

SCOTLAND'S POPULATION 2002

The Registrar General's Annual Review
of Demographic Trends



General Register Office
for
SCOTLAND
information about Scotland's people

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of Demographic Trends

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(Laid before the Scottish Parliament pursuant to Section 1(4) of the Registration of Births, Deaths and Marriages (Scotland) Act 1965.)

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ANNUAL REPORT

of the **REGISTRAR GENERAL** of **BIRTHS, DEATHS AND MARRIAGES** for **SCOTLAND 2002**

To Scottish Ministers

I am pleased to let you have my Annual Report for the year 2002, which will be laid before the Scottish Parliament pursuant to Section 1(4) of the Registration of Births, Deaths and Marriages (Scotland) Act 1965.

John Randall
Registrar General for Scotland
July 2003



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INTRODUCTION

This is the second of my Annual Reports in this new format – designed to highlight key trends and issues affecting Scotland’s population for a wider audience.

But this year’s review does more than simply update last year’s findings. I want to focus this year on one of the major issues affecting population change in Scotland today and in the future – declining fertility. Scotland’s birth rate has fallen significantly in the last two decades and it is currently the lowest of any of the countries in the UK. Moreover, Scotland’s population is falling more because of the excess of deaths over births than because of migration loss and this is projected to continue.

So, following an overview of demographic change in Scotland, this review contains two new chapters:

- a detailed examination of recent trends in Scotland’s fertility;
- an article commissioned from Dr Elspeth Graham and Professor Paul Boyle of St Andrews University, which places Scotland’s fertility in a wider geographical context, discusses the reasons for low fertility, and addresses the scope for policy intervention drawing on the experience of other countries.

I hope that this review will stimulate an informed debate on the policy options. My job as Registrar General is to set out the facts and describe the trends rather than make policy prescriptions. The views expressed by Dr Graham and Professor Boyle are also of course their own, and do not necessarily reflect those of my Office, or indeed the Scottish Executive. It is for others (the Scottish Executive, local Councils, and a host of other organisations and individuals) to take decisions about policy, but I believe that these decisions will be better informed if they are based on a clear exposition of the facts.

Finally, I would note that a range of other detailed information about Scotland’s population is available elsewhere. Results from the 2001 Census can be accessed via our SCROL (Scotland’s Census Results OnLine) website (www.scrol.gov.uk), while for other information please contact the GROS Customer Services team (see Contact Points).

JOHN RANDALL
Registrar General for Scotland
July 2003

CHAPTER 1 – DEMOGRAPHIC OVERVIEW

Over the year to 30 June 2002, Scotland's population fell by 9,400 to 5,054,800, a fall of 0.2 per cent. This relatively slow rate of decline continues the general downwards trend in Scotland's population evident since 1974. In recent years the main reason for the fall in population has been the decline in the number of births, so that a natural decrease (more deaths than births) has been recorded. In contrast, net migration from Scotland, while fluctuating from year to year, has not had the same marked downwards effect on Scotland's population which it had in the 1960s or even the 1980s.

The number of births recorded in 2002 was 51,270, an all-time low, while the number of deaths increased slightly to 58,103, an increase of 721 compared with 2001. There were 278 stillbirths and 270 infant deaths (children aged under one) in 2002, both the lowest totals ever recorded. There were 29,826 marriages and 10,826 divorces in 2002, both slightly up on the equivalent figures in the previous year.

While the rate of decline of Scotland's population in recent years has been relatively slow, much more pronounced changes are occurring in the age structure and geographical distribution of the population. These changes, for example an increasing proportion of older people, and a shift away from most of the larger cities towards the surrounding areas, are projected to continue in the years ahead.

KEY POINTS

- Scotland's population fell in the year to 30 June 2002 to 5,054,800 (0.2 per cent down from mid-2001) – a level last seen in the first half of the 20th century.
- Scotland has recorded a natural decrease (an excess of deaths over births) since 1997. The natural decrease (6,065 in 2001-02) was a larger factor in population decline than emigration, a pattern which is projected to continue.
- Scotland's population is getting older and is projected to continue ageing. Half the population is now over the age of 39, which is four years older than the 1991 equivalent.
- Within Scotland, the population distribution is changing. In general, the larger urban areas are declining in population while areas around the larger cities are increasing.
- The total number of births registered in 2002 (51,270) was the lowest total ever recorded. This is the sixth consecutive year where the total has reached a new low.
- Falling birth rates reflect the fact that women are having fewer children and having them later. As a consequence average completed family size fell below two for women born after 1953 and is expected to fall further for younger women.
- Fertility rates for women in their 20s are little more than half the rate 40 years ago while rates for women over 30 have steadily increased. In 2002, for the first time, rates for women aged 30-34 overtook those for 25-29 year olds.
- Stillbirth, perinatal and infant mortality rates continue to fall and are at historically low levels, but remain above the EU average.
- Expectation of life at birth continues to improve. The expectation of life for babies born in 2002 is 73.3 for males and 78.8 for females. Despite these improvements, expectation of life at birth in Scotland remains one of the lowest in the EU.
- The main causes of death in Scotland are cancers and heart disease; over the last decade there has been a big fall in the latter but not the former.

- Net emigration from Scotland is much lower than 40 years ago and even 15 years ago.
- The pattern of net migration between Scotland and the rest of the UK varies markedly by age group for both males and females, with a net inflow peaking at age 19 and a net outflow peaking at age 23.
- The peak ages for moves within Scotland (between Council areas) for males and females are the 20s and 30s with large peaks at the student ages (18-22).
- The average age at first marriage continues to increase and in 2002 was 31 for males and 29 for females, four years higher for both than in 1991.
- The number of divorces, while much higher than 30 years ago, has decreased slightly over the past decade.
- The number of adoptions is 53 per cent lower than ten years ago and is the lowest total since 1931, the first full year adoptions were registered.

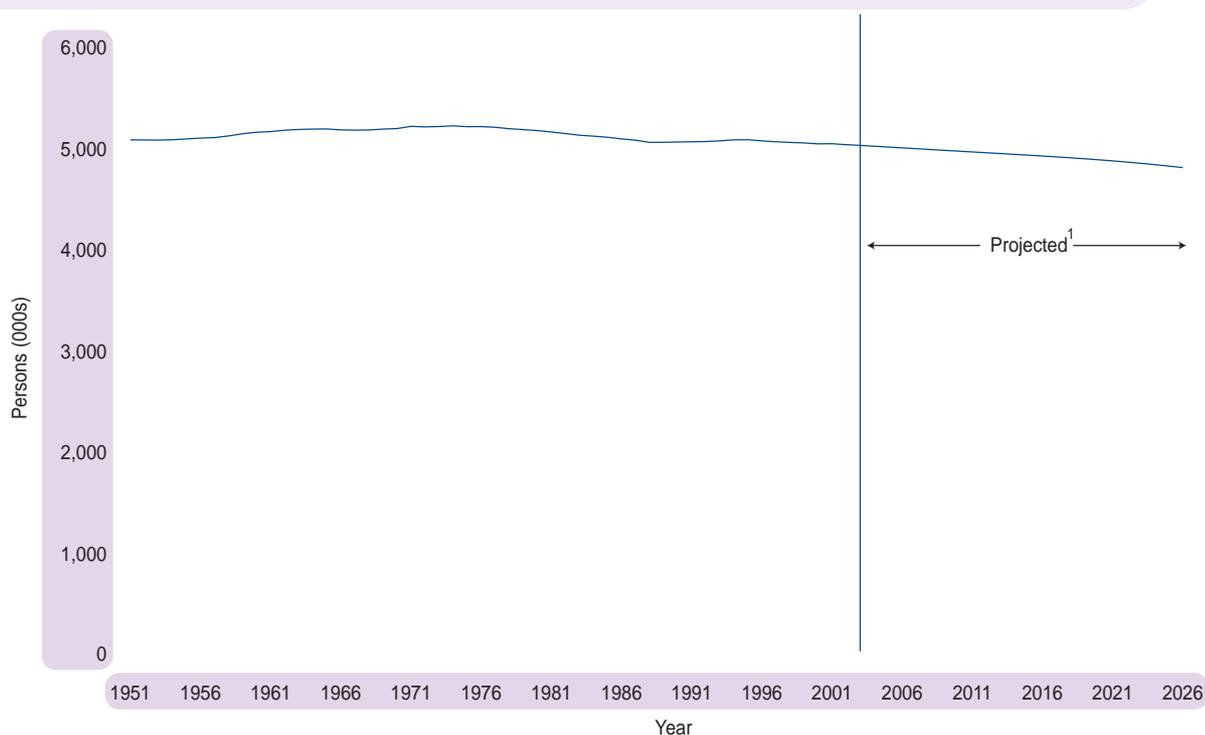
POPULATION

The latest estimate of Scotland's population (30 June 2002) is 5,054,800. Nineteen per cent of the population was aged under 16 and 19 per cent was of pensionable age (60F/65M+) with the remaining 62 per cent of working age (16-59F/64M).

In the 12 months to 30 June 2002, Scotland's population was estimated to have fallen by 9,400. Two-thirds of this decrease was attributable to natural decline, i.e. more deaths than births. The remaining decline is a result of net out-migration. The migration figures include movements of asylum seekers to Glasgow City and an adjustment for unmeasured migration.

The fall in Scotland's population in the year to 30 June 2002 should be seen in the context of the relative stability of the population over the last 50 years as shown in **Figure 1.1**. The population reached a peak of 5.24 million in 1974 and since then has been on a gradually declining trend with some fluctuations.

Figure 1.1 Estimated population of Scotland, actual and projected, 1951-2026



¹2001-based projections

CHAPTER 1 – DEMOGRAPHIC OVERVIEW

It can be seen from the trends in natural change and migration presented in **Figure 1.2** that the population increase up to 1974 was the result of natural change being greater than net emigration from Scotland. But, since 1974, natural change has fallen dramatically as a result of sharp declines in the number of births (over 100,000 in the 1960s to less than 60,000 since 1996), while the number of deaths has remained fairly constant. This fall in natural change was accompanied by a reduction in net emigration from Scotland, but net emigration remained higher than the levels of natural change during the late 1970s and 1980s, causing the population to decline.

Figure 1.2 Natural change and net migration, 1951-2002

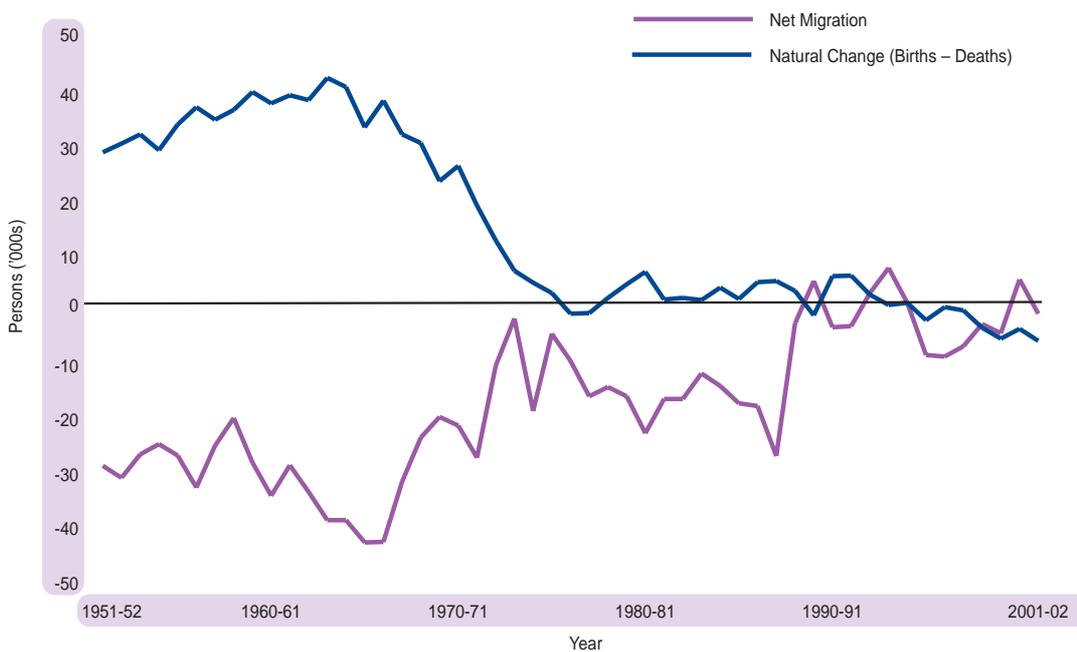
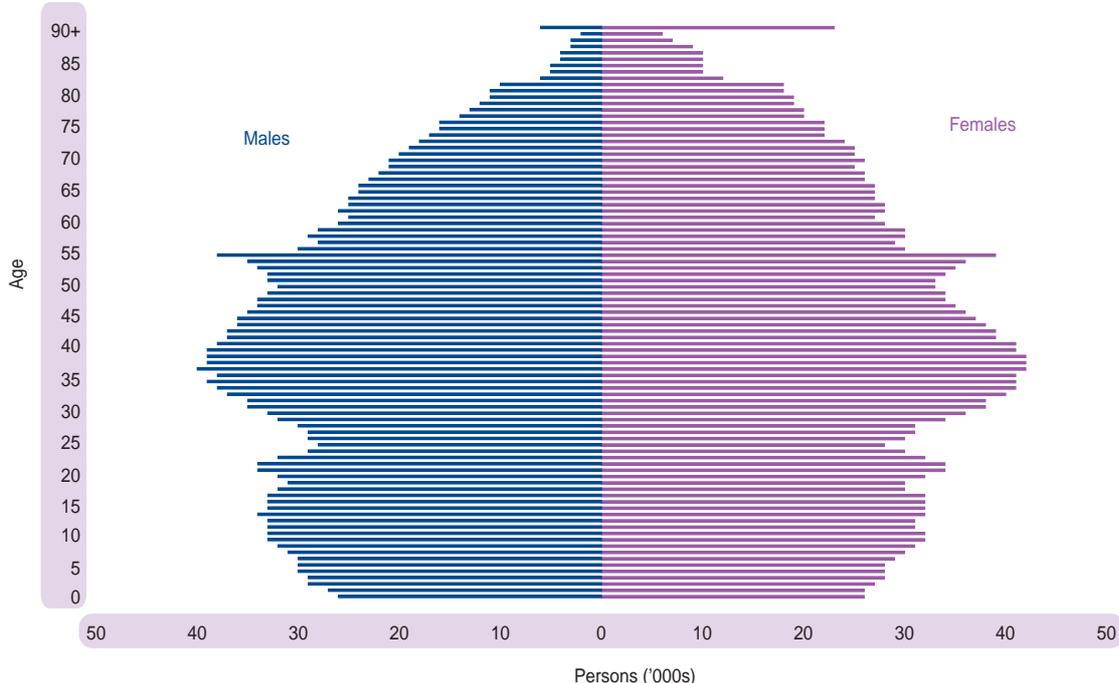


Figure 1.3 Estimated population by age and sex, 30 June 2002



Age structure

The age/sex composition is one of the most important aspects of the population, as changes in different age groups will have different social and economic impacts. For example, increases in the elderly population are likely to place a greater demand on health services.

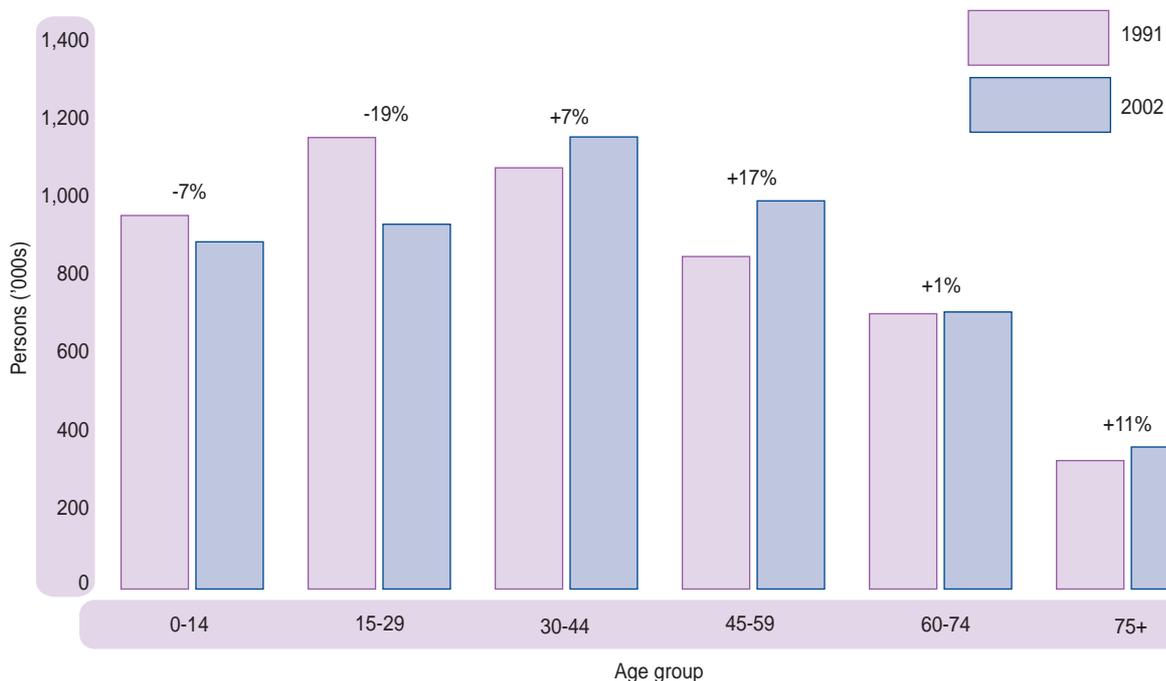
Figure 1.3 shows the age structure of the population for both males and females in 2002. Using past trends in fertility and mortality as a guide, it is possible to explain the peaks and troughs at different ages. Peaks at ages 55 and in the mid-30s reflect the baby boom after the Second World War and in the 1960s. Declining births in more recent years are evident by the tapering of the population under the age of 30. The more stable levels of 10-20 year olds reflect a levelling off of the decline in births during the 1980s when more women were passing through their childbearing ages.

At the more elderly ages, particularly over 75, the higher number of females reflects the longer expectation of life for women, partly as a result of higher rates of male mortality during the Second World War. The effects of the post war 'flu epidemics and lower levels of fertility during the First World War are also evident, as seen in the sharp decline in population aged over 82.

The changing age structure of the population since 1991 is illustrated in **Figure 1.4**. Of particular note are the decrease of 7 per cent in the number of children under 15 and the increase of 11 per cent in the numbers aged 75 and over. During this time the median age (age at which half the population is older than the value and half is younger) has grown by 4 years from 35 in 1991 to 39 in 2002. The ageing of the population is evident in the large rise of the 45-59 age group and the fall in the 15-29 age group.

The ageing of the population is not unique to Scotland. This pattern of change over the last twenty years is consistent with other countries in the UK and Europe, although the rate of ageing varies.

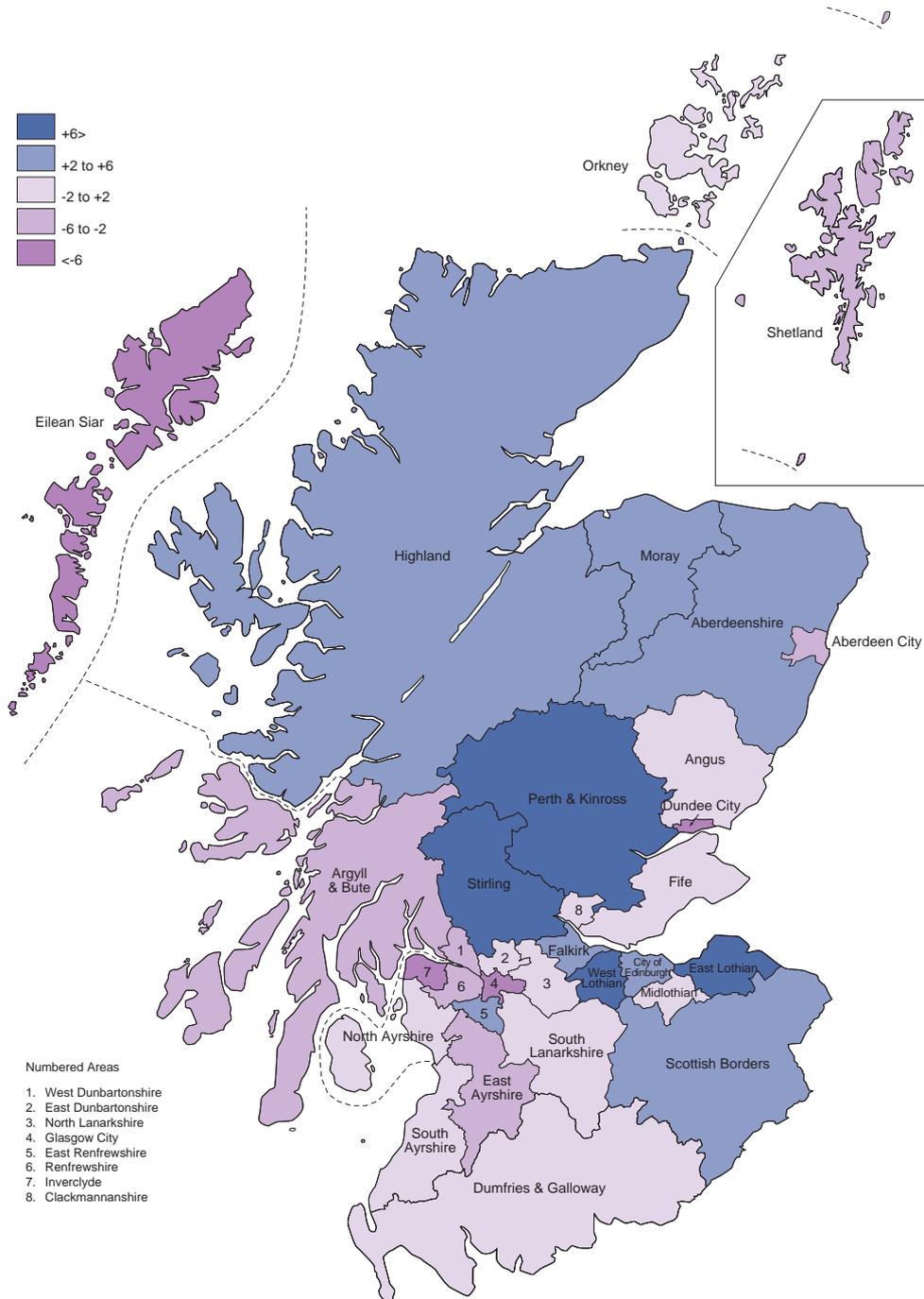
Figure 1.4 The changing age structure of Scotland's population, 1991-2002



Changes within Scotland

The map at **Figure 1.5** shows the percentage change in population between 1991 and 2002 for each Council area. For comparison purposes it is better to compare over a time frame longer than one year, as population change tends to fluctuate from year to year, particularly for smaller areas. In general, the larger urban areas (apart from Edinburgh) are declining, while areas around the bigger cities and many rural areas are increasing. Generally, urban areas tend to have lower levels of fertility, higher mortality and more out-migration. The areas with a growing population tend to experience net in-migration and an excess of births over deaths.

