DEMOGRAPHIC REPORTS

Statistiska centralbyrån
Statistics Sweden

The future population of Sweden 2006–2050

Cover illustration:

The graph also occurs in the publication and shows the number of girls aged 6–15 from 1950 to 2005 and alternative projections for the period 2006–2050.

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The future population of Sweden 2006–2050

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The future population of Sweden 2006–2050

Official Statistics of Sweden
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Foreword

This report presents a projection of the population of Sweden for the period 2006-2050. In addition to a main alternative, a number of sensitivity analyses showing population trends given lower or higher future fertility than that assumed in the main alternative are presented. Similarly, the consequences of deviations in mortality trends as well as of higher or lower levels of foreign migration are also shown.

Statistics Sweden presents reports of this kind every third year. The last such report came out in spring 2003. In the intervening years, population projections are updated and presented in the Statistical Report series, in Sweden's Statistical Databases and on Statistic Sweden's website (www.scb.se).

Several people have contributed to this report. The section on fertility was prepared by Gun Alm Stenflo and Lotta Persson. The section on migration was prepared by Marie Berlin, Ann-Zofie Duvander, Ann-Christin Jans and Peter Lundquist. Lastly, the mortality section was prepared by Hans Lundström, Karin Lundström and Jan Qvist. The working group has obtained valuable advice and opinions from reference groups for each of the three components: fertility, mortality and migration. Statistics Sweden is responsible for the final assessments and suppositions made in the forecast. Hans Lundström was responsible for compiling the work on population projections while Ingrid Florén and Lotta Persson were responsible for the layout.

Statistics Sweden, May 2006

Anna Wilén

Allan Nordin

Contents

List of tables

Summary

Sweden's population continues to increase. From 1995 to 2005 the population increased by nearly 211 000 people. During the ten year period 2006-2015 the population is expected to grow by slightly more than 410 000 people. The more rapid growth in population for the coming period is primarily due to an increased birth rate coupled with a higher immigration surplus. According to this year's forecast, the population will increase from 9.1 million in 2005 to 9.5 million in 2015. In 2050 the population is expected to reach 10.5 million.

The life expectancy for women is predicted to rise from 82.8 years in 2005 to 86.3 years in 2050. For men, the corresponding expected increase in life expectancy for the same period is from 78.4 to 83.6 years. Fertility is expected to rise from today's 1.77 children per woman to 1.85 children per woman in 2015. Thereafter, fertility is expected to remain at the same level until 2050.

At the turn of the century in 1900, less than one percent of the Swedish population was born abroad. By 2000, that figure had risen to slightly over 11 percent. The number of foreign-born people, according to the forecast's main alternative, will rise to around 18 percent in 2050. Net immigration is currently high but is expected to fall slightly to 23 600 by the end of the forecast period. In 2006 immigration will be unusually high due to the temporary asylum law.

Population over the next 10 years

In the coming 10 years, demographic pressure on the major items in the system of transfer payments will likely fall somewhat. A larger proportion of the population aged 20-64 will be under the age of 50 and a reduction in the number of people on long-term sick leave and in early retirement is thus expected for demographic reasons. The number of people aged 20-64 is expected to increase from 5.3 million in 2005 to 5.4 million in 2015. The *number* of people of working age (20-64 years) will thus *increase* although the *percentage* of the total population that this age group represents will *fall*. This drop in percentage despite an increase in numbers is mainly due to the fact that the number of people aged 64 and over increases much more than the number of people in other age groups.

The ageing population will result in an increase in the demand for healthcare and nursing services although probably only to a limited extent over the next 10 years. Many pensioners will still be 65 to 70 years old during the period. For these ages, the need for healthcare and nursing services is relatively small. The need for such services increases primarily after 80 years of age.

When those born in the 1940s retire, we will see a generation change on the labour market. Due to the large number of people reaching retirement age, there will likely be increased demand in the labour market. If supply and demand matches, these *demographic forces* will lead to a reduction in unemployment. This does not mean, however, that other factors may not offset these demographic forces.

The large variations in the number of births over the last 15 years will have notable effects on the number of school-age children of various ages in the next few years. The number of preschool children has already increased in the last few years and this increase is expected to continue for several more years. The number of children in the first three years of compulsory school has dropped since the end of the 1990s but will increase again from 2007. These large fluctuations place great demands on the flexibility of the educational system.

The large group born around 1990 is about to start upper secondary school and in a few years many will likely begin higher education.

Seen from a 50 year perspective

An ageing population

Up until 2050, Sweden's population is predicated to increase by about 1.5 million people. The number of people in the age groups 0-19 years and 20-64 years is expected to increase by 170 000 and 370 000 respectively. This is an increase of around 7 percent. By 2050, the group aged 65-79 years is expected to increase by 45 percent while the group aged 80 and over will increase by 87 percent. It is expected that slightly more than 900 000 more people than today will be aged 65 and over by 2050. Mortality is decreasing more for men than women. Consequently, more women will be able to keep their partners as they grow older.

The structure of the population in the initial year of the forecast determines a great deal of the changes in the population. Today we already know that the number of old-age pensioners will increase sharply around 2010 when large numbers of those born in the 1940s reach the age of 65. Twenty years later, those born in the 1960s will reach the age of 65. Around the year 2020 we can expect a relatively large number of births when large cohorts born around 1990 reach childbearing age.

Number of people in different age groups 2005. Projection 2006-2050. Thousands

Year	0–19 years	20–64 years	65–79 years	80 and over	Total
2005	2 159	5 323	1 078	487	9 048
2006	2 164	5 356	1 091	489	9 099
2007	2 163	5 370	1 116	489	9 139
2008	2 156	5 383	1 149	491	9 179
2009	2 145	5 390	1 192	490	9 217
2010	2 127	5 403	1 236	491	9 257
2011	2 111	5 414	1 281	491	9 296
2012	2 097	5 425	1 323	491	9 336
2013	2 089	5 432	1 366	488	9 376
2014	2 087	5 440	1 404	488	9 418
2015	2 094	5 443	1 435	488	9 460
2020	2 195	5 429	1 531	525	9 680
2030	2 288	5 457	1 540	763	10 048
2040	2 288	5 514	1 653	811	10 267
2050	2 329	5 696	1 566	912	10 502

1 Introduction

In this report Statistics Sweden presents the results of the forecast on changes in Sweden's population for the period 2006-2050. The word forecast in this text is used in its broad sense. Given the perspective of almost 50 years, one cannot speak of forecasts in their true sense. Given a longer time perspective, a forecast is more of a projection or a scenario based on assumptions about the future rather than a prediction of what is most likely to occur.

Some general characteristics of population change can be predicted with relatively good precision while others remain more uncertain. The reliability of the results depends both on the time horizon and the age brackets being considered. For those who are young today, the forecast is relatively certain a long time ahead. Mortality is low up to high ages and the size of the group is mainly affected by immigration to and emigration from Sweden. Future fertility changes are however more uncertain and incorrect assumptions quickly grow in significance when used as a basis for determining the future number of children. Likewise, it is genuinely difficult to foresee the size of immigration and emigration even in the short-term. Immigration to and emigration from Sweden has varied greatly over the years and depends on, among other things, the globalisation of industry as well as the immigration policies of other countries.

Chapter 2 gives an account of population changes according to the forecast's main alternative. Chapter 3 describes the assumptions with respect to fertility, mortality and migration which form the basis of the forecast. In support of this study, advice has been gathered from reference groups for each of the three components: fertility, mortality and migration. A list of the members of the reference groups can be found in Appendix 1. In order to illustrate the sensitivity of the results to variations in future fertility, mortality and migration, concise calculations based on alternative assumptions are presented in Chapter 4. The result according to the main alternative is presented in an appended Table and is also accessible via Sweden's Statistical Databases. If not otherwise specified, the information source is Statistics Sweden's Population Statistics.

2 Population forecast - the main alternative

In 1900, at the turn of the century, less than 1 percent of the population of Sweden was born abroad. By 2000, this figure had risen to slightly over 11 percent. The proportion of foreign-born people will rise to about 18 percent by 2050, according to the forecast's main alternative. Net immigration is calculated to fall slightly in the foreseeable future from 25 000 at the beginning of the forecast period to 23 600 by the end of the period. This represents a small downward adjustment in comparison to the 2003 forecast.

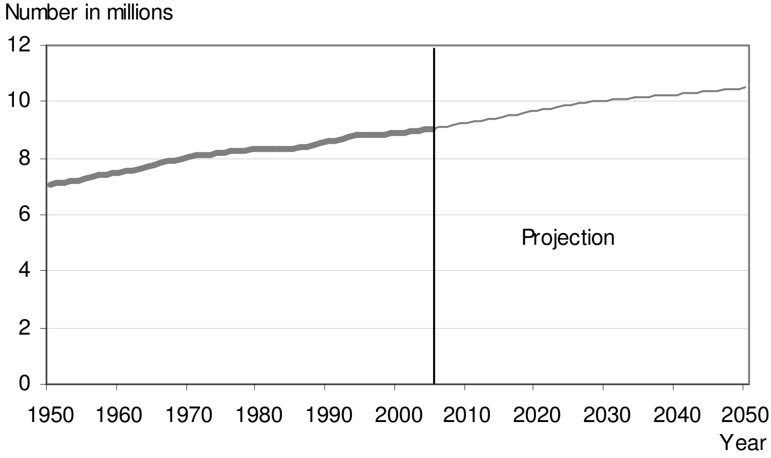
The main alternative is based on the supposition that fertility will rise to 1.85 children per woman in the foreseeable future. In 2005, 1.77 children per woman were born. Women born in the 1900s have on average given birth to two children. A supposition of 1.85 children per woman means that one assumes that women born at the end of the century will give birth to fewer children than those born at the beginning of the century.

The life expectancy of women will increase from the current 82.8 years to 86.3 years by 2050. The life expectancy of men is currently 78.4 years and is expected to rise to 83.6 years by 2050. Mortality in men is falling more than mortality in women. This explains why the difference between the life expectancies of women and the life expectancies of men is getting smaller. The mortality assumptions made in this forecast are, in principle, the same as those made in 2003.

According to this year's forecast, the population will grow from 9.05 million in 2005 to 10.5 million by 2050. This result differs only marginally from the 2003 forecast.

During the last half of the 1900s, the population grew by 1.8 million. During the first half of the twenty-first century, the population is expected to grow by about the same amount: 1.7 million. The main reasons for fairly constant future population growth are our presumptions that fertility will remain relatively high and that Sweden will continue to be a land of immigration.

Figure 2.1
Population 1950–2005 and projection 2006–2050. Millions



Figures are found in table 5.11 in table appendix

The fact that we have fairly constant population growth does not mean that we have a constant age structure of the population. Due to sharp fluctuations in fertility with peaks in the birth rate during the 1940s, 1960s and 1990s, we have seen large variations in the number of people within the different age groups. For example, some 120 000 children were born around 1990 while some 90 000 children were born at the end of the 1990s. These kinds of fluctuations place very high demands on flexibility in the planning of schools, health and social care, community care services and housing. These changes in the number of births also leave their mark on the development during different periods of time.

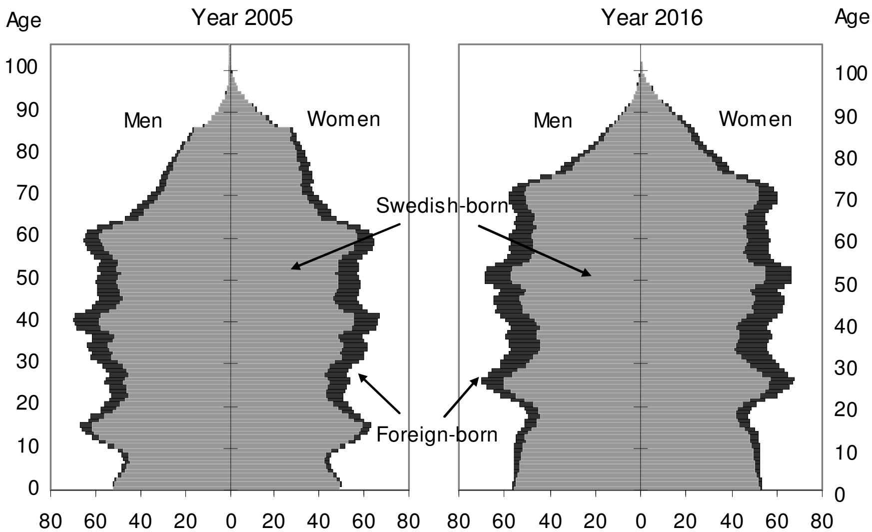
Developments in the next ten years

The population change over the next ten years will likely alleviate pressure on the major items, excluding pension payments[1], within the system of transfer payments. A larger proportion of the population aged 20-64 will be under 50 years of age which means that a reduction in the number of people on long-term sick leave and in early retirement can be expected (Alm Stenflo, 2002). The ageing population will result in an increase in the demand for healthcare and nursing services over time, although probably only to a limited extent in the coming years since most pensioners will

[1] Financing of pension payments are guaranteed in the new pension system.

still be aged 60-70 years. For these ages, the need for healthcare and nursing services is relatively small. The need for such services increases primarily after 80 years of age. One can thus expect that the need for healthcare and nursing services will increase relatively slowly but surely over the next ten years (SCB, 2006a).

Figure 2.2
Population pyramids 2005 and 2016. Thousands



When those born in the 1940s retire, vacancies will arise on the labour market which should lead to an increased demand for labour. If supply and demand match, these *demographic* forces will exert downward pressure on unemployment. This does not mean, however, that other factors may not offset this pressure.

The large variations in the number of births over the last 15 years will have notable effects on the number of school-age children of various ages in the recent years. The number of preschool children has already increased in the last few years. This increase is expected to continue. The number of children in the first three years of compulsory school has dropped since the end of the 1990s but will increase again as of 2007. This trend, with a three year shift, will be the same for the 10-12, 13-15 and 16-18 age groups. These large fluctuations place great demands on the flexibility of the educational system.

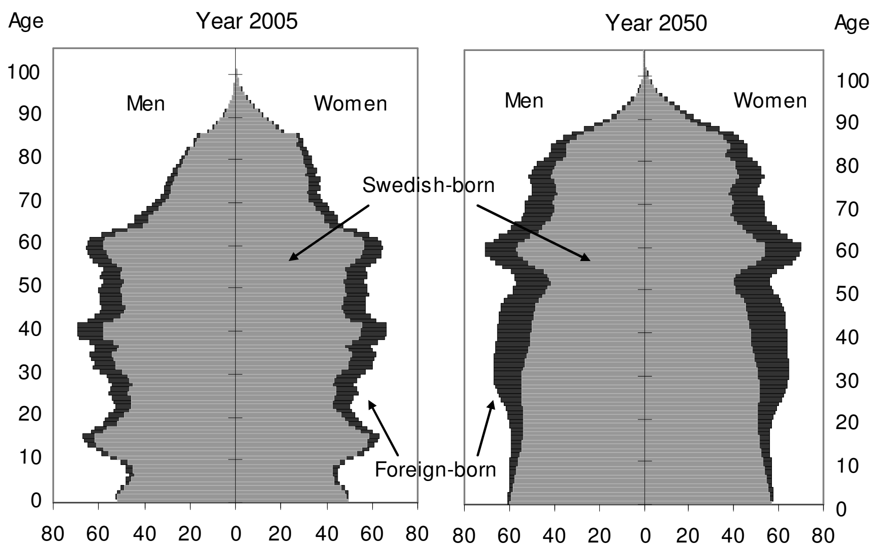
The large group born around 1990 is about to start upper secondary school and in a few years many will likely begin their higher education.

Developments after 2016

Demographic pressure on costs for healthcare and nursing will however increase significantly during the post-2016 decades. Between 2020 and 2030, the number of people aged 80 or more will rise by about 55 percent from around 209 000 people to around 325 000 people. During this period, the cohorts born during the 1940s will reach the age where the need for healthcare and nursing soars.

We do not know whether variations in fertility will continue to be as large as previously noted. Given the current parental insurance system however there is reason to suppose that future fertility will also vary with the upturns and downswings of the economy. The reason that the population pyramids for 2050 seem to be so smooth for those who are under the age of 45 is that the forecast is based on a mean value. Future variations in the birth rate and migration due to responses to economic upturns and downswings are thus not accounted for.

Figure 2.3
Population pyramids 2005 and 2050. Thousands



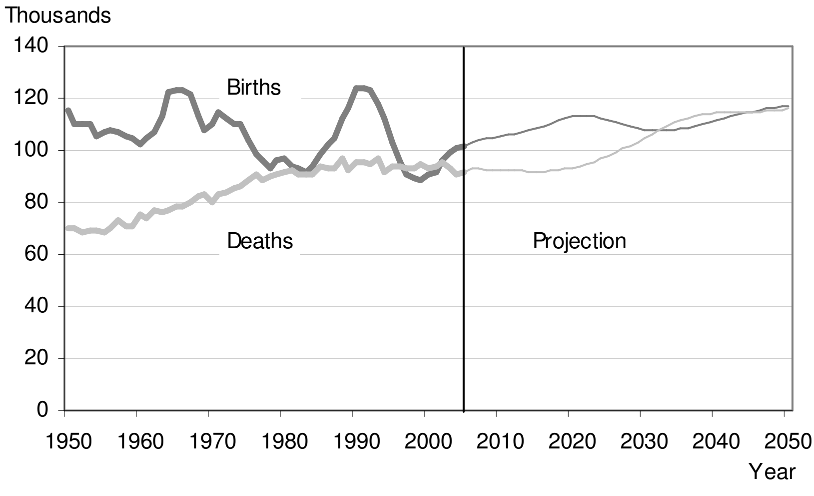
In 2005 the proportion of women in the 65 and over age group was 56 percent. By 2050, it is calculated that this will have fallen to about 52 percent.

The mortality of men is decreasing more rapidly than that of women. We assume that this development will continue for several more years. For this reason, it is likely that an increasing number of older women will be able to keep their partners as they grow older.

Increasing birth surplus

In the forecast we have assumed that fertility rises successively during the coming years and thereafter stabilises at an average level of about 1.85 children per woman. As a result of assumptions on fertility and the age structure of the population, it is calculated that the number of births will rise until some time around 2020. In 2020, the large number of people born around 1990 will have reached an age when it is common to have children and the number of births is then calculated to be relatively high.

Figure 2.4
Number of births and deaths 1950–2005 and projection 2006–2050. Thousands



Experience reveals that changes in the number of births have occurred very rapidly and this will likely also be the case in the future. Occasionally there is talk of being in the midst of a baby boom. We cannot foresee these types of temporary changes over the longer term.

At the turn of the century in 2000, there were more deaths than births recorded over several years. The turning point came in 2002. The excess of births over deaths (the birth surplus) is expected to increase over the next 15 years. A few years after 2030, the pattern is expected to change again and there will be more deaths than births. Such long-term calculations are however highly uncertain. For example, the people presumed to become parents during the last part of the 2030 decade are not even yet born.

Table 2.1
Births, deaths, net migration and population increase 1950–2005. Projection 2006–2050. Thousands

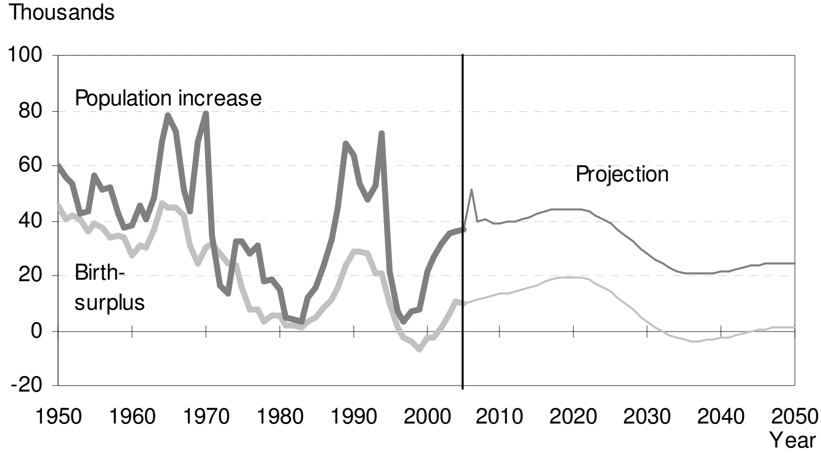
Year	Births	Deaths	Birth-surplus	Net migration	Population increase
1950–54	110,2	69,4	40,8	10,0	49,7
1955–59	106,5	70,8	35,8	12,0	45,6
1960–64	109,9	75,7	34,2	14,0	46,5
1965–69	117,6	80,4	37,2	25,6	61,8
1970–74	111,3	83,8	27,5	7,6	34,5
1975–79	97,5	89,6	7,9	17,5	25,3
1980–84	93,9	91,2	2,8	5,1	7,9
1985–89	106,6	93,9	12,7	24,4	36,9
1990–94	120,2	94,8	25,4	32,5	57,9
1995–99	93,3	93,9	-0,6	9,8	9,0
2000–04	95,6	93,1	2,5	27,7	30,0
2005	101,3	91,7	9,6	27,1	36,4
Projection					
2006–09	103,6	92,5	11,1	30,2	41,2
2010–14	106,4	92,1	14,3	25,8	40,1
2015–19	110,3	92,1	18,2	25,3	43,5
2020–24	112,9	94,8	18,1	24,6	42,7
2025–29	110,1	100,5	9,6	24,7	34,2
2030–34	107,5	107,8	-0,3	24,6	24,3
2035–39	109,4	112,9	-3,5	24,3	20,7
2040–44	113,0	114,6	-1,6	23,9	22,2
2045–49	115,8	115,2	0,6	23,6	24,2
2050	117,0	116,2	0,9	23,6	24,4

Note: Annual average in thousands. Population increase including transfers to and from the register of people without known residence for at least one year. Presented by year in the table appendix, table 5.10.

A shrinking population without immigration

A large part of the population increase during the forecast period rests on assumptions of an annual net migration of some 23 000 people. Net migration, as illustrated in the figure below, is the difference between the population increase and the birth surplus. After 2030, it is the assumption of an immigration surplus which results in the continuing population increase.

Figure 2.5
Excess of births and population increase 1950–2005. Projection 2006–2050. Thousands



The sizable net immigration in 2006 is due to the temporary law on asylum.[2]

Net migration to Sweden has by and large been positive since the 1930s. As a consequence the number of foreign-born people has risen. The number of people who are born abroad is presumed to increase during most of the forecast period at about the same rate as observed in the last preceding decades. In 2005, 12.4 percent of the population was born abroad. According to the forecast, this percentage is expected to increase to 18.5 percent in 2050.

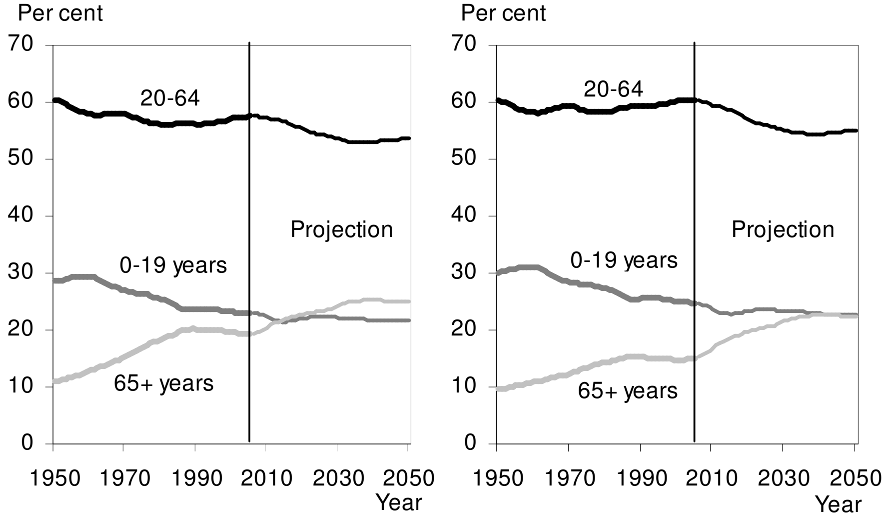
The ageing of the population

The population of Sweden is characterised by a growing share of elderly people and a shrinking share of young people. In 1950, slightly more than 29 percent of the population was under 20 years of age. In 2000, the proportion of children and young people fell to 24 percent and, according to the forecast, this proportion will diminish further to 22 percent in 2050. The proportion of people aged 65 and over has simultaneously risen from 10 percent in 1950 to 17 percent in 2000. In 2050 the proportion of elderly people is calculated to amount to approximately a quarter of the population.

[2] From 15 November 2005 to 31 March 2006 a temporary asylum law was in force. The law allowed a possibility to renew an asylum appeal. The law mainly applied to families with children, but also included others who despite rejection of previous asylum appeals were still in the country.

The *number* of people of working age (20-64 years old) is *rising* (see Table 2.3), but the *proportion* of people of working age is *shrinking*. The cause of the shrinking proportion despite an increase in numbers, is mainly that the number of people aged 65 and over is increasing much more relative to other age groups.

Figure 2.6
Women and men in age groups 0–19, 20–64 and 65–, 1950–2050. Percent



Figures are found in table 5.13 b in table appendix.

This situation is not at all unique to Sweden. The very low fertility currently observed in several countries coupled with high life expectancies means that, within a few years, several countries will have a greater proportion of elderly people than Sweden. In certain countries as many as one out of three people will be aged 65 or over in 50 years. In 2050, for example, the proportion of people aged 65 or over is calculated to reach 36 percent in Japan, 34 percent in Italy and 32 percent in Greece.

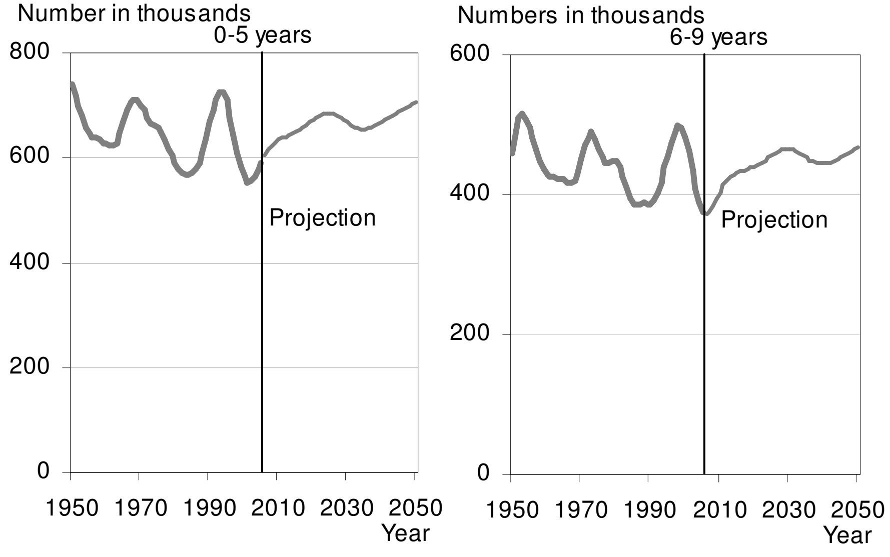
Children and young people

The number of people aged 0-19 years is expected to vary between 2.1 and 2.3 million during the entire forecast period. Despite the fact that the *total* number of children and young people is not expected to change very much, there are large variations in the number within the different age groups.

More preschool children

The number of preschool children (children aged 0-5 years old) is calculated to rise in the near future. This is due to an increased number of births in more recent years and the assumption of an upswing in fertility in the years ahead. In 2005, there were 590 000 children under the age of 6. In 2010, the number of children under the age of 6 will, according to the forecast, reach 632 000. This is nevertheless far below the highest levels seen in recent times. In 1994, when the number of children under the age of 6 was at its highest after the baby boom year of 1990, there were 725 000 such children, representing some 20 percent more than today's number.

Figure 2.7
Population in age group 0–5 and 6–9 1950–2005. Projection 2006–2050. Thousands



Uncertainty in terms of the future number of preschool children is great even in the short term. The number of preschool children quickly becomes entirely dependent on whether the forecast provides correct estimates of future fertility. As early as 2011 the size of the group of preschool children is solely based on the assumptions in the forecast.

The number of children aged 6-9 peaked in 1998 at just under 500 000 children. The number subsequently fell and is calculated to have dipped to slightly more than 370 000 in 2006 before resuming its rise. The number of children in the first three years of compulsory school has dropped since the end of the 1990s but will rise again as of 2007.

Table 2.2
Population in age groups 0–5, 6–9, 10–12, 13–15, 16–18, 1950–2050. Thousands

Year	Ages 0–5	Ages 6–9	Ages 10–12	Ages 13–15	Ages 16–18	Age 19	Ages 0–19
1950	741	460	278	254	247	87	2 067
1960	626	428	355	385	365	99	2 258
1970	700	451	315	324	330	114	2 233
1980	589	449	332	369	348	108	2 194
1985	571	387	327	337	345	124	2 091
1990	668	386	294	307	340	116	2 111
1994	725	438	297	303	302	109	2 175
1998	609	497	336	305	303	102	2 154
2000	562	482	367	326	302	101	2 139
2001	552	461	377	340	309	101	2 141
2002	555	435	381	353	320	100	2 146
2003	565	410	373	371	331	103	2 154
2004	577	389	360	381	344	108	2 160
2005	590	375	341	385	357	112	2 159
Projection							
2006	604	373	321	377	375	114	2 164
2010	633	404	285	306	369	131	2 127
2020	673	440	330	329	322	102	2 195
2030	667	465	350	347	345	115	2 288
2040	668	444	341	352	362	122	2 288
2050	705	467	348	346	347	117	2 329

The table includes information from the years mentioned in the text.

The large number of children born around 1990 leave their mark on trends

One can clearly see how those born in the large baby boom which occurred between 1989 and 1993 have successively made their way through the different stages of schooling. The number of children in the 10-12, 13-15 and 16-18 age groups has followed the same pattern as the number of children in the first three years of compulsory school with a three year shift for each age group.

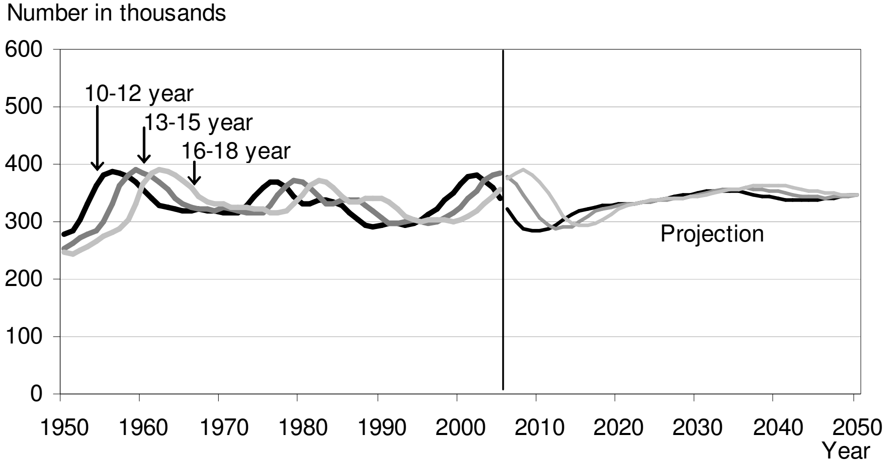
The number of students in their fourth to sixth year of compulsory school peaked in 2002 and then subsided. The number of students in the 13-15 - year old age group culminated in 2005 while the number of students in upper secondary school will peak in 2008 and subside one year later.

Within a decade, the number of students in a certain type of school changes substantially. The number of seniors in compulsory school (13-15 years old) rose by 28 percent between 1995 and 2005.

Variations of this size put considerable demands on the educational system.

Figure 2.8

Population in age groups 10–12, 13–15, 16–18, 1950–2005. Projection 2006–2060.Thousands



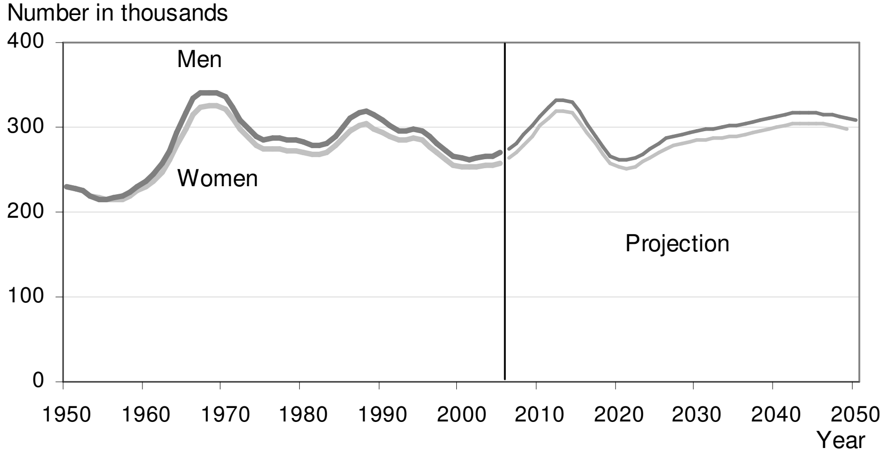
The forecast is relatively certain for 10, 13 and 16 years ahead for each age category since it is then based on persons already born.

More young people and an increased need for places in higher education within the next 10 years

The Government has as one of its objectives that half of all young people shall begin higher education before they reach the age of 25. Fifty percent of the girls and 39 percent of the boys who graduated from upper secondary school in 2000/2001 went on to higher education within 3 years. If the interest in higher education remains high then the demand for higher education places will rise substantially in the near future.

By 2013, the number of young people aged 20-24 will have increased from today's 530 000 to slightly more than 650 000, an increase of 24 percent. It is once again the large number of children born around 1990 who will account for this expansion. The number of young people (20-24 years) then falls markedly as those born in later years, characterised by smaller booms, reach the age of 20. By 2020 the number of 20-to-24-year olds is expected to plunge to the same low levels as today.

Figure 2.9
Population in age group 20–24, 1950–2005. Projection 2006–2050. Thousands



Figures are found in tables 5.12a and 5.12b in table appendix.

The population of 20-64 year olds

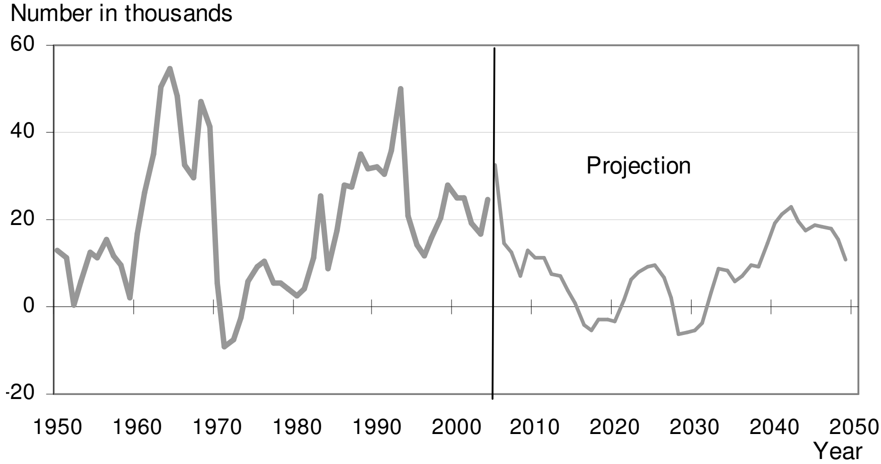
Weak rise in the population of working age

The number of people of working age (20-64 years) is expected to rise from 5.3 million in 2005 to 5.7 million in 2050.

Most people establish themselves on the labour market at some point between the ages of 20 and 30. We have chosen to define the working population as people in the 20-64 year old age group. There are, however, several reasons to consider revising this definition. Young people are establishing themselves increasingly later on the labour market. Studies and youth unemployment are such that many young people do not secure gainful employment until after the age of 25.

Until the beginning of the twenty-first century, many people left their working life before the age of 65. In recent years however the trend has turned and the proportion of people gainfully employed after the age of 60 has increased (Nygren, 2005).

Figure 2.10
Yearly change of population in age group 20–64, 1950–2005. Projection 2006–2050. Thousands

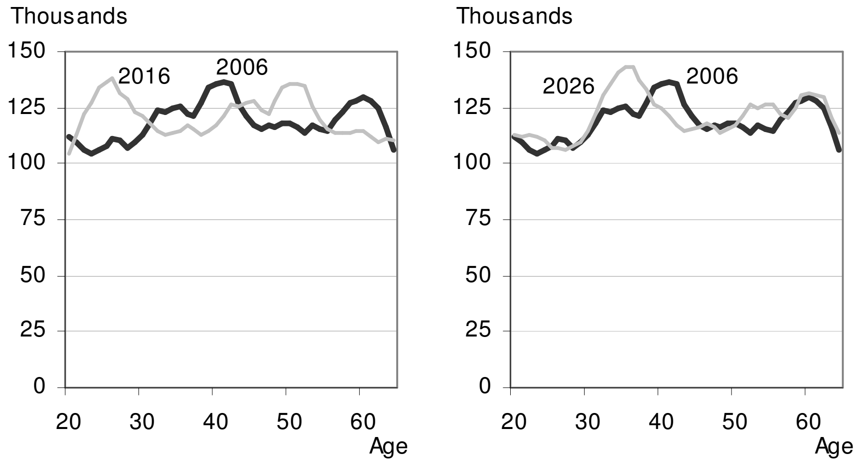


Both the number of young people aged 20-24 and the number of people leaving their prime working years are expected to rise sharply over the next 10 year period. This is due to the large number of people from the often-mentioned 1940s baby boom who will retire and leave their prime working years. Despite these changes, the number of people of working age is expected to increase until some time around 2015 before levelling off (small deficit). When exactly this change is to take place depends greatly on the size of the future immigration surplus. After 2015 the number of people of working age (aged 20-64 years old) is expected to rise again for the remainder of the forecast period, with the exception of some brief period around 2030.

