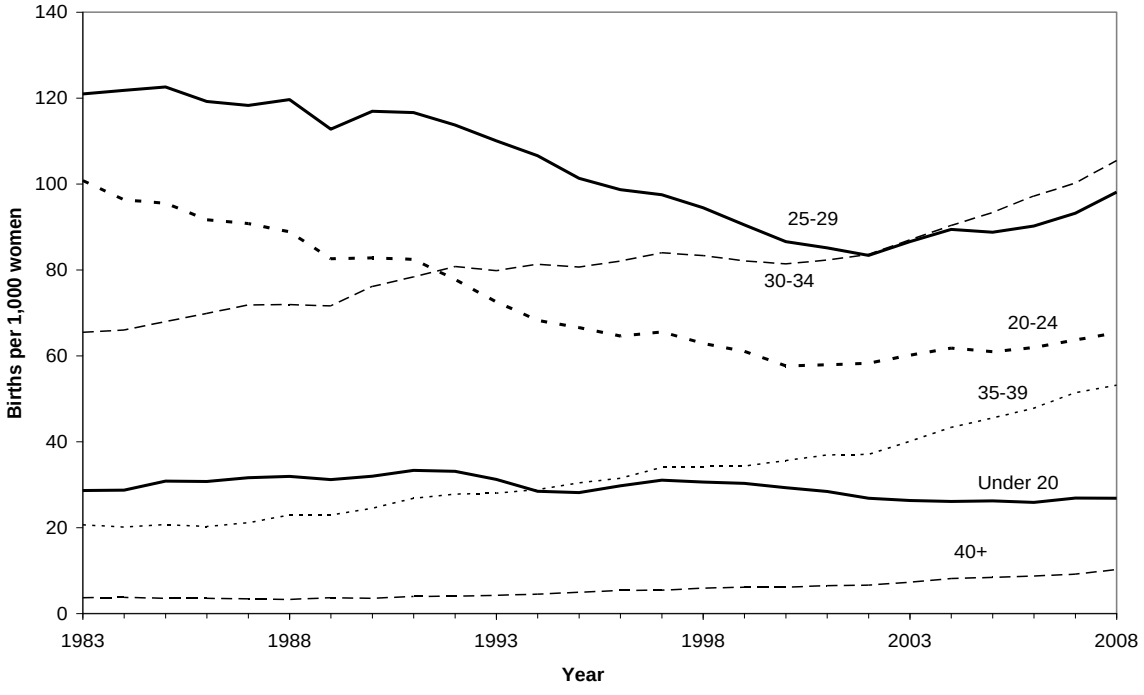
Table A1 Assumptions of long-term average completed family size 2006 and 2008-based projections

	2008-based	2006-based
England	1.85	1.85
Wales	1.85	1.85
Scotland	1.70	1.65
Northern Ireland	1.95	1.95
United Kingdom	1.84	1.84

Recent data have shown increases in fertility rates over the past seven years. Fertility rates for women in their thirties have continued their sustained increase over recent decades, while fertility rates for women in their twenties have been increasing since 2001.

The trends in age specific fertility for Scotland are shown in Figure A1. Until 2002, there is a general pattern of falling fertility at younger ages coupled with rises in fertility at older ages. From 2002, with the exception of the under 20 group, there have been increases in fertility.

Figure A1 Scotland Age Specific Fertility 1983-2008



Fertility assumptions are formulated in terms of the average number of children that women born in particular years will have. This cohort measure of fertility is more stable than the analogous calendar year or period measure (the total fertility rate). This is because it is affected only by change in the total number of children women have and not by the timing of births within their lives. Period rates may rise or fall if births are brought forward or delayed for any reason.

The assumptions about completed family size are based on family building patterns to date and other relevant data. For the UK as a whole, the steady decline in achieved family size at each age, a clear pattern for the 1945 to 1975 cohorts, appears to be bottoming out among the most recently-born cohorts of women.