Figure 1.5 Percentage population change by Council area, 1991-2002



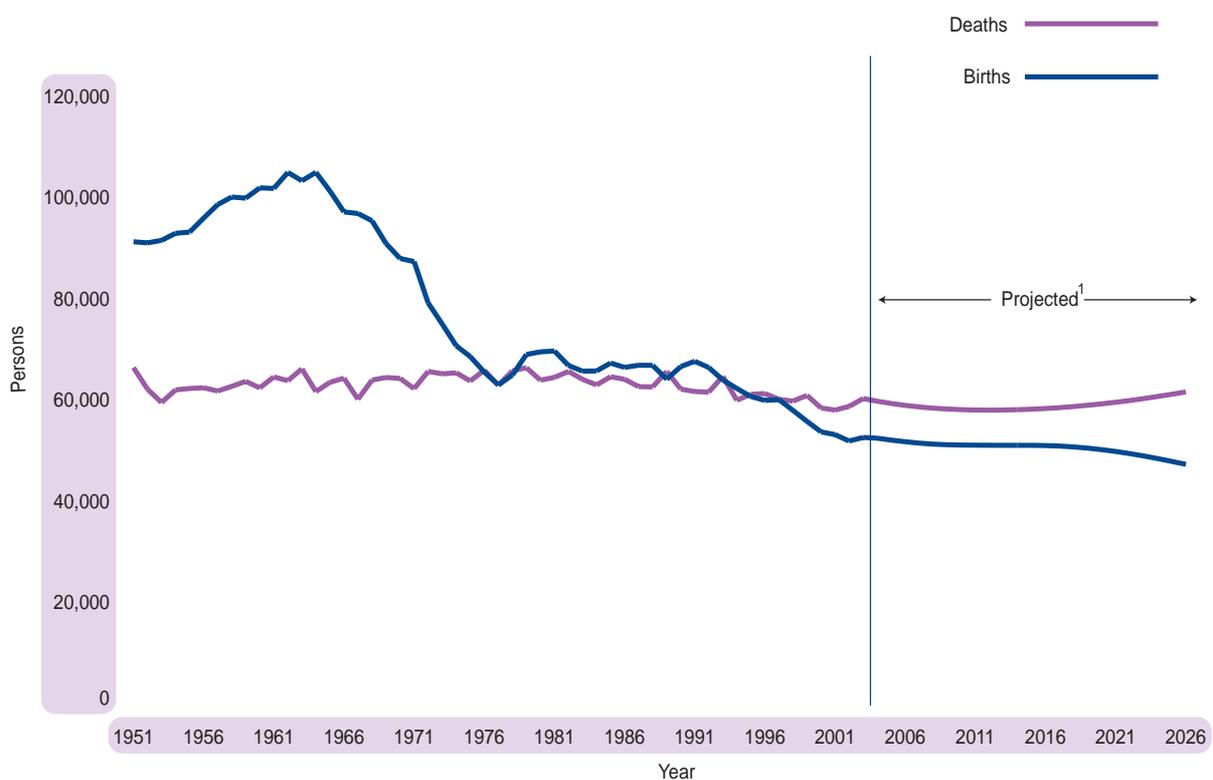
The Council areas which showed the largest relative decreases over this period were Eilean Siar (-11%), Inverclyde (-9%), Glasgow City (-8%) and Dundee City (-7%). The largest relative increases in population occurred in West Lothian (+10%), East Lothian (+8%), Stirling (+7%) and Perth & Kinross (+6%).

Projected population

The latest 2001-based population projections take preliminary account of the results of the 2001 Census, which showed that the base population used in the previous 2000-based projections was overestimated. These projections incorporate a revised assumption of net international migration to Scotland, informed by early results of the 2001 Census and taking account of more recent migration information. As a result, long-term migration is assumed to be a loss of 1,000 persons a year, compared with an assumption of nil net migration in the previous projections. Long-term fertility and mortality assumptions are unchanged. The next full set of population projections which take full account of the results of the 2001 Census are due to be published in October 2003.

The overall trend of a slowly declining population is projected to continue with the population projected to fall below 5 million in 2009. In making these projections, assumptions have been made about future levels of fertility, mortality and migration based on past trends. **Figure 1.6** shows a widening gap between births and deaths with a natural decrease of over 14,000 a year after 2026. This is projected to be the main reason for population decline in future.

Figure 1.6 Births and deaths, actual and projected, Scotland, 1951-2026

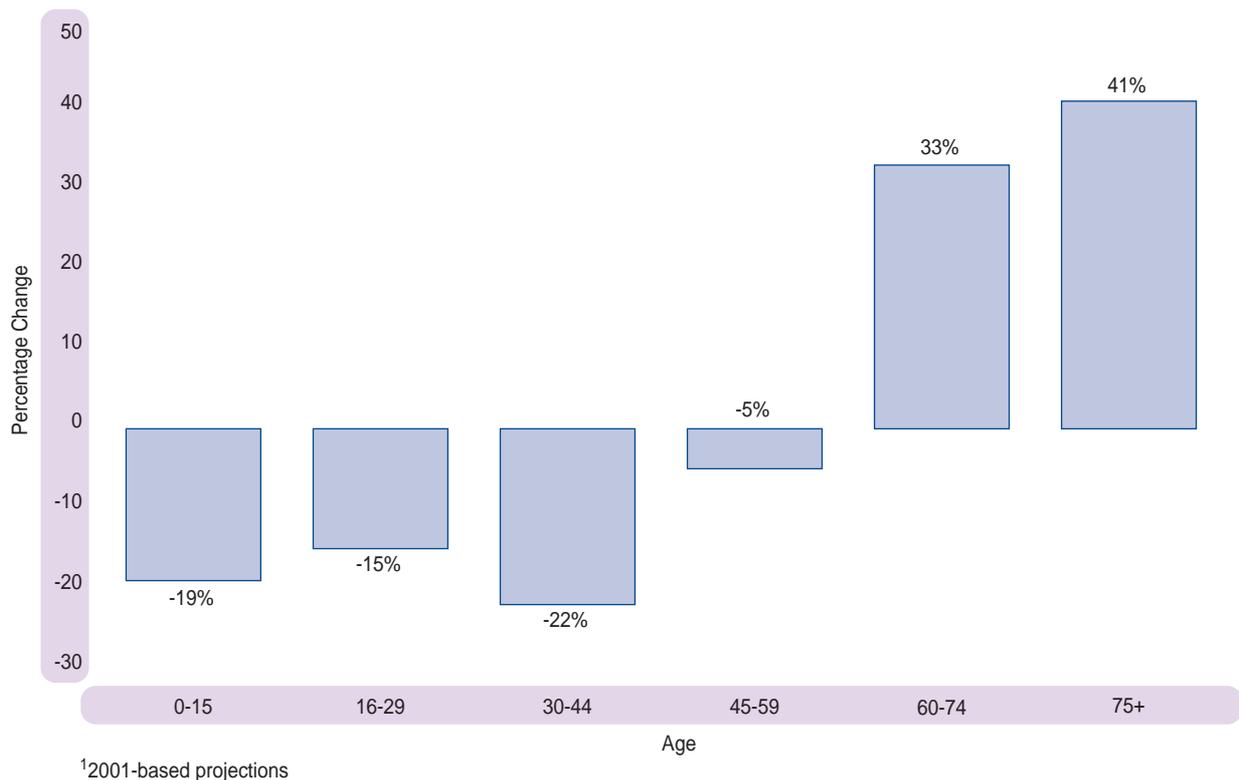


¹2001-based projections

CHAPTER 1 – DEMOGRAPHIC OVERVIEW

Within this overall decline, significant changes to the age structure are projected (**Figure 1.7**). The proportion of children under 16 is projected to fall by 19 per cent by 2026, while the proportion of people aged 60 and over is projected to increase by more than a third.

Figure 1.7 The projected percentage change in age structure of Scotland's population, 2001-2026¹



The projected population decline by 2026 for Scotland is proportionately higher than that currently projected for any other European country. Indeed, most countries (including other countries within the UK) are projected to increase in population over this period. The underlying difference is that in other countries assumptions about future levels of migration offset projected declines in natural change (births minus deaths).

Longer-term projections to 2050, such as those produced by the United Nations, show the population peaking after 2025 in most European countries and then declining to 2050. Indeed in many EU countries (e.g. Italy, Germany, Spain, Sweden) the population in 2050 is projected to be lower than in 2000. These declines are the result of the natural decrease (more deaths than births) growing to exceed the assumed level of in-migration.

BIRTHS

In 2002, there were 51,270 births registered, the lowest total since civil registration began in 1855. This is a fall of 24 per cent since 1991 and 43 per cent since 1951. Births play a significant role in population change and if recent declines continue this will ultimately have a significant impact on the future level of the working age population.

The number of actual and projected births is shown in **Figure 1.6**. It shows a peak in births in 1964 then fell dramatically in the late 1960s and early 1970s. After levelling off in the 1980s as a result of the larger number of women, who were born in the baby boom of the 1950s and 1960s, passing through their childbearing years, the decline in births continued, reaching its lowest level in 2002.

More information on births and fertility is given in Chapters 2 and 3. **Chapter 2** focuses on recent trends in Scottish fertility, comparing these trends with the rest of the UK and Europe. **Chapter 3** places the Scottish fertility experience in a wider geographical context, discusses reasons for low fertility and addresses the scope for policy intervention.

DEATHS

The number of deaths registered in Scotland in 2002 was 58,103, 721 more than 2001. However, this is still one of the lowest totals recorded since civil registration began in 1855 and 5 per cent fewer than 1991 and 12 per cent fewer than 1951.

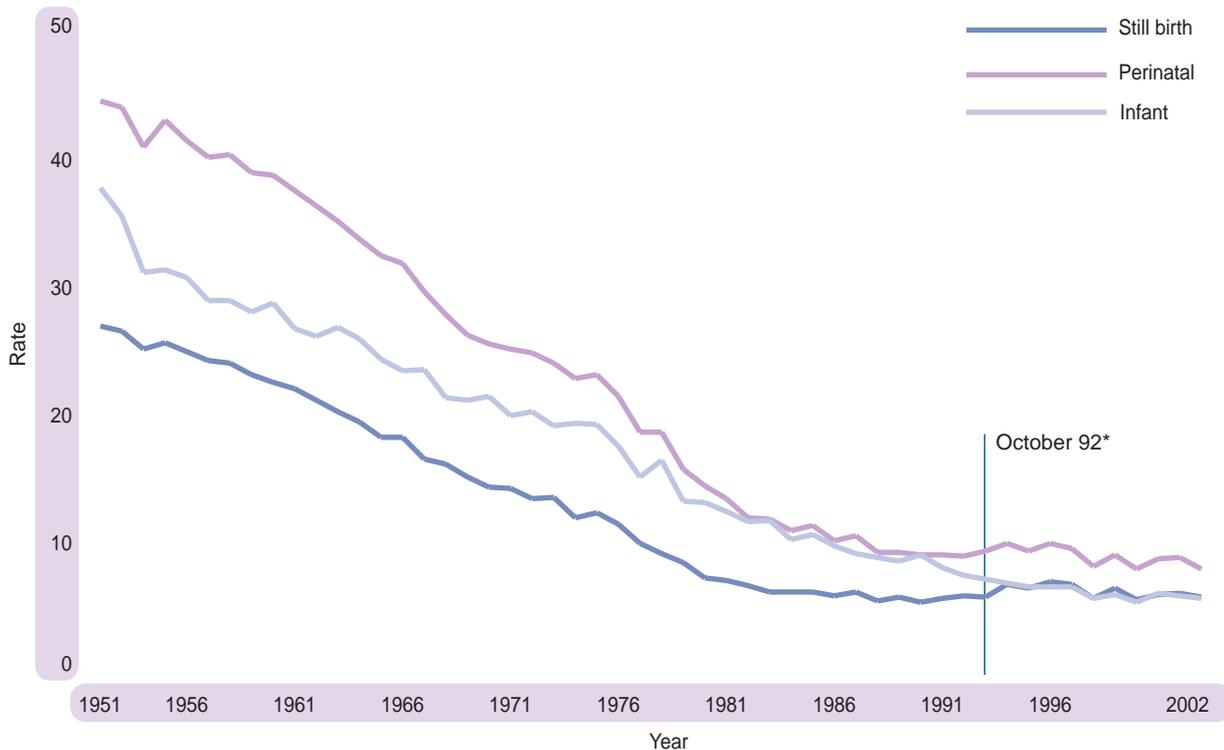
As would be expected, the majority of deaths occur at older ages – about 58 per cent of deaths were to people aged 75 and over, and a further 27 per cent between the ages of 60 and 75.

Up to 1994, the number of deaths has remained relatively stable at about 60,000-65,000 a year and since 1994 has remained below 60,000 (see **Figure 1.6**). However, the number of deaths will almost certainly increase over the next 40 years as the large number of people born in the baby boom after the Second World War and the 1960s grow older. While improvements in mortality rates are likely to continue it is unlikely that they will improve at such a rate as to offset the projected increase in deaths resulting from a sharp growth in the number of the elderly.

Stillbirths and infant deaths

The biggest improvements in mortality have been seen in stillbirth, perinatal and infant death rates. **Figure 1.8** shows rates of stillbirths, perinatal deaths and infant deaths since 1951. The stillbirth rate has reduced from 26.6 per 1,000 total births (live and still) in 1951 to 5.4 in 2002, despite a change in the definition of stillbirths in 1992 which reduced the minimum period of gestation from 28 weeks to 24 weeks thus increasing the numbers classified as stillbirths. The rate of perinatal deaths (stillbirths and deaths in the first week of life) fell from 44.2 per 1,000 total births in 1951 to 7.6 in 2002, an improvement of 83 per cent. Finally, the infant death rate (deaths of children under one) has improved by 86 per cent from 37.4 per 1,000 live births in 1951 to 5.3 in 2002.

Figure 1.8 Stillbirth, perinatal and infant death rates, Scotland 1951-2002



* Change in definition of stillbirths from 28 to 24 weeks

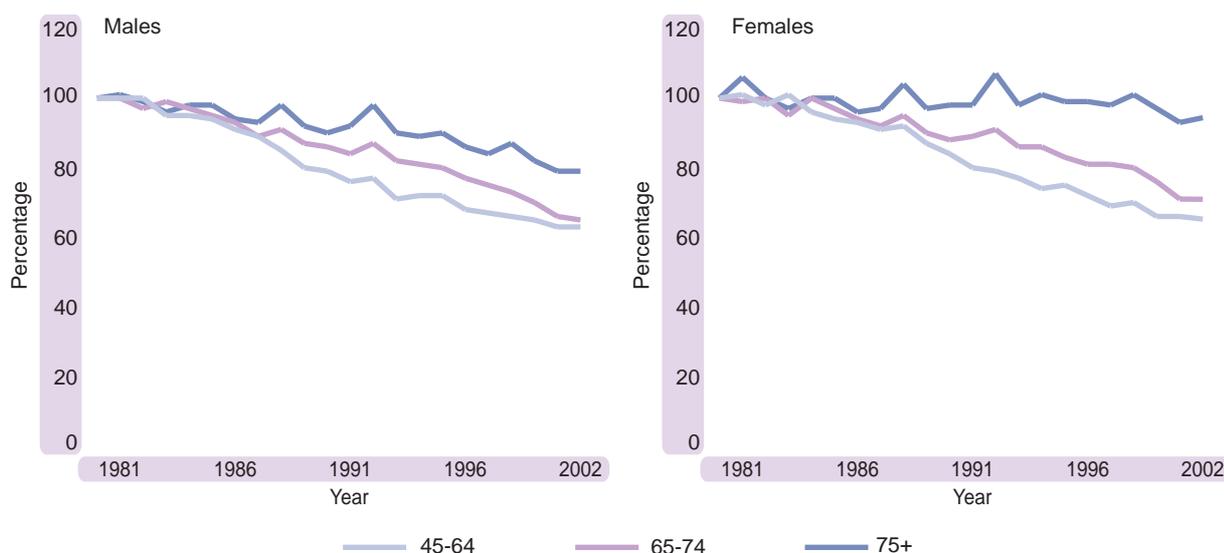
The infant death rate of 5.3 per 1,000 births in Scotland is the same as the UK rate but is still above the EU rate of 4.6.

Mortality by age

The relative stability in the number of deaths over the last 50 years masks large improvements in age-specific mortality. **Figure 1.9** shows the age-specific mortality rates over the last twenty years relative to the 1981 rate for both men and women in the age groups 45-64, 65-74 and 75+ (which between them accounted for about 95 per cent of all deaths in 2002).

There have been greater improvements in male mortality for these ages than females. For the 45-64 age group both males and females experienced an improvement of about 35 per cent. Whilst in the 65-74 age group males showed an improvement of 34 per cent compared to 28 per cent for females. The greatest differential is still in the 75 plus age group where male mortality improved by 21 per cent compared to only 5 per cent for females.

Figure 1.9 Age specific mortality rates as a proportion of 1981 rate, 1981-2002



Although mortality rates have been improving in Scotland, the rate of improvement is slower than elsewhere in the rest of the UK. Since 1976, age standardised mortality rates have improved by 41 per cent in Northern Ireland and 35 per cent in both England and Wales compared with 32 per cent in Scotland.

Improvements in mortality rates in Scotland have generally been slower than in the rest of the UK and elsewhere in Europe. But the improvements are still considerable and the impact is demonstrated in the steadily rising expectation of life for males and females over the last 50 years.

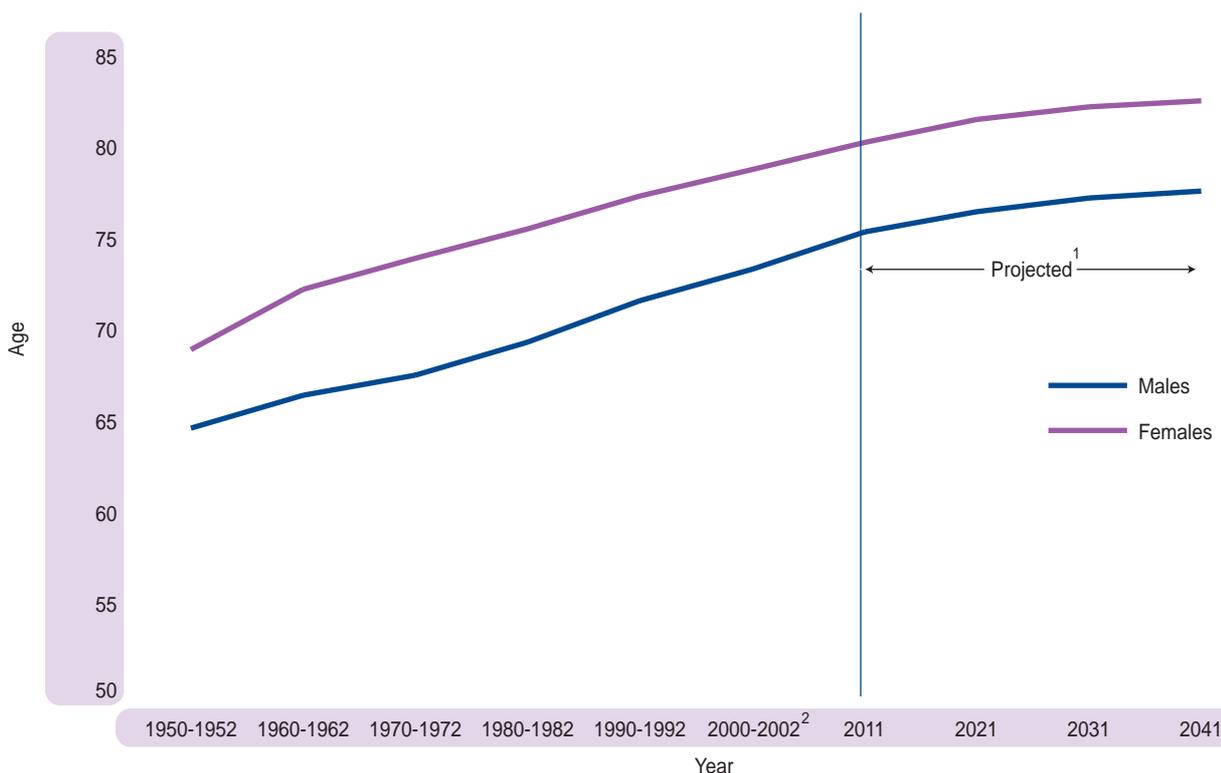
Life expectancy

Life expectancy is a commonly used measure to show the effects of current levels of mortality on the length of time people at various ages can expect to live. It is very useful in comparing the ‘health’ of a nation through time and with other nations as it takes account of the age structure of the population which can differ significantly and so affect the overall crude mortality rate. This is particularly true where countries have a higher proportion of young or elderly within their populations.

Since 1951, there have been considerable improvements in life expectancy at birth as shown in **Figure 1.10**. Males born in 1951 could, at that time, expect to live to 64.4 years, compared with 73.3 years for those born in 2002. Similarly, females have experienced an improvement of ten years from 68.7 years in 1951 to 78.8 in 2002.

Figure 1.10 also illustrates that improvements in life expectancy at birth are projected to continue, rising to 77.4 for males and 82.3 for females by 2041.

Figure 1.10 Expectation of life at birth, Scotland, 1952-2041



¹2001-based projections

²Provisional

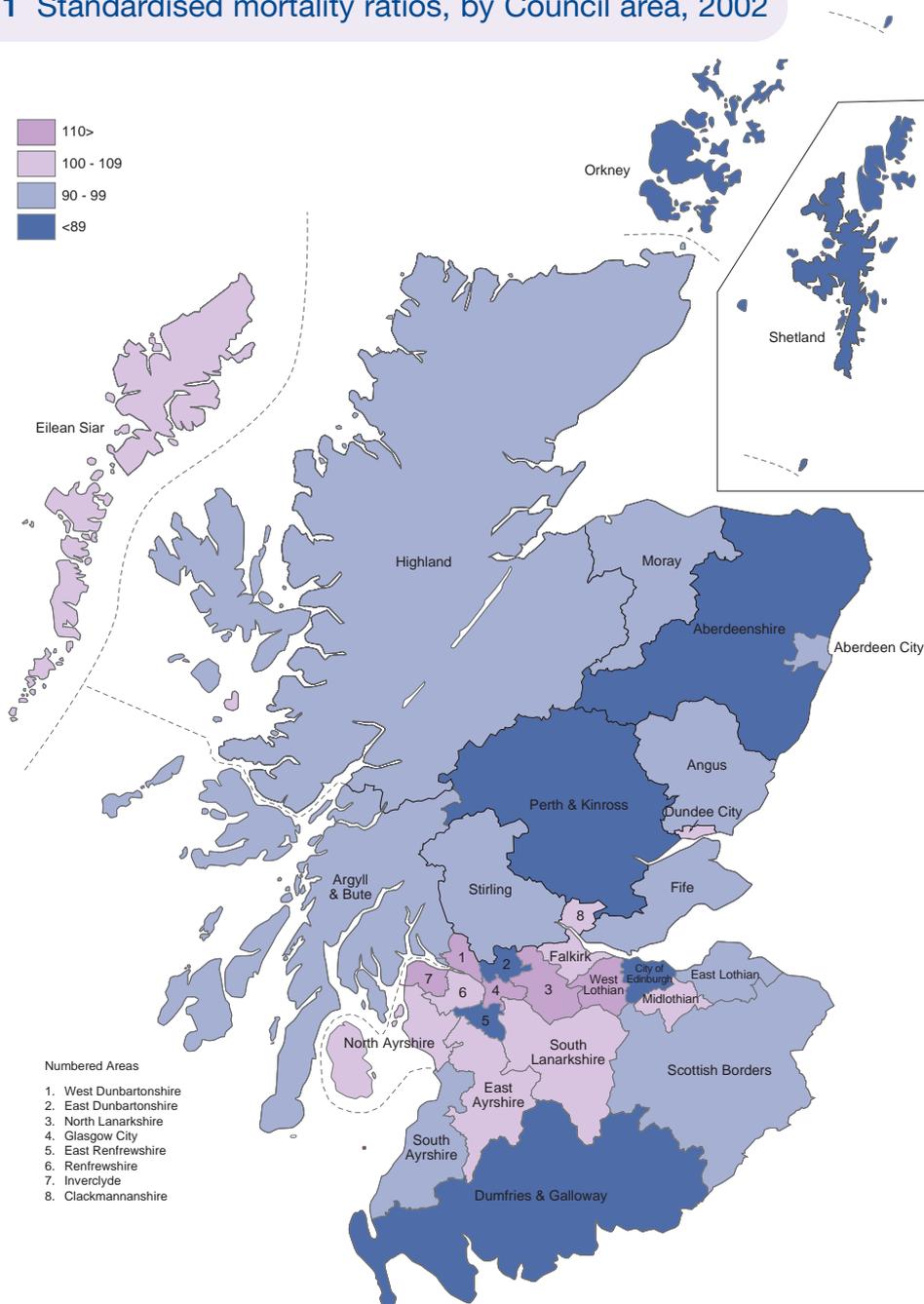
However, despite the improvements in expectation of life, Scottish females have the lowest expectation of life at birth in the EU and males the second lowest. For both sexes, the expectation of life is more than four years lower than the countries with the highest expectation of life and over two years below the EU average.