The age distribution of the working age population

The number of people aged 55-64 years will decline between 2005 and 2016. The next decade however will see an increase in this age group and, by 2026, the population aged 55-64 years will be about the same size as it is today. There is a connection between age and health such that the burden on the health insurance system can be expected to diminish somewhat as the population aged 50-64 years falls (Alm Stenflo, 2002).

Figure 2.11
Comparison of the age distribution year 2006, with 2016 and with 2026. Thousands



If one combines age groups in 20 year classes (e.g., 0-19, 20-39, etc.) then a great deal of the variation disappears. This is because variations in the birth rate occur within a 20 year period or one generation.

The decline in the number of people aged 20-39 years began as early as the mid 1990s. The reduction is expected to continue for some years to come. A slight increase in the number of 20-39 year olds is expected over the next ten year period thereafter due to the rise in the number of births between 1985 and 1990. Towards to end of the forecast period the size of this group is expected to increase, although these figures are very uncertain since they are based on assumptions of a rising birth rate.

The number of people aged 40-64 years will increase for some years yet. This is because the large number of people born in the 1960s will exceed 40 years of age over the next few years. Thereafter, the growth will become relatively stable.

Figure 2.12
Number of women and men in age group 20–39 and 40–64, 1950–2005 and projection 2006–2050. Thousands

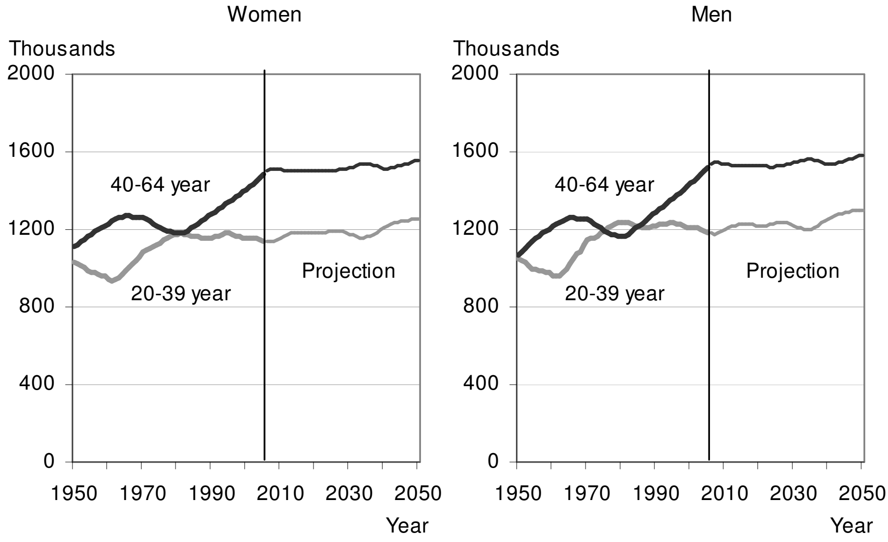


Table 2.3

Population in age groups 20–39 and 40–64, 1950–2005 and projection 2006–2050. Thousands

	Women			Men		
Year	Ages 20–39	Ages 40–64	Ages 20–64	Ages 20–39	Ages 40–64	Ages 20–64
1950	1 031	1 108	2 139	1 051	1 069	2 120
1960	945	1 231	2 175	961	1 216	2 177
1970	1 082	1 258	2 340	1 145	1 249	2 394
1980	1 177	1 179	2 356	1 238	1 167	2 405
1990	1 160	1 282	2 441	1 219	1 293	2 512
2000	1 160	1 408	2 567	1 209	1 436	2 645
2005	1 138	1 485	2 623	1 182	1 519	2 700
Projection						
2006	1 137	1 502	2 640	1 180	1 536	2 716
2010	1 159	1 508	2 667	1 199	1 537	2 736
2020	1 179	1 501	2 680	1 220	1 528	2 749
2030	1 177	1 519	2 696	1 219	1 543	2 761
2040	1 207	1 515	2 722	1 253	1 539	2 792
2050	1 254	1 557	2 811	1 301	1 584	2 885

Senior citizens

Old-age pensioners

During the forty-year period 1950-1990, the number of people aged 65 and over doubled from 721 0000 to 1 526 000 people. Since 1990, however, the number of old-age pensioners has remained relatively unchanged at about 1.5 million. This is as a result of the relatively small number of people born in the 1930s reaching retirement age.

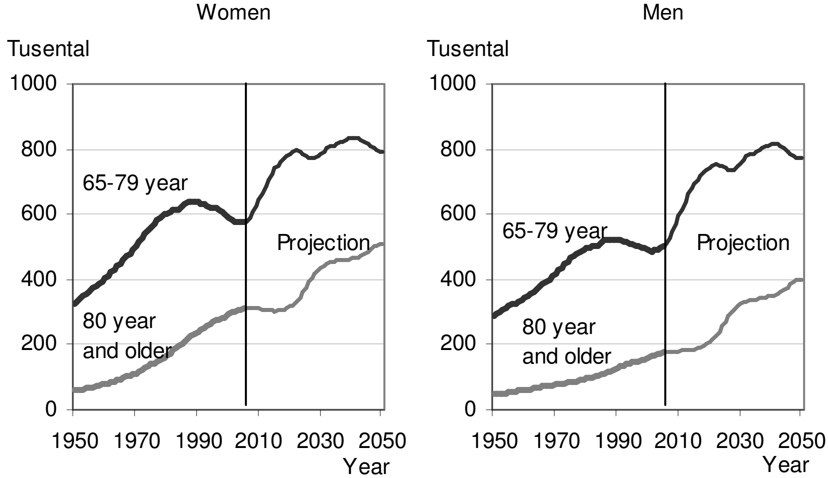
The next decade, when people born in the 1940s reach pensionable age, will lead to an increase of slightly more than 20 percent in the number of people aged 65 and over. The number will rise from 1.5 million in 2005 to 1.9 million in 2015. By 2015, all of those born in the 1940s will have reached pensionable age. Thereafter the increase will continue further until 2040 when the number of old-age pensioners is expected to total some 2.4 million.

People aged 65-79

The number of people aged 65-79 rose from 615 000 in 1950 to almost 1.2 million in 1988. The subsequent downturn can be explained by the small number of births in the 1920s and the 1930s. As those born in the baby boom years of the 1940s reach the age of 65, the number of people aged 65-79 will climb quickly. In 2005 they numbered 1.1 million and in 2015, people aged 65-79 will number slightly more than 1.4 million.

Figure 2.13

Women and men aged 65–79 and 80+ in 1950–2005. Projection 2006–2050. Thousands



At the beginning of the forecast period there were just over 75 000 more women than men aged 65-70, a surplus which is calculated to be approximately 20 000 by the end of the forecast period. The surplus of women of this age is diminishing as the mortality of men is falling more quickly than that of women.

The "older elderly" (80 years and older)

The rapid decline in mortality has resulted in very fast increases in the number of people aged 80 and over (the older elderly) in the Swedish population. Since the 1950s their numbers have quadrupled. In 1950 this segment of the population numbered 107 000 and in 2005 they numbered 487 000.

Over the next ten years, the number of people aged 80 years and over will remain relatively constant. During the 2020s, growth will be dramatic. The number of people aged 80 years and over will grow by 45 percent over a mere 10 years. The number of "older elderly" will increase from some 525 000 to over 760 000.

Table 2.4

Population in age groups 65–79, 80–and 65–, 1950–2050. Thousands

Year	Ages 65–79			Age 80 and older			Age 65 and older		
	Women	Men	Total	Women	Men	Total	Women	Men	Total
1950	325	289	615	60	46	107	386	336	721
1960	403	344	747	79	62	141	482	406	888
1970	504	419	923	113	77	190	618	496	1 113
1980	603	496	1 099	168	95	263	771	591	1 362
1988	637	522	1 159	226	120	345	862	642	1 504
1990	636	521	1 157	241	129	370	877	650	1 526
2000	588	490	1 078	293	160	453	881	650	1 531
2005	576	502	1 078	311	176	487	887	679	1 565
Projection									
2006	580	511	1 091	312	177	489	892	688	1 580
2010	644	592	1 236	311	180	491	954	773	1 727
2015	725	679	1 404	304	183	488	1 029	862	1 891
2020	787	744	1 531	316	209	525	1 103	953	2 056
2030	784	755	1 540	438	325	763	1 222	1 080	2 303
2040	837	815	1 653	463	348	811	1 301	1 164	2 464
2050	793	773	1 566	510	401	912	1 303	1 174	2 477

The table includes information from the years mentioned in the text.

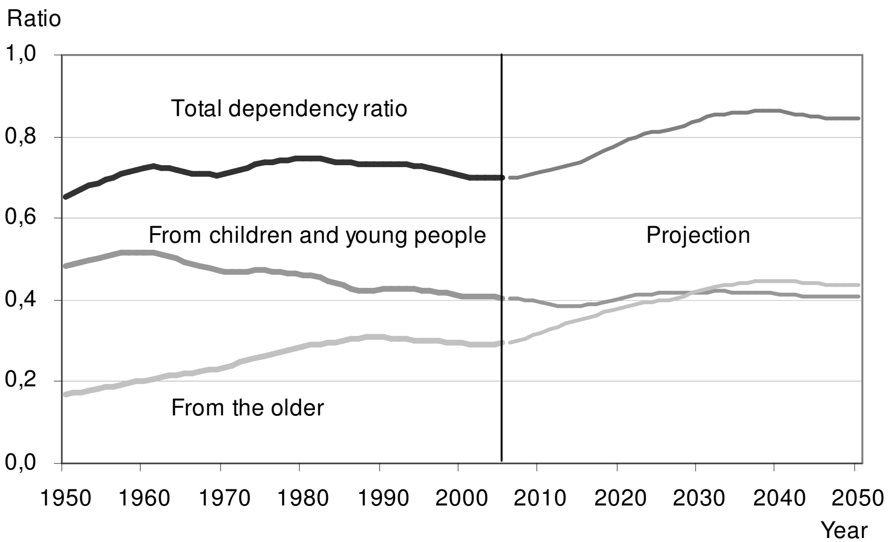
It is again the large booms in the number of births in the 1940s which will influence this trend. Between 2030 and 2050, the number of people aged 80 and over will continue to grow at a slower pace to a total of more than 900 000 by 2050. At the beginning of the forecast period the surplus of women amounted to approximately 130 000. This surplus will shrink to approximately 90 000 by the end of the period.

The future number of people aged 80 and over depends greatly on developments in healthcare. The divergence between the actual number and the forecasted estimates can be considerable at the end of the forecast period.

A greater "dependency ratio"

The relation between the number of people of working age and the sum of the population outside of this age interval (the sum of those aged under 20 and those aged 65 and over) can be seen as a measure of the population's burden of support. This measure is often used when assessing the economic consequences of population change. The most relevant measure is to set the number of employed people against the number of people with no job, but we are unable to do this in this case.

Figure 2.14
Dependency ratio, 1950–2005. Projection 2006–2050



The ratio calculated as the number of persons aged 0-19 (children and young people), persons age 65 and older (the older) and both groups together ("dependency ratio") per person aged 20-64.

As illustrated in Figure 2.14, the burden of support will increase fairly soon. In addition to the total burden of support, the diagram also presents the part of the burden attributable to the support of children and young people under 20 years of age and the part of the burden attributable to old age pensioners. It is the expected increase in the number of people aged 65 and over which is behind the increase in the burden of support. This burden will reach its peak in some 35 years when, according to the forecast, there will be 0.86 people at either extreme of the working age population for every one person of working age. The corresponding value for the current burden of support is 0.70.

According to the forecast, within 30 years the number of people aged 65 and over will have a greater effect on the burden of support than children and young people under the age of 20. This is in strong contrast to the situation 50 years ago when the impact of children and young people on the burden of support was almost three times greater than that of people over 65 years of age. Despite successive increases in the number of elderly people, the burden of support has remained relatively constant during the period 1960-2002. This results from the fact that the number of children has to a large extent remained constant while the number of elderly people has increased at the same pace as the number of people aged 20-64.

Table 2.5
Number of persons in age groups 0–19 and 65– per person aged 20–64, 1950–2005. Projection 2006–2050. Thousands

Year	Ages 0–19	65 years and older	Total
1950	0,49	0,17	0,65
1960	0,52	0,20	0,72
1970	0,47	0,24	0,71
1980	0,46	0,29	0,75
1990	0,43	0,31	0,73
2000	0,41	0,29	0,70
2005	0,41	0,29	0,70
Projection			
2006	0,40	0,29	0,70
2010	0,39	0,32	0,71
2020	0,40	0,38	0,78
2030	0,42	0,42	0,84
2040	0,42	0,45	0,86
2050	0,41	0,43	0,84

3 Assumptions

The forecast assumptions have been worked out based on the analyses of the factors of population change: fertility, mortality and migration. The development of trends up until present day is an important part of this work. We have also tried to explain, to the greatest extent possible, the causal relations in development in order to substantiate our assessments when extrapolating trends.

Fertility

In order to reach a situation in which the population fully replenishes itself, or when the replacement fertility rate is achieved, each woman must give birth to 2.1 children. In Sweden, the total fertility rate[3] in 2005 was 1.77 children per woman which means that, without immigration, we would see a reduction in the population. Compared to many other countries, especially in Europe, Sweden nevertheless has high levels of fertility.

When speaking about the birth rate, we often refer to the total fertility rate for different periods. This is a measurement which is used to examine how fertility evolves from year to year. The total period fertility rate in Sweden has varied greatly over time.

There are several explanations for fluctuations in fertility over time. Participation in working life, education and the economic situation are some of the factors which have been shown to affect childbirth. External social factors such as family policies and the state of the economy also affect the inclination to have children. The total fertility rate is a good indicator of a population's reproductive state at the time of measurement. In this report the total fertility rate is also, for reasons of simplicity, referred to as the fertility rate.

Another way to study reproduction is through the analysis of the total cohort fertility rate. This involves the examination of reproduction by cohorts as the cohorts get older. The study of cohort fertility rates is advantageous in a forecasting context since the total cohort fertility rate evolves in a more stable way than the total period fertility rate.

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[3] The total fertility rate is a measure of the number of children a woman would have on average if fertility (the propensity to have children at different ages) was the same as during the year the calculation was made.

The basis of the fertility forecast rests partly on an assumption about the percentage of childlessness per cohort and partly on an assumption about the distribution of the number of children per cohort. The distribution determines what percentages within a cohort will have one child, two children, etc... . The annual fertility rate resulting from these assumptions is then calculated.

The assessment of future childlessness is uncertain. The postponement of reproduction to later in life leads us to anticipate greater childlessness. However, there are several factors which affect childlessness and this year's forecast includes a deeper examination of the evolution of factors which may be considered important in the assessment of future childlessness.

The information used as the basis for this forecast was obtained from Statistics Sweden's Multi-Generation Register as well as historical databases. Fertility forecasts can be made on the basis of either females or males. However, information on fathers is slightly more often lacking than information on mothers and we have therefore, as in previous fertility forecasts, elected to start with females as the basis for this fertility forecast. Adopted children are not accounted for in the fertility assumptions. They are considered in the assumptions on immigration.

Fertility trends

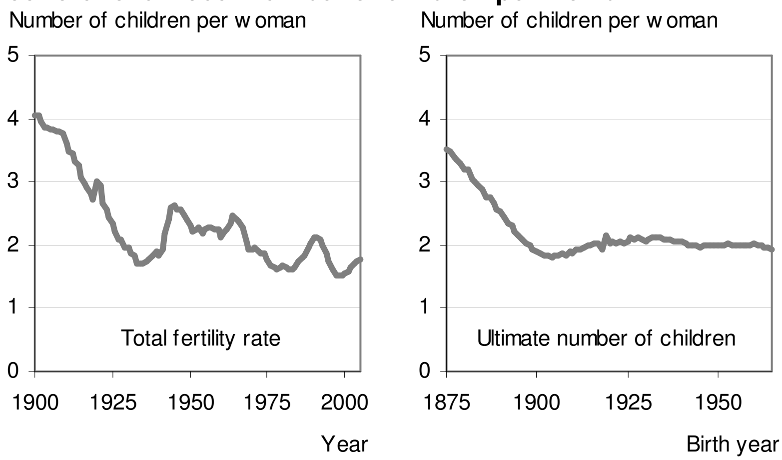
During the 1900s, reproduction (or childbirth) has varied greatly over time (see Figure 3.1). A large part of the annual variations can be explained by the fact that different generations have given birth at different ages. Women born around 1945 were the youngest first-time mothers at an average age of 24 years. The average age of first-time mothers has since increased and, in 2005, first-time mothers were on average 29 years old. The average age has likely never been higher. However if we look slightly further back in time, the average age of first-time mothers born in the 1800s was probably 27-28 years old, which is not so different from today. What distinguishes the 19th century woman from today's woman is that she continued to bear children until the end of her fertile period.

Despite the large variations in annual fertility, women born in the 1900s have generally given birth to an average of two children. Let us use the example of women born in 1965, i.e. women who turned 40 years of age in 2005 and who to a large extent came to the end of their fertile years. These women gave birth to an average of 1.93

children. Women born in 1919 had the highest number of children, slightly more than 2.1 children per woman.

Several studies show that there is a connection between the number of children born and upturns and downswings in the economy. It is mainly the start-up of the family-building process (the first child) which is affected by the state of the economy. Swedish parental insurance is such that it is more advantageous to give birth once a person is firmly anchored in the labour market. Childbirth is greatest among those who are employed and lowest among students and other young people who are not in the labour force.

Figure 3.1
Total fertility rate 1900–2005 and ultimate number of children per birth cohort 1870–1965. Number of children per woman



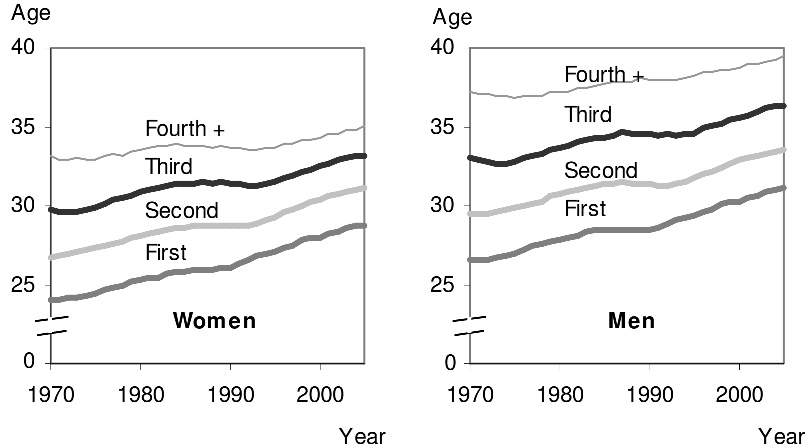
During the 1990s, childbirth fell in Sweden. One reason for this was the economic downturn which led to reduced employment. The postponement of reproduction to later in life accelerated during this period. The recession resulted in, particularly for younger men and women, greater difficulties in establishing oneself on the labour market. An increasing number went on to higher education and therefore postponed having children. The high inclination to study has continued and the advent of parenthood was further displaced to later in life during the first year of the twenty-first century. Since 2003, increases in the average age of first-time parents have subsided somewhat.

The average age has risen the most for first-time mothers (see Figure 3.2). Between 1970 and 1990 the average age for first-time mothers increased by 2 years from around 24 to 26 years of age. Since 1990 the average age has risen by 3 more years to 29 years of age.

First-time mothers in Sweden have the highest average age in the Nordic countries. However, in other European countries, the average age of first-time mothers is the same or older. Examples of such countries include the UK, Germany and Spain.

Figure 3.2

Mean age at birth of child by parity 1970–2005. Year



Fertility assumptions

Fertility in Sweden is characterised by large upswings and downturns. Childbirth will surely continue to vary with the state of the economy, as it has previously, but it is impossible to foresee such variations in the longer term. Our assumptions ought to be interpreted as an average future level rather than as assumptions of the most likely level for a single calendar year.

We have attempted to take into consideration the impact of the state of the economy on childbirth over the first few years of the forecast period. We studied childbirth forecasts[4] and analysed monthly statistics on the number of births in order to examine the development of trends.

When we make assumptions, we study the fertility for a cohort, or for women born in a certain year. The reason for this is that patterns in fertility are more stable for cohorts than the patterns in fertility from year to year. Based on the assumptions on the trends for women born in a certain year, we then calculate the yearly fertility resulting from these assumptions.

[4] Forecasts for births in Stockholm county are available at www.lafa.nu

Fertility in the near future

The forecast result for 2005 and the actual results observed corresponded to a great degree. There are no significant differences between the forecast and the actual results for any child order (whether the child was the first child, second child, etc.) for 2005.

Fertility has risen since 1999 when the fertility rate was at the lowest ever measured in Sweden (1.5 children per woman). In 2005 there were however signs of stagnation. No increase in the frequency of the birth of first-born children was observed. Yet childbirth seems to have regained momentum in 2006. Indications received to date for 2006 depict a rise in the birth of first-born children as well as a rise in the birth of second-born children. For 2006, our main alternative presumes fertility of about 1.81 children per woman and thereafter a continuing rise over the next few years to 1.85 children per woman. This rise is faster than that which was adopted in the previous year's forecast (Statistics Sweden, 2005c). We presume that the rise will occur largely among the older age groups but we also believe that a small rise in the birth of first-born children will be seen in the younger age groups.

Fertility in the longer term

The forecast's main alternative is based on the supposition that fertility will rise to an average of 1.85 children per woman in the future. Women born in the period 1900-1960 gave birth to about 2 children on average. Our assumption thus yields a lower cohort fertility rate in the foreseeable future.

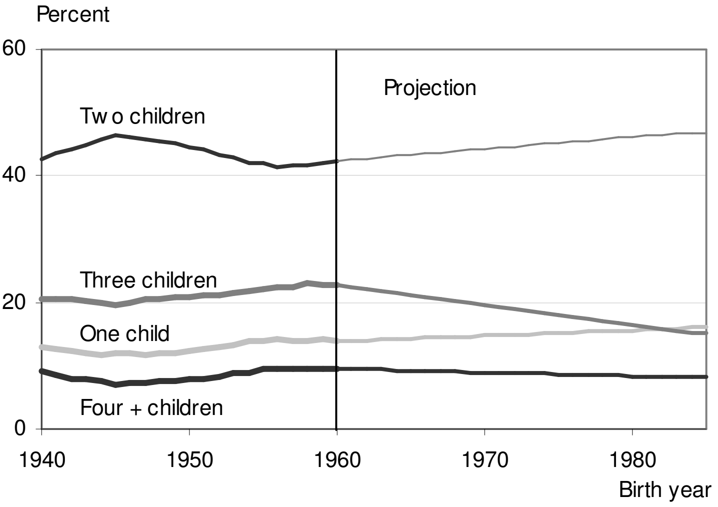
For forecast purposes, parity-specific fertility rates are calculated separately. By first summing these rates for each age and then summing the age-specific rates, the total fertility rate can be calculated. Our assumptions are based on the following supposed future distribution of the number of children:

0 children	1 child	2 children	3 children	at least 4 children
16 %	14 %	47 %	15 %	8 %

We believe that the postponement of childbirth partly leads to a somewhat higher proportion of childlessness and partly to parents having fewer children. Those who have children at an earlier age have more children on average than those who start a family at a later age (Statistics Sweden, 2002). It may be difficult to manage a third or fourth child if people start to build their family in their thirties.

The two child norm has been strong in Sweden and is only expected to get stronger in the future. We believe that it will become somewhat less usual to have 3 or more children (see Figure 3.3). At the same time, however, we believe that the proportion of women having one child will increase slightly.

Figure 3.3
Number of children at the end of the fertile period for women born 1930–1960 and projection for women born 1961 and later. Percent



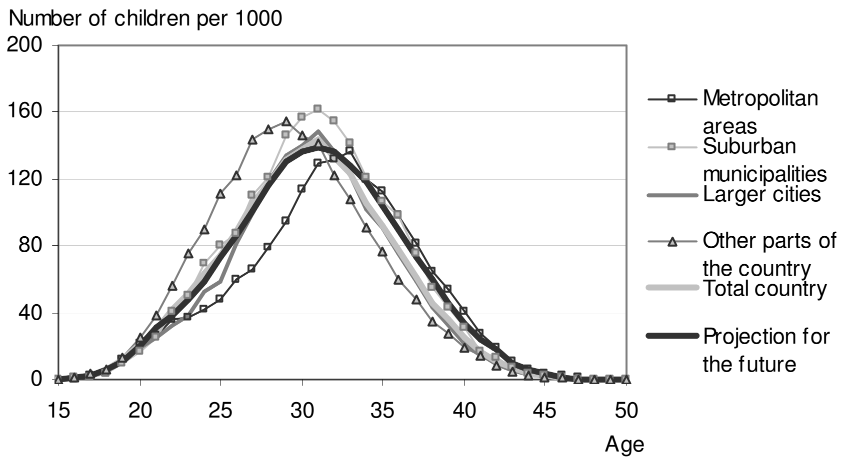
Childbirth in higher ages

Over a succession of years, the trend has been that women are becoming first-time mothers at increasingly older ages. To date, there is nothing that appears to indicate that first-time mothers will be substantially younger in the future. The labour market demands increasingly high levels of education and there are only a few people who have children during their student years. However, it is not enough to have completed ones education, found a job and found a partner to start a family with. Permanent employment with a reasonable level of income is also preferable (Duvander *et al.*, 2001 and Statistics Sweden, 2001b).

We suppose that fertility will also continue to increase for a few more years among the older ages. At the same time we know that a woman's fertile period constitutes a natural frame for when she can have children. A woman's fertility remains relatively stable at a high level up until the age of about 30 and thereafter declines increasingly. This means that older women take an increasingly longer time to become pregnant and that some women experience great difficulty in becoming pregnant (Ministry of Health and Social Affairs, 2001).

Is it realistic to believe that fertility may rise among older women to the extent that we suppose? Figure 3.4 is a comparison of fertility patterns in different municipal groupings - metropolitan areas, suburban municipalities, larger cities and other parts of the country - with the assumed foreseeable national fertility according to our main alternative (1.85 children per woman). In spite of our supposition that fertility at older ages will rise, it will nevertheless lie below the levels attained by older women in metropolitan areas in 2005. We can therefore conclude that the supposition is reasonable within the foreseeable future.

Figure 3.4
Age specific fertility in municipality groups and in the complete country 2005 and age specific fertility according to Statistic Sweden's projection for 2010–2050. Number of children per 1000 women



For breakdown into municipality groups see SCB (2006a)

Alternative scenarios

How fertility trends will evolve in the future is very uncertain. Incorrect assumptions in the forecast can quickly become very significant when used as a basis for determining the future number of children. In order to better understand how the future population is affected by the number of children born, two alternative scenarios to the main alternative are presented in Statistics Sweden's population forecast: one with low fertility and one with high fertility. The alternatives are presented in Table 3.1. The difference between the high and the low alternatives amounted to close to 24 000 children born per year.

Table 3.1
Total fertility rates and number of children born the closest years according to the main assumption and according to alternative assumptions

Year	Alternative					
	Low fertility		Main alternative		High fertility	
	TFR	Number of children born	TFR	Number of children born	TFR	Number of children born
2006	1,70	97 301	1,81	103 234	1,91	109 462
2007	1,70	96 709	1,82	103 585	1,95	111 061
2008	1,69	95 917	1,83	104 240	1,98	112 555
2009	1,68	95 380	1,84	104 803	2,00	113 796
2010	1,64	93 498	1,85	105 551	2,04	116 571
2020	1,65	101 071	1,85	113 154	2,04	124 808

TFR=total fertility rate, given in the number of children per woman.

Low fertility
In the low fertility alternative, we have assumed that future fertility will settle at the same level as that of many other countries in Europe, that is, 1.65 children per woman. In comparison to the main alternative, the low fertility scenario involves women bearing slightly fewer children at younger ages and significantly fewer children at older ages. The fact that some people delay the start-up of their family will thus not, according to this scenario, contribute to a larger proportion of people bearing their first child later in life. In the low fertility assumption, we also presume that people will *not* compensate for the postponement of having children by bearing more children at an older age instead. Consequently, we presume that childlessness will rise to 18 percent. Our assumptions regarding low levels of fertility are based on the following supposed future distribution of the number of children:

0 children	1 child	2 children	3 children	at least 4 children
18 %	23 %	40 %	14 %	5 %

High fertility
In our high fertility scenario we have assumed that women will continue to bear slightly over 2 children on average. This scenario is plausible if the current fertility patterns are more stable than we believe and women continue to bear an average of about 2 children. This depiction of the future would be possible if more people bore children at a younger age and there was a substantial rise in childbearing among the older fertile ages. Such a development can be imagined if it were easier for young people to establish

themselves on the labour market. It is however difficult to say whether biological considerations would hinder a substantial increase in childbirth among the older fertile ages.

In the high fertility scenario, we presume total (or complete) compensation for 'postponed' childbirth. That is, any reduction in childbirth among the younger ages is compensated for by an increased in childbirth among the older fertile ages. This means that no increase in childlessness is considered in the high fertility scenario. Our assumptions regarding high levels of fertility are based on the following supposed future distribution of the number of children:

0 children	1 child	2 children	3 children	at least 4 children
14 %	11 %	45 %	17 %	13 %

Summary of the fertility scenarios
Table 3.2 summarises the assumptions with respect to developments made for the purposes of the forecast's main alternative as well as the two alternative scenarios, low and high fertility.

Table 3.2
Summary of the main assumptions for the fertility scenarios

Assumption	Low fertility	Main alternative	High fertility
Proportion of childlessness among women born 1984 and later	18 %	16 %	14 %
Average number of children born to women born in 1984 and later	1.65	1.85	2.04
Average age at the birth of the first child	Somewhat older mothers	Somewhat older mothers	Somewhat younger mothers
Compensation	No compensation in older fertile ages	Some compensation in the older fertile ages	Full compensation in the older fertile ages
Proportion born 1984 and later who bear at least two children	59 %	70 %	75 %
Proportion born 1984 and later who bear at least three children	19 %	23 %	30 %
Proportion born 1984 and later who bear at least four children	5 %	8 %	13 %

Assumptions on childlessness

In this year's forecast, special emphasis has been placed on the development with respect to childlessness. By means of a reference group (see Appendix 1), experts on childlessness have identified those factors which are particularly significant in assessing future childlessness.

Fertility forecasts are based on assumptions about childlessness for the different birth cohorts. The childlessness referred to here is of a biological nature, that is, that the woman has not had her own biological child. However, she may have had a child via adoption.

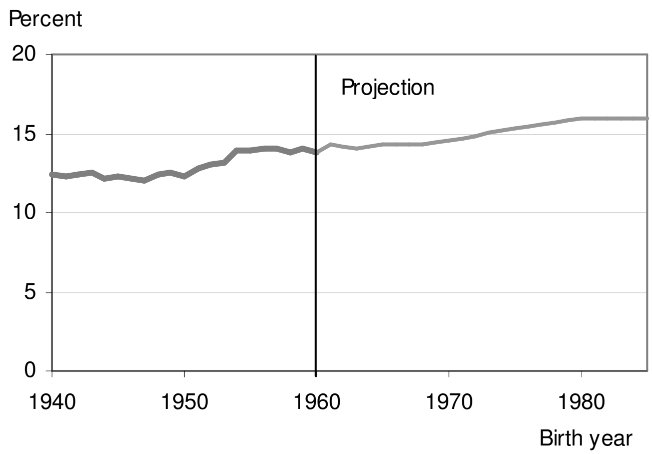
The main assumption on future childlessness which we have had over the last few years and which we intend to maintain until further notice is that childlessness will climb to 16 percent in the foreseeable future. Among women who have just emerged from their fertile period, childlessness is around 14 percent.

In this section, we describe the development of childlessness over the last few years and present the factors which we believe may affect childlessness.

Childlessness trends and assumptions

That more and more people have delayed the start-up of their families has in all likelihood resulted in an increase in the ultimate proportion of childless women. The proportion of childlessness was at its lowest among women born in the mid-1940s, which also comprised the generation which includes the youngest first-time mothers. The proportion of childlessness has since increased somewhat and, among women who have just emerged from their fertile period, the proportion of childlessness has been around 14 percent.

Figure 3.5
Share of childless women at the end of the fertile period for women born 1940–1960 and projection for women born 1961 and later. Percent

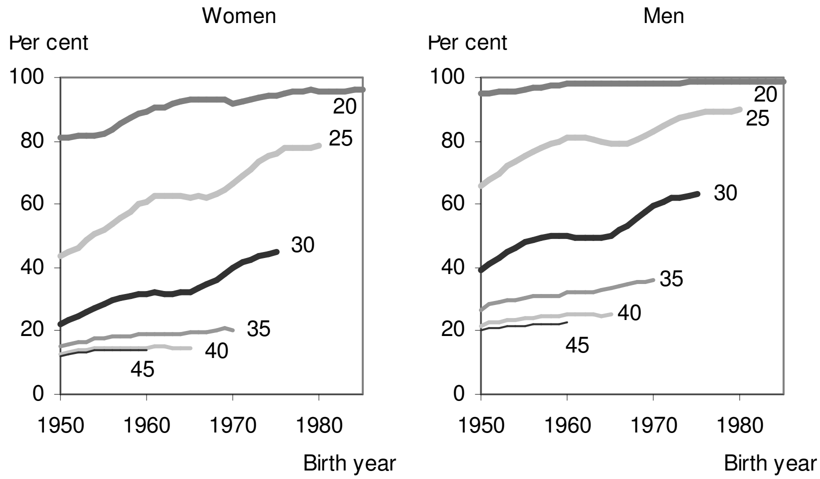


The postponement of childbirth began in the 1970s but accelerated in the 1990s. The postponement which took place in the 1990s was particularly evident among women born in 1968 and later. Hence, we presume that women born up to and including 1968 will have a total childlessness identical to that of women who have just concluded their fertile period. For women born between 1968 and

1980, a successive increase in the proportion of ultimate childlessness per cohort is presumed. The increase is assumed to occur gradually from 14 percent among women born in 1968 to 16 percent among women born in 1980 and later.

Figure 3.6 clearly shows that the postponement of childbearing has yielded an increasing number of childless people as aging progresses. Among women born in 1950, slightly more than 20 percent were childless at the age of 30. In 2005, 45 percent (women born in 1975) were childless at the age of 30. If one compares the proportion of childless women at say, the age of 35, then the differences between the birth cohorts are not as great. More recently, childlessness has risen somewhat for women aged 27 to 34 years although it has remained constant for other age groups.

Figure 3.6
Share of childless women and men by age and year of birth 1950–1985. Percent



Historically, there has been a relatively large proportion of childless women in comparison to current childlessness. It is estimated that some 20 to 25 percent of women born in the 1800s remained childless (Alm Stenflo, 1989). This is also the case for many other countries (Sobotka, 2004). Among white women born in the USA at the beginning of the 1900s, 19 percent remained childless. The corresponding percentage among non-whites was 25 percent. Among women of the same age in France and Germany, every fourth woman remained childless.

Sobotka (2004) has forecast childlessness for 16 European countries as well as the USA using two different methods. In Sweden, these two methods resulted in a childlessness of 17.5 percent and 18.6

percent. The reason that we presume, in the population forecast, lower childlessness in Sweden (16 percent) than Sobotka did is that we assume greater childbirth in the older fertile ages.

Factors affecting childlessness

We believe that several factors are particularly significant in the assessment of future childlessness. It will be important to monitor developments in these areas. Some factors evolve in such a way that they may result in increases in childlessness while other factors may lead to reductions in childlessness. The evolution of other factors such as voluntary childlessness remains unclear.

Involuntary childlessness

Involuntary childlessness is considered to be the case when unprotected sexual relations with one partner of the opposite gender, over the course of one year or more, do not result in a pregnancy. Failure to become pregnant is a relatively common problem. It is estimated that between 10 and 15 percent of all couples are affected by involuntarily childlessness.

It can generally be said that involuntary childlessness can be classified as dependent on three different factors:

- Physiological factors. Age plays a decisive role here. One example of this is that the quality of a female's eggs deteriorates as the woman ages.
- Lifestyle factors. Drugs, sexually transmitted diseases, being overweight or underweight, stress and sexual problems are examples of lifestyle factors that *may* affect fertility negatively.
- Pathological factors. Certain diseases may cause infertility. Age and lifestyle factors both in turn affect illness-related infertility problems. Illness-related infertility which is not dependent on lifestyle factors or age has not increased.

Assisted reproduction

About 5 percent of those who have children today have had help getting pregnant. Three percent have become pregnant via IVF (in vitro fertilisation) and 2 percent via other means. Today almost all forms of female infertility can be treated through the use of IVF. In 2002 some 11 000 IVF treatments were carried out in Sweden and about 25 percent of these led to a live birth (The National Board of Health and Welfare, 2005).

The Nordic countries lead the world, with the exception of Israel, in the greatest number of IVF treatments performed per million inhabitants (Finnström et al., 2005). The demand for treatment exceeds the supply and long queues to county clinics are the norm. Assisted reproduction however can not compensate for the natural decline in fertility with age. Leridon (2004) has studied this and the results indicate that only half of the involuntary childlessness due to the postponement of childbirth from 30 to 35 years of age can be compensated for with assisted reproduction. Similarly, according to the calculations, less than 30 percent of the childlessness due to the postponement from 35 to 40 years of age can be compensated for given current technology. However the continued development of technology could translate into the ability to compensate for age to a greater extent. One example of such a development is egg donation which was approved in Sweden on 1 January 2003.

Attitudes toward childlessness

In Statistics Sweden's latest opinion survey of young people on childbirth (2001a), few were found to never want a child. Among the childless men and women who were living together and aged 31 or below, less than 5 percent indicated that they will *not* or *probably not* have children (see Figure 3.7). It is not until the age of 35 that the proportion who believe they will not have children increases sharply. This likely includes a large proportion of the involuntarily childless (see Figure 3.8). Many couples report that the reason they have not yet had children is that they have not been successful in getting pregnant. Many singles report that it is because they do not have a partner.