The fertility assumptions used in the projection are based on the recession having a small impact on period fertility in the short-term but rates at all ages remaining at a fairly high level. Among women aged 22 and above, rates increase in 2008 but then fall gradually to levels seen in 2006 (for women in their twenties) or slightly higher (for women in their thirties and forties where rates stabilise around levels seen around 2006-2007) by 2014.

Annex B Mortality assumptions

The mortality rates for the first year of the projection, mid-2008 to mid-2009, are based on the best estimates that could be made in the autumn of 2009 of the numbers of deaths at each age in 2008-09.

Assumed improvements in mortality rates after 2008-09 are based on trends in mortality rates before 2008. Improvements in mortality rates by age and gender in the base year of the projection are estimated from the trends in years from 1961 to 2007. It is assumed that annual rates of mortality improvement will converge to a common rate of 1.0 per cent per year at 2033 for most ages, and continue to improve at that constant rate thereafter. However, it is assumed that those born in the years 1923 to 1940 (cohorts which have consistently experienced relatively high rates of mortality improvement over the last 25 years) will continue to experience higher rates of mortality improvement until they die, with assumed rates of improvement in and after 2033 rising from 1.0 per cent a year for those born before 1923 to a peak of 2.5 per cent a year for those born in 1931 and then declining back to 1.0 per cent a year for those born in 1941 or later.

A comparison of period expectations of life (Eols) for Scotland with the UK as a whole (Figure B1) suggests there has been a gradual widening in the difference in expectations of life for males under the age of 80, since the early 1980s. There have also been increases in divergence for females at the younger age groups over the last four of five years (Figure B2).

Figure B1 Period expectations of life (Eol) for Scotland less respective expectation of life for UK – for males at birth and ages 20, 40, 60 and 80