Regional variations within Scotland

Standardised mortality ratios (SMRs), which compare local death rates with death rates in Scotland as a whole, taking account of the different population structure of each area, are presented in **Figure 1.11**. In all, 14 out of 32 Council areas have a higher standard mortality ratio than the Scottish average of 100, and 8 of these are in west central Scotland. The worst, Glasgow City, is 22 per cent higher than the Scottish average which itself is about 15 per cent higher than the UK average.

At the other end of the scale the mortality rate in East Renfrewshire was 18 per cent below the Scottish average. Aberdeenshire, East Dunbartonshire, Orkney Islands and Perth & Kinross were all 14 per cent below, or better than, the Scottish average.

Figure 1.11 Standardised mortality ratios, by Council area, 2002



Cause of death

In 2002, the two most common causes of death in Scotland were cancer (26 per cent) and ischaemic heart disease (20 per cent). However, since 1981 the proportion of deaths caused by ischaemic heart disease has fallen from 29 to 20 per cent, whereas the proportion caused by cancer has risen from 22 to 26 per cent. Since 1995, there have been more deaths from cancer than ischaemic heart disease. Of the 15,051 deaths from cancers in 2002, trachea, bronchus and lung was the most common site, accounting for over a quarter (27 per cent) of all cancer deaths.

Death rates, by sex, for the most common causes of death are shown in **Table 1.1**. Over the last 20 years or so, death rates for men from lung cancer have fallen by 20 per cent (119 per 100,000 population in 1980-82 compared to 95 in 2002). In contrast, rates for women have increased by over 60 per cent (41 per 100,000 females in 1980-82 compared to 66 in 2002), but are still considerably lower than the level experienced by men.

Table 1.1 Death rates from selected causes, by sex, Scotland, 1950-2002

Males – rates per 100,000 population

Year	Cancer			Ischaemic heart disease	Cerebrovascular disease
	All sites	Trachea, bronchus and lung	Prostate		
1950-52	206	48	13	276	155
1960-62	241	86	16	360	166
1970-72	272	112	14	407	158
1980-82	291	119	19	408	139
1990-92	314	111	27	367	119
2002	320	95	32	255	99

Females – rates per 100,000 population

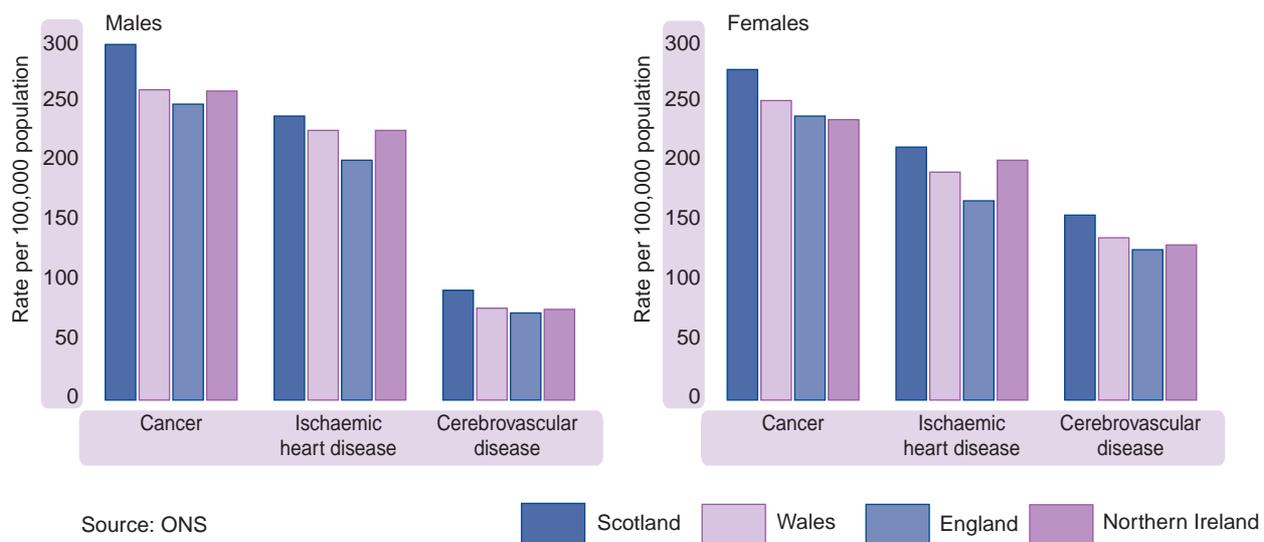
Year	Cancer			Ischaemic heart disease	Cerebrovascular disease
	All sites	Trachea, bronchus and lung	Breast		
1950-52	185	10	31	203	213
1960-62	195	13	35	262	230
1970-72	218	24	40	289	226
1980-82	247	41	45	304	210
1990-92	278	57	48	297	191
2002	278	66	42	210	164

The next most frequent site for cancer deaths was prostate for men (775 deaths of which 63 per cent occurred in men aged 75 and over) and breast for women (1,105 deaths). Death rates for the former continue to increase whereas those for the latter have shown a slight fall in recent years.

In contrast to the rise in death rates resulting from cancer, death rates for ischaemic heart disease and cerebrovascular disease (stroke) have shown significant declines. Since 1981, males have experienced the larger improvements, 40 per cent for ischaemic heart disease and 32 per cent for stroke, compared with improvements of 33 and 24 per cent, respectively, for females.

Using the latest comparable data available, 2001, **Figure 1.12** compares the death rates for the constituent countries of the UK for selected causes after adjusting for differences in age structure. The Scottish rates for cancer, ischaemic heart disease and cerebrovascular disease are well above the rates for the other countries of the United Kingdom for both men and women.

Figure 1.12 Age-adjusted mortality rates, by selected cause and sex, 2001



In 2002, deaths from intentional self-harm (suicide) numbered 635 (480 males and 155 females), 26 more than in 2001. To allow for any under-recording of suicides, a more robust measure is to combine deaths classified as events of undetermined intent with those for intentional self-harm, as is done in international comparisons. The total number of deaths classified to these two groups was 899 in 2002, compared with 887 in 2001 and 728 in 1981. For men the most frequent cause of these deaths was hanging, strangulation and suffocation, whereas for women it was poisoning.

CHAPTER 1 – DEMOGRAPHIC OVERVIEW

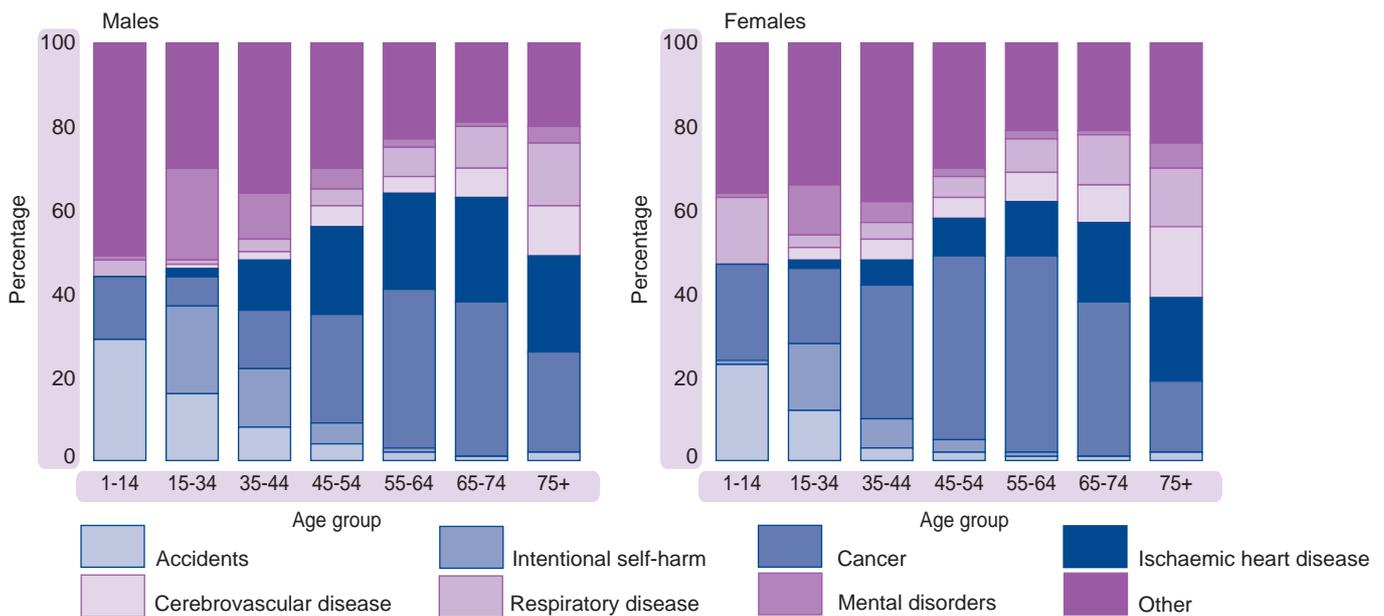
Summary of main causes of death by age and sex

The main causes of death vary in importance by age and sex (**Figure 1.13**). Accidents were the most important category of death in the very young (aged 1-14), accounting for 29 per cent of deaths in boys and 22 per cent of deaths in girls in 2002. Cancer, at 15 per cent for boys and 22 per cent for girls, was the next largest cause.

For males aged 15-34, the main category was accidents followed by intentional self-harm (suicide) and mental disorders (entirely due to drug and alcohol abuse). For females in this age group intentional self-harm (suicide) was the largest category followed by cancer.

For almost all age/sex groups above age 35, the main cause was cancer. For women, cancer was responsible for a higher proportion of deaths in almost every age group than for men. Conversely, ischaemic heart disease accounted for a higher proportion of deaths in all age groups for men than for women.

Figure 1.13 Deaths, by cause and age group, Scotland, 2002



MIGRATION

In addition to births and deaths, migration is the other component of population change. However, unlike births and deaths, there is no comprehensive source for estimating migration and hence it is the most difficult component of change to measure. Migration and the reasons for migrating are also much more susceptible to short-term changes in social and economic circumstances than births and deaths. These factors and the fluctuating nature of migration make it very difficult to estimate.

Regular information on the other characteristics of migrants (for example, educational qualifications, country of birth and ethnic group) is limited, although more will become available when detailed results about migrants from the 2001 Census are published later in 2003.

Migration – Revisions to the 1982 to 2000 series

The results of the 2001 Census indicated that the previously published 2000 mid-year estimates had been overestimated by some 50,000 as a result of cumulative errors in estimating migration (mostly young men) during the 1980s and 1990s. As a result, the population estimates for 1982-2000 have been revised with implied changes to migration estimates. It is likely that these migration errors are the result of an underestimation of young male migration from Scotland to the rest of the world during this period, but if moves from Scotland to the rest of the UK have been under-recorded, the implied increase in overseas migration would be less.

Further work is being undertaken to review the quality of the method and data sources used to estimate migration, in particular to reduce the level of unmeasured migration. This includes analysing the detailed migration results from the 2001 Census due out later this year. In addition, a National Statistics Quality Review of International Migration Statistics is being carried out by the Office for National Statistics. This review, to be published later this year, will recommend ways of improving the quality and accuracy of international migration data.

A complete set of migration revisions, which takes account of this further work, will be available at the end of 2003.

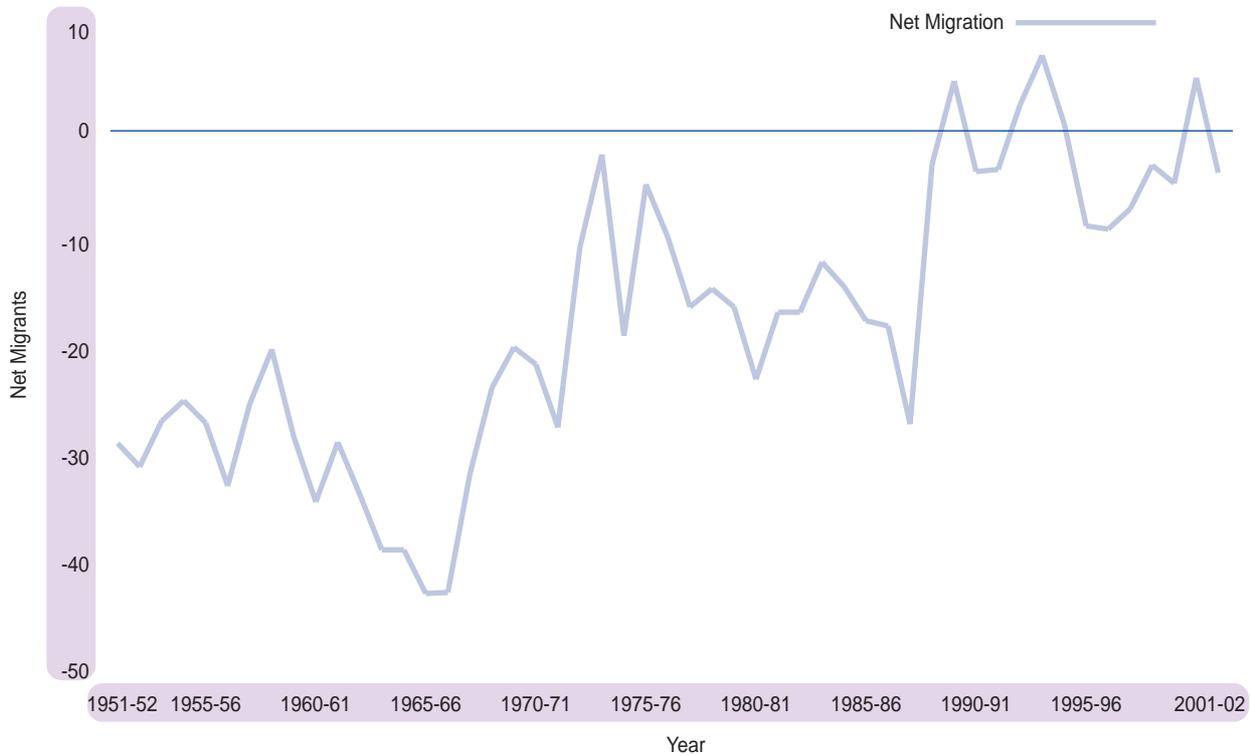
Trends in migration since 1951

Estimates of net migration to and from Scotland since 1951 are shown in **Figure 1.14**. Historically, Scotland has tended to be a country of net out-migration rather than net in-migration, that is more people leave Scotland to live elsewhere than move to live in Scotland. However, since the 1960s the level of net out-migration, some 30,000-40,000 a year, has reduced significantly and in recent years has been less than half of the peak net migration losses in the 1960s. Indeed, in some years during the late 1980s, early 1990s and in 2000-01, Scotland experienced net migration gain rather than loss. There has been an underlying, long-term trend of decreasing net emigration from Scotland over the last 50 years as can be seen from **Figure 1.14**.

It should be noted that estimates of net migration are the difference between much larger gross flows of migrants into and out of Scotland. In the last 10 years these have typically been of the order of 70,000 both in and out of Scotland. The level of net migration can be significantly affected by relatively small changes in these gross flows from year to year, particularly if one flow rises while the other falls.

Migration to and from Scotland comprises moves to/from the rest of the United Kingdom and moves to/from the rest of the world. In net terms, the contribution to the overall total of moves with the rest of the UK and with countries overseas is roughly similar. This broad relationship has been maintained over the last 50 years, and the net loss from Scotland has reduced since the 1960s and early 1970s both in relation to the rest of the UK and the rest of the world. More information on recent trends will be published with the migration revisions to be published at the end of 2003.

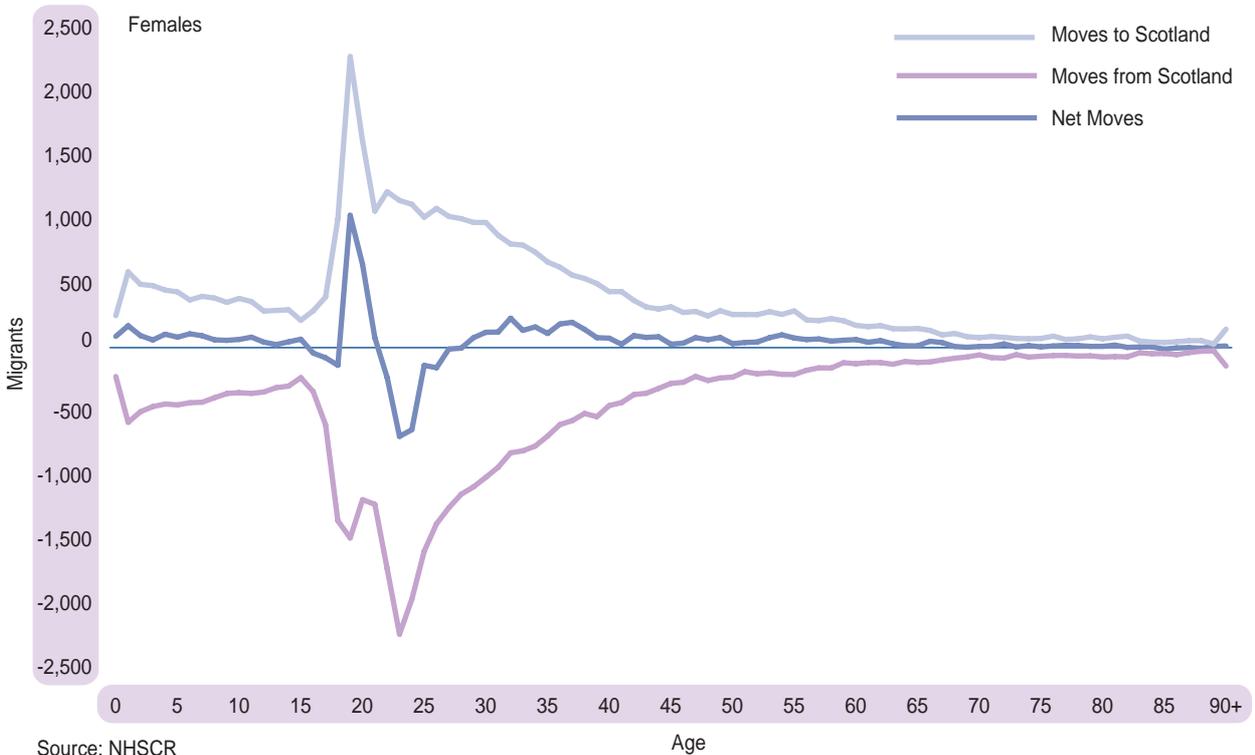
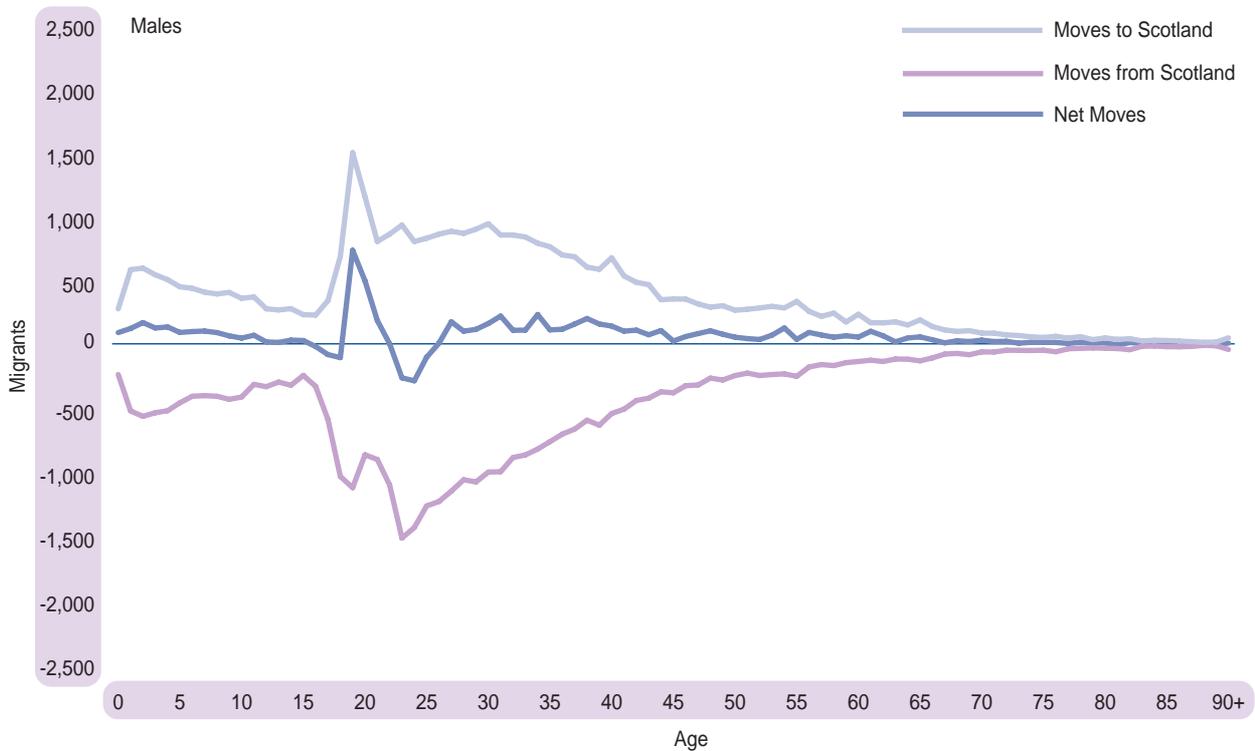
Figure 1.14 Estimated net migration, Scotland, 1951-2002



Migration by age and sex

The age/sex pattern of migrants tends to remain relatively constant from year to year. **Figure 1.15** illustrates the age/sex distribution of migrants for males and females moving into and out of Scotland from the rest of the UK between 2001 and 2002. The peak ages for migrating are the late teens to mid-20s reflecting moves out of the parental home to attend higher education or take up employment. There also tend to be smaller peaks for moves of the very young, under the age of five. This reflects migration of parents who move home before their children have started school. The pattern of migration is very similar for men and women though women tend to have much larger peaks in their early 20s than men. However, this may reflect different patterns of re-registering with an NHS doctor after a move rather than different patterns of migration.

Figure 1.15 Movements between Scotland and the rest of the UK, by age, mid 2001–mid 2002



Source: NHSCR

The peaks in migration for males and females in their late teens and early 20s create marked net migration gains at ages 19 and 20, and net migration losses at ages 23 and 24. These patterns are consistent with an influx of students from the rest of the UK and overseas starting higher education followed by a return to elsewhere after completing their education.