According to the Eurobarometer 2001, a recurrent opinion survey within the EU, the average proportion of those who do not want children in the EU15 member states was 6 percent among women aged 18 to 34. In four of the countries (Germany, Austria, the Netherlands and Belgium), more than 10 percent did not want children. In other countries, the proportion was 5 percent or less (Fahey et al., 2004).

There are many who believe that voluntary childlessness will rise since there are more lifestyles to choose from today. We have not yet however seen any research which supports this though most surveys are beginning to be out of date. The latest opinion survey was conducted in 2001. It is important to monitor this development since changed attitudes can radically affect fertility. It is therefore very important that a new survey on attitudes toward childbirth be carried out as soon as possible.

Figure 3.7
Share of cohabitants and single women and men that think they will not or probably will not have children in the future. Percent

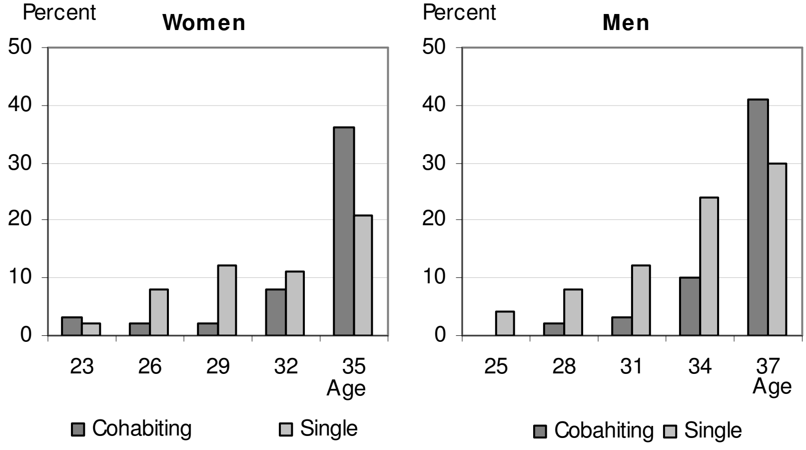
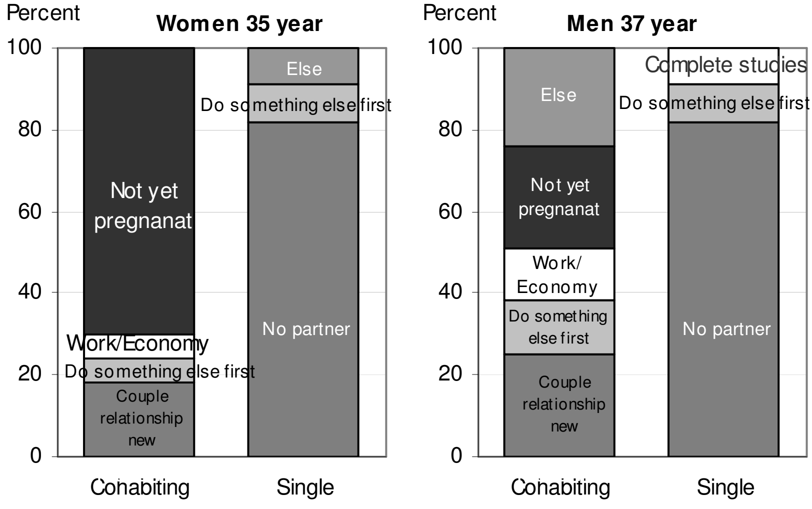


Figure 3.8
Reasons for not having children. Cohabiting and single women 35 years old and men 37 years old. Percent



One study carried out among Swedish university students (Lampic *et al*, 2006) shows that both men and women have an all too optimistic perception of a woman's ability to get pregnant. They were not sufficiently aware of the natural decline in a woman's fertility in her thirties. One third of the men believed that female fertility first declines after the age of 45.

Couple relations
A shrinking proportion of couples have children from their first couple relationship (Statistics Sweden, 1995). When men and

women plan to start a family, the most important consideration is a stable couple relationship. As shown in Figure 3.6, the most important reason for childless singles to not yet have had children is that they did not have a partner. As a whole this points to the prolongation of the "search for a mate" process, that is, the time it takes to find a partner to build a family with.

International comparisons

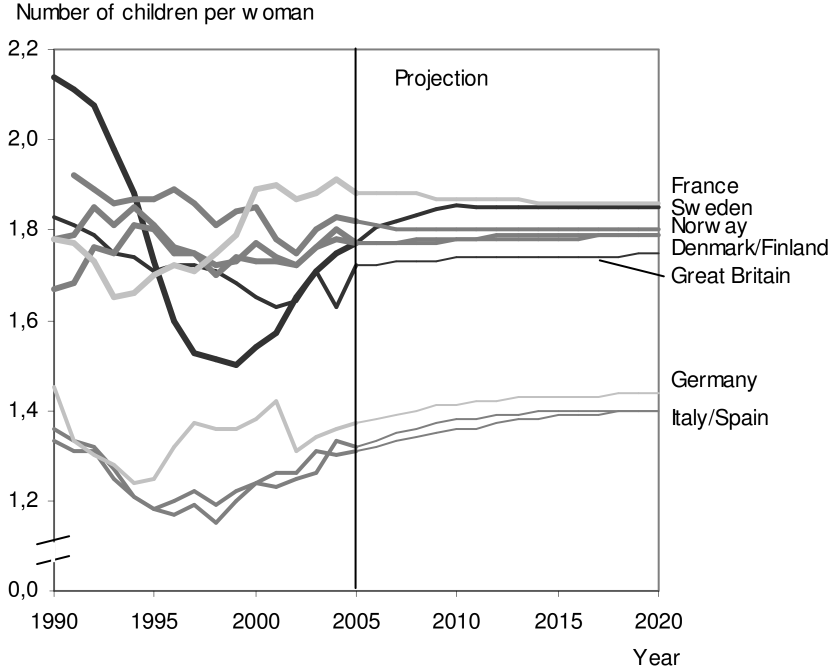
In Sweden, the fertility rate in 2005 was 1.77 children per woman. From a European perspective, this is a high rate (see Figure 3.2). All the Nordic countries have averages well above the European average. One explanation is deemed to be the generous family policies which make the combination of children and gainful employment possible for both men and women. In many countries within Europe, family policies have an entirely different form and can often be considered in connection with remarkably low fertility rates.

In Germany, fertility rates have remained under 1.5 children per woman since the beginning of the 1980s. Swedish policy has aimed to get more women into the work force while German policy has instead rather encouraged women to stay at home. One consequence of this is that well-educated German women have chosen to limit the number of children they have or remain childless (Hoem, 2005). Family policy in Germany however will face significant changes in the coming years.

In the EU's assumptions on future fertility, only Sweden and France are presumed to have a fertility of 1.85 children per women in the foreseeable future (see Figure 3.2). Right behind them are Denmark, Finland and Norway with about 1.8 children per woman and the UK with 1.75 children per woman. Fertility in Germany, Italy and Spain is presumed to remain on a level of about 1.4 children per woman.

The USA is generally considered an exception in the western world. Despite low levels of family support, the USA has high fertility rates. The fertility rate in 2004 was 2.05 children per woman, a level which has been constant throughout the 1990s. There are various explanations for the USA's relatively high fertility rate (Persson, 2006). One important factor is that childbirth generally occurs at a younger age. The population forecast for the USA assumes that future fertility will head towards 2 children per woman.

Figure 3.9
Total fertility rate for a selection of countries 1970–2004 and Eurostat's projection for 2005–2020. Number of children per woman



The total fertility rate is a measure standardised by age. Thus the differences are not due to variations in age composition.

Mortality

Life expectancy

The concept of life expectancy at birth is often used to describe the state of health in a country. What is not always considered is that this measurement is a kind of index since it is calculated for a fictitious group of individuals whose number is initially set to 100 000 and is assumed to be exposed to a given cross section of mortality for different ages over an entire lifespan. We could say that on every measurement occasion, a life expectancy for every fictitious group based on the latest available mortality structure is regenerated. From a forecasting perspective, we can also see how the assumed future mortality structures affect the life expectancy in various years.

The life expectancy for a newborn child has risen since the middle of the 1800s and has not yet reached an upper limit. There are different schools of thought when it comes to the potential maximum life expectancy. There are those who maintain that there is an upper limit of around 85 years of age (Fries, 1980) while others maintain that it is difficult to ascertain a definite upper limit to human being's biological life expectancy.

Historically, the rise in life expectancy during the latter part of the 1800s was significant and gained increasing momentum towards the turn of the century. During the first half of the 1900s, the strong rise continued and then tapered off after 1950 to settle at a somewhat lower rate of growth (see Figure 3.10). Today life expectancy is 82.8 years for women and 78.4 years for men (2005), an increase of 35 years over the last 150 years.

It is primarily the reduction in the risk of death due to infectious, respiratory or deficiency diseases which lies behind the changes in life expectancy. This development was principally relevant for children and younger people. The shift away from these diseases as causes of death is referred to as the epidemiological transition (phase 2)[5]. The trend since around the 1950s has indeed been a

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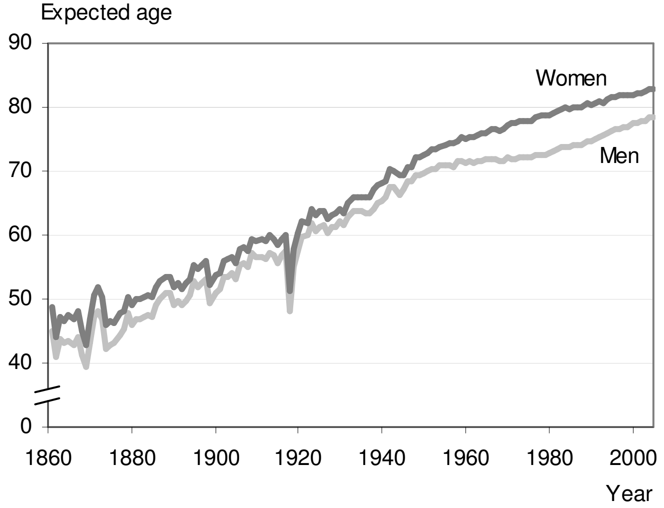
[5] The epidemiological transition theory is a general way of describing the evolution of the most important causes of death throughout different periods of history. The first phase is characterised by high mortality due to infectious and deficiency diseases. Better hygiene and higher standards of living then lead to a substantial reduction in the fatality of these types of diseases. This is referred to as phase 2 and mainly affects children and young people. In phase 3, chronic diseases such as cardiovascular diseases as well as cancer are the leading causes of death and

reduction in mortality due to chronic disease. This trend was initially observed among women but the same trend was seen among men from 1980 onwards (the epidemiological transition phase 2).

These development trends have of late meant that the difference in life expectancy between men and women has diminished increasingly from 6 years in the 1970s to 4.4 years today.

Figure 3.10
Life expectancy by sex in Sweden 1860–2005



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mortality is relatively stable at a low level. Since the 1970s, when the epidemiological transition theory was first published, mortality due to chronic disease has plunged. This has led researchers to add a fourth phase, characterised by declining mortality due to chronic disease as well as declining mortality among the elderly (Olshansky & Ault, 2002).

Figure 3.11
Remaining life expectancies at ages 50, 65, 75 and 85 years 1860–2005

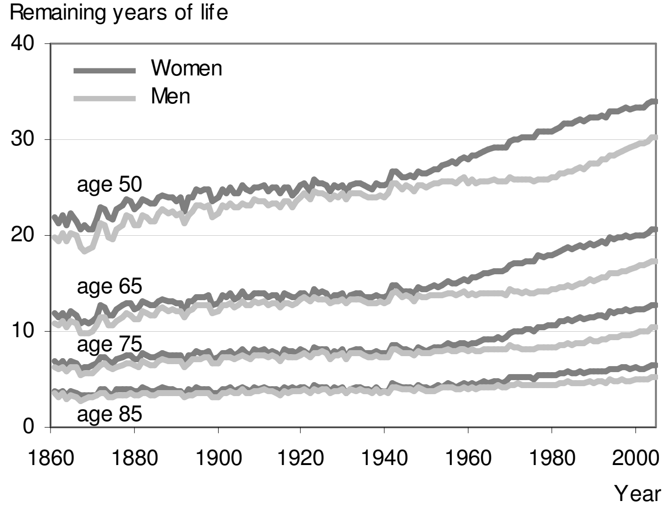

Figure 3.11 shows the remaining life expectancy for people who have reached certain ages. For those who have reached the age of 50, no significant changes were observed during the first half of the 1900s. It is during the latter part of the 1900s that substantial increases in average remaining life expectancy (declining mortality due to chronic diseases) were first seen. This is when we began to speak of an ageing population. Changes had previously mainly pertained to the survival of children and young people.

Gender differences in survival after middle age were not particularly large during the mid-1900s but thereafter grew significantly. This trend can be observed for women 30 years before it can be seen for men. Nevertheless many of the now known risk factors evolved in a similar way for both men and women. Differences in some lifestyle components have thus clearly been pivotal during this time. It is interesting to note that the reason that the current percentage of elderly women is so great relative to that of elderly men emanates mainly from this relatively modern trend. Today some two thirds of those aged 80 and above are women. The fact that it is a lifestyle factor which has changed means that men will also likely reach similar high levels of life expectancy in the future, especially in light of the fact that lifestyle changes for men have progressed in a clearly positive direction over the last few decades. The latest trend shows that the large difference in life expectancy previously noted between men and women is not absolutely predetermined. Environmental factors which affect health are probably of great significance.

Increased life expectancy, 1950-2005

When we speak of life expectancy we often mean life expectancy from birth. Changes in this life expectancy are of general interest and often referred to. Upon calculation of the future population, the mortality rates for those over the age of 50 are of notable significance. Mortality at a younger age is so low that changes have but a minor significance from a forecasting point-of-view. It can nevertheless be of interest to look at the relation between mortality trends and the average remaining life expectancy for a 0 year old during the latter part of the 1900s.

Developments in mortality from 1950 to 2005 have resulted in an increase in the life expectancy of men from 70 to 78 years, or by an average of 0.16 years per calendar year. For women, life expectancy rose from 72 to 83 years or by an average of 0.19 years per calendar year.

Table 3.3 shows what improvements with respect to mortality for different ages, between adjacent five-year periods, have meant in terms of life expectancy (for a 0 year old). The average total increase for every five-year time interval is indicated in the right-hand column. For women it is mainly developments among the elderly which account for the increase in life expectancy during the period 1951-2005. The increase for men has of late consisted mainly of improvements with respect to mortality among middle-aged men (20-64 years old) as well as among the elderly.

Table 3.3
Changes in life expectancy at birth between different time periods. Total change and changes for different age groups (years)

Time period	Change (in year)			
	By age group			Total
	0–19 year	20–64 year	65– year	
Women				
1951–55 to 1956–60	0,3	0,6	0,4	1,2
1956–60 to 1961–65	0,2	0,3	0,5	1,0
1961–65 to 1966–70	0,3	0,2	0,5	0,9
1966–70 to 1971–75	0,2	0,2	0,7	1,1
1971–75 to 1976–80	0,2	0,1	0,5	0,9
1976–80 to 1981–85	0,1	0,3	0,6	1,0
1981–85 to 1986–90	0,1	0,1	0,5	0,7
1986–90 to 1991–95	0,1	0,2	0,5	0,8
1991–95 to 1996–00	0,0	0,4	0,5	0,9
1996–00 to 2001–05	0,0	0,2	0,3	0,6
Men				
1951–55 to 1956–60	0,3	0,3	0,1	0,7
1956–60 to 1961–65	0,3	0,1	0,0	0,4
1961–65 to 1966–70	0,3	-0,1	0,1	0,3
1966–70 to 1971–75	0,3	-0,1	0,1	0,2
1971–75 to 1976–80	0,3	-0,0	0,1	0,4
1976–80 to 1981–85	0,2	0,5	0,4	1,1
1981–85 to 1986–90	0,0	0,4	0,4	0,8
1986–90 to 1991–95	0,2	0,6	0,5	1,2
1991–95 to 1996–00	0,0	0,7	0,5	1,3
1996–00 to 2001–05	0,1	0,4	0,7	1,1

Mortality trends for middle-aged and elderly people, 1950–2005

The risks of death for adult men changed relatively little during the years 1950-1980. One can even establish increased mortality for several ages, especially for middle-aged people. One explanation for this trend may be that the balance between nutrition and physical activity, which is crucial for good health, was negatively affected by the changes in the nature of working life and the subsequent move away from physically-demanding work to more sedentary work.

This caused forecasters to allow mortality trends for men to remain unchanged or even to rise in certain alternative scenarios. In hindsight, and given the subsequent large decreases in mortality, this future perspective may seem rather odd but, at the time, it was considered a conceivable evolutionary path for mortality (see, for example, Carlsson et al., 1979). Around 1980, however, mortality among men began to fall sharply and has since fallen by an average of around 2 percent per year for men from middle age to about 80 years old (see Figure 3.15).

For women, mortality fell throughout the period 1950-2005. The annual rate of reduction has averaged between one and two percent. From a forecasting perspective, the different mortality trend for women was assumed to be of a temporary nature. It was assumed that declines in the mortality of women would subside and that the curves for men and women would then become closer. Gender differences have indeed diminished but this is because declines in mortality have been greater for men than women over the last 20 years.

Among those over 85 years of age, annual declines in mortality have been relatively low for both men and women. It may be added that, in recent years, significant fluctuations in mortality have been observed due to bouts of influenza. Over the last 2 years, however, the number of deaths has been very low among those aged 80 to 95. This has affected the life expectancy measured for these ages. This phenomenon will be addressed later in the new forecast assumption.

During the last 10 years the rate of decline in mortality for upper middle-aged women has subsided slightly.

Causes of declining mortality after 1980

The rising mortality observed for men up until the end of the 1970s was caused by an increase in mortality due to cardiovascular disease and cancer. This increase in mortality due to cardiovascular disease was not observed for women. However, a weak tendency towards an increase in mortality due to ischemic diseases among middle-aged women and a relatively substantial increase in mortality from lung cancer were observed. Total mortality nevertheless fell, albeit at a lower rate. Different dietary habits between men and women may account for the discrepancy in mortality trends observed during this period. A report from the Swedish National Food Administration (Becker et al., 1994) highlights differences between men and women's diets over several decades (1950-1990). The surveys indicate that women have, to a certain extent, had better eating habits than men. Another factor which is seldom mentioned is that urbanisation may have affected mortality trends. The migration from rural to urban areas has meant that women left regions with higher mortality to take up residence in regions with lower mortality (from the 1920s to the 1960s[6]). For men, the mortality relation was the inverse: men moved to regions with higher mortality (Demographic reports 1992:3).

Changing lifestyles contributed to breaking this trend in the 1980s and yielded a sharp decline in mortality for *both* men and women. A number of scientific studies of the different risk factors for cardiovascular disease contributed to a greater understanding of the importance of lifestyle for health. The information on risk factors which conveyed by public authorities and the mass media has likely been important. It is probable that, since the 1970s, the general public's knowledge of the different health risks has changed radically.

For men, the percentage of daily smokers has been falling since the late 1970s and this has had a significant effect on the development of both cardiovascular disease and cancer. Fat-reduced food and increased exercise have likely been significant in terms of diminished cardiovascular disease. The consumption of alcohol has also fallen during this period.

The causes of reduced mortality in women over the last 20 years have presumably been the same for men with one significant exception. The percentage of smokers has continued to successively increase among older women. This is because more women in the younger generations are smokers. Despite this, mortality due to cardiovascular disease has fallen but mortality from lung cancer, which is more specifically dependent on smoking habits, has continued to rise.

In conclusion, it is important to note that medical treatments for cardiovascular disease have improved greatly and that this has played a significant role in reducing the risk of death associated with these diseases. One simple indicator of this change is that mortality due to cardiovascular disease (heart attacks) has sunk at a far greater rate than the incidence of the disease. One study pertaining to the early 1980s showed that approximately 30 percent of the decline in mortality due to heart attacks could be attributed to medical improvements (Hammar et al. 1992). The study concerned middle-aged men in Stockholm county.

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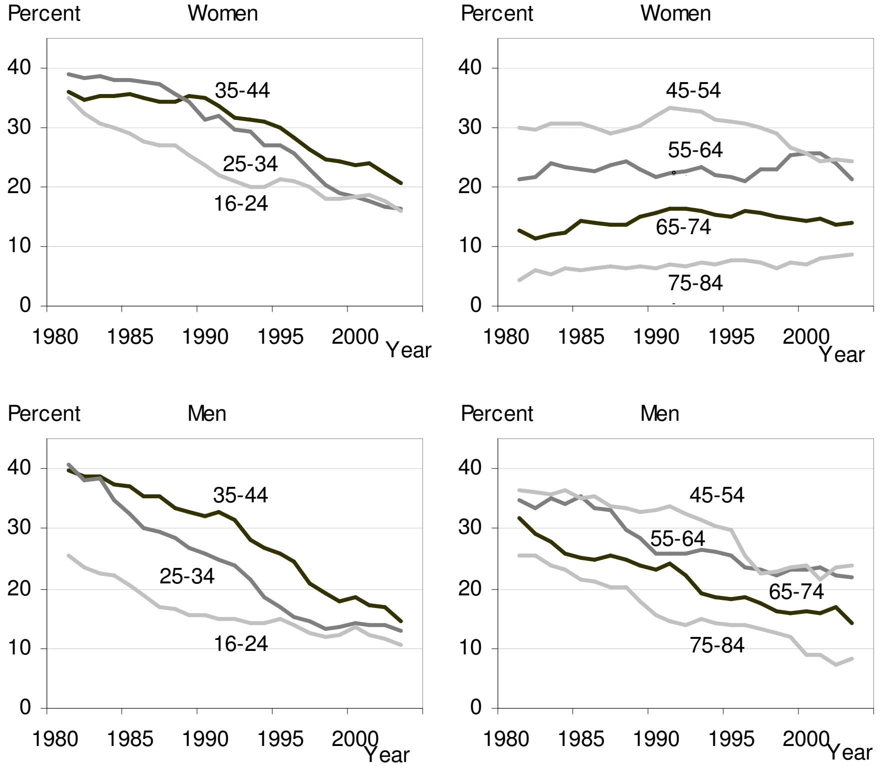
[6] The merging of municipalities meant that sparsely populated areas were incorporated into urban areas during the 1960s. The concept of a city thus lost its meaning as a classification within statistics.

Figure 3.12
Number of daily smokers by age and sex, 1981–2003[1)]. Percent



1) Moving average (3 years) Source: Living Conditions Survey (LCS, Statistics Sweden)

Future mortality trends

The improvements in both living conditions and medical treatments in a variety of areas has, as mentioned previously, been an underlying factor the downturn in mortality in recent decades. The assessment made in this forecast of future developments is roughly the same as in the previous forecast made three years ago, involving a continuing decline in mortality[7].

There are several positive indications of future improvements in living conditions and lifestyle as well as continued improvements in medicine. General health awareness has increased in several areas in recent decades and we presume that this will continue into the future. We know, for example that fewer young people are taking

[7] The forecasts for the intervening years, 2004-2050 and 2005-2050, have maintained the same risk of death as the 2003-2050 forecast. For purposes of this report, the previous forecast refers to the 2003-2050 forecast unless otherwise indicated (Demographic reports 2003:4).

up smoking, the proportion of smokers among men is falling and more people are exercising regularly during their leisure time. These are all factors which are significant for health and life expectancy.

At the same time however there are lifestyle factors which are the cause of some concern. Although smoking is currently declining among young people, there is a large difference between the smoking habits of older and middle-aged women. Today relatively few older women smoke or have smoked. The number of women who have smoked or are smokers will increase somewhat during the forecast period for certain ages. Increasing proportions of overweight and obese people in the population have also been noted in recent years[8].

In the last forecast, 2003-2050, (Demographic reports 2003:4), certain simple calculations related to the significance of changes in lifestyle factors such as smoking, exercise and the incidence of obesity were made with the help of data from Statistics Sweden's Living Conditions Survey (LCS). For men, the combination of a lower proportion of daily smokers and a greater number who exercise regularly yielded a positive effect, which was somewhat dampened by an increase in the proportion of overweight and obese people. For women, increased exercise offset some of the negative factors. The above observations on exercise, smoking and obesity apply primarily to middle-aged and older people.

Even if no further significant changes in lifestyle were to occur, those that have already taken place effect the evolution of mortality among younger generations over the remaining course of their lives, assuming that the changes of the 1980s and 1990s are lasting (better nutritional awareness, regular exercise, fewer daily smokers, etc.). A longitudinal effect on mortality can thus be derived for any given age.

There are also clearly negative factors which are mainly relevant for younger people. The increased stress of working life, particularly the kind which the individual has little or no chance to affect, may show itself to have serious health consequences in the future. Alcohol consumption has increased in recent years and this may

[8] The increased proportion of overweight and obese people and the increase in regular exercise are somewhat contradictory; this alludes to differences in the evolution of trends across groups within society (for example, differences between socio-economic groups). There is also a tendency towards more sedentary activity in everyday life, particularly among children (computers, TV games, etc.).

over time have significance on alcohol-related mortality[9]. A better organisation of work with increased flexibility in how work is done along with improved health information may offset these factors.

Medical progress has led to reduced mortality. On the medical front, continuing positive developments are likely and this progress may contribute to both a better quality of life and increased life expectancy. Significant developments have taken place with respect to the treatment of cardiovascular diseases. Within the area of cardiac surgical procedures, the number of bypass operations as well as angioplasties has increased. Better treatment for sufferers of myocardial infarctions is also essential. General medical treatment within this area has improved through the use of blood pressure treatments and anti-cholesterol agents. In terms of cancer diseases, more and more lives are being saved through early detection and improved treatment methods. Such medical developments are assumed to continue into the future.

Another important area is genetics and biotechnology. We have yet but seen the beginning of the changes that these techniques will bring about. Drug manufacturing, diagnostics and treatments based on this area of research are increasing and will continue to rise.

Nevertheless, it must be acknowledged that the more serious diseases that are cured, the greater will be the proportion of elderly people with previously (although cured) vitality-reducing diseases. This can negatively affect mortality trends at the upper ages. It should be noted that Sweden has one of the oldest populations in the world, i.e. a population with one of the highest proportions of very old people. Influenza epidemics thus affect the number of deaths from year to year.

Mortality due to influenza
Influenza usually emerges during the December to March period. Among older people with poorer immune defence systems, a bout of flu can have serious consequences. Excess mortality among the elderly during the six months of winter is largely due to influenza. Influenza can lead to complications such as pneumonia and stroke and it is mainly these complications which in turn lead to greater mortality among the elderly during flu epidemics.

[9] The effect of the increase in drug abuse and other substance abuse may also be significant.

The spread of influenza and the severity with which it afflicts the population varies from year to year. On occasion, influenza has been widespread and caused many deaths. The Spanish Flu - the influenza pandemic of 1918-1919 - is the most extreme example. The Hong Kong Flu and the Asian flu are examples of outbreaks occurring during more recent decades[10]. The beginning of the twenty-first century saw a number of significant influenza periods but outbreaks over the last 3 years have been less significant and have afflicted fewer people. The effects of influenza on mortality since 2003 have therefore been small. The number of annual deaths averages some 93 000. In 2004 and 2005, the number of deaths in Sweden totalled about 91 000 and 92 000 respectively.

Vaccination against influenza provides some protection against becoming ill and those who catch the flu despite vaccination have milder symptoms and fewer complications. Research on more effective vaccines for the elderly is ongoing. The effect of flu vaccinations on mortality is not entirely clear. Certain studies reveal very significant downturns in mortality, up to one half of the mortality among the elderly. Other studies show more modest effects (Simonsen, 2005).

In recent years the influenza vaccine has gained increasing attention and many county councils now subsidise vaccination of the elderly and members of other groups at risk. The Swedish Institute for Infectious Disease Control (SMI) recommends that the aforementioned groups are vaccinated. Today about half of those aged 65 and above in Sweden get vaccinated (Lindberg, 2005).

Summary of current development trends:

Positive factors:
- Smaller proportion of smokers
- Increased exercise levels
- Better nutrition awareness
- Cohort effects of previous positive lifestyle changes
- Medical progress

Negative factors:
- Greater proportion of smokers among older women
- Increased stress
- Increased alcohol consumption

[10] Possible pandemics such as the Avian Flu and its effects on a population cannot be assessed in this context.

- Greater proportion of people suffering from obesity
- Greater proportion of people who have had a severe disease

The factors which we have chosen to discuss here are assumed to be relevant and closely associated with health developments in Sweden. A number of other factors such as socio-economic factors or environmental factors could of course also have been chosen.

There are thus many development tendencies which affect mortality whether positively or negatively. The overall picture however is that mortality for the foreseeable future should fall in varying degrees for the different age groups. In terms of the negative factors, the future lifestyle choices made by young people will be important.

Calculation of future mortality trends

With the help of the Lee-Carter model (refer to section on Facts about the statistics), we have estimated parameters for the decline in mortality for the most important ages (41 to 90 years). The estimated parameters with an increased number of observations were roughly consistent with the estimates obtained from the forecast 3 years ago. For this reason, we have retained the assumed, extrapolated changes in mortality from the previous round of forecasting. The 2004 and 2005 forecasts are also based on the same mortality trends for the relevant calendar years (Statistical Reports, Statistics Sweden). There is however one exception. The initial input death risks for the first forecast in 2006 have been adjusted for, among other things, the effects of the increased proportion of elderly vaccinated against influenza.

The relative downturn in mortality is consistent with the results of the Lee-Carter model for the years 2007 to 2015. In the longer term, the continuing reduction in death risks is assumed to be somewhat offset as a result of changes in the composition of causes of death, as was the case in the previous round of forecasting. We should consider that the reduction in mortality which we extrapolate is largely related to the decrease in deaths due to cardiovascular diseases. This cause of death category is therefore extinguished more quickly than other cause of death categories[11]. The other cause of death categories, which subside more slowly, thus gain in relative significance and result in a slower decrease in total mortality. In line with this de-escalation, we assume that the rate of decrease *within*

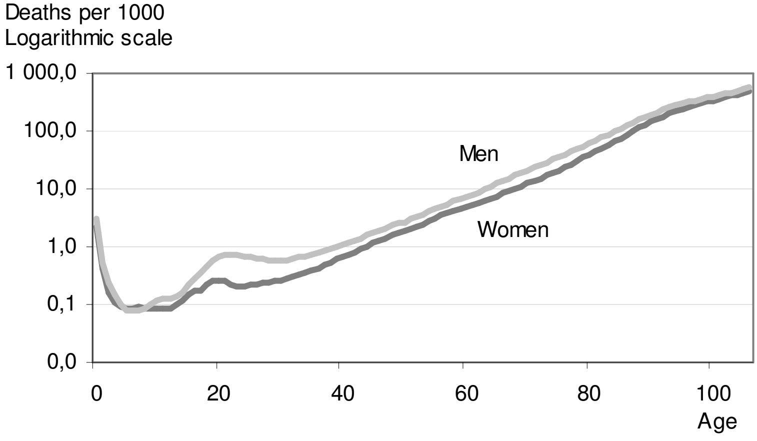
[11] The cause of death categories which were studied include cancer, cardiovascular disease, accidents/suicides and other diseases (underlying cause of death).

each cause of death category remains constant for the entire forecast period.

Forecast assumptions for the first year - 2006
As a starting point, the death risks applied to 2006 in the previous forecast are used as a basis for the assumptions on future mortality trends. These initial risks of death have, however, been adjusted somewhat for both men and women within the age interval 80 to 94 years. The adjustment involves a reduction in mortality of 2 percent for women and 1 percent for men within the age interval[12]. Adjusting the risks of death for the first year of the forecast means that the effects of the adjustment are implicit in the remaining years of the forecast. The reduction in mortality is justified since we assume that the expansion of the flu vaccination programme in recent years may have contributed to the above-mentioned calculated effect. We have observed a tendency towards lower mortality in these ages during 2004-2005. It must however be remembered that variations in the incidence of influenza yield large sudden changes in the number of deaths from year to year. It is thus very difficult to assess whether it is the influenza effects themselves or the vaccinations which are the cause of the observed effects. The reductions are based on the difference between observed and expected mortality in 2005 for the specified age interval; this difference is then reduced (50 percent) to allow for the possibility that this difference solely reflects the absence of influenza. If this was the case, no adjustment should have been made as influenza varies from year to year. There may of course be other factors to consider, such as improved general healthcare.

[12] The de-escalation is 2% for women and 1% for men in the 80 to 94 year age interval. The adjustments are spread out across the front and back ends of the age interval. Declines of 0.5 percent, 1 percent and 1.5 percent in mortality are applied, respectively, to women aged 77, 78 and 79 years; corresponding re-escalations of 1.5 percent, 1 percent and 0.5 percent in mortality are applied, respectively, to women aged 95, 96 and 97 years. For men, the adjustment corresponds to a reduction in mortality of 0.5 percent at 79 years of age and a re-escalation in mortality of 0.5 percent at 95 years of age.

Figure 3.13
Death risks 2006 by age and sex. Per 1000



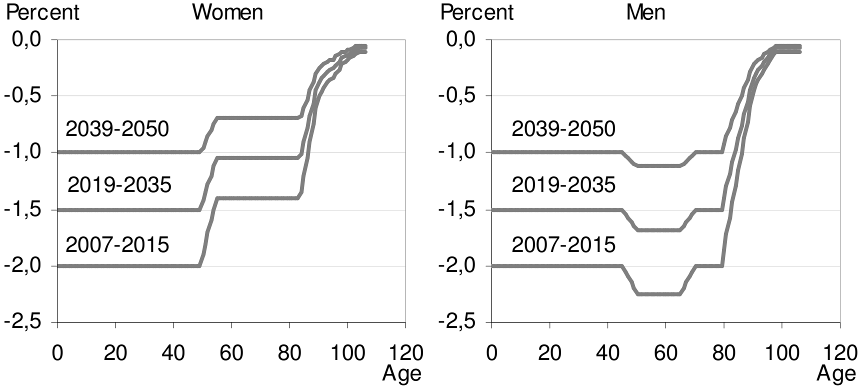
Assumed changes in mortality

The risks of death are presumed to fall yearly (2007-2015) according to the pattern presented in Figure 3.14. For men aged 45 and under, the risks of death are presumed to fall by 2 percent yearly[13] while the annual reductions in mortality are assumed to be somewhat larger for those aged under 70 (2.25 percent) and to subsequently successively subside with age. Reductions in the risks of death correspond in large part to the trends observed during the 1990s. The reductions in the risks of death are assumed to continue unchanged up until 2015.

The risks of death for women over time (2007-2015) are assumed to diminish in about the same way as those for men. Between the ages of 0 to 49 years the risks of death diminish by 2 percent annually. From 50 to 83 years of age, the decline in mortality is however only 1.4 percent. The rate of decline for women also remains unchanged up until 2015.

[13] Based on an average.

Figure 3.14
Predicted yearly reduction of death risks for men and women by age for different periods. Adjusted values. Percent



Over the longer term, a somewhat slower decline takes place due to changes in the composition of causes of death. For men a yearly decline amounting to 75 percent of the original rate of decline is presumed for the period 2019-2035[14]. Thereafter, the rate of decline subsides successively during a subsequent four-year period until it reaches 50 percent of its original level (see Figure 3.14).

We estimate that this deceleration should take the same form as that in the previous forecast since the evolution of the causes of death share the same structural properties. We therefore retain the same deceleration as in the previous forecast. The procedure, as used in the previous forecast, is described broadly below.

The percentages calculated above used the Lee-Carter method applied to the four leading cause of death categories (cancer, cardiovascular disease, accident/suicide and other diseases). The calculations were done for the ages 40 to 79 years for the 1978-2000 time period (see the section on Methods). Total mortality is the sum of mortality rates for the different cause of death categories.

The decline in total mortality, so calculated, corresponds to the above indicated deceleration in the decline of mortality. In this case consideration is also given to changes in the composition of causes of death since mortality has been divided up according to the cause of death categories. It should be noted that mortality is falling in all

[14] It should be noted that changes in the rate of decline for certain years are assumed to occur successively (linear deceleration). The transition of the rate of decline to a new level occurs within a four year period, 2015-2019.

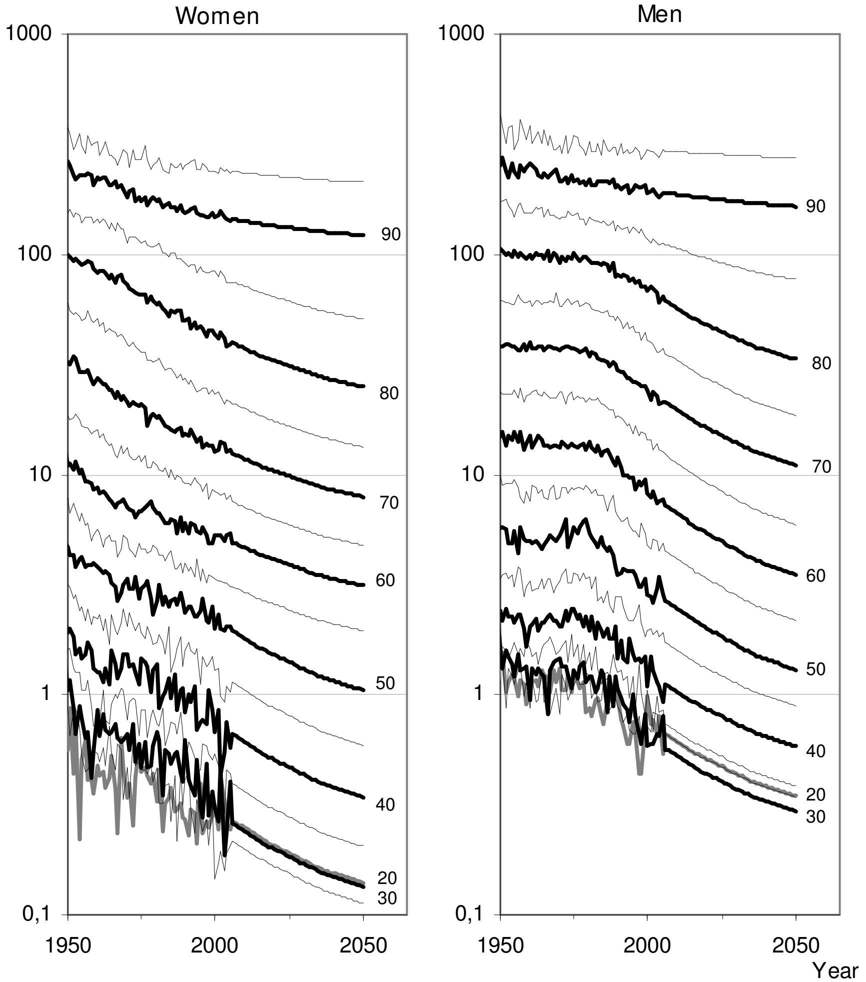
cause of death categories. For older people in the chosen age interval, the decline in mortality due to cancer and other diseases is nevertheless very small.