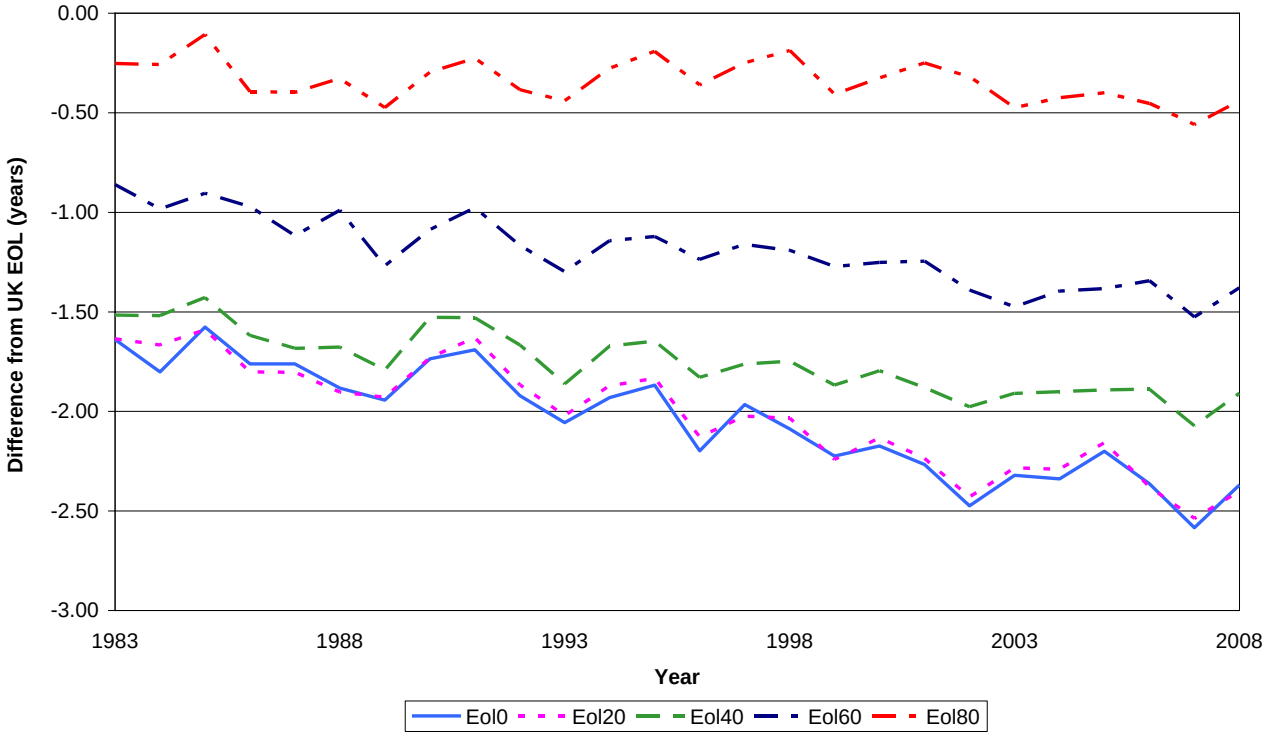
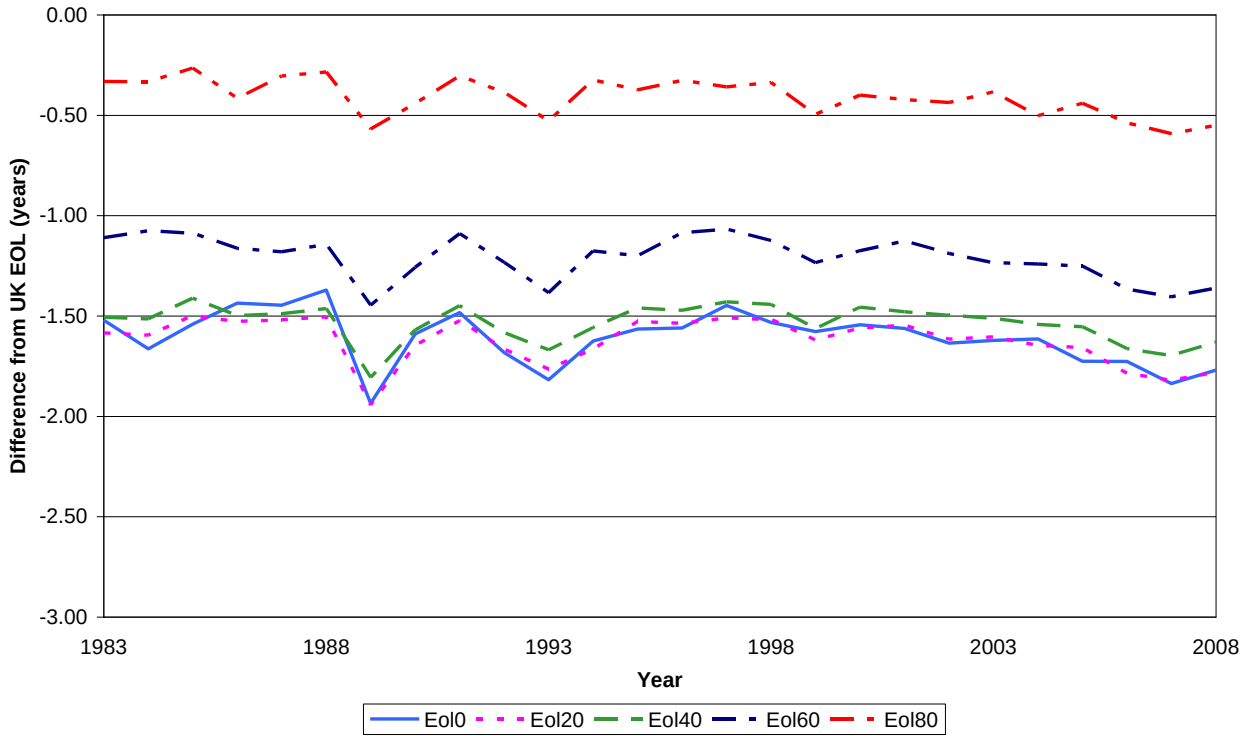


Figure B2 Period expectations of life (Eol) for Scotland less respective expectation of life for UK – for females at birth and ages 20, 40, 60 and 80