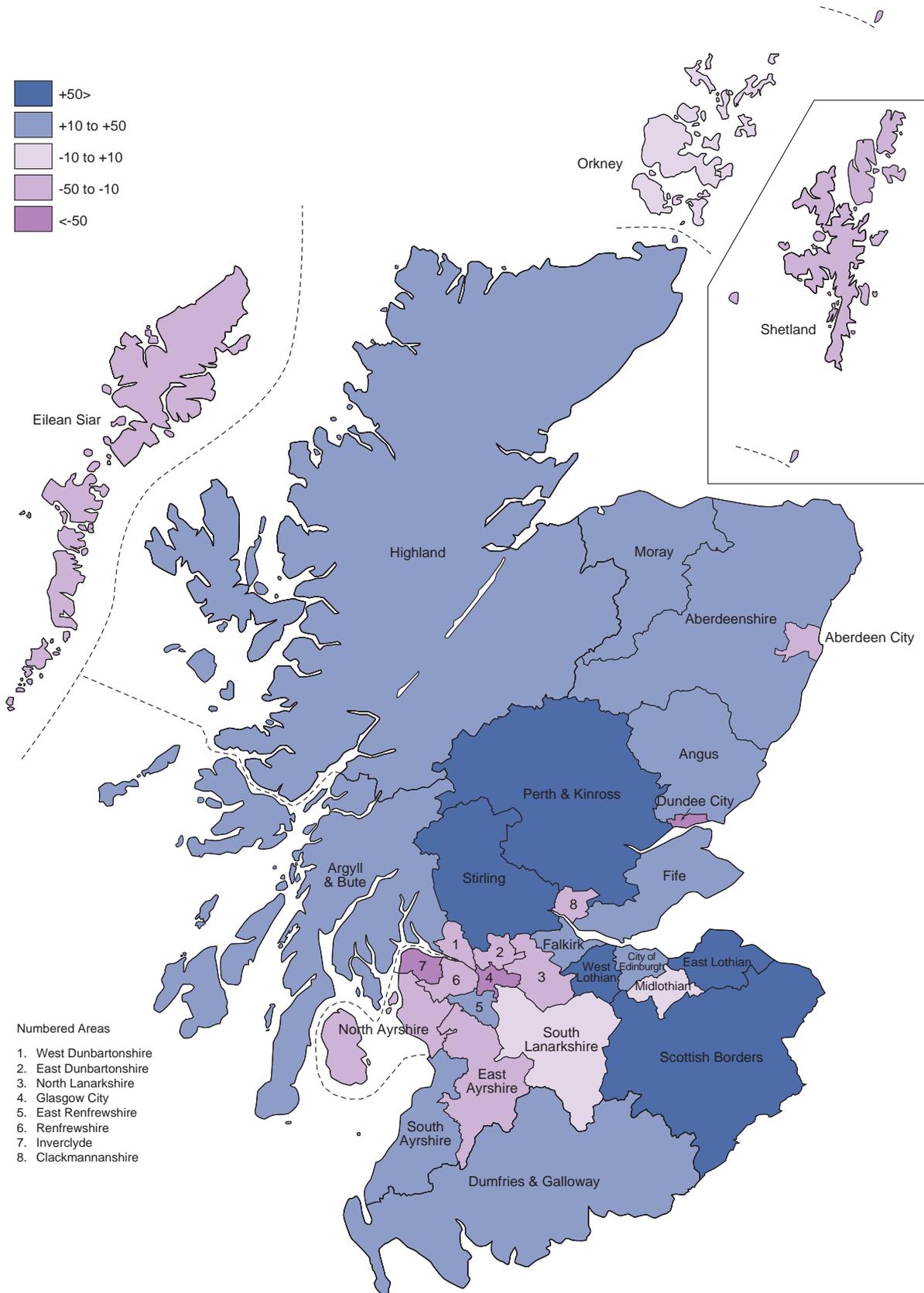
Similar age/sex patterns of migration occur for moves between Council areas in Scotland with peak ages occurring in the late teens and early 20s for both males and females.

Migration and the distribution of population within Scotland

Migration has a large impact on population distribution within Scotland and at local level is often the most important component of population change. Net migration rates, that is the amount of net migration between 1991 and 2002 as a proportion of the 1991 population, are a useful indicator when comparing migration between areas of different sizes. Information on net migration rates for Council areas is shown in **Figure 1.16**.

Generally, areas in the south, east and north of mainland Scotland have experienced migration gains over the last ten years (indicated by a positive rate in the chart), with the largest relative gain taking place in Perth & Kinross (80 migrants per 1,000 population). In contrast, the majority of migration loss was in the west of Scotland with the largest relative rate of migration loss (-72 migrants per 1,000 population) in Glasgow City. For comparison, the rate of migration loss for Scotland as a whole over the period was 2 migrants per 1,000 population.

Figure 1.16 Net migration rates per 1,000 population for Council areas, 1991-2002



The General Register Office for Scotland also registers marriages, divorces, and adoptions in Scotland, and this information sheds light on changing trends in society.

MARRIAGES

In 2002, there were 29,826 marriages in Scotland compared with over 41,000 in 1951. **Figure 1.18**, however, shows that the decline in the number of marriages may be levelling out at around 30,000 a year. Over 70 per cent of the marriages in 2002 were to couples where at least one partner was resident in Scotland.

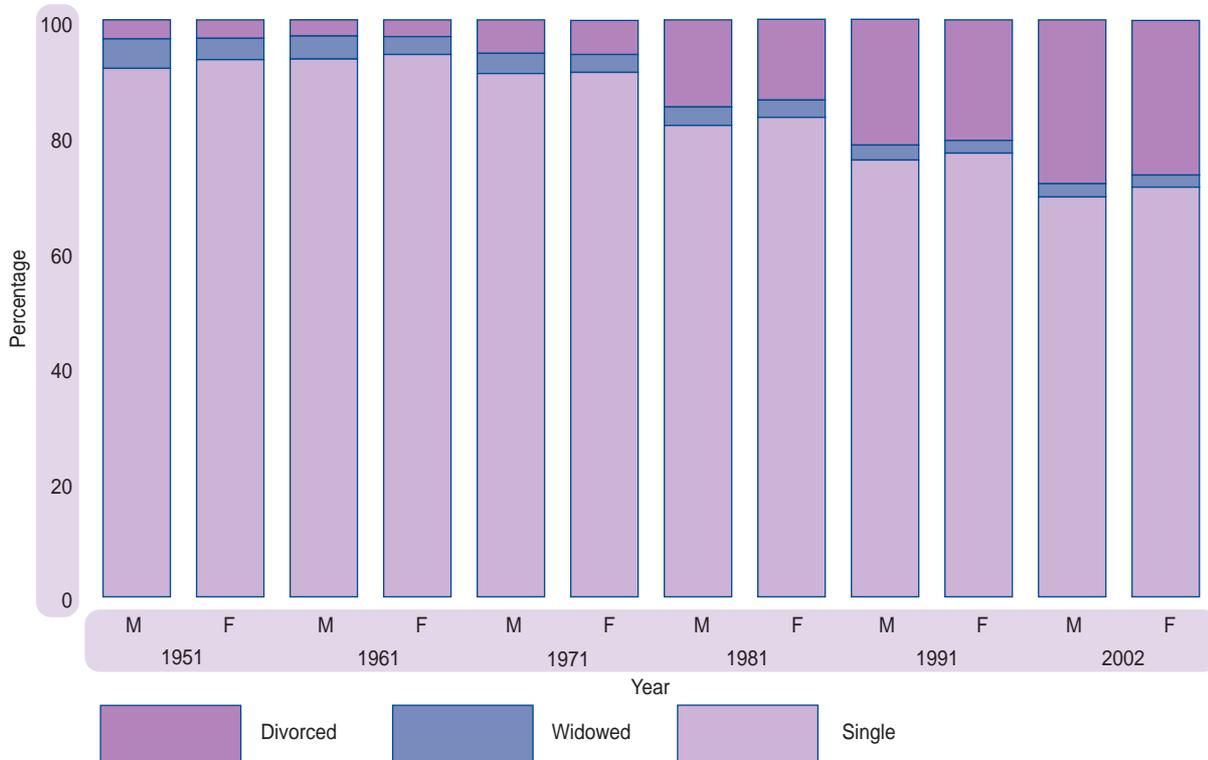
Marriages of non-residents

The information on marriages in this chapter covers all marriages which were registered as having taken place in Scotland regardless of the usual residence of the parties involved. For almost 30 per cent of the marriages registered in 2002 neither the bride nor the groom was resident in Scotland and half of these took place at Gretna. For some demographic purposes users might wish to limit analyses to specific categories of residents. Further details of available information may be obtained from the GROS Customer Service address given in **Contact Points**. Conversely, a number of couples who are resident in Scotland now go abroad to be married. These marriages are not included in this chapter, and only some come to the attention of the Registrar General through notification to British Consular authorities.

Marital status at marriage

Figure 1.17 gives the percentage of marriages by marital status at the time of marriage between 1951 and 2002. The percentage of people marrying who had been divorced rose from only 3 per cent in 1951 to just under 6 per cent during 1971, but by 2002 over a quarter (28 per cent for males and 27 per cent for females) of those marrying were divorcees. The majority of this shift reflects a reduction in the proportion of marriages where one of the partners was a bachelor/spinster. However, the proportion of those marrying who were widowed has also declined – in 2002 the proportion was about 2 per cent or about half of what it was 50 years ago.

Figure 1.17 Marriages by marital status of persons marrying, 1951-2002



When looking at the marital status of persons marrying it is also interesting to look at the remarriage rates, i.e. the number of marriages where one of the participants was widowed or divorced per 1,000 population of widowed or divorced people. It shows a pattern which is consistent with the declining rates of first marriages, although there are differences in the patterns for men and women.

Table 1.2 shows that widowed or divorced men have a much higher propensity to remarry than widowed or divorced women (45.7 per 1,000 population of widowed or divorced men compared with 18.9 for widowed or divorced women). This is the reverse of the pattern for first marriage rates where single women have a higher propensity to marry (35.4 per 1,000 population) than single men (31.7 per 1,000 population). This suggests that women are more likely than men to marry someone who has already been married when first marrying, and that widowed or divorced males are more likely than widowed or divorced females to marry someone who is single when remarrying.

Table 1.2 Marriage rates by sex and marital status, Scotland, 1981-2002

	Men		Women	
	Bachelors ¹	Widowed and Divorced ²	Spinsters ¹	Widowed and Divorced ²
1981	56.1	56.7	63.1	16.6
1991	41.8	46.9	49.0	18.2
2002 ³	31.7	45.7	35.4	18.9

¹ First marriage rates per 1,000 population (single only)

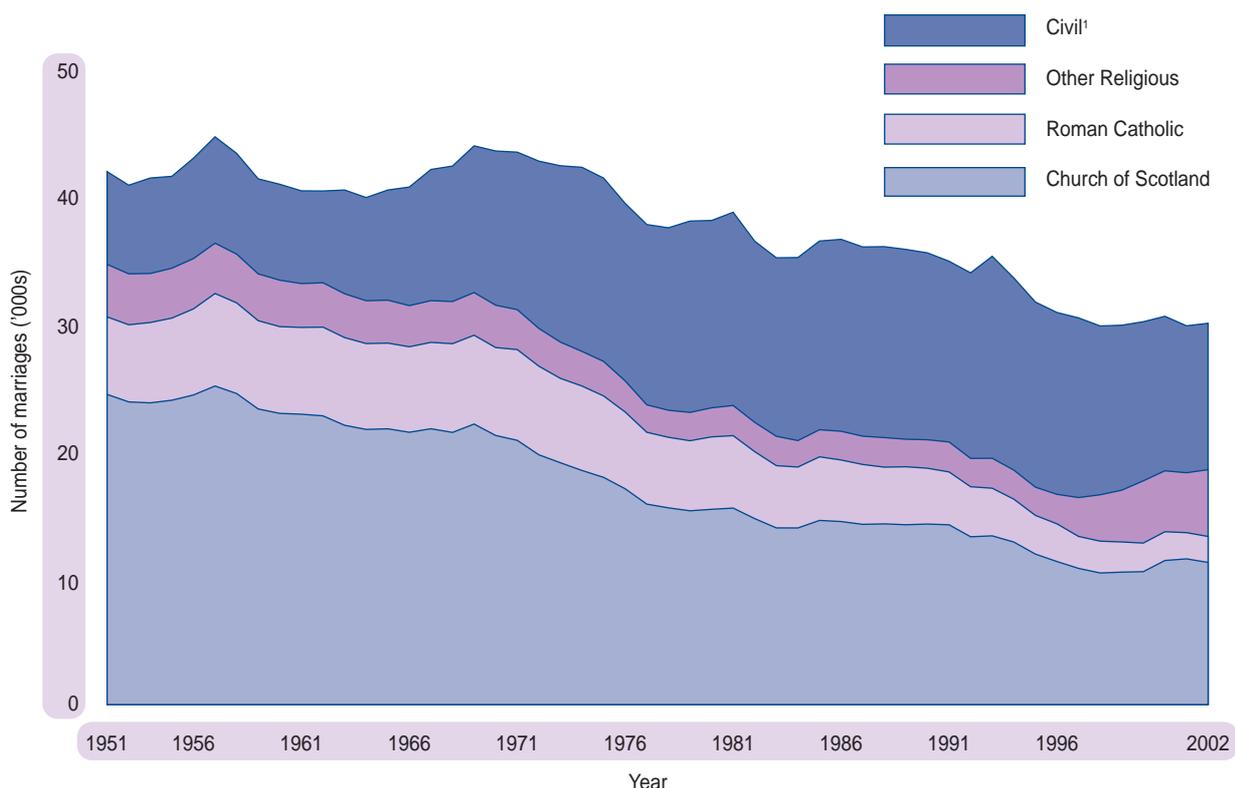
² Remarriage rates per 1,000 population (widowed and divorced only)

³ 2002 rates are based on 2001 Census marital status figures

Marriages by type of ceremony

Civil marriages accounted for nearly 40 per cent of all marriages in 2002. As illustrated in **Figure 1.18**, this is more than twice the proportion fifty years ago. The trend reflects a move away from religious marriages to civil marriages, particularly during the 1970s and 1980s when the proportion of civil marriages reached current levels. There was a further increase in the early 1990s reaching a high of 46 per cent but this has since fallen back to just under 40 per cent, reflecting an increase in religious marriages, of which a significant proportion were carried out at Gretna. More detailed information on marriages in Gretna is available in the GROS Occasional Paper No. 4 *Marriages at Gretna, 1975-2000*.

Figure 1.18 Marriages by type of ceremony, Scotland, 1951-2002



¹Includes irregular marriages

Trends in the type of marriage ceremony are likely to be influenced in future by the Marriage (Scotland) Act 2002 and associated Regulations and Guidance which came into effect in June 2002. This changed the law to give people a wider choice of venues for civil marriage in Scotland. By June 2003, 365 venues had been approved for civil marriages outwith registration offices, and over 1,200 civil marriages had been conducted in approved places.

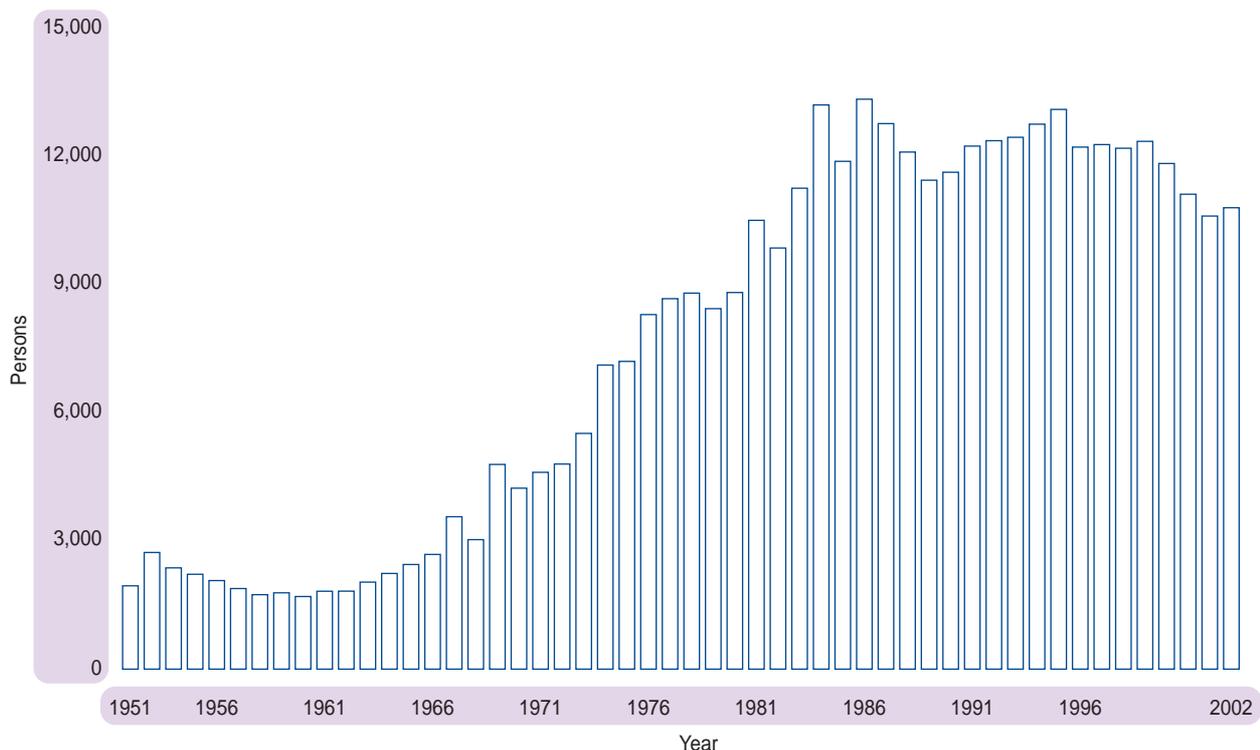
DIVORCES

The number of divorces in 2002 was 10,826, around 200 more than in 2001.

Information on divorces, which relates to divorces granted under the Divorce (Scotland) Act 1976, are for all divorces granted in Scotland regardless of where the marriage took place. **Figure 1.19** shows the number of divorces between 1951 and 2002. There was a very marked increase in the number of divorces up to the early 1980s, since when the level has fluctuated. Since 1994, when there were over 13,000 divorces, there has been a steady fall.

Increasing levels of co-habitation may be relevant to the recent decline in divorces since the breakdown of cohabiting relationships is not subject to divorce proceedings.

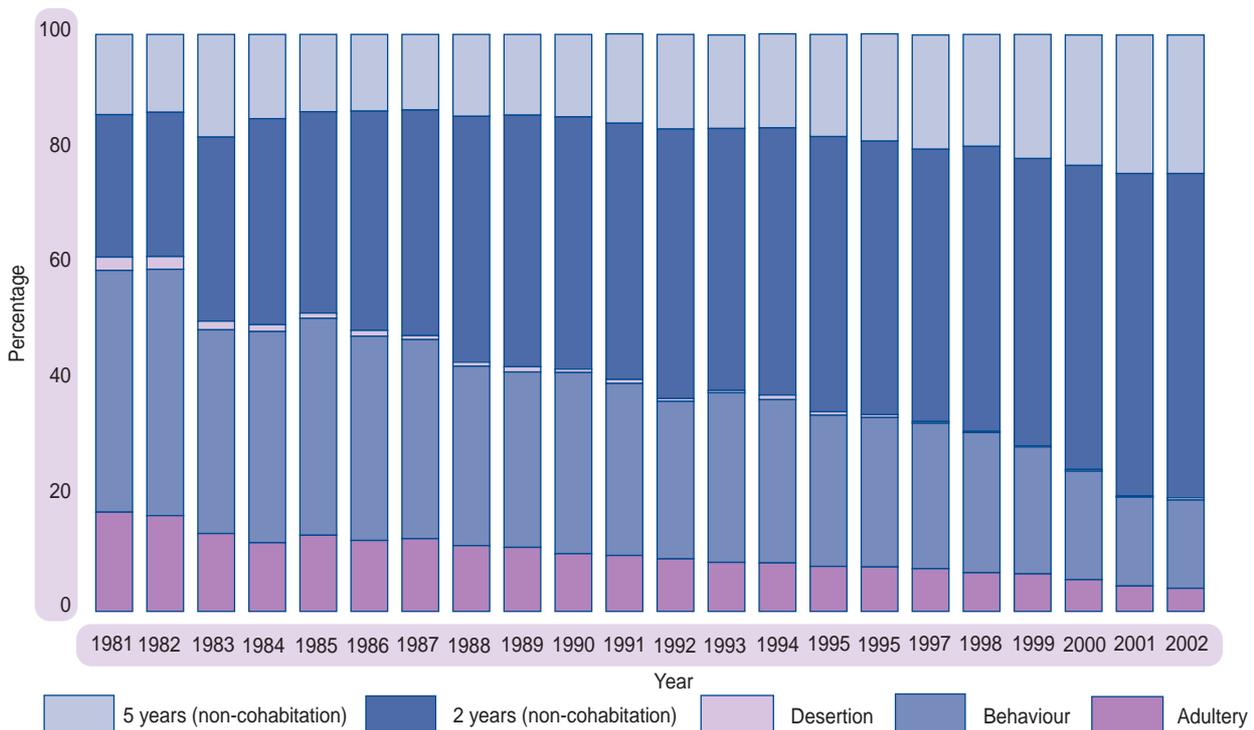
Figure 1.19 Divorces, Scotland, 1951-2002



Grounds for divorce

Figure 1.20 shows the trend in grounds for divorce between 1981 and 2002. The Divorce (Scotland) Act 1976 introduced new grounds for divorce, principally non-cohabitation, meaning that couples separated for two or five years could file for divorce on grounds of non-cohabitation.

Figure 1.20 Divorces, by grounds for divorce, Scotland, 1981-2002



In 2002, non-cohabitation was the most frequent reason for divorce, accounting for 80 per cent of all divorces. Non-cohabitation (2 years and consent) increased from 25 per cent of all divorces in 1981 to over half of all divorces in 2002; non-cohabitation (5 years) increased from 14 per cent to 24 per cent; and adultery as the stated reason for divorce fell from 17 per cent to 4 per cent.

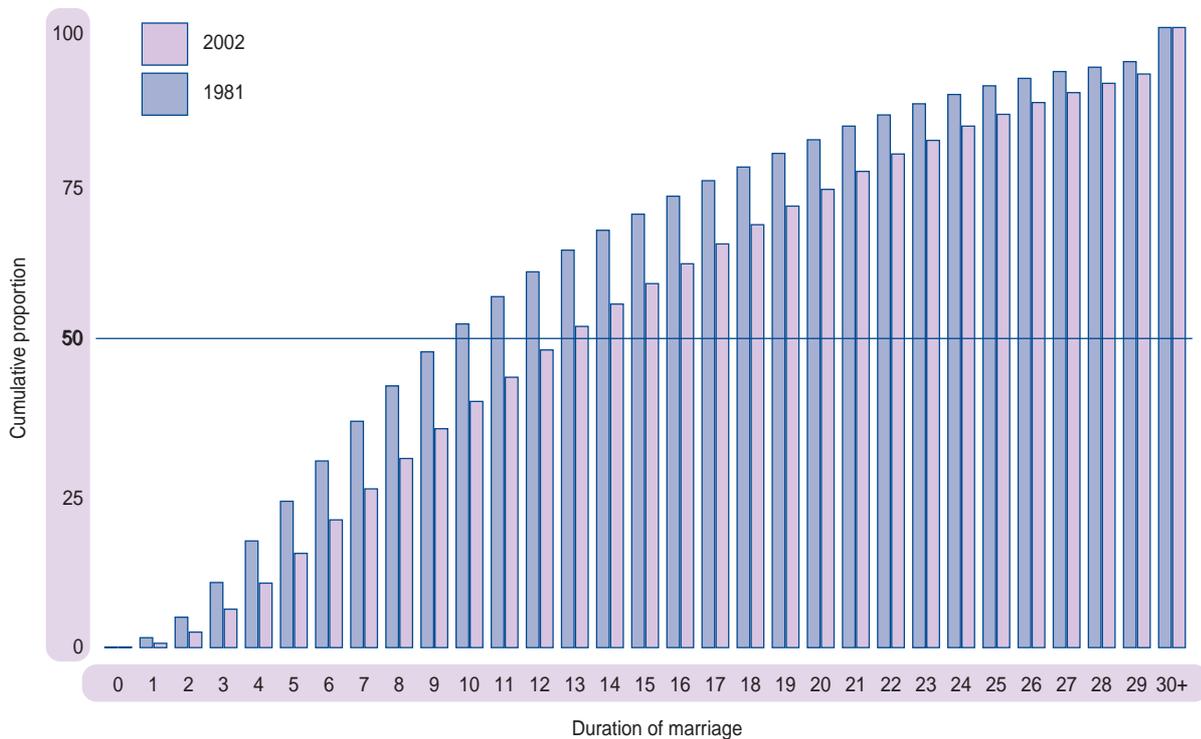
Divorces by marital status

Of those divorcing in 2002, 16 per cent of men and 15 per cent of women had divorced previously. This compares with 8 per cent for males and 7 per cent for females in 1981. This is consistent with the increase in the proportion of all marriages where one or both participants was divorced previously (now 2 in 5 marriages compared with 1 in 4 twenty years ago).

Duration of marriages that ended in divorce

Figure 1.21 compares the cumulative duration of marriages, which ended in divorce in 1981 with 2002. The median duration of marriages ending in divorce is shown by the horizontal line at 50 per cent, indicating that half of marriages ending in divorce lasted for more than this duration and half for less. In 2002, the median duration of marriage was over 13 years, whereas the comparable duration for 1981 was nearly nine years. This increase may be affected by the changing balance between cohabiting relationships, and marriage.