The underlying association with the decelerating decline in mortality is not as evident among younger people as it is among older people. Nevertheless, we have allowed younger people to be subject a weaker decline in mortality of the same proportions as older people. The exceptionally large declines observed in causes of death such as accidents and suicides for younger people during the 1990s are not expected to continue to the same extent throughout the entire forecast period.

Summary of mortality trends (1950-2050)
The two diagrams below summarize mortality trends from 1950 onwards to 2050. A logarithmic scale has been used. The rate of changes in mortality can thus be compared for different ages. The same inclination of the curves illustrates that the percentage declines in the death risk has been the same.

Figure 3.15
Mortality rates (deaths per 1000) by age and sex 1950–2005 and assumptions for 2006–2050

Logarithmic scale



Higher life expectancy

Given the assumed changes in mortality rates, the life expectancy for men is calculated to rise from 78.4 years in 2005 to 83.6 years in 2050 while the corresponding figures for women are, respectively, 82.8 years and 86.3 years. As can be seen from the diagrams below, the increase in life expectancy during the coming 50 years is expected to be slower than that observed during the last 50 years. This is particularly true for women. The remaining life expectancy at 65 years of age is expected to increase from 17.4 years to 20.8

years for men and from 20.6 years to 23.0 years for women during the period 2005-2050.

Figure 3.16
Life expectancy at birth 1950–2005 and projection for 2006–2050

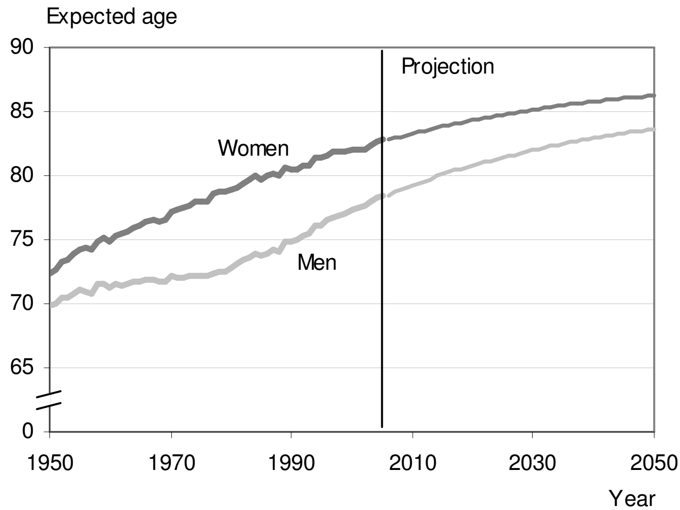
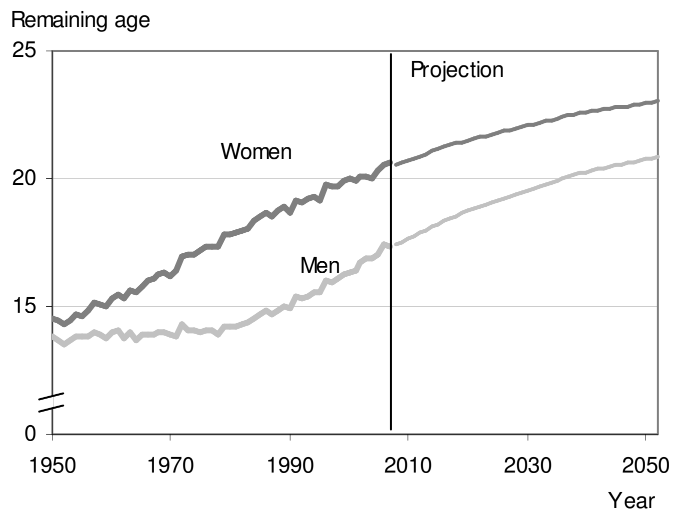


Figure 3.17
Remaining life expectancy at age 65 1950–2005 and projection for 2006–2050



Assumptions on mortality trends in selected countries

In order to compare assumptions on future mortality trends across countries, the life expectancy according to population forecasts are reported below for a number of countries (Eurostat, 2005. Baseline Scenario). There are significant differences between countries in the estimated life expectancy for 2050. The five countries expected to have the greatest life expectancy for men in 2050 have on average estimated an increase of 6.2 years in life expectancy from 2005 to 2050. In Sweden, the life expectancy is expected to increase by 5 years. Sweden however had a very high life expectancy at the outset. The divergence in future mortality trends for women is also large. The increase in life expectancy for women in the five countries with the highest life expectancy in 2050 is 5.4 years. In Sweden, the life expectancy for women is expected to increase by 4 years.

Table 3.4
Life expectancy for women and men 2005 and 2050, projection

Women	2005	2050	Men	2005	2050
France	83,6	89,1	Austria	76,4	83,6
Italy	83,3	88,8	Italy	77,5	83,6
Belgium	81,9	88,3	Sweden	78,3	83,3
Spain	83,6	87,9	Great Britain	76,6	82,9
Austria	82,3	87,7	France	76,4	82,7
Ireland	80,9	87,0	Ireland	75,7	82,4
Germany	81,9	86,9	Belgium	75,8	82,3
Luxembourg	81,6	86,7	Germany	76,3	82,0
Great Britain	81,1	86,6	Finland	75,5	81,9
Portugal	81,2	86,6	Cyprus	76,5	81,9
Sweden	82,5	86,5	Malta	76,5	81,8
Finland	82,0	86,5	Luxembourg	75,2	81,6
Slovenia	80,3	85,2	Spain	76,8	81,4
Greece	81,5	85,1	Denmark	75,4	80,9
Cyprus	80,9	85,1	Portugal	74,4	80,4
Malta	80,9	85,0	Greece	76,5	80,3
Poland	78,7	84,4	Netherlands	76,4	80,2
The Czech Republic	79,0	84,1	Slovenia	72,8	79,8
Lithuania	77,7	83,7	The Czech Republic	72,6	79,7
Denmark	79,7	83,7	Poland	70,7	79,1
Netherlands	80,9	83,6	Bulgaria	69,4	78,2
Hungary	77,0	83,4	Hungary	68,8	78,1
Slovakia	77,9	83,4	Slovakia	69,9	77,7
Estonia	77,0	83,1	Romania	68,5	77,6
Bulgaria	76,1	82,6	Lithuania	66,7	75,5
Latvia	76,3	82,5	Estonia	65,7	74,9
Romania	75,5	82,0	Latvia	65,0	74,3

Source: Eurostat. Baseline scenario 2005–2050

Statistics Sweden's forecast for Sweden 2006

	2050		2050
Women	86,3	Men	83,6

Alternative assumptions

Through the use of alternative assumptions we try, to some extent, to capture the uncertainty in the previously presented main alternative. All alternatives have the same mortality rate in 2006 as the main alternative.

In one alternative assumption with lower mortality, the 1990s trend of declining mortality is assumed to accelerate somewhat and then continue uninterrupted for the duration of forecast period. In addition, somewhat greater yearly reductions in mortality are expected among the most elderly.

Lifestyles, medical care and medical treatments must however be improved beyond the levels that are assumed in the main alternative.

In another alternative with greater mortality, no changes in mortality are assumed to occur in the future. Positive and negative lifestyle factors offset one another. This alternative depicts the base level and how assumptions regarding changes in mortality affect population, that is, a kind of sensitivity analysis.

Life expectancy in the first alternative increases from 78.5 years in 2006 to 87.4 years in 2050 for men and from 82.8 years to 89.8 years for women. In the second alternative, mortality remains constant throughout the period at the 2006 levels (also see Chapter 4).

Migration

Sweden is a land of immigration. Since the end of World War II, with the exception of a handful of years in the early 1970s, Sweden has had an immigration surplus (the difference between immigration and emigration). In 2005 the proportion of the Swedish population born in another country amounted to slightly more than 12 percent. This proportion has doubled since the beginning of the 1970s and is expected, in the forecast, to amount to slightly more than 18 percent by 2050.

From an international perspective, the proportion of foreign-born people in Sweden is high; see Table 3.5. Few western industrialized countries have a higher proportion of foreign-born people than Sweden. Many well-known immigration countries such as France, the Netherlands and the UK have a lower proportion of foreign-born people. It should be noted that illegal immigrants are not included in these figures.

Table 3.5
Proportion immigrants in a selection of countries. Percent

Countries	Proportion immigrants
Australia	23,1
Canada	18,4
Austria	12,5
Sweden	11,8
USA	11,5
Belgium	10,8
Netherlands	9,9
Germany	8,6
Ireland	8,3
Great Britain	8,3
France	7,4
Norway	7,0
Denmark	6,9
Portugal	6,3
Italy	2,5
Finland	2,0

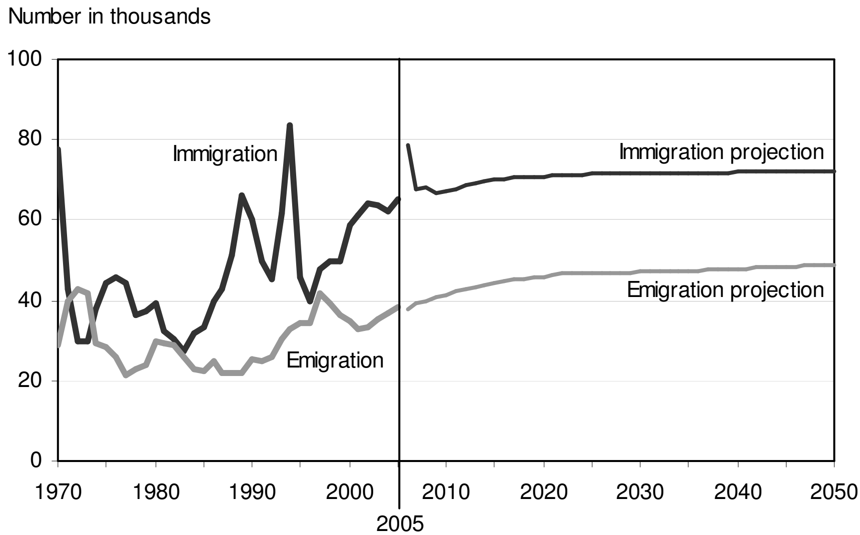
The figures refer to 2002 for Belgium, Denmark, Finland, Ireland, the Netherlands, Norway, Portugal, Spain and Sweden. 2001 for Australia, Italy, Canada, UK and Austria. 1999 for France.

Germany and Italy do not have an account of the percentage of foreign born, so the percentage of foreign citizens is given instead. It is assessed that the percentage of foreign-born in these countries is 2-3 percentage points higher than the figures presented in the table.

Source: Statistics Sweden, Eurostat.

Fluctuations in immigration and emigration to and from Sweden have been large in recent decades. As long as labour immigration was dominant, upswings and downturns in migration varied with the economic cycle. During labour shortages (economic booms), immigration increased and when demand then fell (recession), immigration fell. Since the 1980s, labour immigration has been relatively insignificant and fluctuations in immigration have instead come to be gradually dominated by changes in the migration of refugees and family members. The immigration of family members (to foreign-born and native Swedes) has been the cause of the upswing in immigration since the middle of the 1990s.

Figure 3.18
Immigration and emigration 1970–2005 and assumptions for the period up to 2050. Number in thousands



Both immigration and emigration are assumed to increase in the near future based on increased opportunities for migration due to globalisation (see Figure 3.18). The peak in immigration in 2006 is due to temporary legislation which, according to the Swedish Migration Board's forecasts, will result in an increase of some 12 000 people in the number of residence permits issued during 2006.

Migration to and from Sweden depends on conditions within the country as well as conditions outside of the country. Troubles, war and economic scarcity in different parts of the world are what foremost affect immigration to Sweden today. Swedish migration policy also determines the number who will be allowed to immigrate. The temporary legislation related to appeals for residency (effective between November 2005 and March 2006) is an example of how regulatory changes may have a significant effect on future migration trends.

In the analysis of trends in migration and the projection of future migration a distinction is made between the *emigration* and the *re-immigration* of people born in Sweden and the *immigration* and *re-*

emigration of people born outside of Sweden. The forecasting work also considers how immigration and emigration vary between men and women as well as between different age groups.

Forecasting migration

Changes in migration are difficult to foresee and may occur without warning. The assumptions in the population forecast naturally reflect the current circumstances and thus serve to document our times. The reasoning outlined below refers to the coming 10 to 20 years. We refrain from speculating on developments thereafter. As previously indicated, migration may vary significantly over time. Assumptions should be considered as average values.

The assessment and making of assumptions related to future migration are indisputably uncertain. The evaluation of previous forecasts shows that assumptions based on long-term trends result in better projections than assumptions based on observations made over a couple of years. It is the observed immigration and emigration of Swedish-born and foreign-born people over the latest three decades which provides the basis for the assumptions made in this forecast.

Greater flows in and out

Our assessment of future migration is that we are currently in the midst of an increasing trend in mobility and that an increased flow of both immigration and emigration to and from Sweden will follow. When emigration is proportional to immigration, net migration (the difference between immigration and emigration) is not affected to any high extent. However, we will soon experience a large immigration surplus due to the above-mentioned temporary law on immigration. Thereafter it is assumed that the immigration surplus will stabilise at around 24 000 immigrants per year, including both returning Swedish-born people and immigrating foreign-born people.

Statistics Sweden's historical databases have provided the basis for the forecasting work. It should be noted that there exists both over-coverage and under-coverage in the Population Register as a result of unreported moves to and from Sweden. Over-coverage means that the register includes people who no longer reside in the country. This occurs when people emigrate without reporting it. The opposite is under-coverage which means that the register includes people residing in the country but who are not registered here. For example, this is the case with hidden refugees. In the forecast we disregard measurement errors of this type and the population forecast is thus a projection of the *registered* population.

If the population statistics improves in terms of moves to and from Sweden via reporting procedures or control routines, for example, then significant changes in the number of immigrants and emigrants may arise. Such potential changes have not been taken into consideration in the forecast work.

Another reservation in terms of Migration Statistics is that they are not entirely comparable across countries. This is because countries have different rules concerning the registration of immigration and emigration.

Regional breakdown

A detailed analysis of migration could involve the separate study of the countries of origin of immigrants as well as lands of immigration. Immigration to Sweden however takes place from almost 200 different countries which makes it impossible to handle a country-based analysis. The countries of origin have therefore been divided up into groups: Sweden, the Nordic countries (excl. Sweden), EU (excl. the Nordic countries) and countries with high, medium and low Human Development Index (HDI).

The Nordic countries and EU countries

Within the Nordic countries, mobility is free and citizens of these countries have the right to move within the Nordic area without a need for any special permission. EU citizens may be granted a residence permit if they show that they can support themselves. Today the EU consists of the 15 old EU countries as well as the 10 new member states. Sweden was one of the countries which did not introduce transitional regulations intended to limit immigration from the new member states in conjunction with the expansion of the EU.

Other countries

Immigration from countries outside of the EU and the Nordic countries is strictly regulated. In principal, one can obtain a residence permit for Sweden by seeking asylum as a refugee or by being the relative of a person who already has a residence permit for Sweden. Regulations concerning who is to be considered a relative have however changed over time and will likely continue to do so in the future. In addition, a small number of people are granted residence permits for Sweden by virtue of the nature of their status, e.g., labour immigrants, visiting students or adopted children.

Human Development Index (HDI)
In our assumptions concerning future immigration to Sweden from countries outside of the Nordic countries or the EU, we have used UN country divisions based on the Human Development Index (HDI). HDI measures the welfare level of different countries and is based on composite index on life expectancy of the population, Gross Domestic Product (GDP) per capita and educational levels.

Countries outside of the Nordic countries and the EU have been divided up into three groups: Highly-developed countries *High Human Development*, Medium-developed countries *Medium Human Development* and Less developed countries *Low Human Development*. The index is calculated and updated annually by the UN. How countries develop over time is also taken into account. Since HDI depends on the country's development over time, countries can change classification from one year to the next. This projection is based on the HDI for 2003. We opted to use the HDI for 2003 since we needed to compare our calculations to previous forecasts. The methods for calculating HDI are documented in Human Development Report 2002, published by the UN.

The HDI is used to divide countries into different groups because migration patterns are expected to be different based on the country's level of economic development. The migration assumption for the population projection is thus based on the classification of migrants into groups depending on the migrant's country of origin, see below.

In the forecasting model, migration is made-up of four flows: the emigration of Swedish-born people, the re-immigration of Swedish-born people, the immigration of foreign-born persons and the re-emigration of foreign-born persons. Assumptions regarding the immigration of foreign-born persons are presented separately for all groups of countries while assumptions regarding the re-emigration of foreign-born people are presented for the entire group of foreign-born persons. The re-emigration of foreign-born people is based on how the composition of the foreign-born population has changed over time. In general, people who have immigrated from the Nordic countries, EU countries or countries with a high HDI have been more inclined to re-emigrate than people from countries with medium or high HDIs. Since the inclination to re-emigrate depends in part on where one has emigrated from, the population across the different groups of countries changes at different rates.

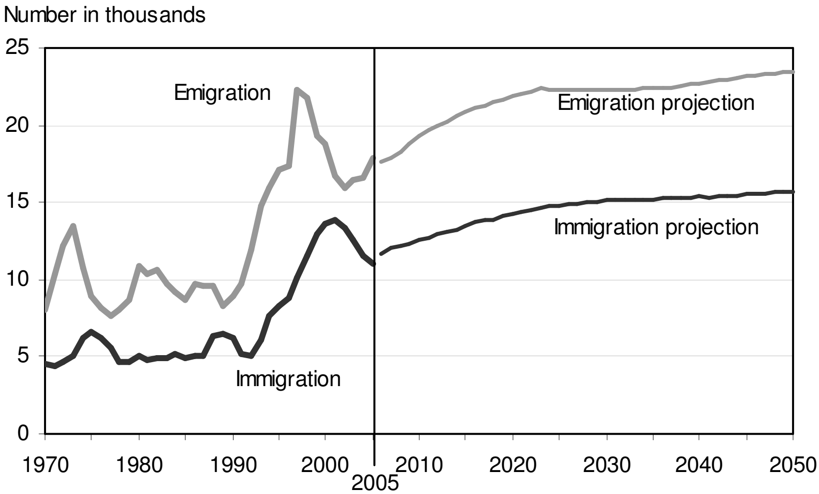
Country groupings

1. **Swedish-born people**
2. **Nordic countries (excl. Swedish-born).**
   Denmark, Finland, Iceland, Norway
3. **EU citizens (excl. citizens of the Nordic countries).**
   EU15 Belgium, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Great Britain, Northern Ireland, Germany, Austria
   EU10: Cyprus, Estonia, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, the Czech Republic, Czechoslovakia and Hungary
4. **High HDI**
   Andorra, Antigua and Barbuda, Argentina, Australia, Bahamas, Bahrain, Barbados, Bosnia-Herzegovina, Brunei Darussalam, Chile, Costa Rica, Gdansk, Hong Kong, Israel, Japan, Yugoslavia, Canada, North Korea, South Korea, Croatia, Kuwait, Liechtenstein, Monaco, New Zealand, Qatar, St. Kitts and Nevis, San Marino, Switzerland, Seychelles, Singapore, Taiwan, Trinidad and Tobago, United Arab Emirates (UAE), Uruguay, USA, Vatican City, Gibraltar, Bermuda, Serbia and Montenegro
5. **Medium HDI**
   Albania, Algeria, Armenia, Azerbaijan, Belarus, Belize, Bolivia, Botswana, Brazil, Bulgaria, Cambodia, Cameroon, Cape Verde, China, Columbia, the Comoros, Cuba, Dominica, Dominican Republic, East Timor, Ecuador, Egypt, Equatorial Guinea, El Salvador, Federation of Malaysia (no longer in existence), Fiji, Gabon, Gaza Strip, Georgia, Ghana, Grenada, Guatemala, Guyana, Honduras, India, Indonesia, Information missing, International territory, Iraq, Iran, Jamaica, Jordan, Kazakhstan, Kenya, Kyrgyzstan, Kiribati, Lesotho, Lebanon, Liberia, Libya, Macedonia, Malaysia, the Maldives, Mauritius, Mexico, Micronesia, Moldavia, Morocco, Mongolia, Myanmar, Namibia, Nauru, Nicaragua, Oman, Palau, Palestine, Panama, Papua New Guinea, Paraguay, Peru, the Philippines, Republic of Congo, Republic of Vietnam, Romania, Russia, St. Lucia, St. Vincent and the Grenadines, Solomon Islands, Samoa, Sao Tome and Principe, Saudi Arabia, Soviet Union, Sri Lanka, Stateless, Surinam, Swaziland, South Africa, Syria, Tajikistan, Thailand, Tunisia, Turkey, Turkmenistan, Tuvalu, Ukraine, Under investigation, Unknown, Uzbekistan, Vanuatu, Venezuela, Vietnam, Western Samoa, Zimbabwe and West Bank
6. **Low HDI**
   Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Central African Republic, Chad, the Ivory Coast, Democratic Republic of Congo, Djibouti, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Laos, Madagascar, Malawi, Mali, Mauritania, Mozambique, Nepal, the Niger, Nigeria, Pakistan, Rwanda, Senegal, Sierra Leone, Somalia, Sudan, South Yemen, Tanzania, Togo, Tonga, Uganda, Yemen, Zambia and Zanzibar

Swedish-born people

During the 1990s, the number of Swedish emigrants doubled from some 10 000 people per year during the 1970s and 1980s to more than 20 000 people per year by the end of the 1990s. At the beginning of this century, 2000s, emigration decreased during several years but it has picked up momentum in recent years. In 2005, the number of Swedes who took up residence abroad amounted to almost 18 000 people.

Figure 3.19
Immigration and emigration of Swedish-born 1970–2005 and assumptions for the period up to 2050. Number in thousands



Emigration of Swedish-born people

The globalisation of industry, an increased proportion of highly educated people, Sweden's entry to the EU and economic trends in Sweden, as well as the rest of the world, lay behind the increased emigration of Swedish-born people.

It is mainly younger people who take up residence abroad but mobility has also increased among the older age groups. Over the last few decades, more people have attained higher levels of education and the percentage who reside abroad during their student years has increased steadily. Highly educated people are generally more disposed to emigrate than those with lower levels of educational attainment.

An increasing number of people in Sweden have a foreign background, i.e. parents born abroad. Residents of Sweden with foreign backgrounds have a greater disposition to emigrate than people with a Swedish background, i.e. those whose parents are both Swedish-born. Consequently, when the proportion of people with foreign backgrounds increases in the population then emigration may also be expected to increase.

The emigration of Swedish-born people varies to a great degree with economic trends within Sweden and the rest of the world. Emigration increases during economic recessions and decreases during booms.

Assumptions on the emigration of people born in Sweden

Our assessment is that the emigration of people born in Sweden will increase in the future. Globalisation, the increased proportion of highly-educated people and the fact that more and more people choose to study and work abroad have lead to increased mobility. Sweden's membership in the EU will also likely lead to continued increased mobility, as will the growing number of Swedish-born people with foreign backgrounds.

For forecast purposes, we have assumed that the age-specific risks of emigration will rise by 2 percent per year up until and including 2010 and thereafter by 1 percent up until 2023.

Figure 3.20
Emigration rates for Swedish-born in the assumption for 2006. Proportion of women and men assumed to emigrate by age. Percent

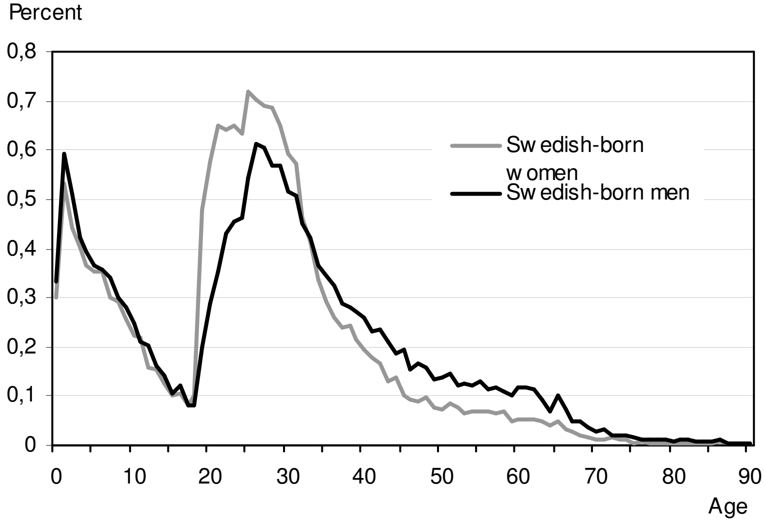


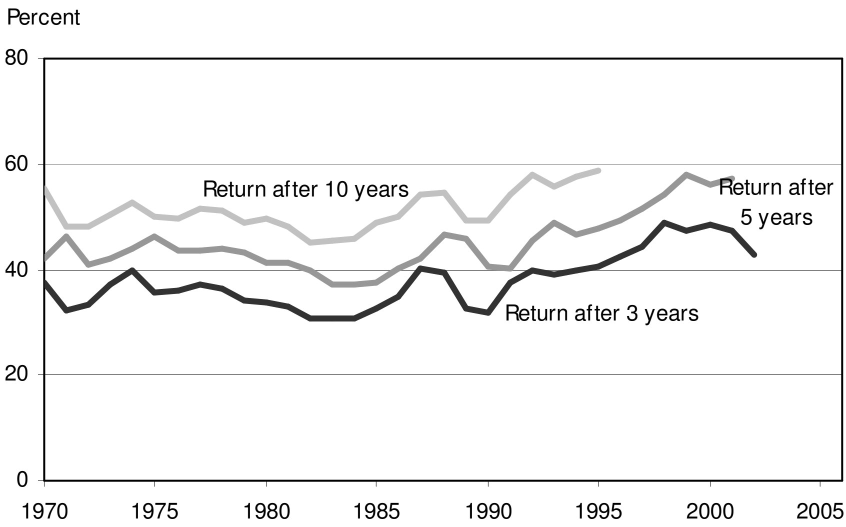
Figure 3.20 presents the age-specific risks of emigration on which the 2006 forecast for men and women born in Sweden is based. As indicated in the diagram, women are assumed to be more disposed to emigration when aged between 18 and 32 years while men are more disposed to emigration when older.

The risks are based on emigration for the period 2001-2005. These risks have been calculated up by 2 percent for women and 8 percent for men. This corresponds to the emigration observed for 2005. The distribution can thus be said to be an average for the period 2001-2005 while the level corresponds to that observed in 2005.

Re-immigration of Swedish-born people

The re-immigration of Swedish-born people depends largely on previous emigration. The proportion of Swedish-born people who gradually return to Sweden was previously around two-thirds. This pattern has changed given that emigration among Swedish-born people rose during the 1990s. Re-immigration now occurs at a faster rate. The proportion who return to Sweden within one to two years has increased sharply. Figure 3.21 shows that almost 60 percent of those who emigrated during the late 1990s re-immigrated within 5 years. Previously, this proportion was stable at around 40 percent.

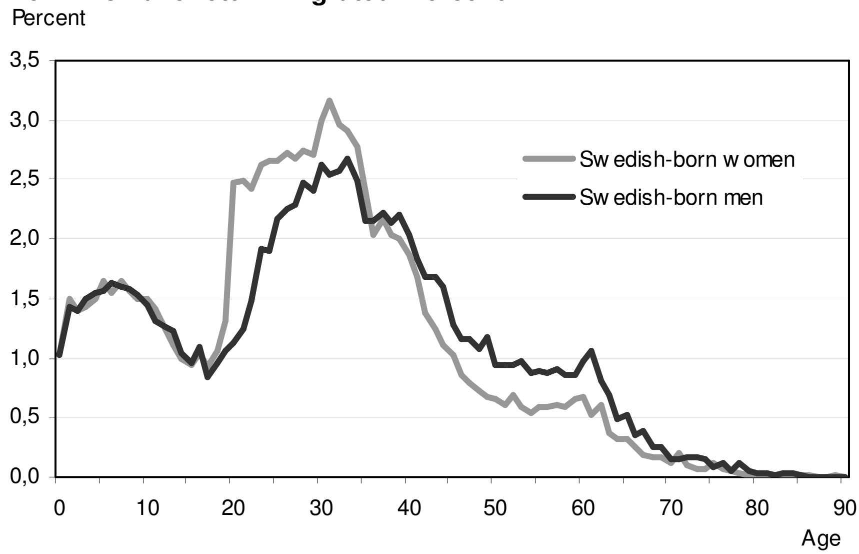
Figure 3.21
Proportion return migration 3, 5, and 10 years after emigration. Women and men born in Sweden.
Percent



This changed pattern in the re-immigration of Swedish-born people emerged during the late 1990s. It is not yet possible to determine whether this will have long-term effects on the proportion who re-immigrate. The fact that an increasing number of young people take up residence abroad and that it is now more common to spend a part of one's student years abroad seems to indicate that this may indeed represent a change in behaviour. It is also possible that in recent years re-immigration has tended to more closely follow the economic cycle than previously.

Assumptions on the re-immigration of Swedish-born people
With the increased globalisation of business, a rise in international student exchanges and a larger proportion of Swedish-born people having foreign backgrounds, it is likely that a greater number of people will take up residence abroad for shorter periods of time. In the forecast model, we have assumed that the re-immigration of Swedish-born people will occur at a faster pace than earlier based on the adoption of a pattern which fits that observed during the period 1990-2005.

Figure 3.22
Assumptions of age distribution among Swedish-born women and men who have return-migrated. Percent



Foreign-born people in Sweden

In 2005, people born in Poland, Denmark and Iraq accounted for the three largest groups of immigrants. For several years during the 1990s, there was a large wave of immigration as a result of the war in the former Yugoslavia. In the coming years, we will again see increased immigration, this time due to the temporary legislation introduced in 2005. We will also likely experience increased immigration from the new EU member states.

The temporary legislation related to applications for residency

On November 9th, the Riksdag (Swedish Parliament) passed a temporary law giving people previously denied residency a new chance of applying for residency. The law came into effect on 15 November 2005 and remained in effect until 30 March 2006.

The purpose of the law was to provide an opportunity for people whose residency had been denied but deportation not yet enforced, to stay in Sweden in cases of:

- long residence in Sweden or

- great difficulty in enforcing prior decisions due to the person's country of origin.

The law called attention to the need to give special consideration to the circumstances of children and families.

By 31 March 2006, the Swedish Migration Board had registered close to 30 000 such cases. Sixteen thousand cases had been handled and some 12 000 residence permits granted, mostly permanent residence permits.

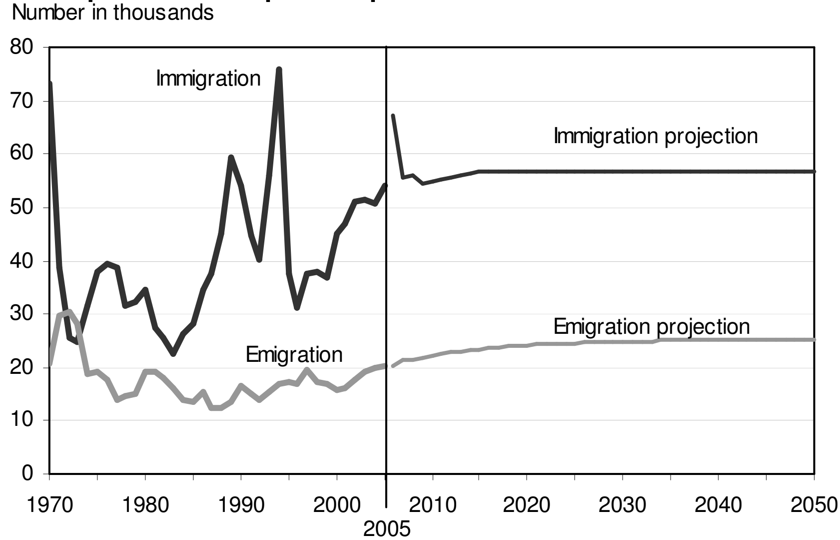
The Swedish Migration Board estimates that this legislative change will result in some 14 000 to 16 000 people being granted residency. Moreover, according to the Swedish Migration Board, the granting of this large number of residence permits will further generate subsequent immigration and several thousand new related immigration cases.

From Statistics Sweden's perspective, the effect of the temporary law is a temporary increase in the number of immigrants in 2006 by 12 000 people and more moderate increases for a few years thereafter. The legislative changes also account for the increase in the number of immigrants in 2005.

Source: 2005/06 SfU5 and the Swedish Migration Board, 2006).

While the immigration of foreign-born people has increased in recent decades, the number of those re-emigrating has remained relatively constant. Re-emigration has not increased at the same pace as immigration since current immigration consists mainly of refugees and their relatives. Those who immigrate as refugees or the relatives of refugees are naturally less inclined to re-emigrate than those who immigrate as labour immigrants or visiting students. The immigration surplus of foreign-born people has thus increased during the last decades.

Figure 3.23
Immigration and emigration of foreign-born 1970–2005 and assumptions for the period up to 2050. Number in thousands



Immigration of foreign-born people

Assumptions regarding the number of foreign-born people who will immigrate to Sweden in the future are determined exogenously, i.e., outside the scope of the model. On the basis of the monitoring of world events and reference group discussions, we have drawn up assumptions on how immigration from the different regions (country groupings) will develop over the next few years. The assumptions for the different country groupings are collated and an age and sex distribution for the entire population of foreign-born immigrants is then calculated.

The Nordic countries (excluding Sweden)

From the post-war period until the end of the 1970s, the Swedish labour market was attractive and immigration to Sweden from the Nordic countries rose. The immigration of Nordic people then settled on a low level except for in 1988-1990 when a brief period of labour immigration was seen. The upswing noted in recent years is largely due to lower housing costs in Sweden than in neighbouring countries. Another contributing factor is the opening of the Oresund Bridge. Many Danish people have moved over the water from Copenhagen and its surrounding areas to Skåne county.

Assumptions on immigration from the Nordic countries

It is likely that immigration from the other Nordic countries will reach a somewhat higher level than it did in the 1990s during the Swedish labour market crisis. Another reason for a somewhat higher level of immigration is the greater commuting opportunities between Denmark and Sweden offered by the Oresund Bridge. Immigration from the Nordic countries averaged slightly over 6 000 people per year during the 1990s and slightly over 9 000 per year for the 2000 to 2005 period. We presume that immigration will rise to 10 000 immigrants per year.

EU25 (excluding the Nordic countries)

In 1995 Sweden became a member state of the EU and citizens of other EU countries were conferred greater opportunities to take up residence in Sweden. That same year, immigration from the EU15 countries totalled about 5 000 people per year. Immigration has since risen and reached just under 10 000 people in 2004. In 2005 there were just under 11 000 immigrants from the EU, an increase due to the expansion of the EU.

The new EU member states

On 1 May 2004 the EU was enlarged with ten new countries: Cyprus, Estonia, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, the Czech Republic and Hungary. Prior to the admission of these countries there were concerns that immigration from these countries would rise drastically and most member states therefore introduced transitional regulations for such immigration. Sweden, Ireland and the UK were the only countries not to introduce any transitional regulations.

The immigration surplus from EU10 countries to Sweden has risen since the inclusion of these countries in the EU but the increase has been smaller than expected and the initial levels were very low.

The new candidate member states

At the time of the writing of this report, there were five candidate countries for EU membership[15].

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[15] Bulgaria, Croatia, Macedonia, Romania and Turkey. Bulgaria and Romania have concluded their negotiations for EU membership and are to be admitted, in accordance with their Association Agreements. Croatia and Turkey began negotiating their candidacy for EU membership at the end of 2005. It has previously been made clear that Turkey may not be granted membership until 2014 or thereafter. Croatia applied for membership in 2003. Negotiations with respect to Croatia's membership were re-opened in October 2005. Macedonia applied for

The impact of the admission of these countries into the EU on Swedish migration flows is unclear. Immigration to Sweden from the former Yugoslavia has been large and those who immigrated during the war have for the most part stayed in Sweden. The fact that there is already a large population from the former Yugoslavia may mean that many people will strive to come to Sweden.

Assumptions on immigration from EU Member States
In Statistics Sweden's 2003 forecast, it was assumed that Sweden would experience a quick increase in the number of EU immigrants as a result of the expansion of the EU. The observed increase was smaller than expected in the years right after the expansion but has gradually continued to grow. We assume here a continued temporary increase from the 2005 levels of 11 000 to 12 000 immigrants per year up to and including 2008. Immigration from the EU subsequently is expected to settle at a constant level of 10 000 immigrants per year.

High HDI
The largest countries in this group are Serbia, the USA, Bosnia-Herzegovina and Chile. Disturbances in the Balkans at the beginning of the 1990s resulted in large waves of immigration during this period. Immigration then settled at between 5 000 and 9 000 immigrants per year.

Assumptions on immigration from countries with high HDI
If regulations concerning labour immigration and the immigration of family members become more liberal then immigration from countries with high HDI will increase. It is also possible that more people from these countries may come to Sweden to study. The projection is based on the 2005 immigration level of 6 500 which is assumed to increase by 1 percent annually until 2015 and then remain constant at 7 500 per year.