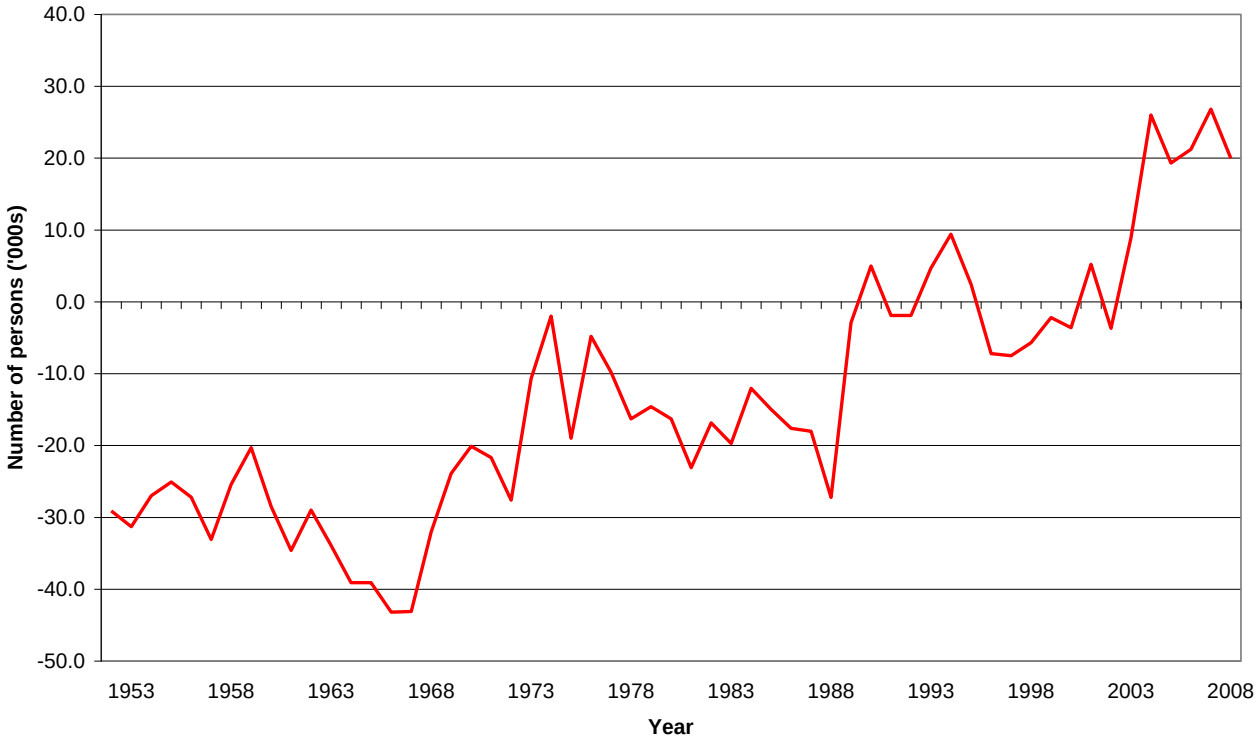
Given this finding, further analysis indicated that lower rates of improvement should be adopted in Scotland for males aged 31 to 56 and 67 to 90 and for females aged 32 to 38 and 65 to 90, than for the UK as a whole.

The impact of these new assumptions can be summarised using the period expectation of life at birth, based on the mortality rates for the given year. This life expectancy is assumed to rise from 74.8 years in 2007 to 80.7 years in 2033 for men, and from 79.8 years in 2007 to 85.3 years in 2033 for women. Compared to the assumptions used in the 2006-based projections for Scotland, these lead to very small increases in the expectations of life at birth for men of around 0.1 years in 2033, and for women of 0.2 years.

Annex C Migration assumptions

The long term assumption for net migration to Scotland is +12,000 each year compared with +8,500 in the 2006-based projections. This increase stems from the continuing high levels of migration observed since around 2003 compared with previous years. Figure C1 illustrates the trends since 1951.

Figure C1 Estimated net migration, Scotland, 1951-2008



The long term assumptions comprise +6,500 from cross-border migration and +5,500 from international migration. The cross-border assumptions are derived from the average of moves recorded through the National Health Service Central Register (NHSCR) system over the last 10 years. The international migration assumption is based largely on International Passenger Survey data (IPS).