Figure 1.21 Duration of marriages ending in divorce, 1981 and 2002



Divorce by age at marriage

In 2002, 30 per cent of all divorces were to couples where at least one of the partners was aged 20 or under when they married. This is a significant fall from 60 per cent in 1981, but not unexpected given that the proportion of marriages where at least one of the partners was under 20 has fallen from 36 per cent in 1981 to 4 per cent in 2001.

ADOPTIONS

The number of adoptions recorded by the Registrar General during 2002 was 385, the lowest number since the first full year of recording in 1931. This is nearly half the level in 1991 and a quarter of the number adopted in 1951.

Nearly 35 per cent of the children adopted in 2002 were adopted by a step-parent, while over 60 per cent were adopted by non-relatives of the child. 17 per cent of children adopted in 2002 were aged under two, the majority of whom were adopted by non-relatives. In contrast, of the 99 adoptions of children aged over ten, only 21 per cent were adopted by non-relatives.

Introduction

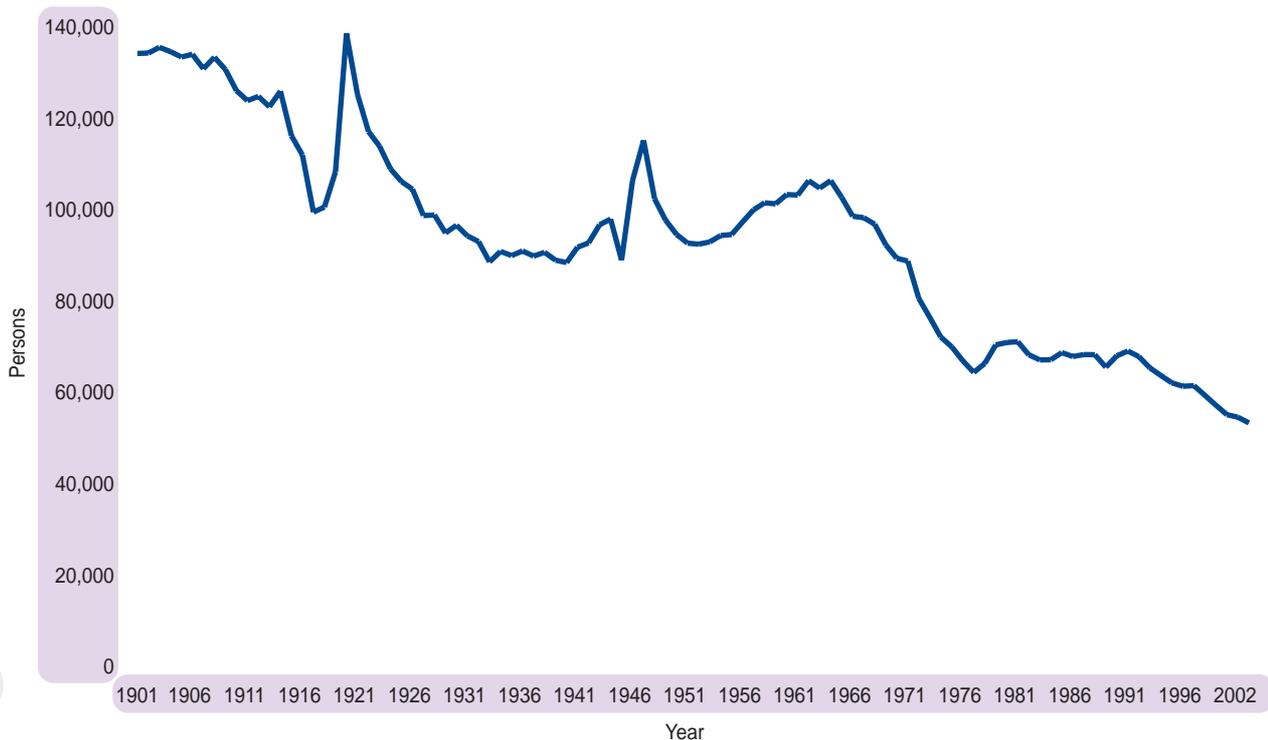
As highlighted in the demographic overview in **Chapter 1**, the main reason for Scotland's falling population in recent years has been the decline in the number of births. This chapter briefly describes trends in births during the twentieth century before focusing on changes over the more recent period. Some limited comparisons with other parts of the United Kingdom and selected other countries are also presented. The chapter concludes with a consideration of official birth projections and the effect of these on population projections. Discussion of the possible reasons for the current low levels of fertility, and the demographic and policy implications of the current trends, is left to **Chapter 3**.

Trends during the twentieth century

Numbers

Figure 2.1 shows the annual number of births in Scotland for the last 100 years. Apart from peaks after each of the World Wars, births have generally been in decline since the start of the twentieth century. However, as in many other western countries, there was a substantial increase in the number of births during the second half of the 1950s, with a peak in the mid-1960s (at 104,000), followed by marked decline in the late 1960s and early 1970s. Following a small recovery, the numbers stabilised between 60,000-70,000 during the 1980s before resuming the decline in recent years. At 51,270, the total number of births registered in 2002 was the lowest number since civil registration began in 1855. Moreover, the 2002 total is only half that recorded in the mid-1960s and represents a fall of over a fifth in the last decade.

Figure 2.1 Live births, Scotland, 1901-2002



Fertility rates

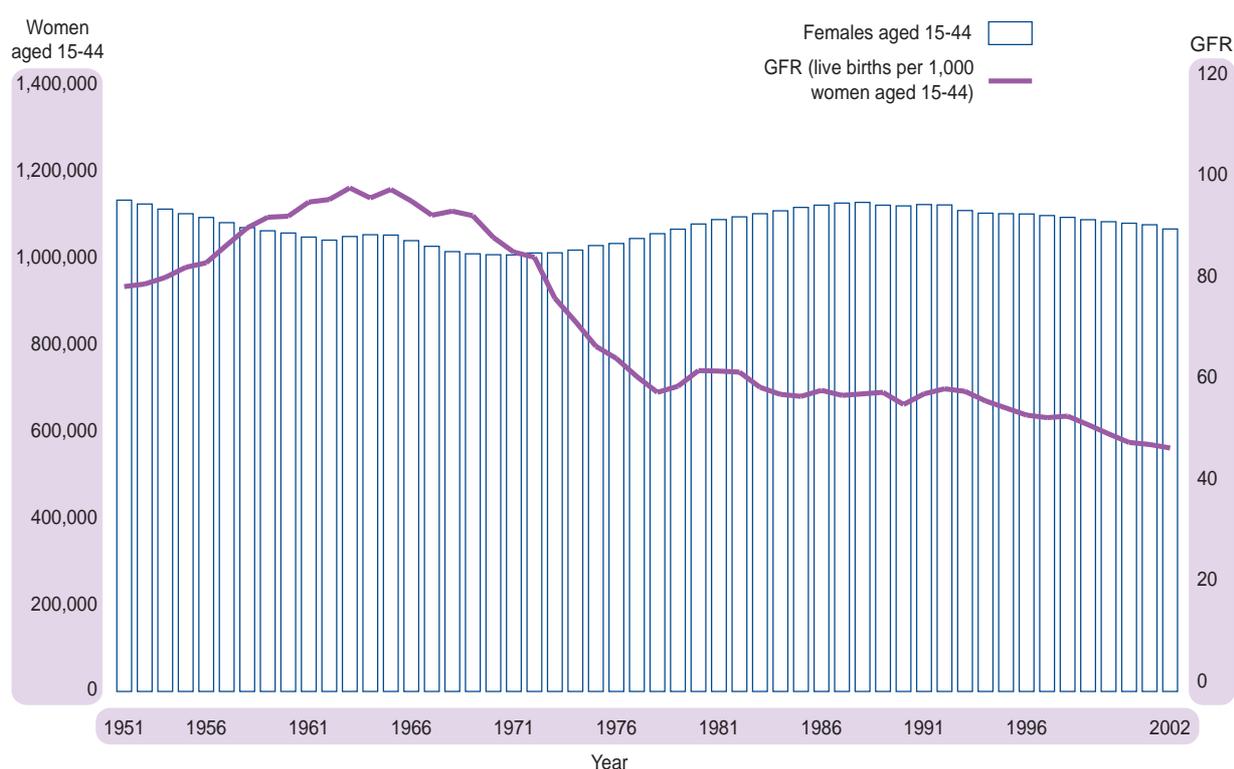
Crude birth rate

The simplest fertility rate is the so-called 'crude birth rate' which is defined as the number of live births per 1,000 total population. **Appendix Table 1** shows that in 2002 the crude birth rate for Scotland stood at 10.1 compared with around 20 fifty years ago and around 30 a hundred years ago. Because it takes no account of the age/sex structure of the population, the crude birth rate has only limited value, e.g. for giving rough comparisons between areas with broadly similar age/sex structures. **Appendix Tables 2** and **3** present crude birth rates for, respectively, administrative areas in Scotland and selected European and other countries. **Appendix Table 2** also gives standardised birth rates for the administrative areas of Scotland – these adjusted birth rates take account of the population structures in the different areas.

General fertility rate (GFR)

A better approach is to consider rates based on the numbers of women of childbearing age. **Figure 2.2** shows the general fertility rate (births per 1,000 females aged 15-44), along with the number of women aged 15-44, since 1951. During the 1960s baby boom the GFR reached 99.5 (in 1962). It then fell sharply to around 60 during the 1980s before declining further during the 1990s to a value of 48.1 in 2002. Interestingly, the chart shows that the female population aged 15-44 was relatively low during the baby boom of the 1960s. Moreover, the levelling off in the annual numbers of births during the 1980s was in part associated with the increasing numbers of women born in the 1950s and 1960s, passing through their childbearing years.

Figure 2.2 Estimated female population aged 15-44 and general fertility rate (GFR), Scotland, 1951-2002



Age-specific fertility rates

A more detailed picture may be obtained by calculating fertility rates for narrower age bands. **Figure 2.3** presents rates by mother's age in five-year age groups. This chart shows many significant age-related features of the pattern of childbearing over the last fifty years. The key point to emerge is that as well as choosing to have fewer babies, women are also choosing to have them later in life. More specific points include:

- i. The 1960's baby boom was mostly due to increased birth rates of women in their 20s.
- ii. Over the last 35 to 40 years birth rates for women in their 20s have experienced a dramatic fall. For women aged 20-24 the fertility rate has fallen by 70 per cent; and for those aged 25-29 it has fallen by 60 per cent.
- iii. Fertility rates for women aged 30 and above have gradually increased over the last 25 years; in particular, the rate for 30-34 year olds overtook that of 25-29 year olds in 2002.
- iv. Despite the recent increases, rates for women aged over 30 are still well below the equivalent rates seen in the 1950s and 1960s.
- v. Though falling by around one-third during the early 1970s, the rate for 15-19 year olds has shown only a modest decline thereafter.

Figure 2.3 Live births per 1,000 women, by age of mother, Scotland, 1951-2002

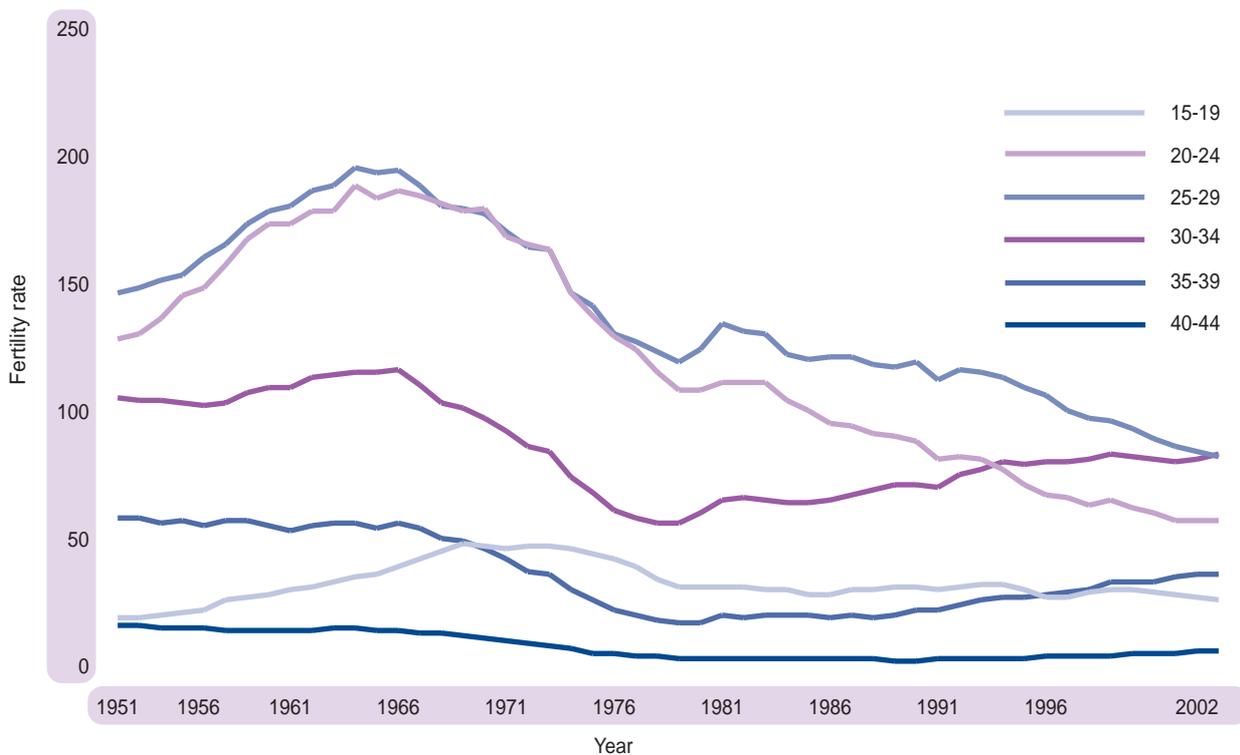
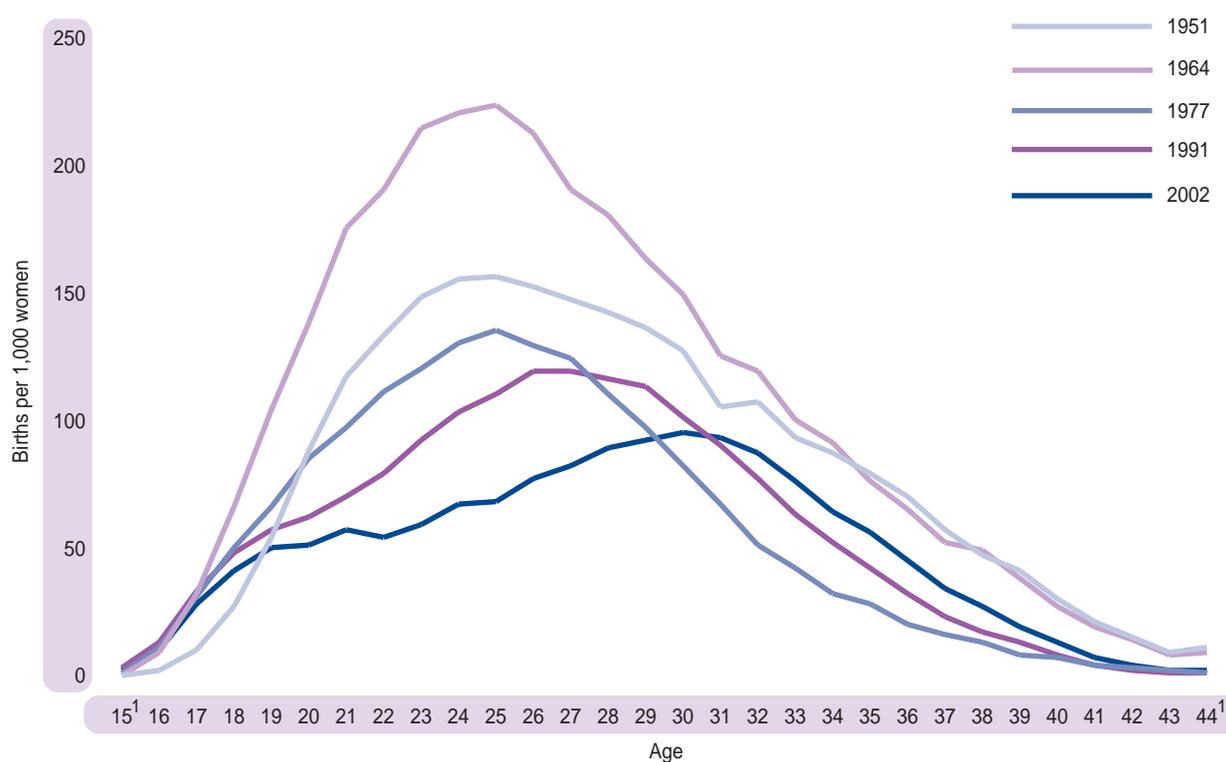


Figure 2.4 further illustrates the ageing pattern of fertility by showing detailed age-specific fertility rates for selected years of the post-war period: 1951, 1964, 1977, 1991 and 2002. Even though the levels differed considerably, the overall age patterns of fertility for 1951, 1964 and 1977 were roughly the same. However, the age distribution for 1991 shows a distinctly older peak; and that for 2002 reveals the collapse of fertility amongst women in their 20s.

Figure 2.4 Live births per 1,000 women, by age, selected years



¹ Rate for age 15 includes births at younger ages and for age 44 includes births at older ages.

CHAPTER 2 – RECENT FERTILITY TRENDS IN SCOTLAND

Figure 2.5 shows how the age profile of mothers in 2002 varied significantly by socio-economic class (as defined by occupation). For those allocated to ‘managerial and professional’ categories there was a particularly marked peak of childbearing in the 30-34 age group. By comparison, the peak childbearing ages for those in ‘routine’ and ‘semi-routine’ categories were 20-29. The other socio-economic categories all displayed a less marked peak in the 30-34 age group.

Figure 2.5 Percentage of births by age group, by NS Socio-economic Class, Scotland, 2002



Average age of mother

The trend towards later childbearing may be summarised by considering the average age for all mothers. In 2002, the average was 29.2 compared with 27.4 in 1991, 26.1 in 1977, and 27.4 in 1964. **Figure 2.6** shows that over the last ten years the average age of mothers increased by broadly similar amounts for all socio-economic classes. In 2002, the average age ranged from just under 28 for those in the 'routine' and 'semi-routine' categories to just under 33 for the 'higher managerial and professional' category.

Figure 2.6 Average age of mother, by NS Socio-economic Class, Scotland, 1992-2002

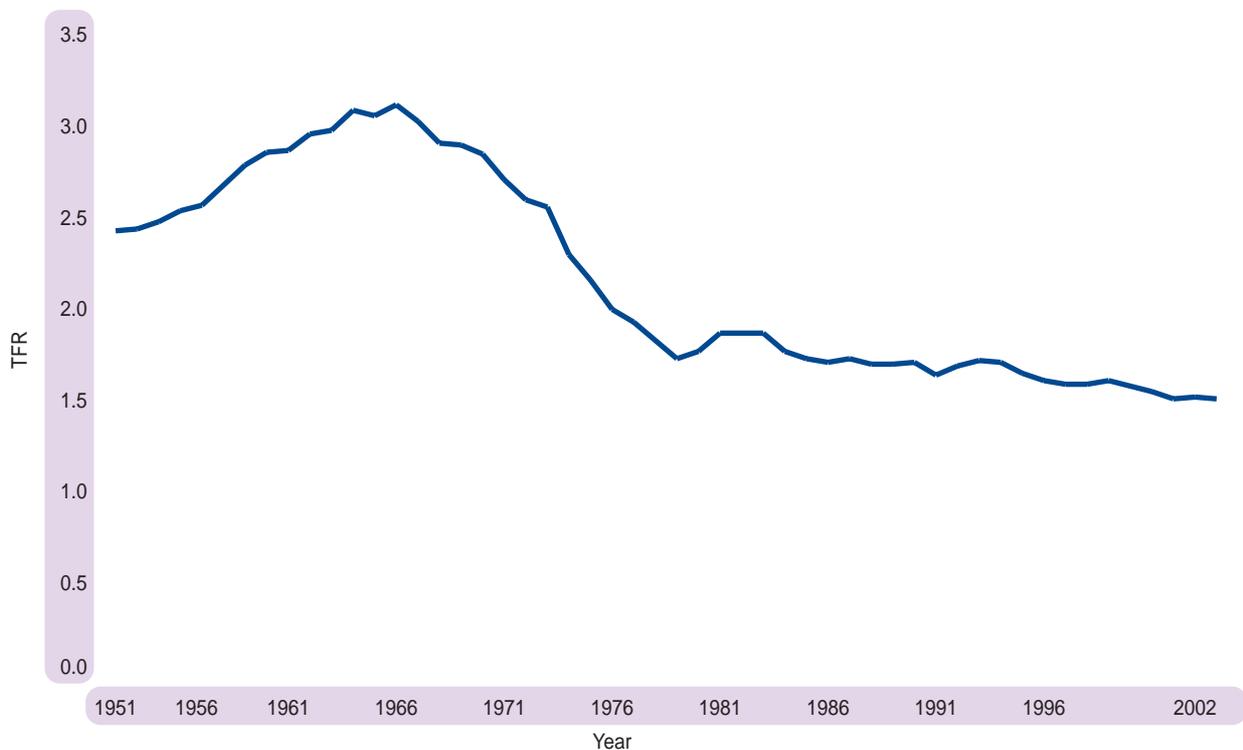


Total Fertility Rate

The total fertility rate (TFR) is a commonly used summary measure of fertility levels calculated by summing each of the age-specific rates for a single year. It may be thought of as the average number of children that a group of women would expect to have if they experienced the age-specific fertility rates (ASFRs) observed in the given year throughout their childbearing years.

The TFR for Scotland since 1951 is plotted in **Figure 2.7**. Not surprisingly, it follows the same general pattern as the GFR described earlier. It rose to 3.09 in 1964 before dropping sharply to 1.70 in 1977 since when, with a few minor fluctuations, it has fallen more slowly to its current (2002) level of 1.48.

Figure 2.7 Total fertility rate, Scotland, 1951-2002



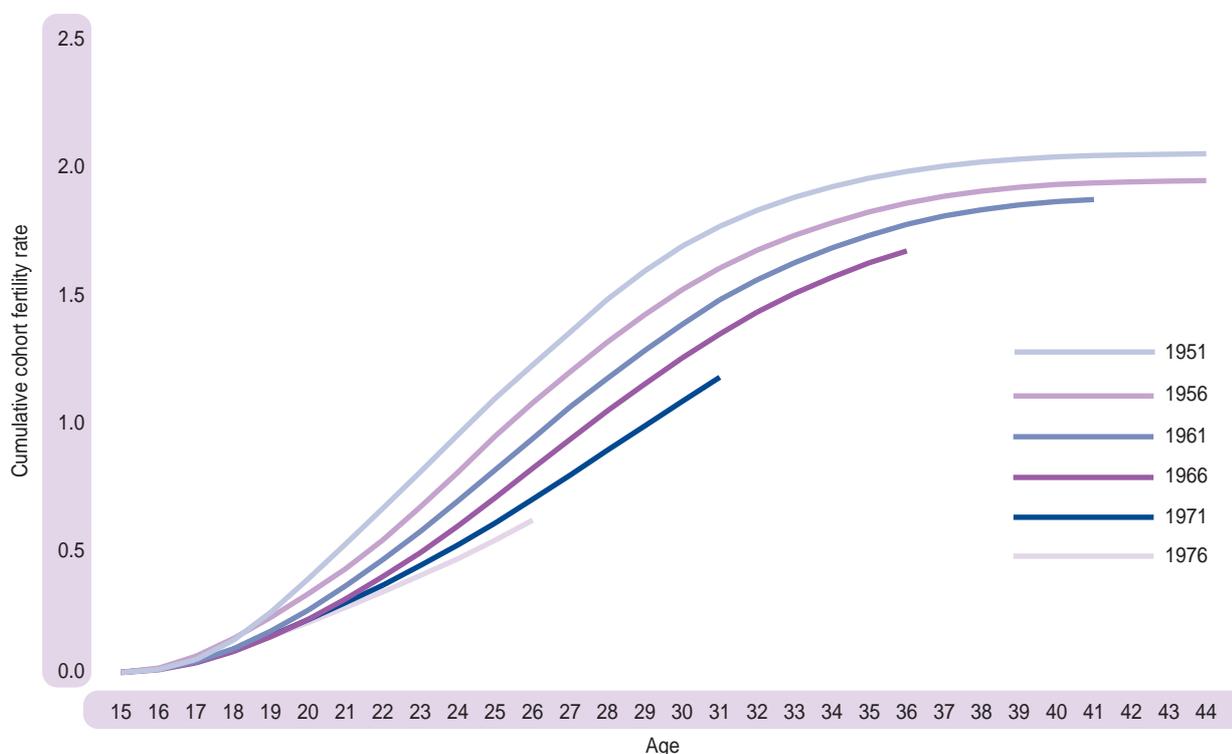
Though widely used, in part because it is relatively easy to calculate, the TFR has serious deficiencies as it is based on only one year's observations. For example, when women are delaying childbearing the TFR is likely to underestimate the number of children women will eventually have; and if women are having children earlier, the TFR will probably overestimate the long-term average number of children. However, as discussed earlier it is the former scenario – delayed childbearing – that is prevalent in Scotland at the present time.