Medium HDI
This grouping represents the greatest number of foreign-born immigrants to Sweden. The largest countries in this group are Iraq, Thailand, China, Iran, Turkey, India and Russia. Immigration from these countries has been slightly more than 20 000 per year since 2000, a lower level than in the mid 1990s. The highest proportion of

membership in March 2004 and was granted candidate country status in November 2005.

those who were granted residency under the temporary law is to be found in this grouping.

Troubles in Kosovo and Iraq are possible reasons for continuing flows of refugees. Labour immigration from these countries is also possible.

Assumptions on immigration from countries with medium HDI
We assume that 10 000 immigrants will come to Sweden from this country grouping during 2006 as a result of the temporary law. Due to the potential for labour immigration, increased immigration of family members and no reduction in the flow of refugees, we assume a slow rise in immigration from these countries up until 2015, followed by an unchanged level for the rest of the forecast period. The growth in immigration occurs gradually with an assumed rate of growth and then rises from about 20 000 in 2006 (in addition to the 10 000 extra people who immigrated under the temporary law) to 23 000 in 2015.

Low HDI
Immigration from countries with low HDI has been minimal but has increased steadily since the end of the 1990s. This immigration has now settled at around 5 000 people a year.

The largest countries with low HDI are Somalia, Pakistan, Afghanistan and Eritrea. The number of refugees from these countries will likely continue to be high in coming years.

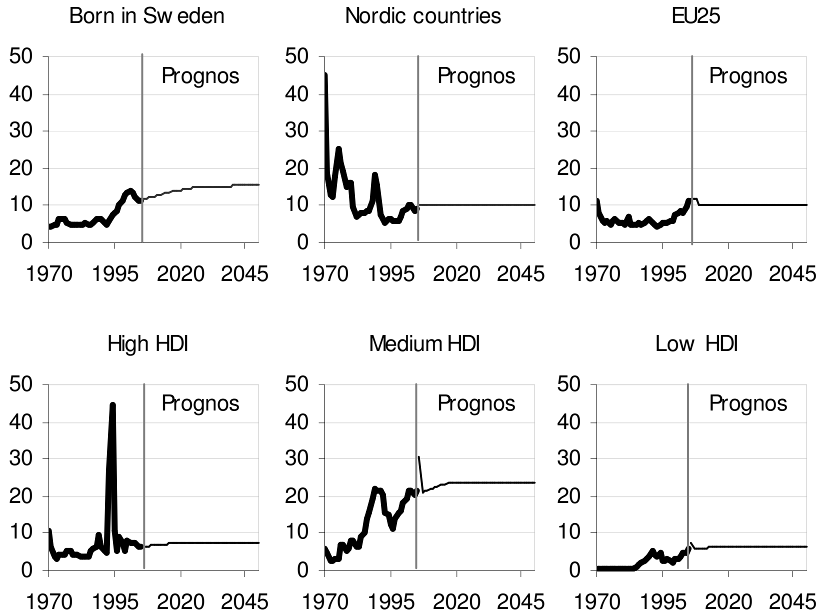
Assumptions on immigration from countries with low HDI
Due to the large flow of refugees, we assume a slow increase of 1 percent per year up until 2015. We assume the immigration of an additional 2 000 people in 2006, in addition to this, as a consequence of the temporary law. After 2015 we assume an unchanged level of immigration of 6 300 people per year from this grouping of countries.

Assumptions on age and sex distribution
In conclusion, it can be said that we assume that the immigration of foreign-born people increases as a result of the same globalisation which leads to people born in Sweden moving away. The development will also be affected by EU expansion and the extent to which labour immigration will be a possibility in the future.

The ageing population means that we may in the future have a shortage of labour in Europe. It can however be expected that there will be hard competition for potential labour immigrants and it is not certain that Sweden will stand out as one of the most attractive countries to move to find work. The continued troubles in the world will however probably lead to a continued high flow of asylum seekers.

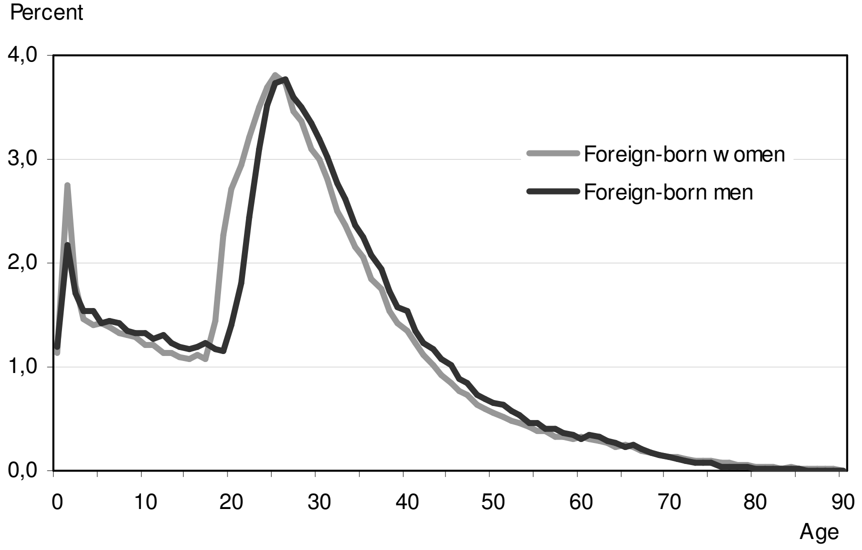
Figure 3.24 shows the assumptions on the immigration of foreign-born people in each country grouping.

Figure 3.24
Observed immigration 1970-2005 and assumption for the period 2006–2050. Number in thousands



The age distribution is based on immigration of all foreign-born people in the past ten years, not taking into account the different country groupings. We have assumed that the sex and age distribution will be the same as that seen during the period 1996-2005.

Figure 3.25
Assumptions of age distributions among immigrating foreign-born men and women. Percent

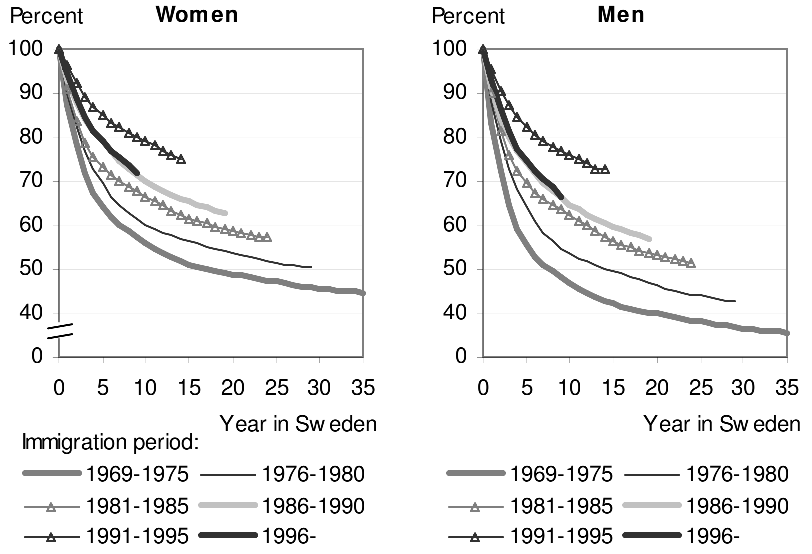


Re-emigration of foreign-born people

In terms of numbers, the re-emigration of foreign-born people has been largely stable since the beginning of the 1970s, amounting annually to roughly 15 000 people. Re-emigration has not increased in line with the increase of immigration, largely due to the fact that immigration since the beginning of the 1970s has been of a different character and has successively been dominated by the immigration of refugees and family members.

Figure 3.26 shows that the share of foreign-born women and men who have stayed in Sweden has successively increased since the beginning of the 1970s. The share who has re-emigrated has, on the other hand, fallen continuously. Foreign-born women have stayed to a greater extent than foreign-born men. Those arriving in Sweden at the beginning of the 1990s have shown the lowest inclination to re-emigrate. One possible explanation for this is that the majority of those who immigrated during this period came from the former Yugoslavia, and these immigrants have had very limited possibilities to move back. People who immigrated after the middle of the 1990s have emigrated to the same extent as those immigrating during the period 1986-1990.

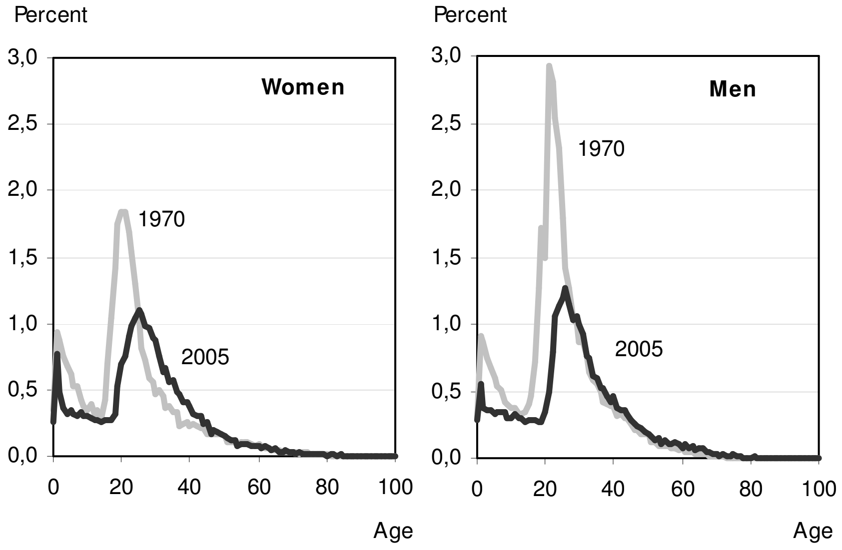
Figure 3.26
Proportion of foreign-born still living in Sweden. Men and women by year of immigration. Percent



It is likely that there are demographic explanations for why the re-emigration of foreign-born people has decreased. Refugees and their families are on average older than labour immigrants when arriving in Sweden. Because the inclination to re-emigrate decreases with age, it is likely that the higher age of refugees and family member immigrants has contributed to the fall in re-emigration.

The inclination to emigrate depends to a large extent on the reason for immigration. Individuals who have immigrated from the Nordic countries, EU member states and countries with a high HDI (mainly labour immigrants) have moved back to a higher degree than immigrants from countries with medium HDI and low HDI. Since the beginning of the 1970s, the majority of immigrants have come from countries with medium HDI (primarily refugees and family member immigrants).

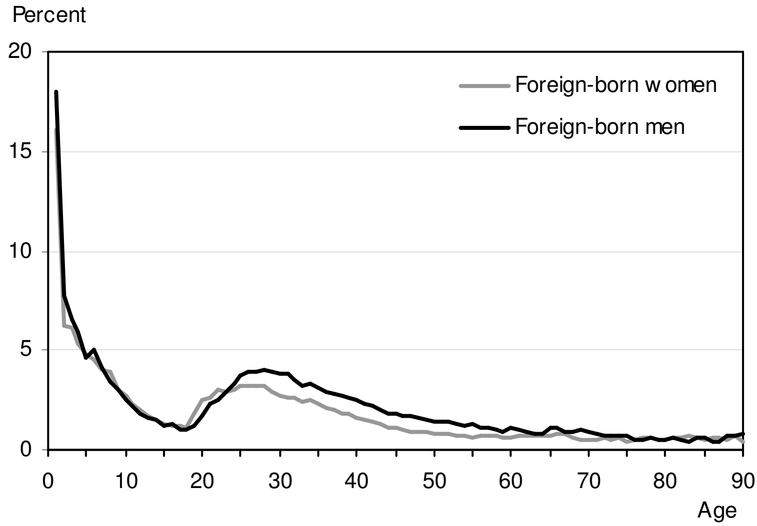
Figure 3.27
Age distribution among immigrating foreign-born women and men in 1970 and 2005. Percent



Assumptions on re-emigration of foreign-born people
The forecast for 2006-2023 assumes that immigration from the Nordic countries, from the EU and from countries with a high HDI will increase slightly but that immigration will in the future be dominated by countries with medium HDI and low HDI. The migration assumptions mean that the composition of the foreign-born part of the population will in the future also largely consist of refugees and family member immigrants.

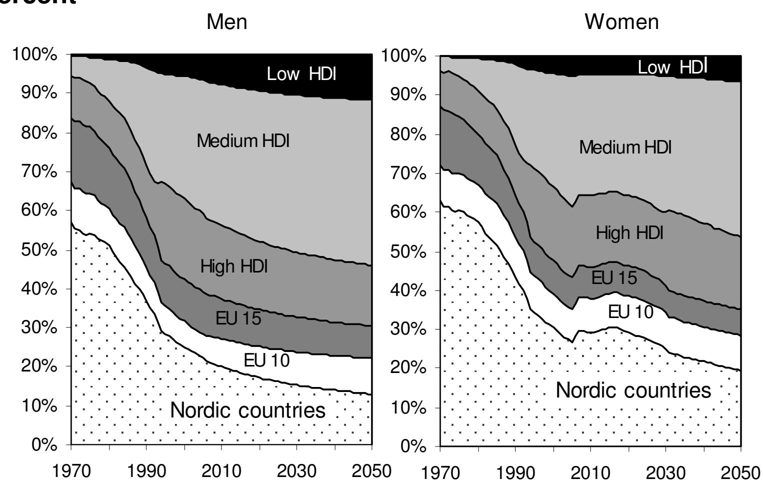
The age-specified risks of emigration for foreign-born women and men for 2006 are based on emigration during the period 2001-2005. To reach a level comparable to the observed emigration in 2005, the risks for foreign-born men have been calculated up by 2.8 percent while the risks of emigration for foreign-born women have remained unchanged.

Figure 3.28
Age specific emigration rates for the foreign-born population 2006. Percent



In order to take into account how the composition of the foreign-born population will change over time and how this will affect the risks for emigration for the entire foreign-born population, we have successively adjusted downwards the age-specific risks of re-emigration from 2007 until 2050 by a total of about 15 percent.

Figure 3.29
Proportion born in different groups of countries in the foreign-born population 1970–2005 and assumption for the period 2006–2050. Percent



Alternative forecasts

It is very possible that immigration and emigration will develop differently to how we have predicted. In order to gain an idea of how the future population will be affected by the size of migration flows, two alternatives to the main alternative in Statistics Sweden's population forecast are presented. These alternatives are named the low alternative and the high alternative. The low alternative has low net immigration (immigration minus emigration) and the high alternative has high annual net immigration. The alternatives are presented in Table 3.6.

Low alternative equals low immigration surplus
In several countries, it has become much harder to receive a residence permit as a refugee or family member immigrant. If Sweden were to introduce a more restrictive immigration policy, it is reasonable to assume that immigration to Sweden from countries outside the Nordics and the EU would decrease. In the low alternative, we have assumed that immigration from the country groupings with low HDI and medium HDI would decrease from 67 000 to 63 000 in 2006. The differences between the main and the low alternative then increase successively.

In this alternative, we have kept immigration from country groups with high HDI, the Nordic countries and EU25 unchanged. This is because we assess that membership of the EU and the Nordic cooperation agreement will make it hard to limit immigration from these countries.

With a decrease in immigration also comes a decrease in re-emigration. Reduced refugee and family member immigration would however result in the composition of the foreign-born population changing over time from refugee and family member immigration to labour immigration, primarily from the Nordics and the EU25. As labour immigrants have a higher inclination to re-emigrate, re-emigration would increase in the long-term. In the low alternative, we have therefore assumed that the risks for emigration observed today will also apply in the future, in contrast to the main alternative in which the risks for re-emigration decrease.

In the low alternative, we have in addition assumed that emigration of Swedish-born people will continue to develop as in the main alternative. This is because it is possible that emigration will increase in the future, even if Sweden introduces a more restrictive immigration policy.

We have assumed in the low alternative that a slightly larger share will move back to Sweden than in the main alternative. The share that has moved back is 5 percent higher in this alternative, a figure based on the average inclination shown to re-emigrate during the period 1990-2005.

In total the assumptions in the low alternative result in a reduction of the immigration surplus from around 24 000 immigrants per year in the main alternative to around 13 000 immigrants per year.

High alternative implies high immigration surplus
The high alternative can be seen as a scenario with successively increasing labour immigration from primarily the Nordic countries, the EU and countries with high HDI combined with a largely unchanged immigration from countries with medium and low HDI, compared to the main alternative. In the high alternative, it is assumed that an increase in labour immigration will occur over a longer time period than in the main and low alternatives. Immigration will increase up to 2030 and will thereafter remain at a constant level of around 75 400 people per year.

With an increase in immigration, also comes automatically an increase in emigration. The fact that labour immigrants are more inclined to re-emigrate than other immigrants will lead to the population of foreign-born people, as in the main alternative, becoming dominated over time by refugees and their families, although not to such a large extent as in the main alternative. The inclination to emigrate among the whole foreign-born population is therefore also assumed in this alternative to reduce at the same rate as the change in the composition of that population.

In this scenario, it is assumed that the emigration of Swedish-born people increases but at a lower rate than in the main alternative. The inclination to emigrate among Swedish-born people here increases by 1 percent annually until 2010 and then by 0.5 percent until 2023. It will thereafter remain constant at the 2023 level. The inclination to re-emigrate is assumed to be the same as in the main alternative. The immigration surplus will, in this alternative, amount in the long-term to roughly 36 000 people in total per year. Among foreign-born people, the immigration surplus will be higher, roughly 43 000 people per year.

Table 3.6
Assumptions of migration in low-, high- and medium alternatives. Number in thousands

Year	Immigration			Emigration			Net migration		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
Born in Sweden									
2006	11,2	11,7	11,7	17,6	17,6	17,6	-6,4	-5,8	-5,8
2010	11,8	12,6	12,3	19,3	19,3	18,5	-7,4	-6,7	-6,3
2015	12,8	13,6	12,9	20,8	20,8	19,6	-8,0	-7,3	-6,7
2020	13,5	14,2	13,3	21,7	21,8	20,1	-8,2	-7,6	-6,9
2030	14,4	15,2	13,8	21,9	22,2	20,4	-7,6	-7,1	-6,5
2050	14,7	15,7	14,8	22,5	23,5	22,1	-7,8	-7,8	-7,4
Born abroad									
2006	63,5	67,2	68,9	20,2	20,2	20,2	43,3	46,9	48,7
2010	46,3	54,8	60,6	21,7	22,2	22,5	24,5	32,6	38,2
2015	42,9	56,6	66,5	22,1	23,5	24,5	20,8	33,1	42,0
2020	42,9	56,6	71,4	22,0	24,2	26,3	20,9	32,5	45,1
2030	42,9	56,6	75,4	22,1	24,8	29,1	20,8	31,8	46,3
2050	42,9	56,6	75,4	22,2	25,3	32,1	20,7	31,3	43,2
Total									
2006	74,7	78,8	80,7	37,8	37,8	37,8	36,9	41,0	42,9
2010	58,1	67,4	72,9	41,0	41,4	41,0	17,1	25,9	31,9
2015	55,7	70,1	79,4	42,8	44,3	44,1	12,8	25,8	35,3
2020	56,4	70,8	84,6	43,7	46,0	46,4	12,7	24,8	38,3
2030	57,3	71,8	89,2	44,0	47,0	49,5	13,3	24,7	39,7
2050	57,6	72,3	90,1	44,7	48,8	54,2	12,9	23,5	35,9

4 Alternative projections

Introduction

It is of course possible that fertility, mortality and migration develop differently to what we have assumed in the main alternative forecast. In this chapter, we therefore illustrate how Sweden's future population will be affected if development differs significantly from what we have previously assumed.

We show calculations below of the development of the future population with alternative assumptions for fertility, mortality and migration. For each component: fertility, mortality and migration, the main alternative has been supplemented with a low and a high alternative (the alternatives are described in more detail in Chapter 3). We have chosen to examine how the size of the population is affected when we vary one factor at a time. This means, for example, that we assume a high and low alternative for the future fertility rate, while the assumptions for mortality and foreign migration remain as in the main alternative.

The three factors, fertility, mortality and foreign migration, affect the age categories in different ways and at different points of time in the future. An adjusted fertility rate directly affects the number of children born although the number of older people is only affected by an adjusted fertility rate in the very long-term.

Different developments in mortality have, on the other hand, only a marginal significance for the future number of children and young people. This is because of the very low mortality risks in general of people of younger ages. In the long-term however a different mortality rate affects the number of people living.

Variations in the assumption on the size of foreign migration primarily affects the population aged between 20 and 40 years as those immigrating and emigrating are most commonly between these ages. The number of children born is successively affected and, in the long-term, also the number of elderly people.

Alternative assumptions on the future fertility rate, mortality and foreign migration

A summary is given below of the different alternatives for fertility, mortality and foreign migration. The different alternatives are motivated under the relevant section in Chapter 3.

Table 4.1
Fertility (children per woman). Alternative assumption

Year	Low fertility	Main alternative	High fertility
2006	1.70	1.81	1.91
2010	1.64	1.85	2.04
2020	1.65	1.85	2.04
2030	1.65	1.85	2.04
2040	1.65	1.85	2.04
2050	1.65	1.85	2.04

Table 4.2
Mortality (life expectancy in years). Alternative assumption

Year	Low mortality		Main alternative		High mortality	
	Women	Men	Women	Men	Women	Men
2006	82.8	78.5	82.8	78.5	82.8	78.5
2010	83.5	79.4	83.3	79.2	82.8	78.5
2020	85.2	81.6	84.3	80.8	82.8	78.5
2030	86.9	83.7	85.1	82.0	82.8	78.5
2040	88.4	85.6	85.8	82.9	82.8	78.5
2050	89.8	87.4	86.3	83.6	82.8	78.5

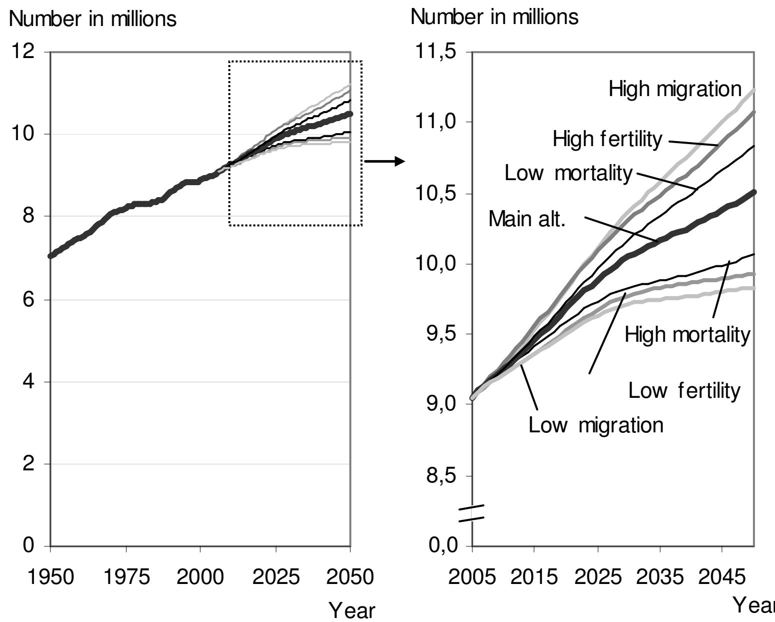
Table 4.3
Net migration in thousands. Alternative assumption

Year	Low net migration			Main alternative			High net migration		
	Im.	Em.	Net	Im.	Em.	Net	Im.	Em.	Net
2006	74.7	37.8	36.9	78.8	37.8	41.0	80.7	37.8	42.9
2010	58.1	41.0	17.1	67.4	41.4	25.9	72.9	41.0	31.9
2020	56.4	43.7	12.7	70.8	46.0	24.8	84.6	46.4	38.3
2030	57.3	44.0	13.2	71.8	47.0	24.7	89.2	49.5	39.7
2040	57.4	44.2	13.2	72.0	47.9	24.1	89.5	52.2	37.3
2050	57.6	44.7	12.9	72.3	48.7	23.6	90.1	54.2	35.9

Total population change under different scenarios

The difference in the total population between the main alternative and the other alternatives increases over time. The alternative with the highest and lowest immigration surplus deviates the most from the main alternative. The two alternative assumptions regarding migration result in 2015 in a total population of around 100 000 more people and less people, respectively, than in the main alternative. In 2050, the deviation from the main alternative amounts to around 700 000 people. The alternative assumptions for fertility, low fertility and high fertility, result in 2050 to a deviation of 600 000 people and the two alternative assumptions for mortality result in a deviation of around 300 000 people in 2050 compared to the main alternative.

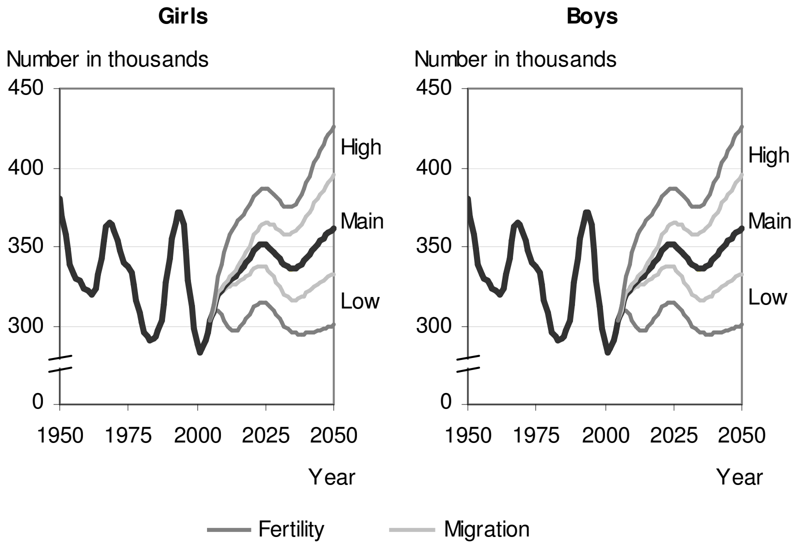
Figure 4.1
Total population size 1950–2005 and development 2006–2050 by alternative. Millions



Number of children aged 0-5 years according to the different alternatives

The number of children aged 0-5 years in the future is difficult to predict. Historically, fertility has varied considerably from year to year and this development will probably continue in the future. The difficulty in foreseeing future variations in fertility increases the weight of the alternative fertility assumptions. An adjusted assumption for the development of fertility directly affects the number of pre-school children and the differences compared to the main alternative increase quickly with time. The alternative fertility assumptions result already in 2015 in a deviation from the main alternative of 70 000 children and, in 2050, this figure is 120 000 children compared to the main alternative. The alternative assumption for migration also affects the calculations on the future number of children in the long-term. In 2015, the deviation from the main alternative is 10 000 children, growing in 2050 to 60 000 more children or less children respectively. The alternative assumption for future mortality only marginally affects the number of children aged 0-5 years.

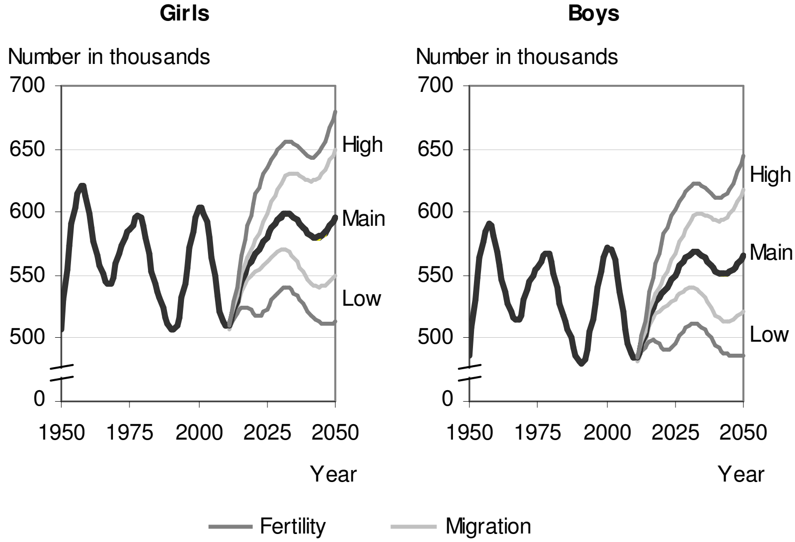
Figure 4.2
Population in age 0–5 by sex 1950–2005 and development 2006–2050 by alternative fertility and migration assumptions. Thousands



Number of children of school age, 6-15 years, according to the different alternatives.

In the short-term, the number of children of school age is not affected by the alternative assumptions for fertility. Migration also has a minimal effect. In 2015, the alternative assumptions for fertility give only a marginal deviation of around 30 000 children compared to the main alternative and the alternative assumptions for migration give an even smaller deviation. In the long-term however the deviations can be more significant. In 2050, the alternative assumption for fertility will result in a deviation of around 160 000 children while the alternative assumptions for migration will give a deviation of around 90 000 children. Mortality in these ages has a very marginal effect on the calculations.

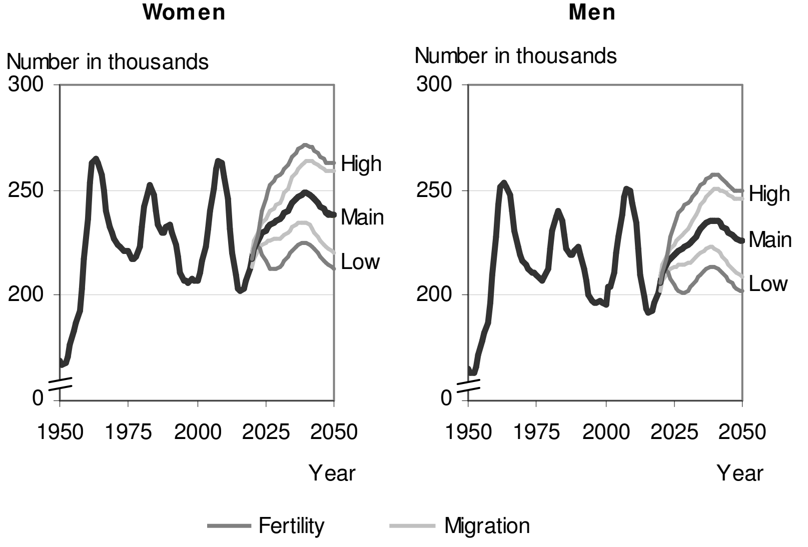
Figure 4.3
Number of children in age 6 –15 in year 1950–2005 and development 2006-2050 according to alternative fertility and migration assumptions. Thousands



Young people aged 16-19 years

The number of young people aged 16-19 years begins to be more markedly affected by the alternative assumptions for the future development of fertility and migration around 2025 onwards. The alternative fertility rate gives a deviation of 30 000 young people and the alternative assumption for migration a deviation of 10 000 young people compared to the main alternative. In 2050, these deviations have increased to 50 000 and 40 000 young people respectively compared to the main alternative.

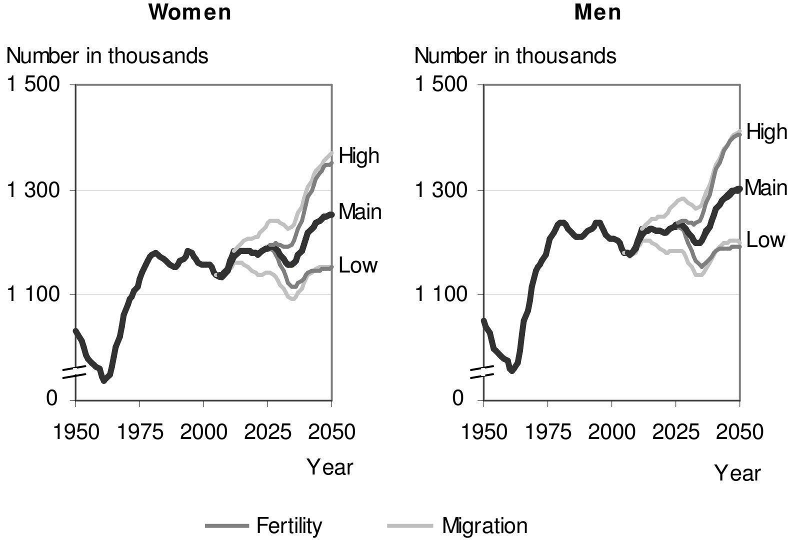
Figure 4.4
Number of persons in age-group 16–19 in year 1950–2005 and development 2006–2050 according to alternative fertility and migration assumptions. Thousands



Population in the younger labour force aged 20–39 years

Until roughly 2030, it is only the alternative for the development of migration that would result in any deviations from the main alternative in the population of younger people in the labour force, aged 20-39 years. In 2025, the deviations between the alternative assumptions and the main alternative amounts to 90 000 people and in 2050, this has increased to 200 000 people. The alternative for fertility gives slight deviations at first from 2030 onwards but then these deviations increase sharply to amount to 200 000 people in 2050. The alternative for mortality gives very marginal deviations from the main alternative for the whole period.

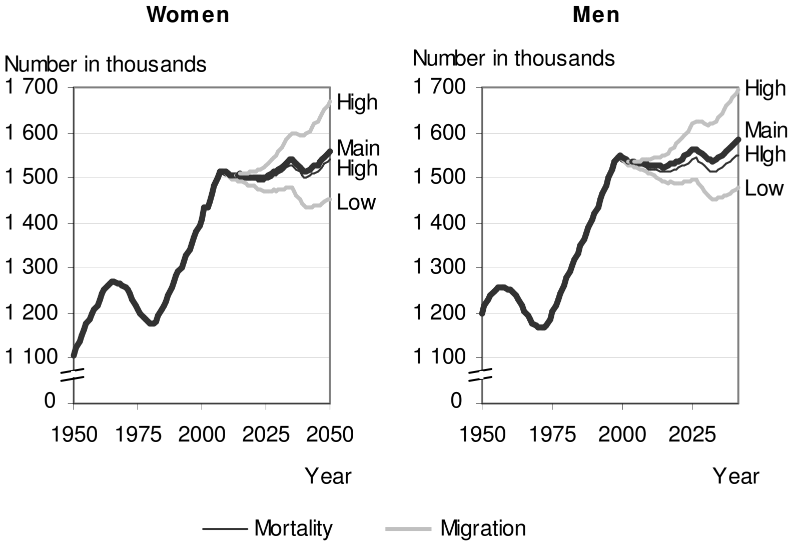
Figure 4.5
Number of women and men in age group 20–39 in year 1950–2005 and development 2006–2050 according to alternative fertility and migration assumptions. Thousands



Population in the older labour force aged 40–64 years

During the larger part of the forecast period, only the alternative assumptions for the development of migration affect the calculated number of people aged 40-64 years to any extent. In 2025, the deviations from the main alternative amount to 60 000 people, which will grow in 2050 to a deviation of slightly over 200 000 people. With regard to mortality, only the alternative with unchanged mortality during the whole forecast period, i.e. the high alternative, gives some larger deviations from the main alternative. In 2025, the alternative assumption for mortality gives a deviation of 20 000 people compared to the main alternative and in 2050 this deviation has grown to 50 000 people.

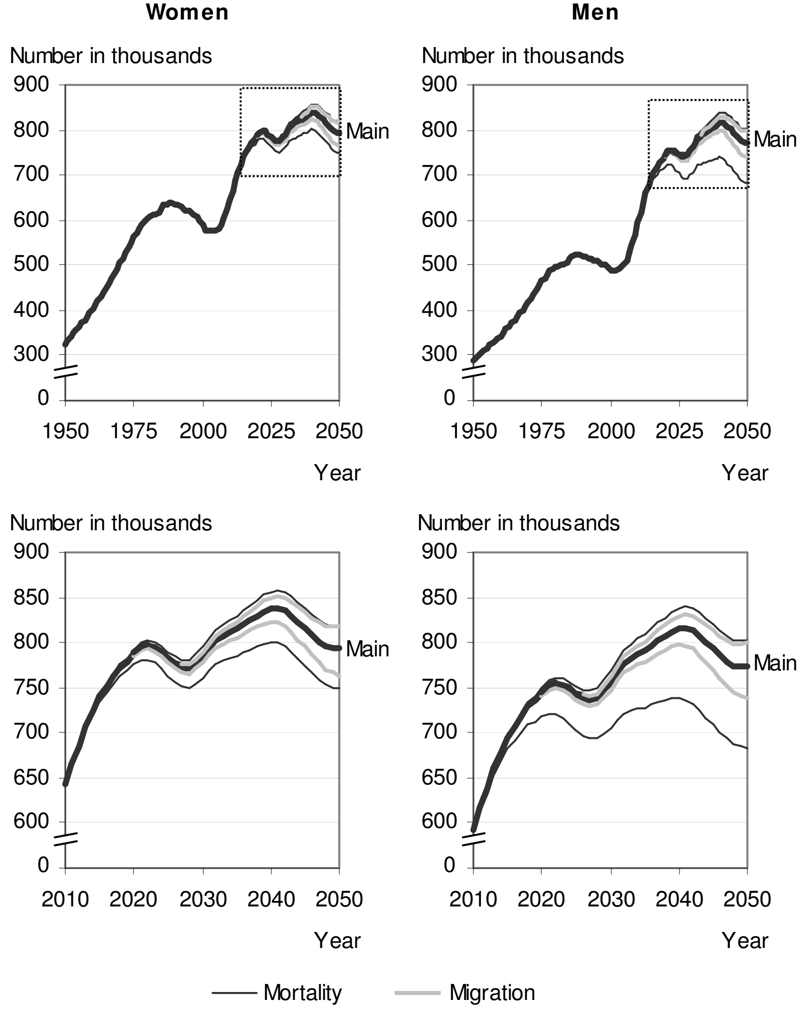
Figure 4.6
Number of women and men in age group 40–64 in year 1950–2005 and development 2006–2050 according to alternative mortality and migration assumptions. Thousands



People aged 65-79 years

The calculations of the number of people aged 65-79 years is above all affected by the alternative assumptions for mortality and then by the alternative with unchanged mortality for the entire forecast period, i.e. the high alternative. In 2025, the deviation from the main alternative is 60 000 people and in 2050 this deviation has grown to 130 000 people. The alternative assumption for migration has a marked effect on the forecasts first from about 2030 and onwards. In 2050, the difference between the alternative assumption for migration and the main alternative amount to around 50 000 people.