Migration assumptions for the initial years are designed to reflect recent rates of migration, and gradually converge to the long-term assumptions.

The assumptions for total net migration are:

- 2008-09 + 16,000
- 2009-10 + 17,400
- 2010-11 + 16,200
- 2011-12 + 15,100
- 2012-13 + 12,900
- 2013-14 + 12,400
- 2014-15 onward + 12,000

These reflect recent migration data and also include an additional allowance for migrants from the A8 countries in Eastern Europe which joined the European Union in 2004.

Annex D Variant projections and assumptions

Every two years the Office for National Statistics (ONS), in consultation with the Registrars General, produces a “principal” population projection and a number of “variant” projections, based on alternative assumptions of future fertility, mortality and migration, for the UK and its constituent countries. The variants are produced to give users an indication of the inherent uncertainty of demographic behaviour. There are two distinct types of variant produced: “standard” variants and “special case scenarios”.

As well as the “principal” assumptions, high and low assumptions are prepared for each of the components of population change (fertility, life expectancy and net migration). These are used to generate what are referred to as the “standard variants”. There are 27 possible combinations of these sets of assumptions although, besides the principal projection, only 12 are published by ONS. These are the six possible “single component” variants and also six selected “combination” variants. The single component variants vary one component at a time from the principal assumptions, the purpose being to illustrate plausible alternative scenarios rather than to represent upper or lower limits for future demographic behaviour). The combination variants which are published are those which produce the largest / smallest total population size, the oldest / youngest age structure and the largest / smallest dependency ratios. Dependency ratios show the relationship between the working age population and the two main dependent groups – children under 16 and people of pensionable age.

As well as producing the “standard variants” ONS produce “special case scenarios” or “what if” projections to illustrate the consequences of a particular, but not necessarily realistic set of assumptions. Four sets of special case scenarios are prepared:

- Replacement fertility
- Constant fertility
- No mortality improvement
- Natural change only (or zero migration)

In addition special case projections, based on combinations of these assumptions, will be prepared:

- No change projections – shows what would happen if fertility, mortality and net migration were to remain at current levels

- Stationary projections – shows a population with an unchanging size and age structure using replacement level fertility, constant mortality rates at all ages and zero net migration at all ages

More details on the variants referred to in this paper and their assumptions are contained in Table D1 and Table D2 on the next page.

On the date of the publication of this paper (21 October 2009) only the six standard variants, the high and low population combination variants and the zero migration variant were published. The remaining variants will be published on the National Statistics website in November 2009. More details about all the variants mentioned in this paper can be obtained from the National Statistics website: http://www.statistics.gov.uk.

Table D1 Assumptions for the 2008-based principal and seven variant projections for Scotland

	Assumptions	Long-term Fertility (Total Fertility Rate - TFR)	Life Expectancy Males (2033)	Life Expectancy Females (2033)	Long-term Migration
Standard variants	**High variant**	1.90	82.8	86.5	+20,500
	Principal	1.70	80.7	85.2	+12,000
	Low variant	1.50	78.6	83.9	+3,500
Special case scenario	**Zero migration**	1.70	80.7	85.2	0

Table D2 Variants and Scenario

		Fertility	Life expectancy	Migration
1	Principal projection	Principal	Principal	Principal
Standard 'single component' variants				
2	High fertility	High	Principal	Principal
3	Low fertility	Low	Principal	Principal
4	High life expectancy	Principal	High	Principal
5	Low life expectancy	Principal	Low	Principal
6	High migration	Principal	Principal	High
7	Low migration	Principal	Principal	Low
Combination variants				
8	High population	High	High	High
9	Low population	Low	Low	Low
Special case scenario				
10	Zero migration	Principal	Principal	Zero

Notes on statistical publications

National Statistics

This is a National Statistics publication. It has been produced to the high professional standards set out in the UK Statistics Authority Code of Practice for Official Statistics (http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html). These statistics undergo regular quality assurance reviews to ensure that they meet customer needs. They are produced free from any political interference.

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General Register Office for Scotland

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