Completed family size

A more satisfactory measure is average completed family size. Conventionally this is calculated by summing over time the succeeding ASFRs of women born in a particular year. (Such an approximation assumes that the effects of mortality and migration are negligible.) Though more intuitive, this measure itself has a fundamental drawback – namely that one can only calculate a value for women who have reached the end of the main childbearing ages, say at 45 years of age. Nevertheless there is real value in considering the historical data for cohorts that have reached this age and the partial series for those not yet 45.

Figure 2.8 shows the completed family size (or cumulative cohort fertility) by age for women born in selected years. Those born in 1951 had attained an average completed family size of 2.03 by the time they reached 45 whereas for those born in 1956 the figure was 1.93. The chart also permits the comparison of family size at selected ages for the various cohorts as they pass through the childbearing ages. For example, by age 30, the cumulative childbearing of the 1971 cohort is about 0.6 lower than that of the 1951 cohort. Of crucial importance is the extent to which the later cohorts are falling behind in family building. The replacement level at which families reproduce themselves is about 2.1 children. Whilst the increasing fertility rates of those aged over 30 may lead to some catching-up, it seems highly unlikely that this will increase the average completed family size to the levels attained recently by the 1950's cohorts.

Figure 2.8 Cumulative cohort fertility rate for selected birth cohorts, Scotland

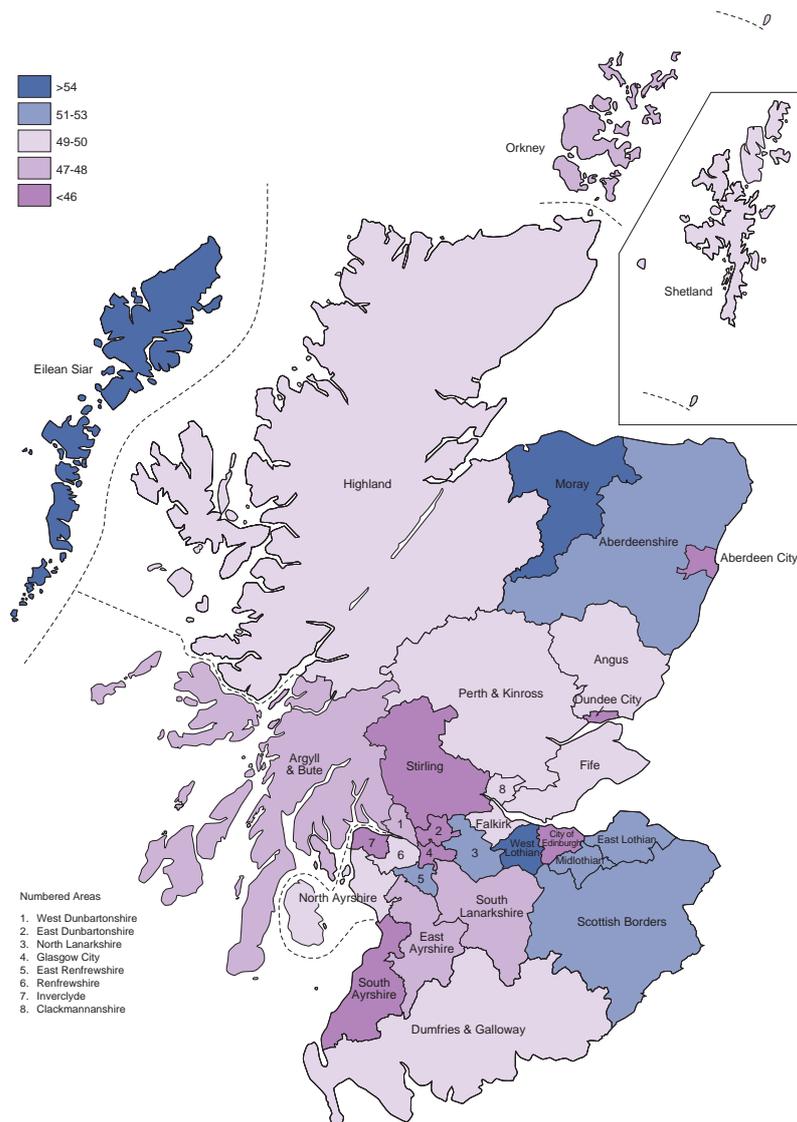


Regional variation

The trend of declining births experienced at the Scotland level is also evident for areas within Scotland, but fertility levels are not uniform across the country. **Figure 2.9** shows the 2002 GFRs for Council areas. Compared with a Scottish rate of 48.1 births for every 1,000 females of childbearing age, urban areas tend to have a lower birth rate than the Scottish average, e.g. at 41.3 the rate for Edinburgh is 14 per cent below the Scottish average. The reasons for this are complex but the following factors are thought to be important – large student populations, high female economic activity rates and the higher costs of housing.

There is evidence that the urban hinterlands and the more rural areas, e.g. Midlothian, East Lothian, West Lothian and Aberdeenshire, tend to have higher rates of fertility. This may be associated with the availability of affordable family housing and lower female economic activity rates. There may also be more specific reasons, e.g. the relatively high GFR in Moray will, at least in part, be due to the large numbers of young families associated with the Armed Forces.

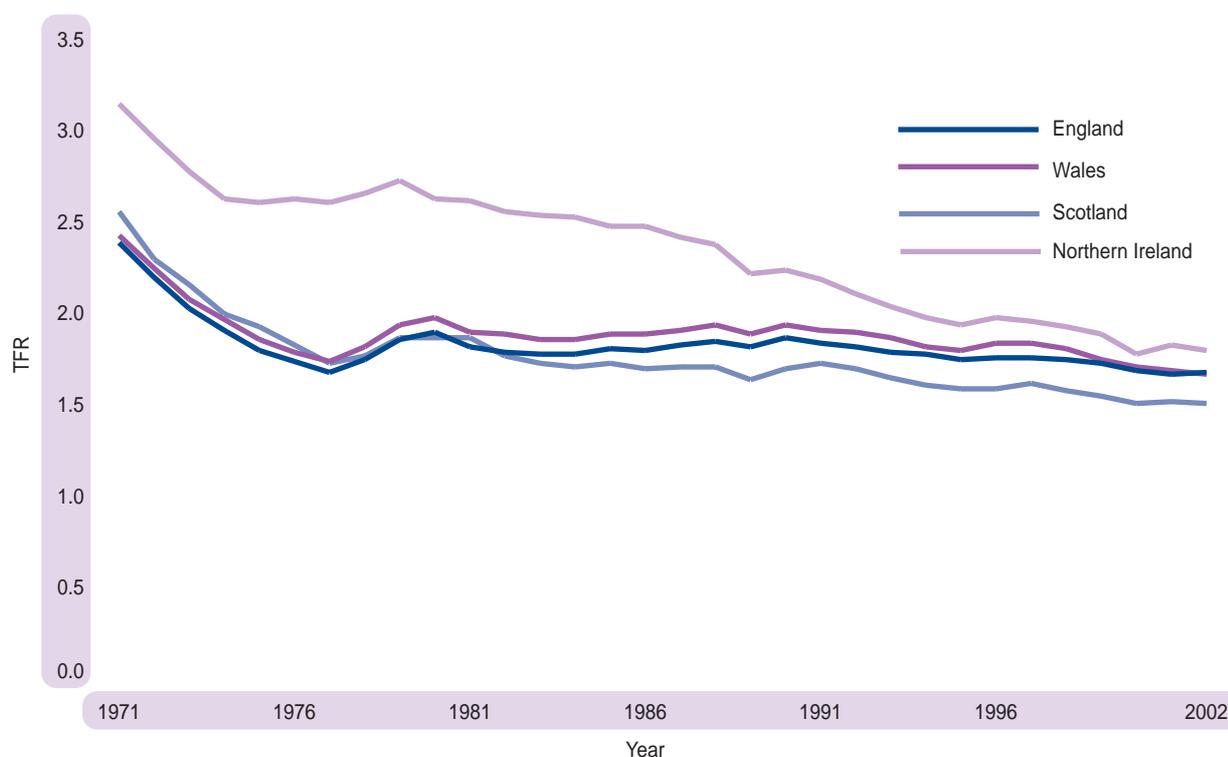
Figure 2.9 Live births per 1,000 women aged 15-44, by Council area, 2002



Comparisons with the rest of the UK and other western countries

Scotland's fertility has not only been falling in recent years relative to past levels, it has also been falling relative to fertility in other parts of the United Kingdom. **Figure 2.10** compares the TFRs for England, Wales, and Northern Ireland with those for Scotland since 1971. Until the late 1970s Scotland's TFR was slightly higher than those for England and Wales but since the early 1980s, Scotland's TFR has dropped steadily below the levels for England and Wales. In 1971 the TFR for Northern Ireland was markedly higher than for the other three countries. However, over the last 30 years the differential has been significantly reduced.

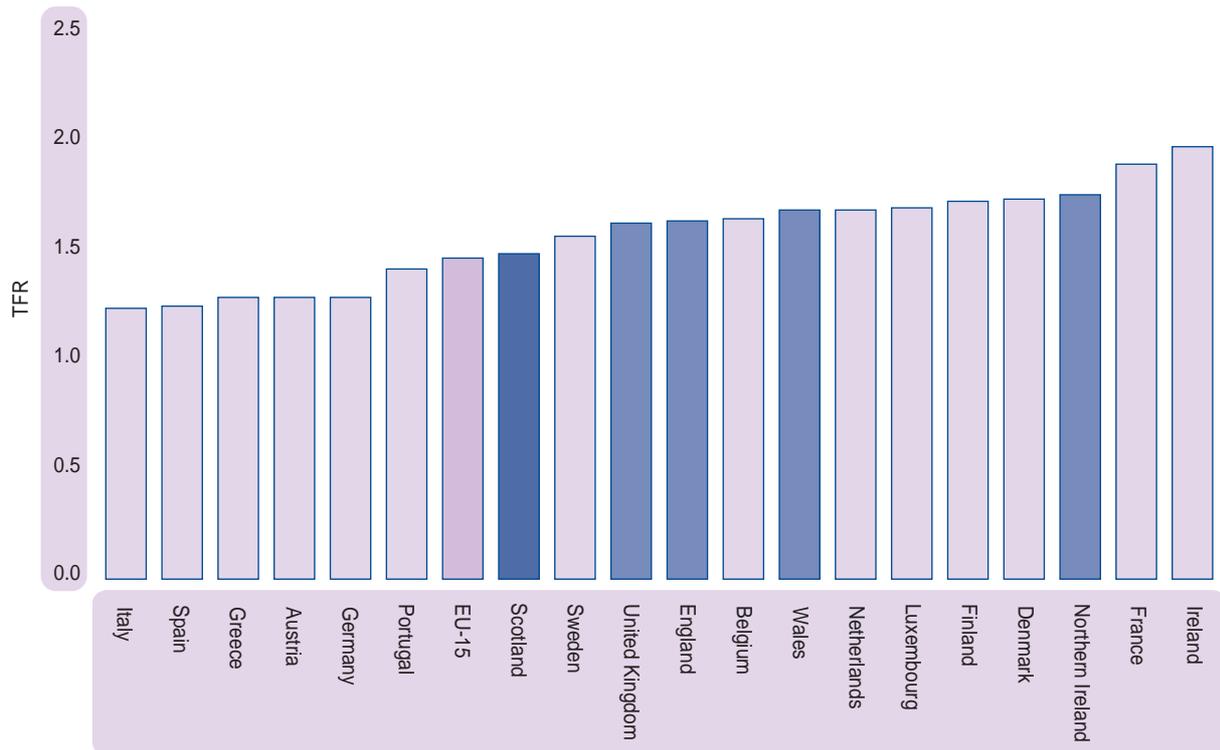
Figure 2.10 Total fertility rates, UK countries, 1971-2002



CHAPTER 2 – RECENT FERTILITY TRENDS IN SCOTLAND

A comparison of the latest TFRs available for Scotland and countries of the European Union is shown in **Figure 2.11**. Scotland's TFR in 2001 was 1.49, just above the EU average (1.47). Italy (1.24) and Spain (1.25) currently have the lowest TFRs in the EU; and France (1.90) and Ireland (1.98) have the highest.

Figure 2.11 Total fertility rates, selected countries, 2001



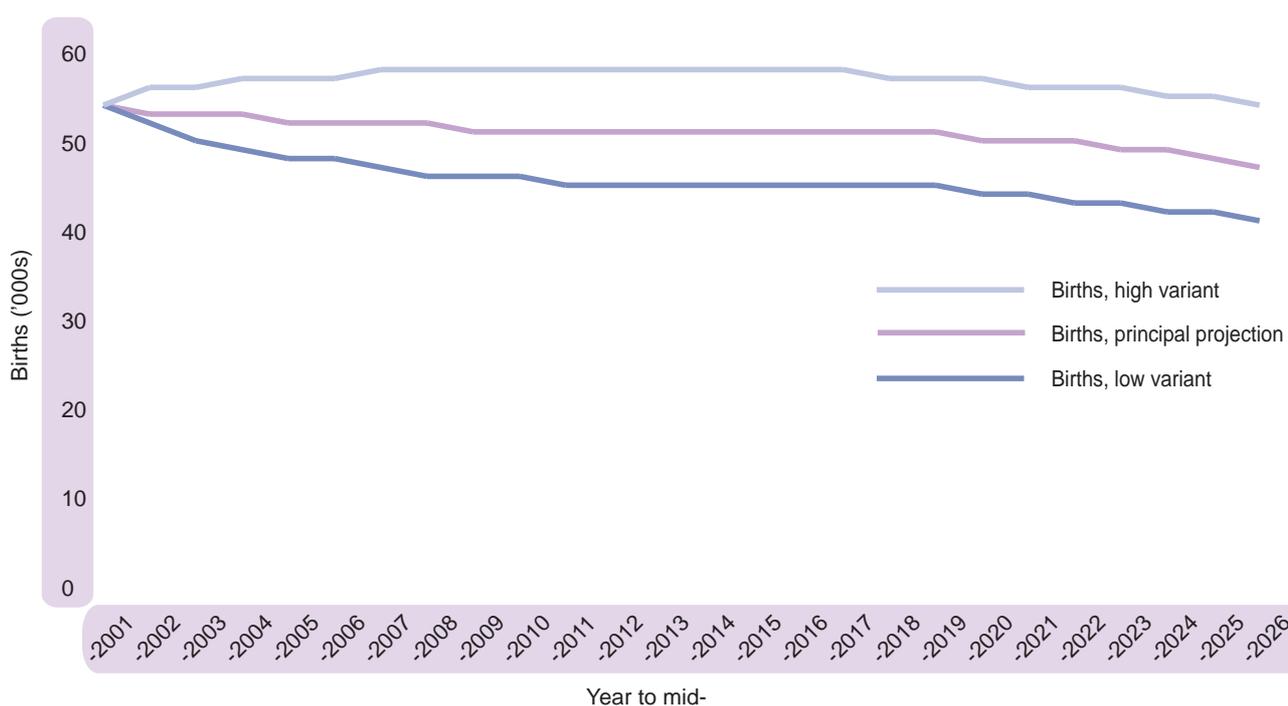
Source: ONS and Eurostat

Birth projections

Official population projections for Scotland are prepared on a regular basis by the Government Actuary's Department (GAD). The projections are prepared using a component projection model in which fertility projections have a key role. Because cohort rates are more stable than those for calendar years, the fertility rates used in the projections are derived from assumptions relating to the long-term average completed family size of successive cohorts of women. These assumptions are based on family building patterns to date and other relevant evidence. For the most recent, 2001-based, principal projection GAD assumed that the average completed family size for Scotland would decline from its current level of around 1.95 for women born in 1955 to 1.6 for women born in 1990 and later. **Figure 1.6** shows the resultant birth projections from 2001 until 2026. As can be seen, after a slight fall these remain relatively stable at around 50,000 until 2019-20. However, by 2025-26 the number of births is projected to fall to around 47,000.

For the previous 2000-based projections GAD prepared high and low fertility variants using assumed long-term average completed family sizes of 1.8 and 1.4 respectively. The projected births, together with those used in the principal 2000-based projection are shown in **Figure 2.12**. By 2025-26 the annual total of births ranges from 53,000 for the high fertility variant, through 46,000 for the principal projection, to 40,000 for the low fertility variant. The effect of these two variants on the projected mid-2026 population would, respectively, be an increase of some 148,000 or a decrease of some 136,000 compared with the principal projection.

Figure 2.12 Birth projections, Scotland, 2000-2026



Source: GAD

CHAPTER 3 – LOW FERTILITY IN SCOTLAND: A WIDER PERSPECTIVE

An invited chapter from Elspeth Graham and Paul Boyle of the University of St Andrews.

Introduction

The Scottish population, in common with other European populations, is failing to reproduce itself. In 2002, Scottish fertility reached an historic low. In that year, 51,270 births were registered, just over half the number fifty years before, and the total fertility rate fell to 1.48 births per women in the reproductive age groups. This low fertility looks set to continue. According to definitions used in the academic literature, Scotland is now a very low fertility country (with a total fertility rate of less than 1.5). Other very low fertility countries include Spain, Italy, Germany, Austria, Canada and much of Eastern Europe. Since around 2.1 births to each fertile woman are required for a population to replace itself in the absence of migration, the shortfall has provoked worries about Scotland's demographic future.

The fact that Scotland is currently experiencing fertility well below the level required for generational replacement results in at least two long-term effects that can be considered undesirable. First, in the absence of change in mortality or migration, continuing low fertility will result in the natural decline of Scotland's population. Scotland's demographic regime will be subject to negative momentum as smaller numbers of children than of parents mean decreases in the number of parents in the next generation and thus contribute to continued population decline (Lutz *et al.* 2003).

Second, the population will age as the proportion of younger people in the population declines. With low numbers of births each year and more people living longer, the average age within the Scottish population will continue to increase. Population ageing is now a common phenomenon throughout Europe but has become particularly apparent in Scotland since 1997 when the number of deaths exceeded the number of births and the population entered a period of increasing natural decline. If this trend continues until 2026, it could lead to a natural population loss of over 14,000 persons per annum.

Thus, low fertility is predicted to result in both natural population decline and population ageing. These demographic consequences of low fertility suggest an unstable future for Scotland's population with implications for Scotland's economy and society. Just what the impacts will be is currently a matter of debate but low fertility is widely viewed as having negative consequences.

The problems of low fertility

Scotland, unlike other countries in the European Union, is currently experiencing overall population decline. Whether this matters socially or economically is debatable. However, falling population can have negative implications, especially when apparently significant numbers are passed. For Scotland, press and political interest has been sparked by the expectation that, if trends continue as projected, the population will fall below 5 million before 2010.

Historically, countries associated population size with military, economic and political power, and a declining population with weakening national identity and loss of international standing (Teitelbaum and Winter 1985). Perhaps more importantly, population decline is often regarded as being symptomatic of poor economic performance and may even reduce confidence in the economy.

In any event, it is the potential impacts of changes in the age structure of the population that are the greater cause for concern. Population ageing could have severely negative effects on public services and the economy. According to the results from the 2001 census, for the first time in census history people aged 60 and above formed a larger part of the UK population than people aged under 16. Further, in comparison with the rest of the UK, the projected percentage of the population aged over 65 will soon be higher in Scotland than in England, Wales or Northern Ireland. Comparing projections for Scotland with those for England and Wales shows that, by 2040, older age dependency (or support) ratios are expected to be higher in Scotland, at 458 per 1,000, than in either England (399 per 1,000) or Wales (438 per 1,000).¹

Such ageing has various implications. Most notable will be the demands on health services, which are likely to increase as people live longer. By 2025 we can expect to see two or three times as many people aged over 80 in Europe and their consumption of health services will inevitably be much higher than average. The number of people dying annually is set to increase by approximately 20 per cent over the next thirty or so years and, given that currently 60 per cent of a person's health costs occur in the year preceding their death, this represents a potential challenge for health service provision (Watson 1996).

Ageing also means that the proportion of population of working age will decrease as the average age of people rises. This has implications for the ability of the labour force to generate enough income to support those who do not work. In the UK over the last twenty years, activity rates for men in all age groups, except the youngest, have been decreasing, while rates for women have been increasing. In combination, overall activity rates remain stable at a time when the dependent population is growing. Related to this is the projected increase of those over state pension age by more than 40 per cent over the next fifty years. The recognition that many pension schemes may be unable to accommodate this demographic shift underlines the potentially serious financial implications of population ageing.

Population decline and population ageing are driven, in part, by low fertility. Both are increasing faster in Scotland than in the rest of the UK. Given the implications for the economy and service provision, it is important to understand the reasons for such low levels of fertility.

¹ Older age dependency ratios are the number of people over state pension age per 1,000 persons of working age (16 to pension age) for a given year. Between 2010 and 2020 state pension age will change from 65 years for men and 60 years for women, to 65 years for both sexes.

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The reasons for low fertility

Very little research has been carried out on this topic in Scotland but evidence from other countries suggests a complex picture with a variety of factors producing low levels of fertility. For example:

Biological	Economic	Socio-Cultural
low ability to conceive	economic insecurity	changing role of women in society
reliable contraception	expansion of higher education	growing secularisation
	participation of women in the labour force	rise in individualism
	high costs of raising children	changing attitudes to marriage and family
	high costs of other goods and services, including housing	
	Practicalities	
	lack of childcare provision	
	inflexible working hours	
	non-family friendly working practices	
	lack of gender equality in the domestic sphere	

These factors are inter-related and can be expected to affect the fertility of different groups in a population in different, and sometimes contradictory, ways.

Fertility varies, for example, by the age of the mother (see **Chapter 2**). This is of particular significance because low fertility is universally associated with the delay of childbirth until older ages. In Scotland during the high fertility of the baby boom years in the 1950s and 1960s, the age group with the highest number of births was 25-29. In contrast, the baby bust has been accompanied by a steady increase in the average age of mothers so that, by 2002, the age group with the highest number of births was 30-34. This coincidence between low fertility and delay in childbirth suggests several possible reasons for fertility decline.

First, there may be a biological effect. Female fecundity, the ability to conceive, varies across a woman's reproductive lifespan. In general, fecundity decreases as women enter their 30s and is almost gone by the time they pass into their 40s (Gosden and Rutherford 1995). Thus, in a population of several million, a significant delay in attempts to conceive until women are in their early or even late 30s could be expected to reduce the fertility level as some couples find that they are subfertile or infertile. The rise in demand for in vitro fertilisation treatment is evidence of this effect. Yet the use of assisted reproduction technology also counterbalances the biological effect of reduced fecundity, increasing the number of live births to older women. The overall effect of delaying decisions to have children is still unclear but it is likely to account for only a small percentage of the European fertility decline over the past thirty years.