Figure 4.7
Number of women and men in age group 65–79 in year 1950–2005 and development 2006–2050 according to alternative mortality and migration assumptions. Thousands

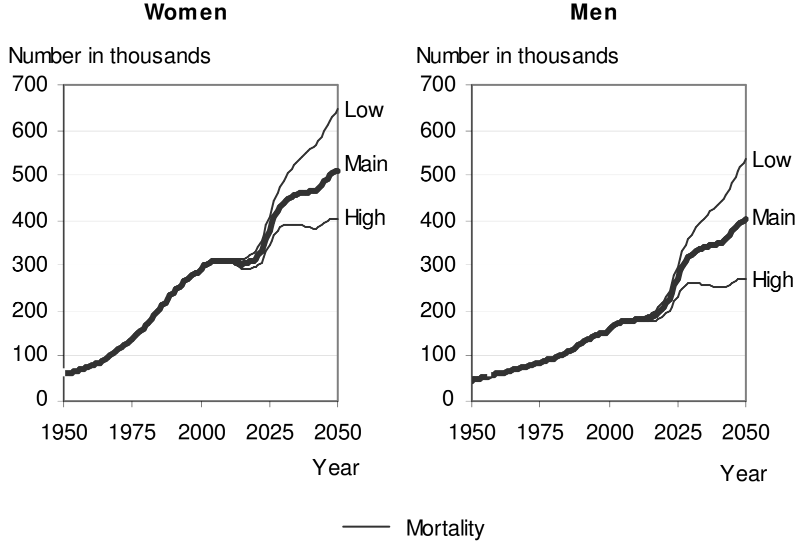


People aged 80 years and older

In the age group 80 years and older, the calculations are affected very marginally by the alternative assumptions for migration. The alternative assumptions for the development of mortality however have a strong penetration in the calculations of the number of "older elderly" people. In the short-term, the effects are already considerable and by 2025, we can see a deviation from the main alternative of between 60 and 70 000 people, rising to around 260 000 people in 2050.

Figure 4.8

Number of women and men in age group 80 and older in year 1950–2005 and development 2006–2050 according to alternative mortality and migration assumptions. Thousands



5 Tables

Assumptions in the main alternative

Table 5.1
Overview of assumptions about fertility, mortality and migration

Year	Immigration Thousand	Emigration Thousand	Total fertility[1)]	Life expectancy at birth	
				Men	Women
2006	79	38	1,81	78,50	82,78
2007	68	39	1,82	78,69	82,90
2008	68	40	1,83	78,87	83,02
2009	67	41	1,84	79,05	83,14
2010	67	41	1,85	79,23	83,26
2011	68	42	1,85	79,41	83,38
2012	68	43	1,85	79,58	83,49
2013	69	43	1,85	79,76	83,61
2014	70	44	1,85	79,93	83,73
2015	70	44	1,85	80,10	83,84
2016	70	45	1,85	80,26	83,95
2017	70	45	1,85	80,41	84,04
2018	71	45	1,85	80,54	84,13
2019	71	46	1,85	80,67	84,22
2020	71	46	1,85	80,79	84,30
2021	71	46	1,85	80,91	84,38
2022	71	47	1,85	81,03	84,47
2023	71	47	1,85	81,15	84,55
2024	71	47	1,85	81,27	84,63
2025	71	47	1,85	81,39	84,71
2026	71	47	1,85	81,51	84,79
2027	72	47	1,85	81,63	84,87
2028	72	47	1,85	81,74	84,95
2029	72	47	1,85	81,86	85,03
2030	72	47	1,85	81,97	85,10
2031	72	47	1,85	82,08	85,18
2032	72	47	1,85	82,20	85,26
2033	72	47	1,85	82,31	85,34
2034	72	47	1,85	82,42	85,41
2035	72	47	1,85	82,53	85,49
2036	72	47	1,85	82,63	85,56
2037	72	48	1,85	82,72	85,62
2038	72	48	1,85	82,80	85,68
2039	72	48	1,85	82,87	85,73

Table 5.1 (cont.)
Overview of assumptions about fertility, mortality and migration

Year	Immigration Thousand	Emigration Thousand	Total fertility	Life expectancy at birth Men	Women
2040	72	48	1,85	82,94	85,78
2041	72	48	1,85	83,01	85,83
2042	72	48	1,85	83,08	85,88
2043	72	48	1,85	83,15	85,93
2044	72	48	1,85	83,22	85,97
2045	72	48	1,85	83,29	86,02
2046	72	48	1,85	83,36	86,07
2047	72	49	1,85	83,43	86,12
2048	72	49	1,85	83,50	86,17
2049	72	49	1,85	83,56	86,22
2050	72	49	1,85	83,63	86,26

1) Total fertility is given as the number of children per woman

Table 5.2

Number of children born per 1000 women by age at end of the year

Age	Year							
	2006	2007	2008	2009	2010	2011	2012	2013–2050
16	1	1	1	1	1	1	1	1
17	3	3	3	3	3	3	3	3
18	6	6	6	6	6	6	6	6
19	11	11	11	11	11	11	11	11
20	21	20	20	20	20	20	20	20
21	31	31	31	31	31	31	31	31
22	38	38	38	38	38	38	38	38
23	49	48	48	48	48	48	48	48
24	60	59	58	58	58	58	58	58
25	75	74	74	73	73	73	73	73
26	88	87	87	87	86	86	86	86
27	103	101	101	101	101	100	100	100
28	119	118	117	117	117	117	116	116
29	132	132	132	131	131	131	130	130
30	139	137	137	137	137	137	136	136
31	142	143	142	141	139	139	139	139
32	138	138	139	139	137	137	137	137
33	129	129	130	132	129	129	129	129
34	116	118	119	119	118	118	118	118
35	100	101	103	105	104	104	104	104
36	82	85	87	88	90	90	90	90
37	65	67	71	71	73	73	73	73
38	51	54	56	58	60	60	60	60
39	37	40	42	42	45	45	45	45
40	27	28	30	31	34	34	34	34
41	18	19	20	22	24	24	24	24
42	12	13	14	15	17	17	17	17
43	8	8	8	9	10	10	10	10
44	4	4	5	5	6	6	6	6
45	2	2	3	3	3	3	3	3
46	1	1	1	1	1	1	1	1
47	0	0	0	0	0	0	0	0
48	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0
Total	**1 808**	**1 819**	**1 833**	**1 844**	**1 853**	**1 851**	**1 850**	**1 849**

Table 5.3

Death risks 2006 by sex and age at the end of the year. Number per 1000

Age	Women	Men	Age	Women	Men	Age	Women	Men
0	2,21	2,93	40	0,66	1,12	80	39,47	61,17
1	0,41	0,52	41	0,71	1,19	81	44,86	68,70
2	0,16	0,24	42	0,80	1,28	82	50,62	77,61
3	0,11	0,15	43	0,92	1,41	83	57,10	87,69
4	0,09	0,10	44	1,04	1,56	84	65,07	98,83
5	0,08	0,08	45	1,13	1,71	85	75,07	111,33
6	0,09	0,08	46	1,24	1,90	86	86,75	125,25
7	0,09	0,08	47	1,40	2,12	87	99,44	140,15
8	0,09	0,08	48	1,58	2,34	88	113,08	155,59
9	0,08	0,10	49	1,77	2,51	89	127,71	172,28
10	0,08	0,12	50	1,95	2,70	90	143,95	190,68
11	0,09	0,12	51	2,07	2,95	91	160,05	209,39
12	0,09	0,12	52	2,22	3,26	92	178,00	231,05
13	0,10	0,13	53	2,45	3,63	93	197,27	252,26
14	0,12	0,17	54	2,75	4,08	94	216,72	272,09
15	0,15	0,21	55	3,08	4,53	95	237,47	295,04
16	0,17	0,27	56	3,49	4,91	96	259,00	319,26
17	0,18	0,35	57	3,93	5,38	97	281,55	340,30
18	0,21	0,44	58	4,31	5,97	98	303,19	359,37
19	0,26	0,56	59	4,58	6,62	99	322,46	378,28
20	0,27	0,66	60	4,93	7,28	100	334,57	395,73
21	0,25	0,73	61	5,39	7,93	101	356,40	418,61
22	0,23	0,74	62	5,91	8,74	102	378,91	442,16
23	0,21	0,70	63	6,35	9,77	103	402,11	466,42
24	0,21	0,67	64	6,79	11,00	104	426,02	491,41
25	0,22	0,66	65	7,51	12,33	105	450,31	517,18
26	0,23	0,65	66	8,36	13,66	106	498,00	556,77
27	0,24	0,62	67	9,24	15,17			
28	0,24	0,57	68	10,12	17,04			
29	0,25	0,56	69	11,18	19,04			
30	0,26	0,57	70	12,47	21,18			
31	0,28	0,59	71	13,78	23,60			
32	0,29	0,63	72	15,19	26,27			
33	0,32	0,67	73	16,80	29,09			
34	0,36	0,70	74	18,72	32,06			
35	0,39	0,74	75	21,05	35,51			
36	0,43	0,77	76	23,67	39,66			
37	0,49	0,83	77	26,66	44,28			
38	0,53	0,92	78	30,27	49,52			
39	0,60	1,01	79	34,63	54,96			

Table 5.4

Yearly reduction of death risks 2007–2050. Percent

Age	Women			Men		
	2007–2015	2019–2035	2039–2050	2007–2015	2019–2035	2039–2050
0-45	-2,00	-1,50	-1,00	-2,00	-1,50	-1,00
46	-2,00	-1,50	-1,00	-2,05	-1,54	-1,03
47	-2,00	-1,50	-1,00	-2,10	-1,58	-1,05
48	-2,00	-1,50	-1,00	-2,15	-1,61	-1,08
49	-2,00	-1,50	-1,00	-2,20	-1,65	-1,10
50	-1,90	-1,43	-0,95	-2,25	-1,69	-1,13
51	-1,80	-1,35	-0,90	-2,25	-1,69	-1,13
52	-1,70	-1,28	-0,85	-2,25	-1,69	-1,13
53	-1,60	-1,20	-0,80	-2,25	-1,69	-1,13
54	-1,50	-1,13	-0,75	-2,25	-1,69	-1,13
55	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
56	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
57	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
58	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
59	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
60	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
61	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
62	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
63	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
64	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
65	-1,40	-1,05	-0,70	-2,25	-1,69	-1,13
66	-1,40	-1,05	-0,70	-2,20	-1,65	-1,10
67	-1,40	-1,05	-0,70	-2,15	-1,61	-1,08
68	-1,40	-1,05	-0,70	-2,10	-1,58	-1,05
69	-1,40	-1,05	-0,70	-2,05	-1,54	-1,03
70	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
71	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
72	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
73	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
74	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
75	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
76	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
77	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
78	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00
79	-1,40	-1,05	-0,70	-2,00	-1,50	-1,00

Table 5.4 (cont.)

Yearly reduction of death risks 2007–2050. Percent

Age	Women			Men		
	2007–2015	2019–2035	2039–2050	2007–2015	2019–2035	2039–2050
80	-1,40	-1,05	-0,70	-1,86	-1,39	-0,93
81	-1,40	-1,05	-0,70	-1,72	-1,29	-0,86
82	-1,40	-1,05	-0,70	-1,57	-1,18	-0,79
83	-1,40	-1,05	-0,70	-1,43	-1,07	-0,72
84	-1,35	-1,01	-0,68	-1,29	-0,97	-0,65
85	-1,20	-0,90	-0,60	-1,15	-0,86	-0,57
86	-1,05	-0,79	-0,53	-1,01	-0,75	-0,50
87	-0,90	-0,68	-0,45	-0,86	-0,65	-0,43
88	-0,75	-0,56	-0,38	-0,72	-0,54	-0,36
89	-0,60	-0,45	-0,30	-0,58	-0,44	-0,29
90	-0,50	-0,38	-0,25	-0,44	-0,33	-0,22
91	-0,46	-0,35	-0,23	-0,39	-0,30	-0,20
92	-0,42	-0,32	-0,21	-0,35	-0,26	-0,18
93	-0,38	-0,29	-0,19	-0,31	-0,23	-0,15
94	-0,36	-0,27	-0,18	-0,26	-0,20	-0,13
95	-0,34	-0,26	-0,17	-0,22	-0,16	-0,11
96	-0,30	-0,23	-0,15	-0,17	-0,13	-0,09
97	-0,26	-0,20	-0,13	-0,13	-0,10	-0,07
98	-0,22	-0,17	-0,11	-0,10	-0,08	-0,05
99	-0,20	-0,15	-0,10	-0,10	-0,08	-0,05
100	-0,18	-0,14	-0,09	-0,10	-0,08	-0,05
101	-0,16	-0,12	-0,08	-0,10	-0,08	-0,05
102	-0,14	-0,11	-0,07	-0,10	-0,08	-0,05
103	-0,12	-0,09	-0,06	-0,10	-0,08	-0,05
104	-0,10	-0,08	-0,05	-0,10	-0,08	-0,05
105	-0,10	-0,08	-0,05	-0,10	-0,08	-0,05
106	-0,10	-0,08	-0,05	-0,10	-0,08	-0,05

The death risks for 2007-2015 are obtained by reducing the death risks annually by the percent that is given in the table for each year. Because the annual reduction for men and women aged 0-45 during the period 2007-2015 is 2 percent, the death risk in 2006 is multiplied by 0.98 for these ages in order to obtain the death risk for 2007. The death risk for 2008 is obtained by multiplying the death risk in 2007 by 0.98 etc. (chain multiplication).

During the transition years 2015-2019 and 2035-39, the reduction figures are interpolated in a linear manner between 2015 and 2019 and 2035 and 2039.

Table 5.5

Age distribution of Swedish and foreign born immigrants by age at end of year 2006. Number per 10 000

Age	Women		Men	
	Swedish-born	Foreign-born	Swedish-born	Foreign- born
0	102	114	103	120
1	149	276	144	218
2	140	179	140	171
3	142	145	150	155
4	150	140	155	154
5	165	142	156	143
6	155	139	163	144
7	166	133	161	142
8	157	131	158	136
9	150	128	153	132
10	150	121	145	132
11	142	121	132	128
12	124	113	126	130
13	112	113	122	124
14	99	110	105	119
15	94	107	96	118
16	105	111	110	120
17	93	109	84	123
18	106	145	97	118
19	132	226	106	115
20	247	271	113	141
21	250	294	124	180
22	242	320	147	245
23	263	350	191	310
24	265	369	190	351
25	266	381	217	373
26	273	373	226	378
27	267	346	228	359
28	274	337	248	351
29	271	310	241	334
30	299	300	263	319
31	317	281	254	301
32	296	250	258	277
33	290	237	268	262
34	278	216	249	237
35	241	206	216	225
36	203	185	215	208
37	217	174	222	195
38	203	153	214	172
39	199	142	220	158

Table 5.5 (cont.)

Age distribution of Swedish and foreign born immigrants by age at end of year 2006. Number per 10 000

Age	Women		Men	
	Swedish-born	Foreign-born	Swedish-born	Foreign-born
40	187	135	204	153
41	168	123	183	135
42	138	112	168	123
43	124	101	168	118
44	111	92	160	108
45	103	85	129	102
46	85	77	117	89
47	78	72	116	84
48	72	64	108	74
49	68	61	117	68
50	66	55	94	65
51	61	53	94	63
52	70	48	95	57
53	59	46	97	53
54	54	42	88	46
55	59	38	90	47
56	59	38	87	40
57	61	32	91	40
58	59	32	87	37
59	65	31	85	35
60	67	32	97	31
61	52	31	106	35
62	61	29	80	32
63	37	27	70	28
64	33	24	49	27
65	32	25	53	23
66	26	23	35	25
67	19	19	38	21
68	17	18	25	18
69	17	16	25	16
70	12	14	15	13
71	20	13	15	12
72	10	12	16	10
73	7	10	16	8
74	8	9	15	7
75	11	9	8	7
76	7	8	12	5
77	5	8	5	4
78	4	6	12	4
79	2	5	5	3

Table 5.5 (cont.)

Age distribution of Swedish and foreign born immigrants by age at end of year 2006. Number per 10 000

Age	Women		Men	
	Swedish-born	Foreign-born	Swedish-born	Foreign-born
80	1	4	3	2
81	2	4	4	3
82	2	4	1	2
83	2	3	3	2
84	1	4	3	1
85	1	3	2	1
86	1	2	1	1
87	1	2	0	1
88	0	1	0	1
89	1	1	0	1
90	0	1	0	0
91	0	1	1	0
92	0	0	0	0
93	0	0	0	0
94	0	0	0	0
95	0	0	0	0
96	0	0	0	0
97	0	0	0	0
98	0	0	0	0
99	0	0	0	0
100	0	0	0	0
101	0	0	0	0
102	0	0	0	0
103	0	0	0	0
104	0	0	0	0
105	0	0	0	0
106	0	0	0	0

Table 5.6
Sex ratio of immigrants (proportion women) 2006–2050

Year	Swedish-born	Foreign-born
2006	0,493	0,500
2007	0,497	0,500
2008	0,494	0,500
2009	0,493	0,500
2010	0,493	0,500
2011	0,489	0,500
2012	0,489	0,500
2013	0,489	0,500
2014	0,486	0,500
2015	0,482	0,500
2016	0,482	0,500
2017	0,480	0,500
2018	0,478	0,500
2019	0,477	0,500
2020	0,476	0,500
2021	0,476	0,500
2022	0,475	0,500
2023	0,475	0,500
2024	0,474	0,500
2025	0,473	0,500
2026	0,472	0,500
2027	0,472	0,500
2028	0,474	0,500
2029	0,474	0,500
2030	0,474	0,500
2031	0,474	0,500
2032	0,474	0,500
2033	0,474	0,500
2034	0,474	0,500
2035	0,474	0,500
2036	0,474	0,500
2037	0,474	0,500
2038	0,475	0,500
2039	0,475	0,500
2040	0,475	0,500
2041	0,475	0,500
2042	0,476	0,500
2043	0,476	0,500
2044	0,476	0,500
2045	0,476	0,500
2046	0,476	0,500
2047	0,476	0,500
2048	0,476	0,500
2049	0,476	0,500
2050	0,476	0,500

Table 5.7a
Number of immigrants 2006–2050

Year	Women		Men		Total
	Swedish-born	Foreign-born	Swedish-born	Foreign-born	
2006	5 777	33 571	5 940	33 547	78 835
2007	5 965	27 809	6 051	27 791	67 616
2008	6 012	28 021	6 155	27 995	68 183
2009	6 101	27 211	6 269	27 198	66 779
2010	6 203	27 410	6 376	27 388	67 377
2011	6 217	27 605	6 486	27 584	67 892
2012	6 317	27 788	6 594	27 766	68 465
2013	6 410	27 969	6 701	27 949	69 029
2014	6 432	28 146	6 814	28 123	69 515
2015	6 510	28 315	6 999	28 289	70 113
2016	6 591	28 315	7 076	28 289	70 271
2017	6 622	28 315	7 179	28 289	70 405
2018	6 649	28 315	7 267	28 289	70 520
2019	6 706	28 315	7 364	28 289	70 674
2020	6 765	28 315	7 444	28 289	70 813
2021	6 821	28 315	7 515	28 289	70 940
2022	6 878	28 315	7 590	28 289	71 072
2023	6 935	28 315	7 663	28 289	71 202
2024	6 984	28 315	7 737	28 289	71 325
2025	7 017	28 315	7 804	28 289	71 425
2026	7 030	28 315	7 862	28 289	71 496
2027	7 045	28 315	7 891	28 289	71 540
2028	7 119	28 315	7 912	28 289	71 635
2029	7 135	28 315	7 929	28 289	71 668
2030	7 181	28 315	7 978	28 289	71 763
2031	7 170	28 315	7 961	28 289	71 735
2032	7 186	28 315	7 977	28 289	71 767
2033	7 196	28 315	7 987	28 289	71 787
2034	7 198	28 315	7 983	28 289	71 785
2035	7 206	28 315	7 994	28 289	71 804
2036	7 238	28 315	8 021	28 289	71 863
2037	7 225	28 315	7 999	28 289	71 828
2038	7 230	28 315	8 009	28 289	71 843
2039	7 251	28 315	8 020	28 289	71 875
2040	7 300	28 315	8 058	28 289	71 962
2041	7 292	28 315	8 043	28 289	71 939
2042	7 315	28 315	8 059	28 289	71 978
2043	7 333	28 315	8 075	28 289	72 012
2044	7 356	28 315	8 096	28 289	72 056
2045	7 375	28 315	8 116	28 289	72 095
2046	7 394	28 315	8 141	28 289	72 139
2047	7 417	28 315	8 165	28 289	72 186
2048	7 434	28 315	8 184	28 289	72 222
2049	7 451	28 315	8 211	28 289	72 266
2050	7 471	28 315	8 230	28 289	72 305

Table 5.7b

Number of emigrants 2006–2050

Year	Women		Men		Total
	Swedish-born	Foreign-born	Swedish-born	Foreign-born	
2006	8 455	9 138	9 112	11 102	37 807
2007	8 639	9 761	9 295	11 482	39 177
2008	8 842	9 954	9 487	11 641	39 924
2009	9 078	10 124	9 704	11 794	40 700
2010	9 337	10 255	9 941	11 909	41 442
2011	9 559	10 426	10 082	12 020	42 087
2012	9 730	10 624	10 242	12 121	42 717
2013	9 876	10 795	10 396	12 205	43 272
2014	10 020	10 950	10 553	12 293	43 816
2015	10 144	11 076	10 694	12 373	44 287
2016	10 244	11 200	10 841	12 446	44 731
2017	10 335	11 304	10 966	12 507	45 112
2018	10 420	11 351	11 080	12 566	45 417
2019	10 495	11 389	11 191	12 632	45 707
2020	10 570	11 431	11 283	12 688	45 972
2021	10 647	11 494	11 376	12 734	46 251
2022	10 726	11 545	11 466	12 798	46 535
2023	10 801	11 584	11 557	12 845	46 787
2024	10 770	11 606	11 533	12 894	46 803
2025	10 751	11 615	11 508	12 950	46 824
2026	10 736	11 649	11 497	12 996	46 878
2027	10 730	11 649	11 489	13 041	46 909
2028	10 740	11 617	11 491	13 084	46 932
2029	10 747	11 594	11 491	13 128	46 960
2030	10 760	11 595	11 494	13 167	47 016
2031	10 777	11 623	11 494	13 203	47 097
2032	10 793	11 644	11 504	13 236	47 177
2033	10 814	11 670	11 509	13 268	47 261
2034	10 833	11 680	11 520	13 297	47 330
2035	10 853	11 692	11 535	13 317	47 397
2036	10 880	11 706	11 542	13 347	47 475
2037	10 906	11 732	11 566	13 373	47 577
2038	10 946	11 745	11 590	13 398	47 679
2039	10 991	11 756	11 617	13 422	47 786
2040	11 030	11 762	11 653	13 440	47 885
2041	11 075	11 762	11 696	13 462	47 995
2042	11 131	11 751	11 742	13 481	48 105
2043	11 176	11 715	11 786	13 496	48 173
2044	11 218	11 716	11 837	13 516	48 287
2045	11 265	11 714	11 888	13 534	48 401
2046	11 301	11 712	11 926	13 548	48 487
2047	11 336	11 704	11 968	13 562	48 570
2048	11 355	11 700	12 008	13 582	48 645
2049	11 373	11 687	12 043	13 588	48 691
2050	11 393	11 681	12 073	13 603	48 750

Table 5.8
Emigration risks for Swedish born persons by sex and age at the end of year 2006. Number per 10 000

Age	Women	Men	Age	Women	Men	Age	Women	Men
0	30	33	35	29	34	70	1	3
1	53	59	36	26	32	71	1	3
2	44	51	37	24	29	72	1	2
3	40	42	38	24	28	73	1	2
4	36	39	39	21	27	74	1	2
5	35	36	40	19	26	75	0	2
6	35	36	41	18	23	76	1	1
7	30	34	42	17	24	77	0	1
8	29	30	43	13	21	78	0	1
9	26	28	44	14	19	79	0	1
10	22	25	45	10	19	80	0	1
11	22	21	46	9	16	81	1	1
12	16	20	47	9	17	82	0	1
13	15	16	48	10	16	83	0	1
14	13	14	49	8	13	84	0	1
15	10	11	50	7	14	85	0	1
16	11	12	51	8	14	86	1	1
17	8	8	52	8	12	87	0	0
18	10	8	53	6	12	88	0	0
19	48	20	54	7	12	89	0	0
20	58	29	55	7	13	90+	0	0
21	65	35	56	7	11			
22	64	43	57	6	12			
23	65	45	58	7	11			
24	63	46	59	5	10			
25	72	54	60	5	12			
26	70	61	61	5	12			
27	69	60	62	5	11			
28	69	57	63	5	9			
29	65	57	64	4	7			
30	59	52	65	5	10			
31	57	51	66	3	7			
32	46	45	67	3	5			
33	42	42	68	2	5			
34	34	37	69	1	4			

The risks above are changed accordingly:
2007-2010 annual increase 2.02 percent
2011-2023 annual increase 1.01 percent
2024-2050 no change

Table 5.9

Emigration risks for foreign born persons by sex and age at the end of year 2006. Number per 10 000

Age	Women	Men	Age	Women	Men	Age	Women	Men
0	0	0	35	232	310	70	52	87
1	1 610	1 797	36	207	291	71	55	77
2	621	772	37	206	282	72	59	67
3	612	649	38	182	273	73	51	67
4	532	596	39	185	256	74	61	68
5	481	463	40	162	248	75	43	70
6	457	505	41	150	228	76	48	51
7	405	417	42	141	224	77	59	50
8	388	345	43	135	199	78	63	62
9	302	297	44	115	182	79	50	51
10	266	256	45	110	179	80	48	46
11	230	222	46	101	176	81	56	57
12	202	185	47	95	171	82	57	51
13	171	163	48	90	164	83	71	45
14	154	149	49	87	154	84	56	64
15	127	121	50	83	141	85	51	56
16	117	132	51	80	137	86	59	43
17	120	102	52	79	136	87	63	43
18	112	102	53	74	127	88	48	74
19	181	122	54	68	123	89	67	71
20	251	167	55	65	130	90	44	76
21	260	233	56	70	108			
22	297	251	57	67	106			
23	290	287	58	69	98			
24	306	331	59	65	93			
25	322	371	60	61	109			
26	324	396	61	66	102			
27	318	396	62	75	95			
28	319	400	63	66	77			
29	293	393	64	67	82			
30	276	381	65	73	116			
31	264	381	66	75	115			
32	262	356	67	77	90			
33	239	326	68	63	92			
34	252	328	69	47	99			

The risks above have gradually been adjusted downwards at the same rate as the assumed composition of foreign born in the population has changed, starting in 2007 up until and including 2050 by a total of about 15 percent.

Population projection – main alternative

Table 5.10

Population and population changes 1990–2005 and projection 2006–2050. Thousands

Year	Births	Deaths	Birth surplus	Immigrants	Emigrants	Net migration	Pop. increase	Pop. 31 dec
1990	123,9	95,2	28,8	60,0	25,2	34,9	63,6	8 590,6
1991	123,7	95,2	28,5	49,7	24,7	25,0	53,5	8 644,1
1992	122,8	94,7	28,1	45,3	25,7	19,6	47,9	8 692,0
1993	118,0	97,0	21,0	61,9	29,9	32,0	53,1	8 745,1
1994	112,3	91,8	20,4	83,6	32,7	50,9	71,3	8 816,4
1995	103,4	94,0	9,5	45,9	34,0	11,9	21,1	8 837,5
1996	95,3	94,1	1,2	39,9	33,9	6,0	7,0	8 844,5
1997	90,5	93,3	-2,8	44,8	38,5	6,3	3,1	8 847,6
1998	89,0	93,3	-4,2	49,4	38,5	10,9	6,7	8 854,3
1999	88,2	94,7	-6,6	49,8	35,7	14,1	7,1	8 861,4
2000	90,4	93,5	-3,0	58,7	34,1	24,6	21,4	8 882,8
2001	91,5	93,8	-2,3	60,8	32,1	28,7	26,3	8 909,1
2002	95,8	95,0	0,8	64,1	33,0	31,1	31,7	8 940,8
2003	99,2	93,0	6,2	63,8	35,0	28,8	34,9	8 975,7
2004	100,9	90,5	10,4	62,0	36,6	25,4	35,7	9 011,4
2005	101,3	91,7	9,6	65,2	38,1	27,1	36,7	9 047,8
Projection								
2006	103,4	92,9	10,5	78,8	37,8	41,0	51,5	9 099,3
2007	103,8	92,8	11,1	67,6	39,2	28,4	39,5	9 138,8
2008	104,4	92,6	11,8	68,2	39,9	28,3	40,1	9 178,9
2009	105,0	92,5	12,5	66,8	40,7	26,1	38,5	9 217,4
2010	105,6	92,4	13,3	67,4	41,4	25,9	39,2	9 256,7
2011	105,8	92,2	13,6	67,9	42,1	25,8	39,4	9 296,0
2012	106,2	92,1	14,1	68,5	42,7	25,8	39,8	9 335,9
2013	106,8	92,0	14,8	69,0	43,3	25,8	40,6	9 376,4
2014	107,5	91,9	15,7	69,5	43,8	25,7	41,4	9 417,8
2015	108,4	91,8	16,6	70,1	44,3	25,8	42,5	9 460,3
2016	109,4	91,8	17,6	70,3	44,7	25,5	43,1	9 503,4
2017	110,4	92,0	18,4	70,4	45,1	25,3	43,7	9 547,1
2018	111,3	92,3	19,0	70,5	45,4	25,1	44,1	9 591,2
2019	112,1	92,7	19,4	70,7	45,7	25,0	44,3	9 635,5
2020	112,7	93,3	19,4	70,8	46,0	24,8	44,3	9 679,8
2021	113,1	93,9	19,2	70,9	46,3	24,7	43,9	9 723,7
2022	113,2	94,7	18,5	71,1	46,5	24,5	43,1	9 766,7
2023	113,0	95,6	17,4	71,2	46,8	24,4	41,8	9 808,6
2024	112,5	96,6	15,9	71,3	46,8	24,5	40,4	9 849,0

Table 5.10 (cont.)

Population and population changes 1990–2005 and projection 2006–2050. Thousands

Year	Births	Deaths	Birth surplus	Immigrants	Emigrants	Net migration	Pop. increase	Pop. 31 dec
2025	111,8	97,8	14,0	71,4	46,8	24,6	38,6	9 887,6
2026	111,0	99,0	11,9	71,5	46,9	24,6	36,5	9 924,1
2027	110,0	100,4	9,6	71,5	46,9	24,6	34,3	9 958,4
2028	109,2	101,8	7,3	71,6	46,9	24,7	32,0	9 990,4
2029	108,4	103,3	5,1	71,7	47,0	24,7	29,8	10 020,2
2030	107,8	104,9	2,9	71,8	47,0	24,7	27,7	10 047,9
2031	107,4	106,4	1,0	71,7	47,1	24,6	25,7	10 073,6
2032	107,3	107,9	-0,6	71,8	47,2	24,6	24,0	10 097,6
2033	107,4	109,2	-1,9	71,8	47,3	24,5	22,7	10 120,2
2034	107,7	110,5	-2,8	71,8	47,3	24,5	21,7	10 141,9
2035	108,1	111,5	-3,4	71,8	47,4	24,4	21,0	10 162,9
2036	108,7	112,4	-3,7	71,9	47,5	24,4	20,7	10 183,7
2037	109,4	113,1	-3,7	71,8	47,6	24,2	20,5	10 204,2
2038	110,1	113,7	-3,6	71,9	47,7	24,2	20,6	10 224,8
2039	110,8	114,1	-3,3	71,9	47,8	24,1	20,8	10 245,6
2040	111,6	114,4	-2,8	72,0	47,9	24,1	21,3	10 266,9
2041	112,3	114,6	-2,3	71,9	48,0	23,9	21,7	10 288,5
2042	113,0	114,6	-1,7	72,0	48,1	23,9	22,2	10 310,8
2043	113,6	114,7	-1,0	72,0	48,2	23,8	22,8	10 333,6
2044	114,3	114,7	-0,5	72,1	48,3	23,8	23,3	10 356,9
2045	114,8	114,8	0,0	72,1	48,4	23,7	23,7	10 380,6
2046	115,4	114,9	0,4	72,1	48,5	23,7	24,1	10 404,7
2047	115,9	115,1	0,7	72,2	48,6	23,6	24,4	10 429,0
2048	116,3	115,4	0,9	72,2	48,6	23,6	24,5	10 453,5
2049	116,7	115,8	0,9	72,3	48,7	23,6	24,5	10 478,0
2050	117,0	116,2	0,9	72,3	48,7	23,6	24,4	10 502,4

Table 5.11

Population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	Total	By age					
		0–4	5–9	10–14	15–19	20–24	25–29
Both sexes							
1950	7 046,9	610,6	589,8	450,7	415,8	459,7	534,0
1960	7 498,0	519,9	533,5	610,2	594,1	466,2	435,5
1970	8 081,1	576,6	575,1	530,3	551,4	657,9	633,9
1980	8 317,9	483,8	554,3	577,2	579,1	553,9	579,5
1990	8 590,6	566,0	487,8	494,4	563,3	601,0	615,5
2000	8 882,8	457,9	585,9	587,0	508,6	516,7	592,2
2001	8 909,1	455,8	557,4	607,1	519,1	515,6	580,9
2002	8 940,8	462,5	527,0	622,4	532,2	517,0	568,7
2003	8 975,7	472,9	501,6	624,5	553,3	520,0	556,0
2004	9 011,4	485,6	479,9	618,1	574,7	522,3	545,7
2005	9 047,8	496,3	468,7	595,7	598,4	527,3	544,1
Projection							
2006	9 099,3	509,2	467,6	568,2	618,9	538,9	546,0
2007	9 138,8	516,7	474,3	538,2	634,0	550,8	547,5
2008	9 178,9	521,6	484,8	513,1	636,3	570,8	549,9
2009	9 217,4	524,9	497,6	492,0	630,4	591,8	550,7
2010	9 256,7	528,7	508,2	481,6	608,9	615,6	553,9
2011	9 296,0	530,9	519,6	479,5	580,9	635,1	563,0
2012	9 335,9	533,2	526,8	486,0	551,1	650,1	574,6
2013	9 376,4	535,5	531,5	496,2	526,1	652,6	594,2
2014	9 417,8	538,1	534,8	508,9	505,2	647,2	615,1
2015	9 460,3	540,9	538,7	519,4	494,9	626,4	638,8
2016	9 503,4	544,5	540,9	530,7	492,9	599,0	658,3
2017	9 547,1	548,6	543,2	537,9	499,3	569,7	673,4
2018	9 591,2	553,1	545,5	542,6	509,5	545,0	676,3
2019	9 635,5	557,6	548,0	546,0	522,1	524,2	671,3
2020	9 679,8	561,8	550,7	549,8	532,5	513,9	651,3
2021	9 723,7	565,4	554,2	552,0	543,8	511,7	624,6
2022	9 766,7	568,2	558,3	554,3	551,0	517,9	595,8
2023	9 808,6	569,9	562,6	556,5	555,7	527,9	571,3
2024	9 849,0	570,3	567,0	559,0	559,0	540,2	550,8
2025	9 887,6	569,4	571,1	561,7	562,8	550,6	540,4
2026	9 924,1	567,3	574,7	565,2	565,1	561,7	538,1
2027	9 958,4	564,2	577,5	569,2	567,4	568,9	544,0
2028	9 990,4	560,4	579,2	573,6	569,7	573,6	553,8
2029	10 020,2	556,4	579,6	578,0	572,2	577,0	565,9
2030	10 047,9	552,5	578,8	582,1	574,9	580,7	576,1
2031	10 073,6	549,1	576,8	585,7	578,4	583,1	587,0
2032	10 097,6	546,5	573,8	588,4	582,4	585,4	594,3
2033	10 120,2	544,8	570,2	590,1	586,7	587,7	599,0
2034	10 141,9	544,1	566,3	590,6	591,1	590,3	602,4

Table 5.11 (cont.)

Population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	Total	By age					
		0–4	5–9	10–14	15–19	20–24	25–29
2035	10 162,9	544,4	562,5	589,8	595,2	593,0	606,2
2036	10 183,7	545,7	559,2	587,9	598,8	596,4	608,6
2037	10 204,2	547,7	556,7	585,0	601,5	600,4	610,9
2038	10 224,8	550,4	555,0	581,4	603,2	604,7	613,2
2039	10 245,6	553,5	554,3	577,6	603,7	609,0	615,7
2040	10 266,9	556,9	554,7	573,9	603,0	613,1	618,4
2041	10 288,5	560,5	555,9	570,6	601,0	616,7	621,8
2042	10 310,8	564,1	557,9	568,1	598,2	619,4	625,7
2043	10 333,6	567,6	560,5	566,5	594,6	621,1	629,9
2044	10 356,9	571,0	563,6	565,8	590,9	621,6	634,2
2045	10 380,6	574,2	566,9	566,2	587,2	620,9	638,3
2046	10 404,7	577,3	570,4	567,4	584,0	619,1	641,9
2047	10 429,0	580,1	574,0	569,4	581,5	616,2	644,6
2048	10 453,5	582,7	577,4	572,0	579,9	612,8	646,4
2049	10 478,0	585,2	580,8	575,0	579,3	609,1	646,9
2050	10 502,4	587,3	584,0	578,4	579,7	605,5	646,3

Table 5.11 (cont.)
Population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age 30–34	35–39	40–44	45–49	50–54	55–59	60–64
Both sexes							
1950	543,1	545,6	540,7	489,1	435,9	380,5	330,2
1960	470,2	533,5	535,9	533,5	521,5	460,7	395,5
1970	490,1	444,8	471,9	527,4	521,3	507,9	479,2
1980	659,9	622,4	479,2	433,7	455,2	498,8	478,7
1990	577,0	585,3	654,9	613,0	467,2	415,4	423,7
2000	627,8	632,1	584,6	583,6	642,0	591,2	442,5
2001	619,1	651,1	583,2	585,6	623,7	623,4	455,1
2002	611,6	664,9	586,4	586,5	608,4	641,5	477,8
2003	609,1	665,9	596,6	584,9	595,2	648,4	506,1
2004	612,6	651,2	615,8	586,4	583,6	642,7	538,5
2005	610,3	638,0	636,2	584,9	578,8	630,5	573,3
Projection							
2006	601,4	630,8	655,5	583,9	581,3	612,8	605,0
2007	589,5	623,5	669,3	586,7	582,1	597,9	622,8
2008	577,7	621,4	670,3	597,0	580,7	585,2	629,6
2009	567,7	625,9	656,5	616,2	582,5	574,1	624,3
2010	564,9	623,8	644,0	636,6	581,1	569,8	612,9
2011	564,0	613,2	635,8	655,2	579,7	572,0	595,8
2012	565,0	601,0	628,4	668,8	582,5	572,9	581,5
2013	566,8	588,9	626,3	669,9	592,5	571,6	569,5
2014	567,4	578,7	630,7	656,5	611,5	573,4	559,0
2015	570,6	575,6	628,6	644,2	631,8	572,1	555,1
2016	579,4	574,5	618,0	636,1	650,3	570,9	557,4
2017	591,0	575,2	605,8	628,9	664,0	573,8	558,4
2018	610,2	576,9	593,5	626,8	665,2	583,7	557,4
2019	630,9	577,3	583,2	631,1	652,1	602,4	559,3
2020	654,2	580,3	579,8	629,0	640,1	622,5	558,2
2021	673,6	588,9	578,6	618,4	632,2	640,7	557,2
2022	688,7	600,3	579,0	606,2	625,1	654,3	560,0
2023	692,1	619,4	580,5	593,9	623,1	655,6	569,8
2024	687,6	640,0	580,8	583,5	627,3	642,9	588,2
2025	668,4	663,3	583,7	580,0	625,2	631,2	607,9
2026	642,5	682,9	592,3	578,7	614,7	623,6	625,9
2027	614,2	698,2	603,7	579,0	602,6	616,8	639,3
2028	590,0	702,2	622,6	580,5	590,4	614,9	640,8
2029	569,7	698,1	643,3	580,8	580,1	619,1	628,7
2030	559,2	679,5	666,6	583,7	576,6	617,1	617,5
2031	556,7	654,0	686,3	592,2	575,3	606,8	610,2
2032	562,4	626,0	701,9	603,6	575,6	594,9	603,8
2033	572,0	601,8	706,2	622,5	577,0	582,9	602,1
2034	583,9	581,4	702,4	643,2	577,3	572,8	606,3

Table 5.11 (forts.)
Population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
2035	594,0	570,7	684,1	666,4	580,2	569,3	604,4
2036	604,8	568,0	658,8	686,2	588,7	568,0	594,5
2037	612,0	573,6	631,0	701,8	600,1	568,3	582,9
2038	616,8	583,0	606,8	706,2	618,8	569,7	571,1
2039	620,2	594,8	586,4	702,6	639,4	570,1	561,3
2040	624,0	605,0	575,6	684,7	662,5	573,0	557,9
2041	626,5	615,8	572,8	659,6	682,2	581,4	556,7
2042	628,8	623,1	578,2	631,9	697,9	592,7	557,0
2043	631,1	627,9	587,6	607,7	702,5	611,2	558,4
2044	633,6	631,4	599,4	587,4	699,0	631,6	558,8
2045	636,3	635,2	609,6	576,5	681,3	654,6	561,8
2046	639,7	637,7	620,3	573,7	656,5	674,2	570,0
2047	643,6	640,0	627,7	579,1	629,0	689,7	581,2
2048	647,8	642,4	632,5	588,4	605,0	694,4	599,5
2049	652,1	644,9	636,0	600,1	584,8	691,1	619,7
2050	656,1	647,6	639,9	610,3	574,0	673,7	642,3

Table 5.11 (cont.)

Population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age							
	65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Both sexes								
1950	270,2	209,0	135,3	68,5	30,1	7,2	0,9	0,0
1960	324,5	251,8	170,5	95,4	36,2	8,3	1,3	0,0
1970	399,4	309,9	213,7	122,7	51,5	13,8	2,0	0,1
1980	442,8	382,5	273,5	163,0	73,9	22,1	3,9	0,3
1990	443,2	394,1	319,3	220,5	107,5	34,7	6,3	0,6
2000	378,3	362,1	338,0	247,6	139,8	53,6	10,6	1,0
2001	380,3	358,4	329,1	256,5	140,7	54,8	11,2	1,0
2002	384,5	356,5	323,3	259,7	141,4	55,9	11,5	1,1
2003	395,7	350,4	319,2	263,2	142,2	57,4	11,9	1,2
2004	409,2	348,2	314,6	265,7	143,8	58,9	12,6	1,3
2005	420,3	346,0	311,9	259,2	153,9	59,5	13,2	1,3
Projection								
2006	432,4	348,6	309,5	253,4	160,3	60,3	13,6	1,4
2007	454,3	353,1	308,5	250,0	162,6	61,1	14,2	1,5
2008	481,7	363,9	303,8	247,9	165,2	61,6	14,6	1,6
2009	513,2	376,8	302,5	244,8	166,4	62,4	14,9	1,7
2010	546,9	387,5	301,3	243,6	163,2	67,3	15,0	1,8
2011	577,3	399,1	304,3	242,6	160,5	70,5	15,2	1,9
2012	594,5	419,9	309,0	242,7	159,0	71,4	15,5	2,0
2013	601,2	446,0	319,1	239,8	158,5	72,4	15,7	2,0
2014	596,6	475,9	331,2	239,5	157,2	72,9	16,0	2,1
2015	586,0	507,8	341,2	239,5	157,3	71,9	17,5	2,1
2016	570,1	536,4	352,1	242,8	157,4	71,1	18,4	2,1
2017	556,9	552,8	371,3	247,6	158,0	70,5	18,6	2,2
2018	545,8	559,5	395,4	256,6	156,6	70,7	18,8	2,2
2019	536,1	555,7	422,9	267,0	156,9	70,3	18,8	2,3
2020	532,7	546,2	451,8	275,7	157,6	70,7	18,7	2,5
2021	535,1	531,9	477,6	285,1	160,6	70,9	18,5	2,6
2022	536,3	520,0	492,6	301,7	164,5	71,3	18,4	2,7
2023	535,6	510,2	499,1	322,4	171,0	70,8	18,5	2,7
2024	537,7	501,5	496,3	345,9	178,6	71,1	18,5	2,7
2025	536,7	498,8	488,3	370,2	184,7	71,7	18,7	2,7
2026	536,0	501,4	476,1	391,7	191,6	73,4	18,8	2,7
2027	539,1	503,0	466,1	404,4	203,7	75,6	18,9	2,7
2028	548,7	502,6	458,1	410,3	218,9	78,9	18,8	2,7
2029	566,7	504,9	450,9	408,6	236,0	82,6	18,9	2,7
2030	586,0	504,4	449,1	402,7	253,0	85,5	19,1	2,7
2031	603,5	504,1	452,1	393,3	267,6	88,8	19,7	2,7
2032	616,7	507,4	454,1	386,0	276,3	95,0	20,4	2,8
2033	618,4	516,8	454,3	380,3	280,6	102,9	21,3	2,7
2034	606,9	534,3	456,9	375,3	279,9	111,5	22,4	2,8

Table 5.11 (cont.)
Population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age 65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
2035	596,4	552,9	456,9	374,7	276,3	119,5	23,2	2,8
2036	589,7	569,8	457,2	377,9	270,3	126,0	24,1	2,9
2037	583,7	582,6	460,8	380,4	266,1	129,9	26,0	3,0
2038	582,3	584,4	469,9	381,3	263,2	131,8	28,3	3,2
2039	586,5	573,8	486,5	383,9	260,5	131,5	30,9	3,3
2040	584,8	564,1	503,9	384,4	260,9	129,8	33,0	3,4
2041	575,2	558,1	519,7	385,3	263,7	127,0	34,6	3,6
2042	564,1	552,8	531,5	388,9	265,9	125,3	35,6	3,9
2043	552,8	551,7	533,4	397,3	267,0	124,4	36,0	4,2
2044	543,4	555,9	523,9	412,2	269,1	123,5	35,9	4,6
2045	540,2	554,4	515,4	427,6	269,8	124,1	35,3	4,9
2046	539,1	545,4	510,4	441,3	271,0	125,7	34,6	5,1
2047	539,5	535,0	506,1	451,6	274,3	127,0	34,2	5,3
2048	540,9	524,4	505,5	453,3	281,1	127,7	34,1	5,4
2049	541,3	515,7	509,6	445,5	292,8	128,8	34,0	5,3
2050	544,3	512,9	508,5	438,7	304,4	129,2	34,2	5,3

Table 5.12a

Female population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	Total	By age 0–4	5–9	10–14	15–19	20–24	25–29
Women							
1950	3 535,9	297,3	287,9	221,3	204,9	229,1	264,2
1960	3 757,8	252,5	259,3	297,7	290,8	230,4	215,6
1970	4 045,4	280,5	280,0	257,7	269,4	321,3	304,6
1980	4 198,1	236,0	270,6	281,2	282,7	271,0	283,1
1990	4 346,6	275,6	237,3	241,0	274,9	293,2	298,6
2000	4 490,0	223,0	285,5	285,7	247,1	253,5	290,9
2001	4 500,7	221,5	272,1	295,4	251,9	253,3	285,4
2002	4 513,7	224,9	257,4	302,4	258,7	253,8	279,3
2003	4 529,0	230,1	244,5	304,0	268,9	254,9	273,0
2004	4 545,1	236,2	233,8	301,3	279,5	255,7	268,0
2005	4 561,2	241,8	228,2	290,2	291,3	257,8	267,0
Projection							
2006	4 585,4	248,2	227,4	277,3	301,3	263,5	268,2
2007	4 603,5	251,7	230,9	262,8	308,2	270,0	269,0
2008	4 621,9	254,0	236,3	250,1	309,8	279,7	270,1
2009	4 639,4	255,7	242,3	239,6	307,3	290,1	270,3
2010	4 657,2	257,4	247,8	234,5	296,7	301,9	271,9
2011	4 675,0	258,5	253,4	233,1	283,6	311,2	276,2
2012	4 693,1	259,6	256,8	236,4	269,1	318,1	282,4
2013	4 711,5	260,7	259,0	241,6	256,5	319,8	291,8
2014	4 730,3	261,9	260,6	247,6	246,0	317,5	302,1
2015	4 749,7	263,3	262,4	253,0	240,9	307,3	313,7
2016	4 769,5	265,0	263,4	258,6	239,6	294,5	323,1
2017	4 789,7	267,0	264,5	261,9	242,9	280,3	329,9
2018	4 810,2	269,2	265,6	264,2	248,0	267,7	331,8
2019	4 831,0	271,4	266,8	265,8	254,0	257,4	329,7
2020	4 851,9	273,5	268,1	267,5	259,3	252,3	319,9
2021	4 872,8	275,2	269,8	268,6	264,9	250,8	307,3
2022	4 893,5	276,6	271,8	269,7	268,2	253,9	293,4
2023	4 913,6	277,4	273,9	270,8	270,5	258,9	281,0
2024	4 933,3	277,6	276,1	272,0	272,1	264,8	270,8
2025	4 952,1	277,2	278,1	273,3	273,9	270,0	265,6
2026	4 970,1	276,1	279,9	275,0	274,9	275,4	264,1
2027	4 987,1	274,6	281,2	277,0	276,0	278,8	267,1
2028	5 003,1	272,8	282,0	279,1	277,1	281,1	271,9
2029	5 018,0	270,9	282,3	281,3	278,4	282,8	277,6
2030	5 031,9	269,0	281,9	283,3	279,7	284,5	282,8
2031	5 044,8	267,3	281,0	285,1	281,4	285,6	288,2
2032	5 056,8	266,1	279,5	286,4	283,4	286,7	291,6
2033	5 068,1	265,2	277,8	287,3	285,5	287,8	293,8
2034	5 078,7	264,9	275,9	287,5	287,7	289,1	295,5

Table 5.12a (cont.)

Female population by age 1950–2005 and projection 2006–2050. Thousands

31 dec.	Total	By age					
resp. year		0–4	5–9	10–14	15–19	20–24	25–29
Women							
2035	5 088,9	265,1	274,1	287,2	289,7	290,4	297,2
2036	5 098,8	265,7	272,4	286,2	291,5	292,1	298,4
2037	5 108,4	266,6	271,2	284,8	292,8	294,0	299,5
2038	5 118,0	267,9	270,4	283,1	293,7	296,1	300,6
2039	5 127,6	269,5	270,1	281,3	293,9	298,3	301,9
2040	5 137,4	271,1	270,2	279,5	293,6	300,3	303,2
2041	5 147,3	272,8	270,8	277,9	292,6	302,0	304,8
2042	5 157,5	274,6	271,8	276,6	291,3	303,4	306,8
2043	5 168,1	276,3	273,1	275,9	289,5	304,2	308,8
2044	5 178,9	277,9	274,5	275,5	287,7	304,5	311,0
2045	5 190,0	279,5	276,2	275,7	285,9	304,2	312,9
2046	5 201,3	281,0	277,9	276,3	284,4	303,3	314,7
2047	5 212,9	282,4	279,6	277,3	283,2	301,9	316,1
2048	5 224,6	283,7	281,3	278,5	282,4	300,3	317,0
2049	5 236,4	284,8	282,9	280,0	282,1	298,5	317,3
2050	5 248,2	285,9	284,4	281,6	282,3	296,8	317,0

Table 5.12a (cont.)

Female population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
Women							
1950	268,3	269,5	268,4	246,7	222,1	197,1	173,4
1960	233,9	264,6	265,4	264,7	260,6	234,9	205,2
1970	237,0	218,7	234,9	262,8	260,3	255,4	245,1
1980	322,0	301,2	234,4	215,8	229,8	253,3	245,8
1990	281,1	286,7	321,7	298,9	231,1	210,2	219,8
2000	307,2	308,1	286,9	288,1	318,0	291,7	223,0
2001	303,6	317,2	286,4	288,6	309,2	307,8	228,5
2002	300,4	324,0	287,4	289,3	301,7	317,5	238,9
2003	299,4	325,3	292,1	288,4	294,8	321,6	252,3
2004	301,4	318,4	301,7	288,9	289,0	319,7	267,8
2005	300,0	312,9	311,2	288,1	286,9	313,9	284,9
Projection							
2006	295,6	310,0	320,6	287,8	287,6	305,4	300,9
2007	289,6	307,1	327,3	288,8	288,2	298,0	310,5
2008	283,9	306,1	328,7	293,4	287,5	291,2	314,4
2009	279,2	308,5	322,2	303,1	288,0	285,6	312,6
2010	277,8	307,4	316,9	312,7	287,3	283,7	307,1
2011	277,7	302,2	313,3	321,7	286,9	284,3	298,7
2012	278,2	296,1	310,3	328,3	287,8	284,8	291,5
2013	279,0	290,1	309,3	329,7	292,4	284,1	285,0
2014	279,1	285,3	311,6	323,2	302,0	284,7	279,5
2015	280,5	283,7	310,5	317,9	311,5	284,0	277,8
2016	284,6	283,4	305,3	314,4	320,5	283,6	278,4
2017	290,7	283,8	299,2	311,4	327,1	284,5	279,0
2018	299,9	284,5	293,1	310,4	328,4	289,1	278,4
2019	310,0	284,5	288,2	312,6	322,0	298,5	278,9
2020	321,5	285,8	286,5	311,5	316,7	308,0	278,3
2021	330,7	289,8	286,1	306,3	313,3	316,8	278,0
2022	337,6	295,8	286,4	300,1	310,3	323,3	278,9
2023	339,7	304,9	287,0	294,1	309,3	324,7	283,4
2024	337,8	315,0	287,0	289,1	311,6	318,4	292,7
2025	328,4	326,4	288,2	287,4	310,4	313,2	301,9
2026	316,2	335,8	292,2	287,0	305,3	309,8	310,7
2027	302,5	342,8	298,2	287,2	299,2	306,9	317,1
2028	290,3	345,1	307,3	287,8	293,2	306,0	318,4
2029	280,2	343,5	317,4	287,8	288,3	308,2	312,4
2030	275,0	334,3	328,9	289,0	286,5	307,1	307,3
2031	273,4	322,3	338,3	293,0	286,1	302,1	304,1
2032	276,2	308,8	345,5	299,0	286,3	296,1	301,3
2033	281,0	296,6	347,9	308,1	286,9	290,1	300,4
2034	286,6	286,4	346,4	318,2	286,9	285,3	302,6

Table 5.12a (cont.)

Female population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age 30–34	35–39	40–44	45–49	50–54	55–59	60–64
Women							
2035	291,7	281,1	337,4	329,7	288,1	283,6	301,6
2036	297,0	279,4	325,5	339,1	292,1	283,2	296,7
2037	300,4	282,2	312,0	346,3	298,0	283,4	290,8
2038	302,7	286,9	299,8	348,8	307,1	284,0	285,0
2039	304,4	292,5	289,6	347,4	317,2	283,9	280,3
2040	306,2	297,6	284,2	338,5	328,6	285,2	278,6
2041	307,3	302,9	282,5	326,7	338,1	289,1	278,2
2042	308,5	306,4	285,2	313,2	345,3	295,0	278,4
2043	309,6	308,7	289,9	301,0	347,8	304,1	279,0
2044	310,9	310,5	295,5	290,9	346,5	314,1	278,9
2045	312,2	312,2	300,6	285,5	337,7	325,4	280,3
2046	313,8	313,4	306,0	283,8	325,9	334,8	284,1
2047	315,8	314,6	309,5	286,4	312,6	341,9	289,9
2048	317,8	315,7	311,8	291,1	300,5	344,5	298,9
2049	319,9	317,0	313,6	296,7	290,4	343,2	308,7
2050	321,9	318,4	315,4	301,8	285,0	334,5	319,9

Table 5.12a (cont.)

Female population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age 65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Women								
1950	142,3	110,6	72,5	38,1	17,4	4,3	0,6	0,0
1960	172,8	136,9	93,3	52,9	20,5	5,0	0,9	0,0
1970	211,9	170,1	122,4	72,3	31,0	8,6	1,3	0,1
1980	233,2	209,9	159,9	101,0	48,8	15,3	2,8	0,2
1990	234,7	216,0	185,0	137,2	73,1	25,2	4,9	0,5
2000	197,7	197,6	193,0	151,0	93,5	39,2	8,4	0,8
2001	197,8	195,1	187,3	156,1	93,7	39,9	9,0	0,9
2002	199,0	193,4	183,6	157,5	93,7	40,7	9,2	1,0
2003	204,0	189,2	181,4	159,0	94,0	41,6	9,5	1,0
2004	209,9	187,3	178,1	160,8	94,5	42,5	10,0	1,1
2005	214,8	184,8	176,3	155,8	100,6	43,0	10,4	1,1
Projection								
2006	220,0	185,4	174,3	151,8	104,5	43,4	10,8	1,2
2007	230,0	186,8	173,1	149,4	105,8	43,9	11,2	1,3
2008	243,2	191,7	169,6	147,9	107,0	44,1	11,5	1,4
2009	258,3	197,4	168,1	145,4	107,7	44,5	11,7	1,5
2010	275,1	202,2	166,2	144,3	105,2	47,8	11,8	1,5
2011	290,4	207,3	167,0	143,0	103,0	49,9	12,0	1,6
2012	299,7	216,9	168,6	142,4	101,7	50,5	12,2	1,7
2013	303,5	229,6	173,2	139,9	101,2	51,0	12,3	1,7
2014	301,8	244,1	178,7	139,0	99,9	51,3	12,5	1,8
2015	296,6	260,1	183,2	137,8	99,6	50,4	13,6	1,8
2016	288,6	274,7	188,1	138,9	99,2	49,6	14,3	1,8
2017	281,7	283,6	197,1	140,7	99,0	49,1	14,4	1,9
2018	275,6	287,3	209,0	144,9	97,6	49,1	14,5	1,9
2019	270,4	285,7	222,6	149,9	97,3	48,6	14,6	1,9
2020	268,8	280,9	237,4	153,9	96,8	48,7	14,4	2,1
2021	269,4	273,5	250,7	158,3	98,1	48,7	14,3	2,2
2022	270,1	267,1	258,9	166,3	99,8	48,7	14,1	2,3
2023	269,5	261,4	262,4	176,9	103,2	48,1	14,2	2,3
2024	270,2	256,7	261,1	188,9	107,0	48,1	14,1	2,3
2025	269,6	255,3	256,8	201,6	110,1	48,1	14,2	2,3
2026	269,3	256,0	250,2	213,1	113,6	49,0	14,2	2,3
2027	270,3	256,8	244,6	220,2	119,9	50,1	14,3	2,2
2028	274,7	256,4	239,7	223,4	128,2	52,0	14,1	2,3
2029	283,8	257,1	235,6	222,5	137,5	54,2	14,2	2,3
2030	292,9	256,6	234,5	219,0	147,0	55,8	14,2	2,3
2031	301,4	256,5	235,4	213,7	155,4	57,7	14,6	2,3
2032	307,7	257,6	236,3	209,2	160,5	61,3	15,1	2,3
2033	309,1	261,9	236,1	205,4	162,9	66,0	15,7	2,3
2034	303,3	270,7	236,9	202,3	162,5	71,2	16,4	2,3

Table 5.12a (cont.)

Female population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age 65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Women								
2035	298,5	279,6	236,7	201,8	160,1	76,2	16,9	2,3
2036	295,4	287,8	236,8	202,8	156,4	80,4	17,6	2,4
2037	292,7	293,9	238,0	203,9	153,6	82,8	18,8	2,5
2038	292,0	295,3	242,2	204,0	151,3	84,1	20,4	2,6
2039	294,2	289,7	250,6	204,9	149,4	83,8	22,2	2,7
2040	293,2	285,2	258,9	204,9	149,4	82,6	23,7	2,8
2041	288,4	282,4	266,7	205,1	150,4	80,7	24,9	2,9
2042	282,7	280,0	272,4	206,5	151,5	79,4	25,5	3,1
2043	277,1	279,3	273,6	210,4	151,9	78,6	25,9	3,4
2044	272,5	281,5	268,6	218,0	152,6	77,8	25,8	3,7
2045	270,9	280,6	264,5	225,6	152,8	78,0	25,3	4,0
2046	270,5	276,0	262,0	232,4	153,3	78,7	24,8	4,1
2047	270,8	270,6	260,0	237,5	154,7	79,5	24,5	4,3
2048	271,3	265,2	259,5	238,6	158,0	79,8	24,3	4,3
2049	271,3	260,9	261,6	234,3	164,4	80,2	24,2	4,3
2050	272,7	259,5	260,8	230,9	170,4	80,4	24,3	4,3

Table 5.12b

Male population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	Total	By age 0–4	5–9	10–14	15–19	20–24	25–29
Men							
1950	3 511,0	313,2	301,9	229,3	210,9	230,6	269,8
1960	3 740,1	267,4	274,2	312,5	303,2	235,8	219,9
1970	4 035,8	296,1	295,1	272,6	282,0	336,6	329,3
1980	4 119,8	247,9	283,8	295,9	296,5	282,9	296,3
1990	4 244,0	290,3	250,5	253,4	288,4	307,8	316,9
2000	4 392,8	234,9	300,4	301,3	261,4	263,2	301,3
2001	4 408,4	234,2	285,3	311,7	267,2	262,4	295,5
2002	4 427,1	237,6	269,6	320,0	273,5	263,2	289,5
2003	4 446,7	242,8	257,1	320,5	284,4	265,1	283,0
2004	4 466,3	249,3	246,2	316,9	295,2	266,6	277,7
2005	4 486,6	254,5	240,5	305,5	307,1	269,5	277,0
Projection							
2006	4 513,9	261,0	240,2	290,9	317,6	275,4	277,8
2007	4 535,3	265,0	243,5	275,4	325,8	280,8	278,5
2008	4 557,0	267,5	248,6	263,0	326,5	291,1	279,8
2009	4 578,1	269,2	255,3	252,4	323,1	301,7	280,3
2010	4 599,5	271,2	260,4	247,1	312,2	313,7	282,0
2011	4 621,0	272,4	266,2	246,4	297,3	323,9	286,8
2012	4 642,8	273,6	270,1	249,6	282,0	332,0	292,2
2013	4 665,0	274,8	272,5	254,6	269,6	332,8	302,4
2014	4 687,5	276,1	274,2	261,2	259,1	329,7	313,0
2015	4 710,6	277,6	276,3	266,4	253,9	319,1	325,1
2016	4 733,9	279,4	277,5	272,1	253,3	304,6	335,3
2017	4 757,4	281,6	278,7	276,0	256,5	289,4	343,4
2018	4 781,0	283,9	279,9	278,4	261,5	277,2	344,5
2019	4 804,5	286,2	281,2	280,1	268,1	266,8	341,6
2020	4 827,9	288,3	282,6	282,2	273,2	261,6	331,4
2021	4 850,8	290,2	284,4	283,4	278,9	260,9	317,3
2022	4 873,3	291,6	286,4	284,6	282,8	264,0	302,4
2023	4 894,9	292,5	288,7	285,8	285,2	269,0	290,3
2024	4 915,7	292,7	290,9	287,0	286,9	275,5	280,0
2025	4 935,5	292,2	293,0	288,4	289,0	280,6	274,8
2026	4 954,0	291,1	294,9	290,2	290,2	286,2	274,0
2027	4 971,3	289,5	296,3	292,2	291,4	290,1	277,0
2028	4 987,4	287,6	297,1	294,5	292,5	292,5	281,9
2029	5 002,2	285,5	297,3	296,7	293,8	294,2	288,3
2030	5 016,0	283,5	296,9	298,8	295,2	296,3	293,3
2031	5 028,8	281,8	295,8	300,6	297,0	297,5	298,9
2032	5 040,8	280,4	294,3	302,0	299,0	298,7	302,7
2033	5 052,2	279,6	292,4	302,8	301,2	299,9	305,1
2034	5 063,2	279,2	290,4	303,1	303,4	301,2	306,8

Table 5.12b (cont.)

Male population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	Total	By age 0–4	5–9	10–14	15–19	20–24	25–29
Men							
2035	5 074,1	279,4	288,5	302,6	305,5	302,6	308,9
2036	5 084,9	280,0	286,8	301,6	307,3	304,3	310,2
2037	5 095,8	281,1	285,5	300,1	308,7	306,4	311,4
2038	5 106,8	282,4	284,6	298,3	309,6	308,6	312,6
2039	5 118,0	284,0	284,3	296,3	309,8	310,8	313,9
2040	5 129,5	285,8	284,4	294,4	309,4	312,8	315,2
2041	5 141,2	287,6	285,1	292,7	308,4	314,6	316,9
2042	5 153,2	289,5	286,1	291,4	306,9	316,0	318,9
2043	5 165,5	291,3	287,5	290,6	305,1	316,9	321,1
2044	5 177,9	293,0	289,0	290,3	303,1	317,1	323,3
2045	5 190,6	294,7	290,8	290,5	301,3	316,7	325,4
2046	5 203,3	296,3	292,6	291,1	299,6	315,8	327,1
2047	5 216,1	297,7	294,4	292,1	298,3	314,3	328,5
2048	5 228,9	299,1	296,2	293,5	297,5	312,5	329,4
2049	5 241,6	300,3	297,9	295,0	297,2	310,6	329,7
2050	5 254,2	301,4	299,5	296,8	297,4	308,7	329,3

Table 5.12b (cont.)
Male population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age 30–34	35–39	40–44	45–49	50–54	55–59	60–64
Men							
1950	274,8	276,1	272,3	242,4	213,9	183,4	156,8
1960	236,3	268,8	270,5	268,8	260,9	225,7	190,3
1970	253,1	226,1	237,0	264,5	261,1	252,5	234,2
1980	337,9	321,1	244,8	217,9	225,5	245,4	232,9
1990	295,8	298,6	333,2	314,1	236,1	205,2	204,0
2000	320,6	324,0	297,7	295,4	323,9	299,5	219,4
2001	315,6	333,9	296,8	297,0	314,5	315,6	226,5
2002	311,2	340,9	299,0	297,2	306,7	324,0	238,9
2003	309,7	340,6	304,5	296,5	300,4	326,8	253,7
2004	311,2	332,7	314,0	297,6	294,6	323,0	270,7
2005	310,3	325,1	325,0	296,8	291,9	316,5	288,4
Projection							
2006	305,8	320,8	334,9	296,1	293,7	307,4	304,2
2007	299,9	316,4	342,0	298,0	293,9	299,9	312,3
2008	293,8	315,3	341,6	303,5	293,3	294,0	315,1
2009	288,5	317,4	334,4	313,1	294,5	288,5	311,8
2010	287,0	316,5	327,2	323,9	293,7	286,1	305,8
2011	286,4	311,0	322,5	333,5	292,8	287,8	297,0
2012	286,8	305,0	318,1	340,5	294,7	288,0	290,0
2013	287,9	298,7	316,9	340,2	300,1	287,5	284,5
2014	288,4	293,4	319,0	333,3	309,5	288,8	279,4
2015	290,1	291,9	318,1	326,3	320,3	288,1	277,3
2016	294,8	291,1	312,7	321,8	329,8	287,3	279,0
2017	300,3	291,4	306,6	317,6	336,9	289,2	279,4
2018	310,3	292,4	300,4	316,4	336,8	294,6	279,0
2019	320,9	292,8	295,0	318,5	330,1	303,9	280,4
2020	332,7	294,5	293,3	317,5	323,3	314,5	279,8
2021	342,9	299,1	292,4	312,1	318,9	323,9	279,2
2022	351,1	304,6	292,6	306,1	314,8	330,9	281,1
2023	352,5	314,4	293,5	299,8	313,7	331,0	286,4
2024	349,8	325,0	293,9	294,4	315,8	324,5	295,5
2025	340,0	336,8	295,5	292,6	314,8	318,0	306,0
2026	326,3	347,1	300,0	291,7	309,5	313,8	315,2
2027	311,7	355,4	305,5	291,8	303,5	309,9	322,2
2028	299,7	357,0	315,3	292,7	297,2	308,9	322,4
2029	289,5	354,6	325,9	293,0	291,9	310,9	316,3
2030	284,2	345,2	337,7	294,7	290,1	310,0	310,1
2031	283,3	331,7	348,0	299,2	289,2	304,8	306,2
2032	286,2	317,2	356,4	304,7	289,3	298,9	302,5
2033	291,0	305,2	358,2	314,4	290,1	292,8	301,6
2034	297,3	295,0	356,0	324,9	290,5	287,5	303,7

Table 5.12b (cont.)

Male population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
Men							
2035	302,3	289,6	346,7	336,7	292,1	285,7	302,8
2036	307,8	288,6	333,4	347,0	296,6	284,9	297,8
2037	311,6	291,4	319,0	355,4	302,0	284,9	292,1
2038	314,1	296,1	307,0	357,4	311,7	285,8	286,2
2039	315,8	302,4	296,8	355,2	322,2	286,2	281,1
2040	317,8	307,4	291,3	346,2	333,9	287,8	279,4
2041	319,1	312,9	290,3	333,0	344,2	292,2	278,5
2042	320,3	316,7	293,0	318,7	352,6	297,7	278,6
2043	321,5	319,2	297,7	306,7	354,6	307,2	279,5
2044	322,8	320,9	303,9	296,5	352,5	317,6	279,9
2045	324,1	322,9	308,9	291,1	343,6	329,2	281,5
2046	325,8	324,2	314,4	289,9	330,6	339,4	285,9
2047	327,8	325,4	318,2	292,6	316,4	347,8	291,3
2048	330,0	326,6	320,7	297,3	304,6	349,9	300,7
2049	332,1	327,9	322,5	303,5	294,4	347,9	310,9
2050	334,2	329,3	324,5	308,5	289,0	339,2	322,4

Table 5.12b (cont.)

Male population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age 65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Men								
1950	127,9	98,4	62,8	30,5	12,7	2,9	0,3	0,0
1960	151,7	114,9	77,1	42,5	15,7	3,3	0,4	0,0
1970	187,5	139,8	91,3	50,4	20,5	5,3	0,7	0,0
1980	209,6	172,6	113,6	62,0	25,1	6,8	1,1	0,1
1990	208,5	178,2	134,2	83,3	34,4	9,5	1,4	0,1
2000	180,6	164,5	145,0	96,6	46,3	14,4	2,1	0,2
2001	182,4	163,4	141,8	100,4	47,0	14,9	2,2	0,2
2002	185,5	163,2	139,7	102,2	47,6	15,2	2,3	0,2
2003	191,7	161,2	137,9	104,2	48,3	15,8	2,4	0,2
2004	199,3	160,9	136,4	105,4	49,3	16,4	2,6	0,2
2005	205,5	161,2	135,6	103,4	53,3	16,5	2,8	0,2
Projection								
2006	212,4	163,2	135,2	101,6	55,8	16,8	2,9	0,2
2007	224,3	166,3	135,4	100,7	56,8	17,2	2,9	0,2
2008	238,5	172,2	134,2	100,1	58,2	17,5	3,1	0,2
2009	254,9	179,4	134,3	99,4	58,7	17,9	3,2	0,3
2010	271,8	185,3	135,1	99,3	58,1	19,5	3,2	0,3
2011	286,9	191,8	137,3	99,6	57,5	20,5	3,2	0,3
2012	294,8	203,0	140,4	100,3	57,2	20,9	3,3	0,3
2013	297,7	216,4	145,9	99,9	57,3	21,4	3,4	0,3
2014	294,8	231,8	152,5	100,5	57,3	21,6	3,5	0,3
2015	289,4	247,7	158,0	101,7	57,7	21,5	3,9	0,3
2016	281,5	261,7	164,0	103,9	58,2	21,4	4,1	0,3
2017	275,2	269,2	174,2	106,9	59,0	21,4	4,1	0,3
2018	270,3	272,3	186,4	111,6	59,0	21,6	4,2	0,3
2019	265,7	270,0	200,3	117,1	59,7	21,7	4,3	0,3
2020	263,9	265,4	214,4	121,8	60,7	22,0	4,3	0,4
2021	265,7	258,4	226,9	126,8	62,5	22,2	4,3	0,4
2022	266,3	252,9	233,7	135,3	64,7	22,6	4,3	0,4
2023	266,0	248,8	236,7	145,5	67,9	22,7	4,3	0,4
2024	267,5	244,9	235,1	157,0	71,5	23,0	4,4	0,4
2025	267,1	243,5	231,5	168,6	74,6	23,6	4,5	0,4
2026	266,7	245,4	225,9	178,6	78,0	24,4	4,5	0,4
2027	268,7	246,2	221,5	184,2	83,8	25,5	4,6	0,4
2028	274,0	246,3	218,4	186,9	90,7	26,8	4,6	0,4
2029	282,9	247,9	215,4	186,1	98,5	28,4	4,7	0,4
2030	293,1	247,8	214,6	183,7	106,0	29,7	4,9	0,4
2031	302,1	247,6	216,7	179,7	112,2	31,1	5,1	0,4
2032	309,0	249,8	217,8	176,7	115,8	33,7	5,3	0,5
2033	309,3	254,9	218,2	174,9	117,6	36,8	5,6	0,5
2034	303,7	263,5	220,0	173,0	117,4	40,2	6,0	0,5

Table 5.12b (cont.)