Another possible additional biological effect relates to semen quality among men. Emerging evidence from Denmark suggests a decline in semen quality in successive birth cohorts. More than 30 per cent of the youngest cohort born around 1980 was found to have sperm counts in the subfertile range (Jensen *et al.* 2002). The relationship between poor semen quality and low fertility is still a matter of controversy but it seems unlikely that cohort-related declines in male fecundity account for more than a very small proportion of current low fertility in European populations. The consensus is that profound social changes play the major role.

Demographers and social scientists broadly agree that attitudes to childbearing, especially to its timing, have changed in most developed countries. There is less agreement about the causes of this change. The introduction of the oral contraceptive pill in the 1960s and 1970s has been identified as an important cause of fertility decline in Britain, since it allowed women unprecedented control over their fertility (Murphy 1993). Other researchers point to less favourable economic conditions in the 1980s and 1990s, coupled with growing insecurity in job tenure. Most explanations for very low fertility see the increasing participation of women in the full-time labour force as a central concern (Caldwell *et al.* 2002), although this trend itself is ascribed variously to economic necessity and/or the changing role of women in society. Increasing secularisation and individualism, reflected in rising rates of cohabitation and births outside marriage in north-west European countries, are seen as the catalysts to changes in attitudes to childbearing (Van de Kaa 1987). Women are seeking greater gender equality, economic security and self-fulfilment outside motherhood. Many men too appear to share the belief that fatherhood is best entered into once they are at least in their 30s, have established a career and enjoyed the freedoms of a childless lifestyle.

Possible reasons for Scotland's low fertility

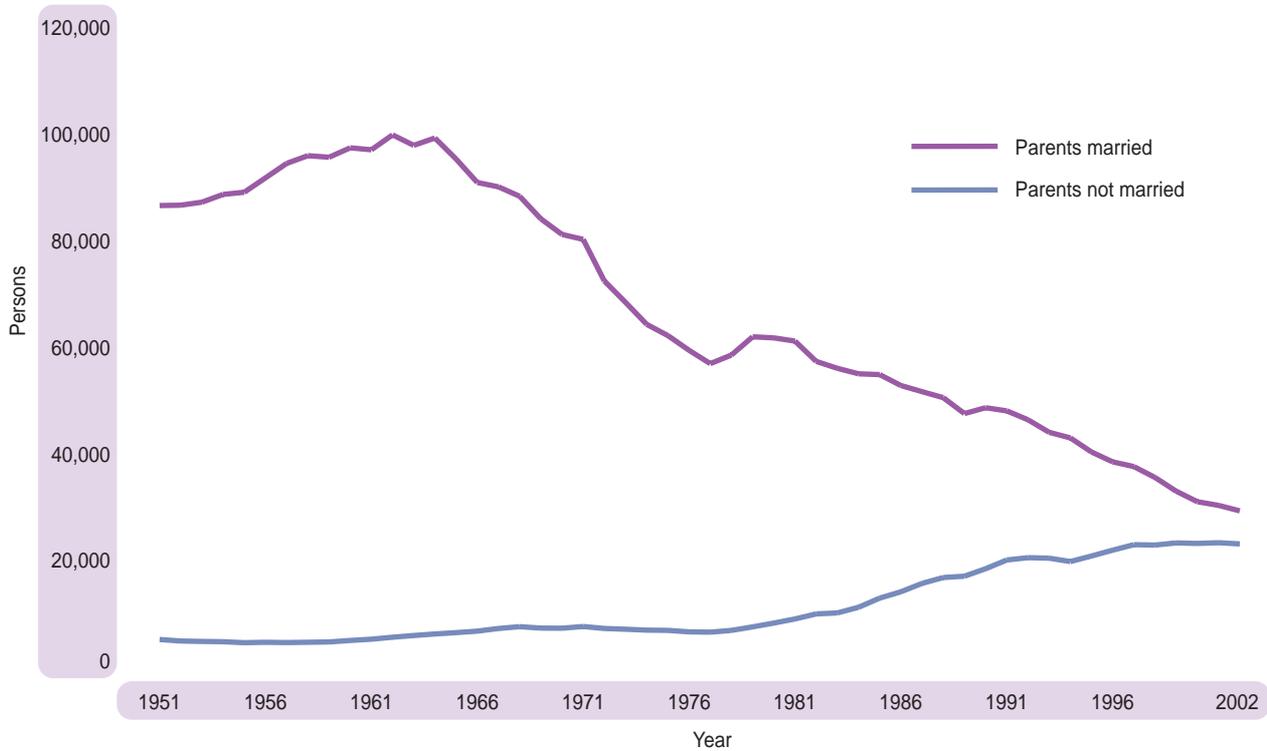
There is a paucity of research examining the reasons for low fertility in Scotland but it seems safe to assume that some of the explanations above are common across north-west Europe. In the case of Scotland, two key questions still need to be addressed. First, why are young adults choosing to wait until they are in their 30s to begin childbearing? Second, why is fertility at such a low level, with couples in Scotland having fewer children, on average, than couples in England? Some possible answers suggest themselves but, at present, they are little more than speculation.

- *Changing values and attitudes*

In 1991, 3.8 per cent of households in Scotland included couples who are cohabiting. The 2001 Census revealed that this figure has increased to 6.9 per cent. Furthermore, the proportion of households with dependent children where the parents are cohabiting has risen from 6.9 per cent to over 13.9 per cent in the same period. And while the overall fertility rate has declined, births outside marriage have increased steadily since the 1970s, reaching 44 per cent of all births by 2002 (**Figure 3.1**)

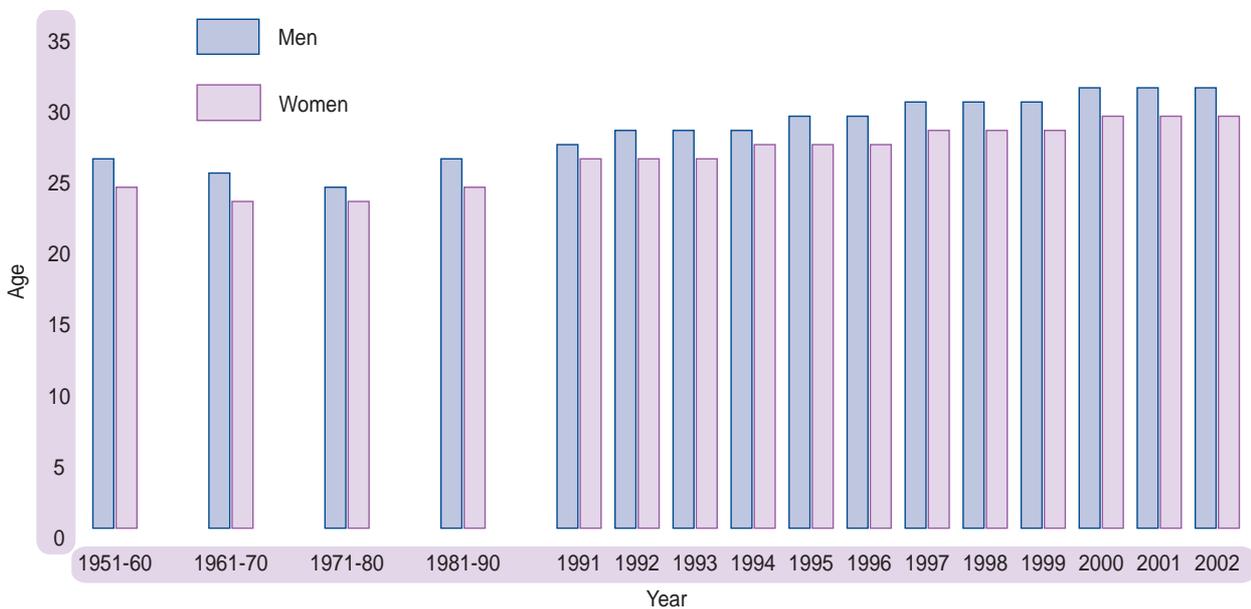
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Figure 3.1 Live births by marital status of parents, Scotland, 1951-2002



Such trends are indicative of changing social attitudes towards the family and, perhaps, a rising tide of individualism as younger adults choose consumerism and enjoyment over the commitments of marriage and children. Mean age at first marriage for both men and women in Scotland fell during the high fertility years between the 1950s and 1970s but has steadily increased since. In 2002, on average, women were marrying at age 29 and men at age 31 (**Figure 3.2**).

Figure 3.2 Average age at first marriage, by sex, Scotland, 1951-2002



However, changing social attitudes have weakened the connection between marriage and fertility and **Figure 3.2** must be interpreted with caution. Marriage is no longer the social prerequisite for childbearing that it once was, and some couples only enter formal marriage after they have had a child. Nevertheless, the combination of delays in both marriage and childbearing over the past three decades suggests a change in the aspirations of younger people in Scotland.

- *The expansion of higher education*

The Government's policy of expanding higher education is encouraging more young people to invest time in obtaining post-school qualifications. The benefits of this policy, both for the economy and the individual, must be recognised but its demographic consequences may not be so positive. Few students find themselves in a position conducive to starting a family. Not only does the period of study delay entry into the labour market but paying off the burden of debt built up by most students reduces disposable incomes in the crucial years after graduation. Further, women may have an additional incentive to delay childbearing since maternity leave soon after starting a new job could jeopardise career prospects. Housing market conditions may also provide incentives for delay as young couples find it impossible to afford family housing. It is notable that cities like Edinburgh, where house prices are particularly high, have the lowest levels of fertility in Scotland.

- *The increase in female participation in the labour force*

The increasing participation of women in higher education is a welcome sign of advances in gender equality and brings with it a number of economic advantages. It tends to increase the overall size of the labour force and, in the longer term, promises to reduce poverty in older age as more women acquire work-based pensions. In 2002, 75 per cent of women aged 16 to 59 were economically active in Scotland, compared to 70 per cent in 1990. Without this increase, support ratios in relation to the older population would be less favourable and the negative effects of population ageing more pronounced. Yet, along with these gains, there is also a demographic cost.

Studies in other developed countries have shown that the most highly educated women have the lowest fertility. Explanations for this are complex but the emotional and economic stresses of combining a demanding career and motherhood are prominent among them. In Singapore, for example, a recent survey of graduate women found lack of time to devote to children to be the most frequently cited reason for not having a/another child (Graham *et al.* 2002). More generally, the maintenance of work-life balance in relation to the often conflicting expectations of employers and family appears to be problematic and, when compromises are demanded, it is women rather than men who tend to adjust their working practices (Hanson and Pratt 1995). In strictly economic terms, highly paid women have the most to lose (higher opportunity costs) if they decide to leave employment or reduce their working hours.

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- *Difficulties of combining work and family*

The difficulties faced by couples when combining work and family responsibilities draw attention to various practical barriers to higher fertility. There is a relative lack of affordable and accessible childcare in Scotland. The state provision of nursery places has increased over the past two decades (pre-school education is now available on demand to all 3 and 4 year olds in Scotland) but childcare for young babies is largely provided by the private sector, with parents bearing the quite substantial costs. Further, the ethos of the workplace is still some way from being family friendly despite advances in terms of flexible working hours. Paid maternity leave is less generous than in some other European countries and encourages mothers to return to work a few months after the birth of a child. Paternity leave only covers the immediate period after a birth and employers' attitudes to parents taking leave to look after sick children are often ambivalent at best. More controversially, the responsibility for children is rarely shared equally between the two parents and Scotland may be lagging behind England in terms of gender equality in the home. Greater pressures on women dealing with the combined demands of work and family may be contributing to the difference in fertility between England and Scotland.

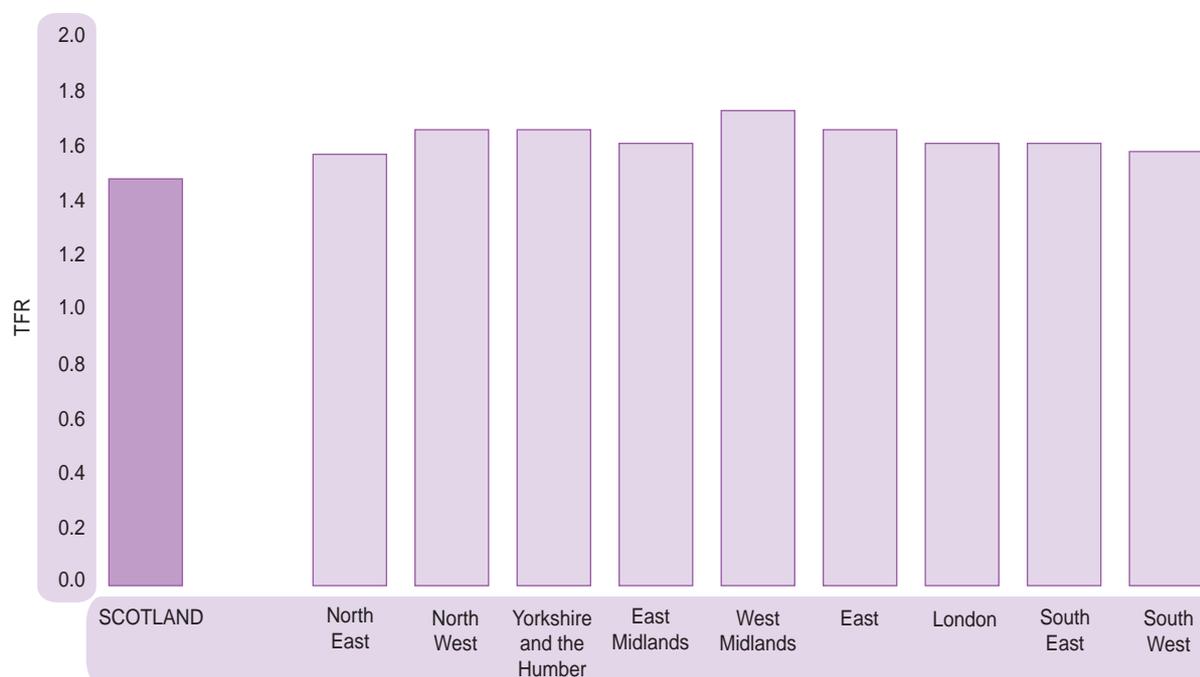
- *The state of the economy*

Scotland's economy, like that of the UK as a whole, is profoundly influenced by global economic conditions. In this respect, wider economic upturns and downturns affect all parts of the UK. However, Scotland's economy is smaller and less diverse in its range of employment opportunities than England's, which may be one reason that Scotland has a net outflow of younger people (**Figure 1.15**). England, in contrast, is a net loser of older people.

Labour market conditions can have a considerable impact on fertility through their influence on incomes and job security. In particular, a lack of confidence in Scotland's economy may be serving to depress fertility generally. Some evidence for this can be seen in the comparison of fertility levels in Scotland with those for regions in England. **Figure 3.3** shows that Scotland had a lower total fertility rate in 2001 than did any of the English regions. Scotland's near neighbour, the north-east of England, experienced the lowest fertility in England but its total fertility rate of 1.58 was nevertheless substantially higher than that in Scotland.

More research is required before we can gain a secure understanding of the reasons for Scotland's very low fertility. Changing values and attitudes, the expansion of higher education, the difficulties of combining work and family, and the state of the economy are all potential but complex influences, combining a variety of factors. If some of these factors were to be modified by Government policy, would fertility rates rise in the future?

Figure 3.3 Total fertility rates, Scotland and the English regions, 2001



The scope for policy intervention

In the policy context, there are two ways of responding to the challenges of low fertility:

- to modify institutions in order to counteract the perceived negative effects of population ageing and decline;
- to intervene directly with policies calculated to raise fertility.

Most European countries are considering, or have already developed, strategies in the former category. The shift towards private pension provision in the UK is one example. As numbers in the working population suffer decline relative to the older population and support ratios worsen, the retirement burden on the state is expected to become unsustainable. An increase in private pensions is thus one policy that can moderate the economic effects of population ageing. In contrast, the UK Government has never actively sought to influence the size or composition of the population. Official statements adopt the view that decisions about fertility and childbearing are for people themselves to make (Dunnell 2001). Policies in the second category would require a change in Government thinking and a public acceptance of active pronatalism.

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A disadvantage of moderating policies is that they tend to treat the symptoms rather than the cause. Change in pension arrangements will have no impact on the ageing trajectory. On the other hand, evidence on the effectiveness of pronatalist policies is limited. In the past, most countries that have adopted explicit population policies have sought to decrease, rather than increase, fertility; China's one-child policy is the best-known example. Policy instruments with potential to increase fertility include some that would be socially unacceptable. The withdrawal of easily available contraception, for example, would increase fertility in the short term but is not a policy likely to be pursued by any Government in a liberal democracy. If pronatalist policies were to be adopted in Scotland, we need to ask both what works and what would be acceptable.

Singapore is the country that, to date, has invested most in strong and explicit pronatalist policies. Worries about skill shortages and the threats of ageing to future economic prosperity first arose in the 1980s. Since then the Singapore Government has used a suite of policy measures in its attempts to raise fertility. Incentives include priority in housing and school choice for families with three or more children, tax relief and bonus payments for births. These were accompanied by a vigorous education campaign emphasising the individual and national benefits of higher fertility. In an attempt to reverse the increasing delay in childbearing, especially among graduates, a computer dating service was set up to facilitate earlier partnership and marriage (Graham 1995).

Initially, the fertility response to these initiatives seemed to be positive and fertility rose slightly. This rise has not been sustained, however, despite adjustments to the incentives and a broadening of the focus of the education campaign to the role of the family in Singaporean society. In 1987 when new pronatalist policies were introduced, the total fertility rate in Singapore was 1.62. In 2001, after more than a decade of policy effort, the total fertility rate had declined to 1.42, a level comparable to that of Scotland where no attempts have been made to raise fertility. It seems that the raft of policies tried in Singapore have not had the effect the Government desired. Whether fertility would have been even lower in their absence is an open question since it is difficult to isolate the policy effects from other influences on fertility such as the general state of the economy.

In most European countries, including Scotland, the scope for policy intervention is more limited than it is in Singapore. Neither the UK Parliament nor the Scottish Parliament has the same control over the housing market and any attempt to manipulate school choice to give preference to higher parity children would almost certainly prove unworkable. In any case, the evidence points to the failure of strong pronatalist incentives as tried in Singapore. There is also evidence that the Singapore Government has not sufficiently addressed barriers to higher fertility associated with the conflicting demands of work and family faced by Singaporean women. In Europe, welfare state structures suggest rather different opportunities for policy development.

Many of the policies likely to raise fertility have been incorporated in social welfare provision somewhere in Europe over the past half century (Caldwell *et al.* 2002). France has a long-standing family policy and, after Ireland, has the highest total fertility rate in the European Union at 1.9 children per woman of childbearing age. The French government has recently announced an additional 'birth bonus' and promised another 20,000 crèche places to help mothers return to work (*The Economist* 2003). Again, the effect of these weaker pronatalist policies on low fertility is unclear. Generous maternity leave schemes may have prevented what would have been a more rapid fall in fertility, but they may also have depressed the number of mothers in full-time employment thus exacerbating the problems of population ageing.

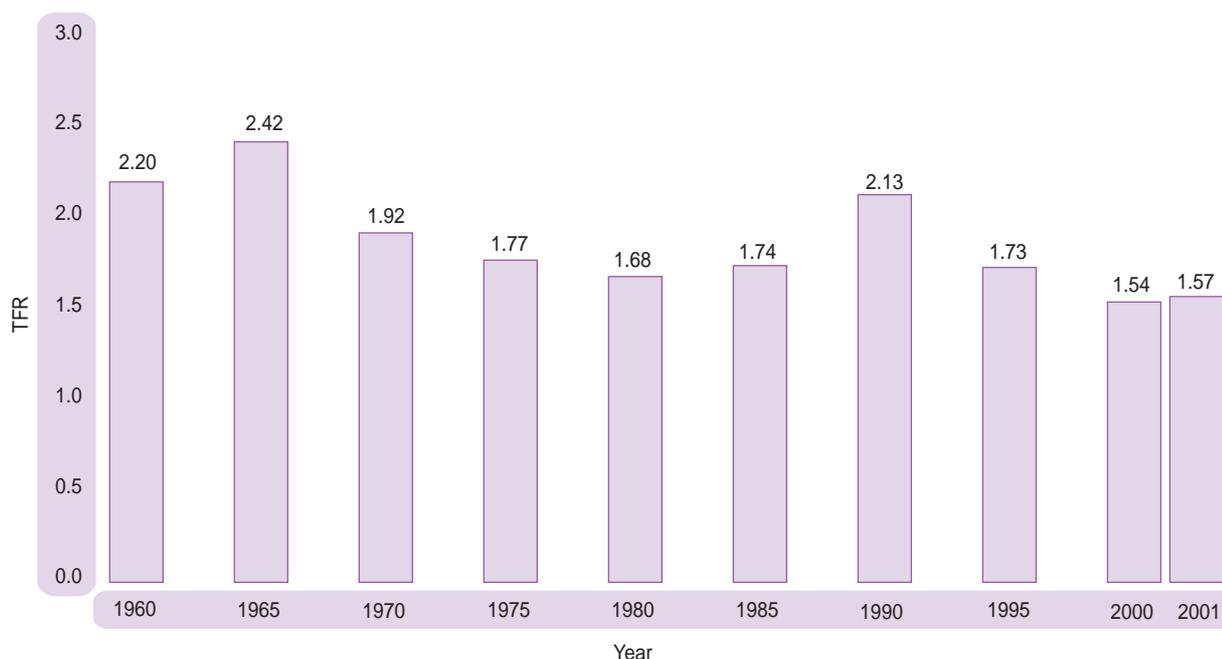
Most of the reliable evidence on the effectiveness of family policy comes from Sweden, and it too leaves room for debate. Sweden, like Scotland, has experienced fertility decline and a trend towards later childbearing since the 1970s. However, unlike other industrialised countries, Swedish fertility rates rose sharply in the 1980s. The rise corresponded to a rapid expansion of family policy, incorporating measures to make it easier for parents to both work and have children. These included:

- generous paid maternity leave for new parents;
- a special maternity leave scheme giving both parents the right to paid absence from work to look after children;
- greater gender equality in tax policies;
- the widespread provision of subsidised day care facilities;
- higher child allowances for higher parity children;
- protective employment legislation including rights to work part-time.

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In 1990 the total fertility rate rose to 2.13, above generational replacement level, and it seemed that the policies had worked. However, by 2000 the total fertility rate had fallen back to 1.54, below that of Sweden's Scandinavian neighbours, leading to a more pessimistic interpretation of policy effects (**Figure 3.4**).

Figure 3.4 Total Fertility Rates (TFRs), Sweden, 1960-2001



The fertility downturn may have been a response to the economic dislocation of the 1990s (Santow and Bracher 2001). Despite massive government expenditure aimed at reducing the costs of having children and compensating for loss of earnings, Sweden's family policy has probably had minimal long-term effect on the level of fertility, which appears to respond more to general economic conditions. Perhaps the lesson for Scotland is that, in the absence of economic optimism, it would be difficult to create a family policy generous enough to reverse fertility decline.

Fertility is only one of the three key variables influencing the size and composition of a population. An alternative to pro-natalist policies, therefore, might be to seek population growth by encouraging immigration. Scotland has historically been a country that has experienced net out migration and the current situation is one of a small net loss (see **Chapter 1**). The reversal of this situation through the attraction of economically active migrants with relevant skills could improve dependency ratios. Indeed, the Scottish Executive appears to be giving this strategy serious thought. However, such a policy may be difficult and costly to implement and there are good demographic reasons why it may not succeed in solving the population ageing problem.

Attracting immigrants may not be a simple policy to implement. Europeans are already free to move into Scotland for employment, but few are coming. This may be because of a perceived, or real, lack of economic opportunities in Scotland, compared to other countries in the EU. Other aspects of Scotland, such as the climate, may also be acting as a deterrent. Perhaps these issues can be addressed by some careful marketing, but even were it possible to persuade immigrants to come, the lack of a legal border between Scotland and the rest of the UK means that there would be little to prevent them moving elsewhere if the opportunities appeared more attractive.

More importantly, stimulating immigration is unlikely substantially to offset Scotland's projected population decline and ageing. Recent work suggests that, while migration can slow population decline, even substantial migration flows make very little difference in tackling population ageing. One set of projections for Scotland assumes a total fertility rate of 1.5 and demonstrates that continuing zero net migration would result in 36 per cent of the total population being aged 65 and over in 2101. However, if Scotland were to experience a net gain of 10,000 migrants (adults and children) a year, the comparable percentage of older people would decrease by only 1 per cent, to 34 per cent of the total population (Wilson and Rees 2003). Indeed, this study takes us full circle, arguing that only through increasing fertility will Scotland regain demographic stability. Thus, however welcome a policy of encouraging immigration may be from an economic, social and cultural point of view, its likely success as a solution to population ageing is debatable.

Conclusion

Fertility is a crucial aspect of the population decline and population ageing that Scotland is experiencing. And it is possible that fertility will decline further – both Italy and Spain have experienced total fertility rates of 1.2. Regardless of whether Scottish fertility does continue to fall, there are already problems that most would agree need to be addressed.

Various policies are possible, but those that are chosen need to have a marked and long-term impact. A rise in fertility tomorrow would take twenty or so years before it had an impact on the number of economically active people in the population, assuming that most young adults decided to stay in Scotland. Certainly, increasing fertility would have a bigger impact on population ageing than increasing immigration, although there is no reason why both policies could not be implemented in unison. We should also recognise that addressing the delay in childbearing may be as effective as trying to fashion a society that encourages people to wish for more children. It may even be that couples' desire for children is not currently being realised because of significant impediments to combining work and family. Reducing these barriers would be a reasonable policy aim, but effective policies require a good evidence base and, for Scotland, the research is yet to be done.

As far as both attracting immigrants and increasing fertility are concerned, one reasonably convincing argument is that economic buoyancy is the most effective stimulus. Improving the Scottish economy so that people feel more confident about job security and are more willing to have more children earlier may be fruitful. It may have the added bonus of discouraging young adults from moving elsewhere for jobs. Reducing the considerable direct and indirect costs of raising children through the wider provision of affordable childcare may also have an impact on fertility. If economic improvements are combined with family-friendly policies that enable women to combine motherhood and career, and also encourage men to provide more assistance within the household, they may be even more effective.

References

- Caldwell JC, Caldwell P and McDonald P (2002) Policy responses to low fertility and its consequences: a global survey *Journal of Population Research* 19 1-24
- Dunnell K (2001) Policy responses to population ageing and population decline in the United Kingdom, *Population Trends* 103 47-52
- Gosden R and Rutherford A (1995) Delayed childbearing, *British Medical Journal* 311: 1585-1586
- Graham, E (1995) Singapore in the 1990s: can population policies reverse the demographic transition?, *Applied Geography*, 15: 219-232
- Graham E, Teo P, Yeoh B and Levy S (2002) Reproducing the Asian Family across the Generations: 'tradition', gender and expectations in Singapore, *Asia-Pacific Population Journal*, 17: 61-86
- Hanson S and Pratt G (1995) *Gender, Work and Space* London: Routledge
- Jensen TK, Carlsen E, Jørgensen N, Berthelsen JG, Keiding N, Christensen K, Peterson JH, Knudsen LB and Skakkebaek NE (2002) Poor semen quality may contribute to recent decline in fertility rates, *Human Reproduction* 17: 1437-1440
- Lutz W, O'Neill BC and Scherbov S (2003) Europe's Population at a Turning Point, *Science* 299: 1991-1992
- Murphy M (1993) The contraceptive pill and women's employment as factors in fertility change in Britain 1963-1980: A challenge to the conventional view, *Population Studies*, 47: 21-43
- Santow G and Bracher M (2001) Deferment of First Birth and Fluctuating Fertility in Sweden, *European Journal of Population* 17: 343-363
- Teitelbaum MS and Winter JM (1985) *The Fear of Population Decline* London: Academic Press
- The Economist (2003) The French Family. Keep it up, *The Economist* May 3rd 2003: 46
- Van de Kaa DJ (1987) Europe's Second Demographic Transition, *Population Bulletin* 41, Population Reference Bureau: Washington DC
- Watson R (1996) Europe's aging population, *British Medical Journal* 312: 1442
- Wilson T and Rees P (2003) Why Scotland needs more than just a migration policy, Queensland Centre for Population Research, University of Queensland



APPENDIX 1 – SUMMARY TABLES

Table 1 Population and vital events, Scotland, 1855-2002

Year	Estimated population ('000s)	Live births		Stillbirths ²		Infant deaths		Deaths		Marriages		Divorces
		Number	Rate ³	Number	Rate ⁴	Number	Rate ⁵	Number	Rate ³	Number	Rate ³	Rate
1855-60	3,018.4	102,462	34.1	...	...	12,250	119.6	62,644	20.8	20,645	6.8	19
1861-65	3,127.1	109,764	35.1	...	...	13,166	119.9	69,265	22.1	22,013	7.0	14
1866-70	3,275.6	114,394	34.9	...	...	13,971	122.1	71,974	22.0	22,832	7.0	9
1871-75	3,441.4	120,376	35.0	...	...	15,314	127.2	77,988	22.7	25,754	7.5	24
1876-80	3,628.7	126,086	34.8	...	...	14,921	118.3	74,801	20.6	24,956	6.9	54
1881-85	3,799.2	126,409	33.3	...	...	14,864	117.6	74,396	19.6	26,176	6.9	74
1886-90	3,943.9	123,977	31.4	...	...	14,943	120.5	74,320	18.8	25,702	6.5	94
1891-95	4,122.5	125,800	30.5	...	...	15,895	126.4	78,350	19.0	27,962	6.8	115
1896-1900	4,345.1	130,209	30.0	...	...	16,857	129.5	78,021	17.9	31,771	7.3	146
1901-05	4,535.7	132,399	29.2	...	...	15,881	119.9	77,313	17.1	31,838	7.0	181
1906-10	4,679.9	128,987	27.6	...	...	14,501	112.4	75,534	16.1	31,811	6.8	195
1911-15	4,748.3	120,654	25.4	...	...	13,604	112.8	74,466	15.7	33,857	7.1	264
1916-20	4,823.8	109,750	22.8	...	...	10,869	99.0	72,365	15.0	37,437	7.8	531
1921-25	4,879.6	112,245	23.0	...	...	10,299	91.8	67,652	13.9	34,720	7.1	427
1926-30	4,845.1	96,674	20.0	...	...	8,260	85.4	66,017	13.6	32,605	6.7	478
1931-35	4,905.1	89,306	18.2	...	...	7,212	80.8	64,839	13.2	34,986	7.1	507
1936-40	4,956.8	87,734	17.6	...	...	6,650	75.8	67,166	13.5	42,941	8.6	750
1941-45	4,711.9	91,593	19.4	3,393	35.7	6,202	67.7	66,302	13.8	43,772	8.5	1,413
1946-50	5,054.3	101,222	20.0	3,047	29.2	4,789	47.3	63,854	12.6	43,206	8.5	2,435
1951-55	5,103.6	91,366	17.9	2,390	25.5	3,009	32.9	61,838	12.1	41,718	8.2	2,274
1956-60	5,145.2	98,663	19.2	2,307	22.9	2,755	27.9	61,965	12.0	41,671	8.1	1,792
1961-65	5,201.0	102,642	19.7	2,000	19.1	2,568	25.0	63,309	12.2	40,235	7.7	2,253
1966-70	5,204.3	93,033	17.9	1,415	15.0	1,970	21.2	62,797	12.1	42,832	8.2	4,056
1971-75	5,234.7	75,541	14.4	939	12.3	1,421	18.8	63,808	12.2	41,404	7.9	6,604
1976-80	5,213.9	65,758	12.6	529	8.0	900	13.7	64,343	12.3	37,801	7.3	9,068
1981-85 ⁶	5,151.9	66,422	12.9	389	5.8	695	10.5	63,723	12.4	35,756	6.9	11,941
1986-90 ⁶	5,089.5	65,544	12.9	350	5.3	550	8.4	62,796	12.3	35,440	7.0	12,067
1991-95 ⁶	5,093.5	63,571	12.5	382	6.0	418	6.6	61,171	12.0	32,866	6.5	12,548
1996-2000 ⁶	5,077.5	56,856	11.2	327	5.7	316	5.6	59,478	11.7	29,965	5.9	11,984
2001	5,064.2	52,527	10.4	301	5.7	290	5.5	57,382	11.3	29,621	5.8	10,631
2002	5,054.8	51,270	10.1	278	5.4	270	5.3	58,103	11.5	29,826	5.9	10,826

¹ Live births only, prior to 1939.

² See Notes and Definitions.

³ Rate per 1,000 population.

⁴ Rate per 1,000 live and still births.

⁵ Rate per 1,000 live births.

⁶ Population and corresponding rates for 1982-2000 are based on revised population estimates for 1982-2000 which were revised to take account of the final Census-based population estimates for 2001.

Table 2 Estimated population, births, stillbirths, deaths and marriages, numbers and rates, by Council area, Scotland, 2002

Area	Estimated population at 30 June	Live births			Stillbirths ²		Infant deaths		Deaths			Marriages
		Number	Rate ¹	Standardised rate	Number	Rate ²	Number	Rate ³	Number	Rate ¹	Standardised rate	Number
SCOTLAND	5,054,800	51,270	10.1	10.1	278	5.4	270	5.3	58,103	11.5	11.5	29,826
Council areas												
Aberdeen City	209,270	2,098	10.0	8.8	13	6.2	4	1.9	2,208	10.6	10.9	1,005
Aberdeenshire	227,280	2,326	10.2	11.5	9	3.9	8	3.4	2,074	9.1	9.6	1,032
Angus	108,130	1,014	9.4	11.0	3	2.9	4	3.9	1,347	12.5	10.8	397
Argyll & Bute	91,030	755	8.3	10.8	6	7.9	3	4.0	1,188	13.1	11.0	652
Clackmannanshire	47,930	480	10.0	10.7	2	4.1	2	4.2	511	10.7	11.6	159
Dumfries & Galloway	147,310	1,343	9.1	11.2	6	4.4	7	5.2	1,789	12.1	10.1	6,110
Dundee City	144,180	1,436	10.0	9.5	11	7.6	11	7.7	1,829	12.7	11.6	520
East Ayrshire	119,740	1,157	9.7	10.1	4	3.4	6	5.2	1,427	11.9	12.0	341
East Dunbartonshire	107,310	942	8.8	10.3	4	4.2	6	6.4	1,040	9.7	9.9	342
East Lothian	90,750	910	10.0	11.2	5	5.5	4	4.4	1,036	11.4	10.5	446
East Renfrewshire	89,630	916	10.2	11.9	8	8.7	3	3.3	844	9.4	9.4	492
Edinburgh, City of	448,080	4,477	10.0	8.1	26	5.8	23	5.1	4,545	10.1	10.2	2,721
Eilean Siar	26,200	242	9.2	11.7	1	4.1	1	4.1	403	15.4	12.1	94
Falkirk	145,560	1,507	10.4	10.3	6	4.0	11	7.3	1,711	11.8	12.3	574
Fife	350,700	3,536	10.1	10.5	19	5.3	26	7.4	4,012	11.4	11.1	1,784
Glasgow City	577,350	6,386	11.1	9.2	43	6.7	44	6.9	7,688	13.3	14.1	2,607
Highland	208,140	1,977	9.5	11.1	11	5.5	7	3.5	2,381	11.4	10.8	1,545
Inverclyde	83,600	787	9.4	9.9	3	3.8	6	7.6	1,137	13.6	13.3	296
Midlothian	80,500	863	10.7	11.3	5	5.8	3	3.5	917	11.4	12.1	676
Moray	86,740	876	10.1	11.6	4	4.5	3	3.4	971	11.2	11.0	399
North Ayrshire	135,650	1,379	10.2	10.7	9	6.5	3	2.2	1,622	12.0	11.8	649
North Lanarkshire	321,350	3,664	11.4	10.9	16	4.3	14	3.8	3,489	10.9	12.8	1,089
Orkney Islands	19,210	164	8.5	10.5	1	6.1	-	-	211	11.0	9.9	93
Perth & Kinross	135,160	1,245	9.2	11.0	5	4.0	7	5.6	1,594	11.8	9.9	937
Renfrewshire	171,940	1,797	10.5	10.6	15	8.3	14	7.8	2,063	12.0	12.5	499
Scottish Borders	107,400	1,021	9.5	11.5	3	2.9	7	6.9	1,384	12.9	10.8	701
Shetland Islands	21,940	209	9.5	10.6	-	-	-	-	214	9.8	10.2	91
South Ayrshire	111,670	955	8.6	10.1	6	6.2	7	7.3	1,507	13.5	11.2	745
South Lanarkshire	302,110	3,076	10.2	10.4	19	6.1	17	5.5	3,384	11.2	12.0	1,038
Stirling	86,150	833	9.7	9.8	4	4.8	1	1.2	905	10.5	10.5	764
West Dunbartonshire	92,830	939	10.1	10.1	4	4.2	8	8.5	1,145	12.3	12.8	420
West Lothian	159,960	1,960	12.3	11.4	7	3.6	10	5.1	1,527	9.5	12.8	608

¹ Rate per 1,000 population. ² Rate per 1,000 live and stillbirths. ³ Rate per 1,000 live births.

APPENDIX 1 – SUMMARY TABLES

Table 3 International populations and vital statistics rates, selected countries, latest available figures

Country	Estimated population ('000s)		Live births per 1,000 population		Stillbirths ³ per 1,000 total births (live and still)		Infant mortality per 1,000 live births		Deaths per 1,000 population		Marriages per 1,000 population	
	Year	Population	Year	Rate	Year	Rate	Year	Rate	Year	Rate	Year	Rate
Scotland	2002	5,055	2002	10.1	2002	5.4	2002	5.3	2002	11.5	2002	5.9
European Union												
Austria	2002*	8,140	2001*	9.3	1999	4.0	2001	4.8	2001*	9.2	2001*	4.2
Belgium	2002*	10,307	2001*	11.2	1995 ¹	4.8	2001 ¹	5.0	2001*	10.1	2001*	4.1
Denmark	2002	5,368	2001	12.2	1996	4.8	2001	4.9	2001	10.9	2001	6.6
Finland	2002	5,195	2001	10.8	1998	2.6	2001	3.2	2001	9.4	2001	4.8
France	2002 ¹	59,344	2001 ¹	13.1	1997	4.9	2001*	4.6	2001 ¹	8.9	2001 ¹	5.1
Germany	2002*	82,431	2001*	8.9	1997	4.3	2001*	4.5	2001*	10.0	2001*	4.7
Greece	2002*	10,598	2001*	9.5	1998	5.1	2001*	5.9	2001*	9.7	2001*	5.4
Irish Republic	2002*	3,884	2001*	15.0	1997	6.9	2001 ¹	5.8	2001*	7.7	2001*	5.0
Italy	2002*	58,018	2001*	9.4	1997	3.6	2001*	4.3	2001*	9.3	2000*	4.9
Luxembourg	2002*	446	2001*	12.3	1998	5.9	2001	5.9	2001*	8.4	2001*	4.5
Netherlands	2002 ¹	16,100	2001 ¹	12.7	1998	4.8	2001 ¹	5.3	2001 ¹	8.7	2001 ¹	5.1
Portugal	2002 ¹	10,336	2001 ¹	10.9	1997	4.5	2001	5.0	2001 ¹	10.2	2001 ¹	5.7
Spain	2002	40,409	2001*	10.1	1997	3.6	2001*	3.9	2001*	8.7	2001	5.2
Sweden	2002	8,909	2001	10.3	1999	3.8	2001	3.2	2001	10.5	2001	4.0
United Kingdom ²	2002 *	60,114	2002 ¹	11.4	2002 ¹	5.6	2002 ¹	5.3	2002 ¹	10.3	2001 ¹	4.9
Other Europe												
Bulgaria	2002 ¹	7,930	2001 ¹	8.5	1997	7.5	2001 ¹	14.4	2001 ¹	14.0	2001 ¹	4.0
Czech Republic	2002 ¹	10,270	2001 ¹	8.8	1999	3.4	2001	4.0	2001 ¹	10.5	2001 ¹	5.1
Hungary	2002 ¹	10,179	2001 ¹	9.5	1999	5.0	2001 ¹	8.2	2001 ¹	13.0	2001 ¹	4.3
Norway	2002	4,524	2001 ¹	12.6	1999	4.0	2001 *	3.8	2001 ¹	9.8	2000	5.6
Poland	2002	38,633	2001	9.5	1999	4.9	2001	7.7	2001	9.4	2001	5.0
Romania	2002*	22,386	2001*	9.8	1998 ¹	6.3	2001	18.4	2001*	11.6	2001*	5.8
Switzerland	2002 ¹	7,259	2001 ¹	10.2	1998	3.9	2001	5.0	2001 ¹	8.5	2001 ¹	5.0

Sources: Eurostat, United Nations and the Office for National Statistics.

* Eurostat estimate

1 Provisional.

2 Excludes Isle of Man and Channel Islands.

3 The definition of a stillbirth varies from country to country and over time. The position in the UK is described in the Notes and Definitions.



APPENDIX 2 – NOTES AND DEFINITIONS

This Appendix gives general notes on some of the data and conventions used in this report as well as providing definitions for some of the terminology used.

GENERAL

– tabular conventions

Where a range of years is listed in a time series table, e.g. 1951-55, the data presented will be an average for this period.

Throughout the tables ‘year’ means ‘calendar year’ except where otherwise defined. By convention, many of the time series presented start at Census years, e.g. 1991.

– date of registration and place of occurrence

All the data presented on births, stillbirths, marriages and deaths relate to the date of registration of the event and not to the date of occurrence; for example, a birth on 31 December 2001 which was registered on 5 January 2002 would be included in the 2002 figures. Births and stillbirths are usually registered within the statutory period of 21 days. Similarly, marriages are usually registered within 3 days and deaths within 8 days.

Births, stillbirths, and deaths have been allocated to the area of usual residence if it is in Scotland, otherwise to the area of occurrence. Marriage figures relate to the area of occurrence.

POPULATION

All population figures refer to estimates as at 30 June of the year in question.

Throughout this report, revised annual mid-year estimates of population are used for comparing population trends and for calculating rates per head for the period 1982-2000. Population estimates for these years were revised to be in-line with the mid-2001 population estimates which were based on the results of the 2001 Census. More information describing the methods used to produce revised population estimates is available on the GROS website at www.gro-scotland.gov.uk

– population covered

The resident population of an area includes all those usually resident there whatever their nationality. Students are treated as being resident at their term-time address. Members of HM and non-UK armed forces stationed in Scotland are included; HM forces stationed outside Scotland are excluded.

– age

Population figures relate to 30 June of the year shown and ages relate to age last birthday.

– population projections

Population projections for Scotland are prepared by the Government Actuary, at the request of, and in consultation with, the Registrar General. The latest projection was the 2001-based interim projections. The latest set of sub-national projections, produced by the Registrar General, for administrative areas of Scotland consistent with the Scotland projections are the 2000-based projections published in January 2002.

The 2000-based population projections for Scotland and its administrative areas used the previously published 2000 mid-year estimates as a base, which are some 56,000 higher than the revised 2000 mid-year estimates (consistent with the 2001 Census results). While the 2000-based sub-national projections are in need of updating, the general picture is unlikely to change.

A set of 2002-based projections for Scotland, which take full account of the 2001 Census, is planned for October 2003 with sub-national projections, consistent with the national projection, planned for November 2003.

BIRTHS

– general fertility rate (GFR)

The number of births per woman of child-bearing age (15-44).

– total fertility rate (TFR)

The average number of children that would be born to a cohort of women who experienced throughout their child-bearing years, the fertility rates of the calendar year in question.

– age specific fertility rate (ASFR)

The number of births per individual for a specific age during a specified time.

– cohort

A well-defined group of people who have had a common experience or exposure who are observed through time. For example, the birth cohort of 1900 refers to people born in that year.

– marital status of parents

Married parents: refers to parents who are married to each other.

Unmarried parents: refers to parents who are unmarried or married but not to each other.

APPENDIX 2 – NOTES AND DEFINITIONS

– National Statistics Socio-economic Classification (NS-SeC)

This new social classification has replaced the previously published Registrar General's Social Class. It is principally based on the individual's occupation and has been introduced in order to reflect a modern view of social classification. It was introduced from 2001 onwards. Further information can be obtained from the Office for National statistics web site: <http://www.statistics.gov.uk/methods-quality/ns-sec/default.asp>

DEATHS

– cause-of-death coding

From 1 January 2000, deaths in Scotland have been coded in accordance with the International Statistical Classification of Diseases and Related Health Problems (Tenth Revision) (ICD10). Classification of underlying cause of death is based on information collected on the medical certificate of cause of death together with any additional information provided subsequently by the certifying doctor. Changes notified to GROS by Procurators Fiscal are also taken into account. In cases of homicide, intentional self-harm (suicide) and other deaths from violence, advice may be sought from the Crown Office.

– expectation of life

The average number of additional years a person could expect to live if current mortality trends were to continue for the rest of that person's life. Most commonly cited is life expectancy at birth.

– age standardisation

A straight comparison of crude rates between areas may present a misleading picture because of differences in the sex and age structure of the respective populations. The technique of standardisation has been used in certain tables and charts to remedy this. In general, standardisation involves a comparison of the actual number of events occurring in an area with the aggregate number expected if the age/sex specific rates in the standard population were applied to the age/sex groups of the observed population.

– stillbirth

Section 56(1) of the Registration of Births, Deaths and Marriages (Scotland) Act 1965 defined a stillbirth as a child which had issued forth from its mother after the 28th week of pregnancy and which did not breathe or show any other sign of life. The Still-Birth (Definition) Act 1992, which came into effect on 1 October 1992, amended Section 56(1) of the 1965 Act (and other relevant UK legislation), replacing the reference to the 28th week with a reference to the 24th week.

– perinatal

Refers to stillbirths and deaths in the first week of life.

- infant

Refers to all deaths in the first year of life.

MIGRATION

Net migration figures presented in **Chapter 1** for the period 1982-2000 have been provisionally revised following the revisions to the population estimates for the same years (see section on Population in this Appendix). Unless otherwise stated, these are estimates of net civilian migration which include movements to and from the Armed Forces but exclude other changes, such as changes in the numbers of Armed Forces stationed in Scotland.

More detailed migration revisions are planned for later in 2003. These revisions will take account of detailed migration results from the 2001 Census due out later this year and the National Statistics Quality Review of International Migration Statistics being carried out by the Office for National Statistics, also due out later this year.

The migration estimates for the twelve months up to mid-2002 used in the 2002 mid-year population estimates include a number of special adjustments to take account of the results from the 2001 Census and information on list cleaning in the NHSCR (National Health Service Central Register). More information on these adjustments is detailed on the GROS website at:

www.gro-scotland.gov.uk/grosweb/grosweb.nsf/pages/02-mid-year-notes#ec

MARRIAGES

Civil marriages were introduced by the Marriage (Scotland) Act 1939, which came into operation on 1 July 1940.

DIVORCES

The data presented on divorces relate to the date on which the decrees were granted.

In legal terms the 1976 Act introduced a single ground for divorce – irretrievable breakdown of marriage – with the detailed reasons as ‘proofs’. However, the information presented in this report on reasons for divorce retains the terminology ‘grounds for divorce’.

ADOPTIONS

The Registrar General for Scotland registers adoptions under the Adoption of Children (Scotland) Act 1930.

CONTACT POINTS

Enquiries about the statistics in this report or about any other statistics or geography products produced by the General Register Office for Scotland (GROS), should be addressed to:

Customer Services
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Detailed statistical tables supplementing this report and other related statistics produced by GROS are available from the GROS website in the on-line data library.

Comments on the format or content of this report are welcome and should be sent to the address above by **31 December 2003**.

Enquiries about the wider work of GROS are welcome and letters should be addressed to the Registrar General or sent by fax to 0131 314 4650.

Government Actuary's Department

For further information about the UK and Scottish population projections prepared for the Registrar General by the Government Actuary's Department (GAD) please contact:

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GAD website: www.gad.gov.uk

UK National Statistics

Enquiries for equivalent UK information to that presented in this report, or for more general enquiries about UK National Statistics, contact the National Statistics Public Enquiry Service on **020 7533 5888**.

Minicom: 01633 812 399
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