Male population by age 1950–2005 and projection 2006–2050. Thousands

31 dec. resp. year	By age							
	65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Men								
2035	297,9	273,4	220,2	173,0	116,2	43,3	6,2	0,5
2036	294,3	282,0	220,5	175,2	113,9	45,7	6,6	0,5
2037	291,0	288,7	222,8	176,5	112,5	47,0	7,2	0,5
2038	290,3	289,2	227,8	177,3	111,8	47,7	7,9	0,6
2039	292,4	284,1	235,9	179,1	111,1	47,7	8,7	0,6
2040	291,6	278,9	245,0	179,5	111,5	47,2	9,3	0,6
2041	286,8	275,7	253,0	180,1	113,2	46,3	9,8	0,7
2042	281,4	272,8	259,2	182,4	114,4	45,9	10,0	0,7
2043	275,7	272,4	259,7	187,0	115,2	45,9	10,1	0,8
2044	270,9	274,4	255,3	194,2	116,5	45,7	10,1	0,9
2045	269,3	273,8	250,9	202,0	116,9	46,0	10,0	0,9
2046	268,6	269,4	248,4	208,9	117,7	46,9	9,8	1,0
2047	268,7	264,4	246,1	214,1	119,6	47,5	9,8	1,0
2048	269,6	259,1	246,0	214,6	123,1	47,9	9,8	1,0
2049	270,0	254,7	248,0	211,2	128,5	48,5	9,8	1,0
2050	271,7	253,4	247,6	207,8	134,0	48,7	9,9	1,0

Table 5.13a

Population by age 1950–2005 and projection 2006–2050. Thousands

Year	Age			Total
	0–19	20–64	65+	
Total				
1950	2 066	4 259	722	7 047
1960	2 257	4 352	888	7 498
1970	2 234	4 734	1 114	8 081
1980	2 194	4 761	1 362	8 318
1990	2 112	4 953	1 527	8 591
2000	2 139	5 212	1 531	8 883
2005	2 160	5 323	1 566	9 048
Projection				
2006	2 164	5 356	1 580	9 099
2010	2 127	5 403	1 727	9 256
2020	2 194	5 429	2 056	9 680
2030	2 288	5 457	2 302	10 048
2040	2 288	5 514	2 465	10 266
2050	2 329	5 696	2 477	10 502
Women				
1950	1 011	2 139	386	3 536
1960	1 100	2 175	482	3 758
1970	1 088	2 340	618	4 045
1980	1 070	2 356	771	4 198
1990	1 029	2 441	877	4 347
2000	1 041	2 567	881	4 490
2005	1 052	2 623	887	4 561
Projection				
2006	1 054	2 640	892	4 585
2010	1 036	2 667	954	4 657
2020	1 068	2 680	1 103	4 852
2030	1 114	2 696	1 222	5 032
2040	1 114	2 722	1 301	5 137
2050	1 134	2 811	1 303	5 248
Men				
1950	1 055	2 120	336	3 511
1960	1 157	2 177	406	3 740
1970	1 146	2 394	496	4 036
1980	1 124	2 405	591	4 120
1990	1 083	2 512	650	4 244
2000	1 098	2 645	650	4 393
2005	1 108	2 700	679	4 487
Projection				
2006	1 110	2 716	688	4 514
2010	1 091	2 736	773	4 599
2020	1 126	2 749	953	4 828
2030	1 174	2 761	1 080	5 016
2040	1 174	2 792	1 164	5 129
2050	1 195	2 885	1 174	5 254

Table 5.13b

Share of population by age 1950–2005 and projection 2006–2050. Percent

Year	Age			Total
	0–19	20–64	65+	
Total	29	60	10	100
1950	30	58	12	100
1960	28	59	14	100
1970	26	57	16	100
1980	25	58	18	100
1990	24	59	17	100
2000	24	59	17	100
2005				
Projection				
2006	24	59	17	100
2010	23	58	19	100
2020	23	56	21	100
2030	23	54	23	100
2040	22	54	24	100
2050	22	54	24	100
Women				
1950	29	60	11	100
1960	29	58	13	100
1970	27	58	15	100
1980	25	56	18	100
1990	24	56	20	100
2000	23	57	20	100
2005	23	58	19	100
Projection				
2006	23	58	19	100
2010	22	57	20	100
2020	22	55	23	100
2030	22	54	24	100
2040	22	53	25	100
2050	22	54	25	100
Men				
1950	30	60	10	100
1960	31	58	11	100
1970	28	59	12	100
1980	27	58	14	100
1990	26	59	15	100
2000	25	60	15	100
2005	25	60	15	100
Projection				
2006	25	60	15	100
2010	24	59	17	100
2020	23	57	20	100
2030	23	55	22	100
2040	23	54	23	100
2050	23	55	22	100

Alternative projections

Table 5.14

Population according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
All ages – both sexes								
1950	7 047							
1960	7 498							
1970	8 081							
1980	8 318							
1990	8 591							
2000	8 883							
2005	9 048							
Projection								
2006		9 099	9 093	9 105	9 099	9 099	9 095	9 101
2010		9 257	9 215	9 298	9 263	9 246	9 223	9 278
2015		9 460	9 362	9 555	9 482	9 415	9 362	9 526
2025		9 888	9 676	10 092	9 965	9 734	9 635	10 111
2050		10 502	9 929	11 077	10 841	10 064	9 835	11 232
Discrepancy to the main alternative (thousands)								
2006			-6	6	0	0	-4	2
2010			-42	41	6	-11	-33	22
2015			-99	95	22	-45	-98	66
2025			-212	205	77	-154	-253	223
2050			-573	574	338	-439	-668	730
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			-1	1	0	0	-1	1
2025			-2	2	1	-2	-3	2
2050			-5	5	3	-4	-6	7

Table 5.15a

Female population according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assuptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
All ages – women								
1950	3 536							
1960	3 758							
1970	4 045							
1980	4 198							
1990	4 347							
2000	4 490							
2005	4 561							
Projection								
2006		4 585	4 583	4 588	4 585	4 585	4 583	4 586
2010		4 657	4 637	4 677	4 661	4 653	4 640	4 667
2015		4 750	4 702	4 796	4 762	4 732	4 701	4 782
2025		4 952	4 849	5 052	4 993	4 893	4 830	5 062
2050		5 248	4 970	5 527	5 415	5 074	4 919	5 613
Discrepancy to the main alternative (thousands)								
2006			-3	3	0	0	-2	1
2010			-20	20	3	-4	-17	10
2015			-48	46	12	-18	-48	32
2025			-103	100	41	-59	-122	110
2050			-278	278	166	-174	-329	365
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			-1	1	0	0	-1	1
2025			-2	2	1	-1	-2	2
2050			-5	5	3	-3	-6	7

Table 5.15b

Male population according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Ob-ser-ved	Main alter-native	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
All ages – men								
1950	3 511							
1960	3 740							
1970	4 036							
1980	4 120							
1990	4 244							
2000	4 393							
2005	4 487							
Projection								
2006		4 514	4 511	4 517	4 514	4 514	4 512	4 515
2010		4 599	4 578	4 621	4 602	4 593	4 583	4 611
2015		4 711	4 660	4 759	4 720	4 684	4 660	4 745
2025		4 935	4 827	5 041	4 972	4 841	4 805	5 049
2050		5 254	4 959	5 550	5 426	4 990	4 916	5 619
Discrepancy to the main alternative (thousands)								
2006			-3	3	0	0	-2	1
2010			-22	21	3	-7	-17	11
2015			-51	49	9	-27	-50	34
2025			-109	105	36	-95	-131	114
2050			-295	296	172	-265	-338	365
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			-1	1	0	-1	-1	1
2025			-2	2	1	-2	-3	2
2050			-6	6	3	-5	-6	7

Table 5.16a

Number of girls aged 0–5 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assumptions: Fertility Low	Fertility High	Mortality Low	Mortality High	Migration Low	Migration High
Girls, 0–5 year								
1950	360							
1960	304							
1970	341							
1980	287							
1990	325							
2000	274							
2005	287							
Projection								
2006		294	291	297	294	294	294	294
2010		308	288	329	308	308	306	310
2015		316	282	347	316	316	310	320
2025		333	298	367	333	333	319	346
2050		343	285	404	343	342	315	375
Discrepancy to the main alternative (thousands)								
2006			-3	3	0	0	0	0
2010			-20	20	0	0	-2	1
2015			-34	31	0	0	-6	4
2025			-35	34	0	0	-14	13
2050			-58	61	0	-1	-28	32
Discrepancy to the main alternative (percent)								
2006			-1	1	0	0	0	0
2010			-7	7	0	0	-1	0
2015			-11	10	0	0	-2	1
2025			-10	10	0	0	-4	4
2050			-17	18	0	0	-8	9

Table 5.16b

Number of boys aged 0–5 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Ob-ser-ved	Main alter-native	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Boys, 0-5 year								
1950	380							
1960	322							
1970	360							
1980	302							
1990	343							
2000	288							
2005	303							
Projection								
2006		310	307	313	310	310	309	310
2010		325	303	346	325	325	323	326
2015		333	297	366	333	333	327	337
2025		351	315	387	351	351	337	365
2050		362	300	426	362	360	333	396
Discrepancy to the main alternative (thousands)								
2006			-3	3	0	0	0	0
2010			-22	21	0	0	-2	1
2015			-36	33	0	0	-6	4
2025			-37	36	0	-1	-14	14
2050			-61	64	0	-1	-29	34
Discrepancy to the main alternative (percent)								
2006			-1	1	0	0	0	0
2010			-7	7	0	0	-1	0
2015			-11	10	0	0	-2	1
2025			-10	10	0	0	-4	4
2050			-17	18	0	0	-8	9

Table 5.17a

Number of girls aged 6–15 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Girls, 6-15 year								
1950	486							
1960	569							
1970	530							
1980	561							
1990	481							
2000	572							
2005	537							
Projection								
2006		522	522	522	522	522	521	522
2010		484	484	484	484	484	482	485
2015		510	496	525	510	510	504	514
2025		550	496	602	550	550	531	567
2050		565	487	644	565	563	522	617
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	0	0	-2	1
2015			-14	15	0	0	-6	4
2025			-55	51	0	0	-19	17
2050			-78	79	0	-2	-43	52
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			-3	3	0	0	-1	1
2025			-10	9	0	0	-3	3
2050			-14	14	0	0	-8	9

Table 5.17b

Number of boys aged 6–15 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assumptions: Fertility Low	Fertility High	Mortality Low	Mortality High	Migration Low	Migration High
Boys, 6-15 year								
1950	506							
1960	599							
1970	559							
1980	589							
1990	506							
2000	603							
2005	565							
Projection								
2006		549	549	549	549	549	549	549
2010		510	510	510	510	510	508	511
2015		538	523	553	538	538	531	542
2025		580	523	635	580	580	560	598
2050		595	513	679	596	593	550	650
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	0	0	-2	1
2015			-15	15	0	0	-6	5
2025			-58	54	0	-1	-20	18
2050			-82	84	0	-2	-45	55
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			-3	3	0	0	-1	1
2025			-10	9	0	0	-3	3
2050			-14	14	0	0	-8	9

Table 5.18a

Number of women aged 16–19 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Women, 16-19 year								
1950	165							
1960	227							
1970	217							
1980	222							
1990	223							
2000	196							
2005	228							
Projection								
2006		239	239	239	239	239	238	239
2010		244	244	244	244	244	243	244
2015		193	193	193	193	193	191	195
2025		219	205	233	219	219	213	224
2050		226	202	250	226	226	209	246
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	0	0	-1	0
2015			0	0	0	0	-2	1
2025			-14	14	0	0	-6	5
2050			-24	24	0	-1	-17	20
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			0	0	0	0	-1	1
2025			-6	6	0	0	-3	2
2050			-11	10	0	0	-7	9

Table 5.18b

Number of men aged 16–19 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Men, 16-19 year								
1950	169							
1960	236							
1970	227							
1980	233							
1990	234							
2000	207							
2005	240							
Projection								
2006		251	251	251	251	251	251	251
2010		256	256	256	256	256	256	257
2015		203	203	203	203	203	201	205
2025		231	216	246	231	231	225	237
2050		238	213	263	238	237	221	259
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	0	0	-1	1
2015			0	0	0	0	-2	2
2025			-15	15	0	0	-6	5
2050			-25	25	0	-1	-18	21
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			0	0	0	0	-1	1
2025			-6	6	0	0	-3	2
2050			-11	11	0	0	-7	9

Table 5.19a

Number of women aged 20–39 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Ob-ser-ved	Main alter-native	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Women, 20-39 year								
1950	1 031							
1960	945							
1970	1 082							
1980	1 177							
1990	1 160							
2000	1 160							
2005	1 138							
Projection								
2006		1 137	1 137	1 137	1 137	1 137	1 136	1 138
2010		1 159	1 159	1 159	1 159	1 159	1 150	1 164
2015		1 185	1 185	1 185	1 185	1 185	1 162	1 201
2025		1 190	1 190	1 190	1 190	1 190	1 143	1 236
2050		1 254	1 153	1 352	1 255	1 251	1 153	1 370
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	-1	1
2010			0	0	0	0	-9	5
2015			0	0	0	0	-23	16
2025			0	0	0	-1	-48	46
2050			-101	98	0	-3	-101	116
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	-1	0
2015			0	0	0	0	-2	1
2025			0	0	0	0	-4	4
2050			-8	8	0	0	-8	9

Table 5.19b

Number of men aged 20–39 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assumptions: Fertility Low	Fertility High	Mortality Low	Mortality High	Migration Low	Migration High
Men, 20-39 year								
1950	1 051							
1960	961							
1970	1 145							
1980	1 238							
1990	1 219							
2000	1 209							
2005	1 182							
Projection								
2006		1 180	1 180	1 180	1 180	1 180	1 179	1 180
2010		1 199	1 199	1 199	1 199	1 199	1 191	1 205
2015		1 226	1 226	1 226	1 226	1 225	1 203	1 242
2025		1 232	1 232	1 232	1 232	1 230	1 186	1 276
2050		1 301	1 193	1 406	1 303	1 295	1 202	1 414
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	-1	0
2010			0	0	0	0	-8	6
2015			0	0	0	-1	-23	16
2025			0	0	0	-2	-47	44
2050			-108	105	1	-6	-100	113
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	-1	0
2015			0	0	0	0	-2	1
2025			0	0	0	0	-4	4
2050			-8	8	0	0	-8	9

Table 5.20a

Number of women aged 40–64 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Observed	Main alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Women, 40-64 year								
1950	1 108							
1960	1 231							
1970	1 258							
1980	1 179							
1990	1 282							
2000	1 408							
2005	1 485							
Projection								
2006		1 502	1 502	1 502	1 502	1 502	1 502	1 503
2010		1 508	1 508	1 508	1 508	1 507	1 505	1 509
2015		1 502	1 502	1 502	1 502	1 499	1 493	1 507
2025		1 501	1 501	1 501	1 503	1 494	1 470	1 526
2050		1 557	1 540	1 573	1 563	1 539	1 453	1 669
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	0	-1	-3	2
2015			0	0	1	-2	-9	6
2025			0	0	2	-7	-31	25
2050			-17	17	6	-17	-104	113
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			0	0	0	0	-1	0
2025			0	0	0	0	-2	2
2050			-1	1	0	-1	-7	7

Table 5.20b

Number of men aged 40–64 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Ob-served	Main alter-native	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Men, 40-64 year								
1950	1 069							
1960	1 216							
1970	1 249							
1980	1 167							
1990	1 293							
2000	1 436							
2005	1 519							
Projection								
2006		1 536	1 536	1 536	1 536	1 536	1 536	1 536
2010		1 537	1 537	1 537	1 537	1 535	1 534	1 539
2015		1 530	1 530	1 530	1 530	1 526	1 519	1 537
2025		1 527	1 527	1 527	1 528	1 514	1 489	1 556
2050		1 584	1 565	1 601	1 591	1 551	1 478	1 693
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	0	-1	-3	2
2015			0	0	0	-5	-11	7
2025			0	0	2	-13	-37	29
2050			-18	18	7	-32	-105	110
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			0	0	0	0	-1	0
2025			0	0	0	-1	-2	2
2050			-1	1	0	-2	-7	7

Table 5.21a

Number of women aged 65–79 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Ob-ser-ved	Main alter-native	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Women, 65-79 year								
1950	325							
1960	403							
1970	504							
1980	603							
1990	636							
2000	588							
2005	576							
Projection								
2006		580	580	580	580	580	580	580
2010		644	644	644	644	642	643	644
2015		740	740	740	742	734	739	741
2025		782	782	782	790	764	778	785
2050		793	793	793	818	749	764	819
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	1	-1	0	0
2015			0	0	2	-5	-1	1
2025			0	0	8	-18	-4	3
2050			0	0	25	-44	-29	26
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			0	0	0	-1	0	0
2025			0	0	1	-2	-1	0
2050			0	0	3	-6	-4	3

Table 5.21b

Number of men aged 65–79 according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Ob-served	Main alter-native	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Men, 65-79 year								
1950	289							
1960	344							
1970	419							
1980	496							
1990	521							
2000	490							
2005	502							
Projection								
2006		511	511	511	511	511	511	511
2010		592	592	592	593	589	592	592
2015		695	695	695	697	683	694	696
2025		742	742	742	751	703	737	746
2050		773	773	773	803	683	739	800
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	1	-3	0	0
2015			0	0	2	-12	-1	1
2025			0	0	9	-39	-5	4
2050			0	0	30	-89	-34	28
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	0	0	0	0
2015			0	0	0	-2	0	0
2025			0	0	1	-5	-1	0
2050			0	0	4	-12	-4	4

Table 5.22a

Number of women aged 80 and older according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Ob-served	Main alter-native	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Women, 80 year and older								
1950	60							
1960	79							
1970	113							
1980	168							
1990	241							
2000	293							
2005	311							
Projection								
2006		312	312	312	312	312	312	312
2010		311	311	311	313	308	311	311
2015		303	303	303	313	294	303	303
2025		376	376	376	407	344	376	377
2050		510	510	510	645	404	503	516
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	3	-2	0	0
2015			0	0	10	-10	0	0
2025			0	0	30	-32	-1	1
2050			0	0	134	-106	-7	6
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	1	-1	0	0
2015			0	0	3	-3	0	0
2025			0	0	8	-9	0	0
2050			0	0	26	-21	-1	1

Table 5.22b

Number of men aged 80 and older according to different alternative assumptions and discrepancy to the main alternative. Thousands and percent

Year	Ob-served	Main alter-native	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Men, 80 year and older								
1950	46							
1960	62							
1970	77							
1980	95							
1990	129							
2000	160							
2005	176							
Projection								
2006		177	177	177	177	177	177	177
2010		180	180	180	182	178	180	180
2015		185	185	185	192	176	185	185
2025		272	272	272	297	232	271	272
2050		401	401	401	534	269	394	407
Discrepancy to the main alternative (thousands)								
2006			0	0	0	0	0	0
2010			0	0	2	-2	0	0
2015			0	0	7	-9	0	0
2025			0	0	25	-39	-1	0
2050			0	0	133	-133	-8	6
Discrepancy to the main alternative (percent)								
2006			0	0	0	0	0	0
2010			0	0	1	-1	0	0
2015			0	0	4	-5	0	0
2025			0	0	9	-14	0	0
2050			0	0	33	-33	-2	1

Facts about the statistics

Scope of the statistics

Population forecasts or projections have been carried out by Statistics Sweden since the 1940s. The main objective for the statistics is to provide projections of Sweden's population, divided by age and sex, as a basis for social planning. Starting with the forecast for the period 2003-2050 onwards, the population has also been divided into Swedish-born people and foreign-born people.

The population forecast presented is based on the population on 31 December 2005 and extends over every year until 31 December 2050.

The forecast has been made every year for the last eight years. Every third year (this year's forecast), a more extensive analysis is carried out of the assumptions with detailed descriptions in the publication series "Demographic reports". In the other years, a more concise report is made in the Statistical Report series.

Definitions and explanations

Age-specific fertility rate
The number of children born of women of a specific age during one calendar year, in relation (ratio) to the average population of women of the same age. If the period is longer than one year, the ratio's numerator consists of the risk time (average population multiplied by the period's length in years).

Average population
Average population during a period.

Cohort - period data
The majority of demographic measurements (mortality, fertility, etc.) usually relate to a calendar year and are called period data (cross section). Data on a cohort (people born in a certain year) aim to provide observations during the lifetime of these people, i.e. longitudinally.

Emigrant
The term emigrant (Swedish-born and foreign-born) refers to a

person who on leaving Sweden has the intention of taking up residency abroad for at least one year.

Immigrants
In the forecast, we differentiate between re-immigration of Swedish-born people and immigration of foreign-born people. The term immigrant refers to a foreign-born person who on arrival has the intention of taking up residency in Sweden for at least one year.

Mortality risk
The number of deceased people of a certain age is divided by the population at the beginning of the period (results are adjusted for migration).

Natural population growth (birth surplus or deficit)
The difference between the number of births and the number of deaths.

Net migration
The number of immigrants minus the number of emigrants.

Remaining life expectancy
The number of years on average that a person has left to live, calculated from different ages. The term "life expectancy" stipulates the life expectancy for a 0 year old. The calculation of life expectancy is carried out in the frame of the life tables (collective name for mortality risks, survival rate and life expectancy).

Total Fertility Rate (TFR)
Sum of the age-specific fertility rates. This measurement shows how many children would be born on average of a woman throughout her fertile years (disregarding mortality).

How the statistics are produced

The population forecast is based on partial forecasts of the various demographic changes: births, deaths, immigration and emigration.

Model

The size of the population at the end of the year is determined using the population in one year age categories at the beginning of a year and the assumptions for the demographic change factors for that year as a basis. This forecasted population then forms the basis for the calculation of the population at the end of the following year.

The forecast calculations are carried out for individuals, divided into Swedish-born, foreign-born and for each sex separately. We start with the last known population figure and then move forward from year to year in the way described above.

If x is the age at the end of the year and t is the calendar year, the recursive forecast method can be expressed for ages one year and older at the end of year t as

$$P_x^t = P_{x-1}^{t-1} - D_x^t + I_x^t - E_x^t \qquad \text{where}$$

P_x^t = number of men/women at the end of year t, who were born in year t-x

D_x^t = number of deceased men/women during year t, who were born in year t-x

I_x^t, E_x^t = number of immigrants and emigrants (men/women) during year t, who were born in year t-x.

The basis for this calculation in stages is the population data from the last day in December 2005.

The number of deceased men/women in year t is given by

$$D_x^t = P_{x-1}^{t-1} \cdot q_x^t$$

where q_x^t = the forecast mortality risk for one year, or the forecast probability that a man/woman born in year t-x will die during year t.

The number of emigrated men/women in year t is given by:

$$E_x^t = P_{x-1}^{t-1} \cdot e_x^t$$

where e_x^t = forecast annual emigration risk, or the forecast probability that a man/woman born in year *t-x* will emigrate during year *t*. The sub-populations Swedish-born and foreign-born have different emigration risks but the same fertility and mortality risks. Swedish-born people who have at any time been resident abroad and have then returned to Sweden are treated in the same way as people who have never been resident abroad.

Immigration I_x^t is partly an exogenous variable. Re-immigration of Swedish-born people is calculated using a special routine which takes previous emigration into account.

The new addition of 0 year olds to the population, i.e. the expected number of births during year t, is given by:

$$F^t = \sum_{x=15}^{49} f_x^t (P_{x-1}^{t-1} + P_x^t)/2$$

where the population data relate to the number of women at the beginning and the end of year t and f_x^t is the forecast age-specific fertility rate, which gives the expected number of births per women of age x years. The total number of births is included in the Swedish-born population regardless of the country of birth of the parents. In order to calculate the number of 0 year olds at the end of year t, attention is paid to the number of deaths and migrations among these young people.

The forecast model is described in detail in the Background material on Demography, Children and the Family 2005:1, *Statistics Sweden's model for population forecasts - a documentation.*

Fertility forecasts

Model for calculating fertility

The future fertility rate of different ages must be calculated for use in the population forecast. We use the observed relative distribution of births in each cohort up to the first forecast year (measured using incidence figures). During the forecast period, the estimated transitional probabilities, which have been shown to be stable, are used to calculate relative events for the second, third and fourth child who corresponds to the incidence figure. The incidence figure is estimated by:

$$f_x^p = B_x^p / M_x \qquad \text{(incidence figure)}$$

B_x^p is the number of children born with *ordinal position p* to all women of *age x* years (end of year). M_x is the average time lived for women of *age x* regardless of ordinal position. The measure relates the number of children born with *ordinal position p* to the total number of women of *age x* years.

In the model, the incidence figures for the first, second and third child are estimated. The incidence figures for children with an ordinal position of over four have been added to the fourth child.

The total of all incidence figures correspond to the normal age-specific fertility rate:

$$f_x = (f^1_x + f^2_x + f^3_x + f^{4+}_x)$$

The total fertility over the fertile years**, TFR,** is calculated as:

$$\text{TFR} = \sum_{x=15}^{\omega}(f^1_x + f^2_x + f^3_x + f^{4+}_x) = \sum_{x=15}^{\omega}(B^1_x + B^2_x + B^3_x + B^{4+}_x)/M_x$$

is the highest age at which women give birth. This has been set to 45 years as very few women give birth after this age. This measure is used as a total description of the fertility rate in different years.

There are special calculation routines for calculating the first child using the model, which estimates the incidence figure so that every cohort has a predetermined level of childlessness. In the forecast's main alternative, it is assumed that childlessness in the future will rise successively from 14 to 16 percent. The incidence figure for first child fertility is calculated differently depending on age. Up to the age of 31 years, the incidence figure follows the distribution that has been observed most recently for women of these ages. After the age of 31 years, the incidence figure is estimated for the remaining fertile period using weights so that cohorts have an assumed childlessness as follows:

$$\hat{f}^1_{x,k} = \underbrace{\frac{f^1_{x-2}}{\sum_{a-2}^{\omega-2} f^1_i}}_{\text{A weight for every age}} \left(bl_{a,k} - bl_{\omega,k}\right) \quad x=a+1,\ a+2,\ \ldots,\ \omega$$

In the formula above, $\hat{f}^1_{x,k}$ denotes the estimated incidence figure for the first child at age x for women born in year k. We assume that the women will have a certain childlessness towards the end of the fertile period, $bl_{\omega,k}$. The most recently observed childlessness is $bl_{a,k}$ and cohort k is of age a for the last empirical observation.

The weight used to determine how the incidence figure should be distributed into age for the part of the fertile period in the future is calculated from the most recently observed incidence figure. The weight is based on the observed figure for women who are two years younger, as we believe that those who have waited to have children will, to a greater extent, have children at an older age than women born earlier have done.

The calculations for how a mother with one child will go on to have a second child begin from the time from the birth of the first child.

The share that does go on to give birth to a second child also depends on the woman's age at the birth of their first child. The incidence figure for the second child is estimated for every birth cohort as follows:

$$\hat{f}^{2}_{x,k} = \sum_{j=15}^{x-1} f^{1}_{j,k} \times \hat{p}^{2}_{j,x-j}$$

where $f^{1}_{j,k}$ is the incidence figure for the first child of age j for the cohort born in year k and $\hat{p}^{2}_{j,x-j}$ is the estimated probability of a second child being born *x-j* years after the first child's birth, given that a woman had their first child at age j. The probability $\hat{p}^{2}_{j,x-j}$ is estimated using information from 1987-2002 and is evened out to match the information from the last years before the forecast period.

The incidence figures for the third and fourth+ child are estimated in the same way as for the second child.

There are therefore several assumptions behind a fertility rate for one single age category as one point in time, which builds up a complex picture. The advantage of building up fertility rates in this way is that it is possible to explicitly take into account changes in the point of time of the birth of the first child. It is then easier to assess the consequences of compensation at a later age for low fertility at a younger age. Furthermore, consideration can be given more directly to any changes in the share of women going on to have more children and it is easier to add in assumptions about changes in the time between children.

A more detailed description of fertility forecasts is available in Statistics Sweden (2005b) *Fertility model - a description of calculations of the number of births.*

Fertility for Swedish-born and foreign-born women

There are differences in fertility between mothers who were born in different countries, now living in Sweden. When comparing regions of the world, it can be seen that mothers born in the EU25 and in North America in 2004 had a fertility of between 1.6 and 1.7 children per woman, which is roughly the same as mothers born in Sweden (Statistics Sweden, 2005a). Mothers born in Asia and Europe outside the EU25 had a fertility which roughly matches the reproduction, 2.1 children per woman. The highest fertility can be seen in mothers born in Africa, with 2.7 children per woman.

There is also a difference in the fertility of foreign-born women in Sweden with Swedish citizenship and those with foreign citizenship. As an example, we can look at the fertility for mothers born in Iraq. The fertility rate for Iraqi citizens was 3.8 and for Swedish citizens born in Iraq, it was 2.1. According to Andersson (2004), immigrant women adapt in the long-term to the Swedish birth patterns.

The forecast model that is used today does not show Swedish-born people with Swedish and foreign citizenship. Both groups are considered as Swedish-born. The fertility rate used in the model is based on the observed figures for Swedish-born and foreign-born mothers. If the share of Swedish-born and foreign-born women of childbearing age changes suddenly, the assumptions could be incorrect.

Statistics Sweden has initiated a study into fertility among foreign-born women. The study aims to produce a good basis for reporting how the group of women with foreign background will change in future forecasts.

Mortality forecasts

The risks of death in the forecast are defined using denominations from a normal life table (actuary table).

The number of people surviving to the exact age x, is written as l_x in the life table. The average number of people surviving to two closely related exact ages, x and x+1, gives the number of people living in a one year age category (x, x+1), written as L_x .

The probability of death, which forms the basis for the calculation of people living l_x (exact age x) in the official statistics, appears as follows

$$q_x = \frac{D_x}{R_x + d_x}$$

where D_x is the number of deceased people aged x during calendar year t, R_x is the risk time at age x years (mean population) during year t and d_x is the number of deceased people aged x, who died after their birthday during year t[16]. The probability describes the mortality for a person between the exact ages x and x+1.

The forecast uses the mortality on the basis of cohorts, q_x^t (the probability of dying for a person born in year t-x during year t) when the projection is carried out. These probabilities are defined as complementary probabilities of surviving to an age between the ages (x-1, x) and the age (x,x+1) at the end of each year. The risks of death in the forecast are defined and calculated using the following measurement[17],

$q_0^t = 1 - L_0 / l_0$ l_0 = radix ("newborns")

$q_x^t = 1 - L_x / L_{x-1} \quad 1 \le x \le 105$

$q_{106+}^t = 1 - (L_{106+} / L_{105+})$

where l_x = number of people surviving to exact age x years (l_0 is the survival table's radix= 100 000)

$L_x = (l_x + l_{x+1}) / 2$ represents those surviving to an age category (x,x+1).

In the report, the mortality risks according to the cohort method are used unless stated otherwise (x gives the age at the end of the calendar year). In the context of forecasts, therefore, an age displacement takes place according to the system described above of the usual probabilities of death as used in the official statistics.

When deriving the mortality risks for the first forecast year, the most recently observed life table is used (five year calendar period). These relatively stable risks are slightly adjusted to correspond to the first forecast year. The publication of life tables at Statistics Sweden is currently so quick that 3 years forwards in time from the median of the table is sufficient[18].

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[16] See Statistics Sweden's official population statistics.

[17] The forecast is carried out for the population in one year age categories with one open age category, 105+. This age category is divided into those surviving in two age categories; firstly those who are 104 at the beginning of the year who are 105 at the end of the calendar year and secondly people of age 105+ years who become 106+ in the same period.

[18] In the current forecast (2006-2050), we have used the first year forecast value from the forecast 2003-2050, i.e. a displacement with an adjustment of the base table 3+3 years.

To calculate the future change in mortality after the first forecast year, we have used a method advocated by Lee and Carter (Lee and Carter, 1992). According to this method, time parameters (vectors) are determined on the basis of observed mortality data, which can then be extrapolated.

The parameters in the Lee-Carter model are estimated on the basis of the mortality rate and not mortality risks (the probability of dying at a given age). The mortality rate (m) is always slightly higher than the corresponding mortality risk and consists of the ratio between the number of deaths and the time of exposure (mean population) for a given year[19], and can be converted back into mortality risks. The mortality rate is, as with mortality risks, divided into sex and one year age categories (x, age at the end of the year).

$$m_x^t = \frac{D_x^t}{(P_{x-1}^{t-1} + P_x^t)/2} \ ,$$

where d = deaths during year t, P= population at the turn of year t-1 and t for the cohort.

The mortality rate by age and sex (matrix) consists of an origin matrix. The logarithmic values of the matrix in each cell can then be reproduced using the model according to Lee-Carter,

$$\ln(m_{x,t}) = a_x + b_x k_t + \varepsilon_{x,t} \ ,$$

a_x = age-specific average level of mortality

k_t = trends over time in the mortality rate

b_x = age-specific weight for trend over time

$\varepsilon_{x,t}$ = random terms

It can be noted that if the mortality rate for a given time period lacks a trend-related development or other functional change, it would be sufficient to describe the logarithm of the mortality rate using the average level (first term) and the random term (third term) in the above formula.

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[19] The mortality rate and mortality risks are approximately the same but differ slightly in later ages.

It is commonly the case that some form of change in mortality occurs, at least over a longer period of time. According to the model, this type of change can be divided up into two separate parts or vectors (factors in the second term in the right flow), which represents the dependency on age and time of the mortality rate. The vectors for the time effect k_t are assumed therefore to have a common component regarding development over time in the different ages. The vector for the age effect b_x is assumed to reflect the level differences in the development of mortality in different ages.

The estimation of b_x and k_t is carried out using the method "singular value decomposition" (SVD) for men and women. This multi-variate analysis method has similarities with principal component analysis and, with quadratic symmetric origin matrices, matches diagonalization in Eigen value problems.

Before the estimation is done, the matrix with logarithmic m_x figures is centred by subtraction of the average of the logarithmic m_x figures over time, for each age (in rows). With this procedure, the first term in the model is avoided when estimating.

The equation for the singular value decomposition of Y (m x n) is as follows:

$Y = USV^T$

m = age

n = time

Y = centred, logarithmic mortality rates

U = m x n matrix (orthonormal)

S = n x n diagonal matrix, singular values

V^T = n x n matrix (orthonormal)

The first singular value and the first vector in each two orthogonal matrices, U and V, are used for parameter estimation. The calculations are carried out in SAS using the sub-routine SVD. The result does not however give unambiguous values but is converted according to the following conditions. The sum of b_x over different ages is equal to 1 and the sum of k_t over time is equal to 0. The estimations are unweighted; we have not tried to calibrate the parameter values in relation to the number of deaths. Such an unweighted estimation can be made under the assumption that the inner structure of development over time is homogenous in different ages.

The Lee-Carter method is commonly used on data that extends over very long time periods. In several cases, the whole of the 1900s has been used. We have however found that the age effect is not particularly stable for such long time series. At the beginning of the century, there was primarily a decline in the number of deaths of young people and, at the end of the century, this decline related more to older people (Lundström and Qvist, 2002). We have therefore limited our study to the later period of 1990-2005.

To calculate the future mortality, the time vector, k_t is extrapolated. This can be done using an ARIMA model. We have chosen to apply a simple variation by assuming that the development is linear[20]. It is clear from the model that the annual changes show the relative changes in the mortality rate[21].

When applying the Lee-Carter method, we have concentrated on estimations of the ages over 40. We have done so to make the structure of mortality as homogenous as possible, dominated by chronic diseases. The number of deaths in these ages is a determining factor for the forecast, as the majority of deaths occur in these ages.

For the younger ages, 0-40 years, we use the technique used in previous forecasts. For reasons of stability when estimating, we have also done the same for the higher ages, 91-106+ years. In the age groups mentioned, the ratios between the life tables for the two neighbouring five year periods have been used for the calculations of change.

The actual change figures often changes relatively slowly over time and can be approximated by the average annual change r_x calculated as follows:

[20] We then get the average annual time change as the difference between the last and first values in the kt curve, divided by the number of points in time minus one (slope coefficient). We can obtain the relative annual change factors, intended for extrapolation of mortality rates by age, by weighting the slope by the age factor. Some equalisation is required. The projection of mortality implies that the slope coefficient is multiplied by the number of years being forecast.

[21] It can be noted that the changes are roughly the same for the mortality rate as for the corresponding mortality risks in the case presented here.

Let q_x^0 and q_x^τ be the two observed mortality risks at two points in time with τ years' interval. The average annual change in mortality risks is obtained by using the expression

$$q_x^0(1+r_x)^\tau = q_x^\tau$$

In the younger ages (0-40 years) we have finally chosen an unweighted average in the change figure.

The assumption of the future development of the change figure is thus based on the development of mortality towards the end of the 1900s. However directly projecting mortality in the same way for 50 years is problematic. The characteristics that distinguish the development in recent times must first be assessed and evaluated.

The Lee-Carter method applied to causes of death categories
When extrapolating mortality risks divided into causes of death, the decrease in total mortality is usually weaker. This is because the decrease in mortality is not the same for all causes of death. If mortality is very high for one particular cause of death, this slows the annual decrease in total mortality over the years as this cause of death acquires a lessening relative significance.

The development in Sweden in the post-war period points to a fairly biased change in the different cause of death categories. The decrease in mortality has above all followed the decrease in cardiovascular disease - which naturally only constitutes one part, albeit large, of the total mortality. It should be noted that, as the perspective of the forecast is very long (almost 50 years), such a slowdown can be comprehensive. This has to some extent already occurred for women.

We have therefore carried out a calculation for the four cause of death categories that is matched with the total mortality (Lee-Carter model). The cause of death categories[22] are:

- cancer
- cardiovascular disease
- accidents and suicide

[22] In the official cause of death statistics, deaths are divided into the underlying cause.

- other diseases

When estimating the parameters in the Lee-Carter model, the mortality rate for different cause of death categories is used in five year age categories (in the interval 40-79 years) and for the time period 1978-2000 (the estimation remains from the previous forecast 2003-2050). When extrapolating the mortality rate in each cause of death category, it is assumed that the relative changes (decreases) are constant from year to year until 2050. The decrease in the summed extrapolated figures for the cause of death categories for a given age can then be compared at different points in time.

When comparing between the average decrease in total mortality over the whole forecast period (2003-2050) and the decrease at the beginning of the forecast period (2003-2004), the average decrease in different ages was considerably lower. In the younger ages in the interval 40-79 years however the differences were relatively small. If we limit the study to those aged over 55 in the given age interval, the decrease was on average around 25 percent lower. The decrease for middle-aged men which was 2.25 percent per year according to the previous total mortality forecast was thereby reduced to 1.7 percent (0.75 x 2.25 percent) during a large part of the forecast period[23]. At the end of the forecast period, the decrease was close to 50 percent compared to the beginning of the forecast period, which led to a change in the reduction, 0.5 x 2.25 = 1.1 percent. It can also be added that women had a slightly faster reduction than men. The calculations are unweighted averages of the specified ages for men and women together in the forecast.

One question that is often asked about the technique of division into causes of death is whether a simple summing up of the mortality rates can be accepted as we go back to the extrapolated total mortality. As long as we are working with the mortality rate (transition intensity), it is mathematically correct to carry out a simple summing up. However, there is a risk that we do not sufficiently take into account the relationships between the different causes of death. An example in this respect is that people who are very old may have overlapping causes of death. As we only work here with one cause of death per death (the underlying cause), distortions may occur. In higher ages, there may be multiple causes of death (cardiovascular disease may occur as a contributing cause

[23] The extrapolation results without a division into cause of death categories from the Lee-Carter model are applicable until 2015.

of death). To avoid this problem as far as possible, we have excluded the highest age groups and only carried out the analysis on ages up to 80 years[24]. However we expect that the above de-escalation in the reduction is also applicable for ages over 80 years.

Migration forecasts

The forecast[25] divides the migration to and from Sweden into four flows: the emigration of Swedish-born people, the re-immigration of Swedish-born people, the immigration of foreign-born people and the re-emigration of foreign-born people. Every flow is divided into age (one year categories) and into men and women.

The immigration of foreign-born people (I_B) is determined outside of the forecast model while the other three flows (E_B, E_A and I_A) are calculated in the model (risks).

Net migration, also called the immigration surplus, indicates how these four flows affect the size of the population annually. The immigration surplus is given by the difference between immigration and emigration for Swedish-born and foreign-born people, $I_A + I_B - E_A - E_B$.

Emigration of Swedish-born people

The emigration of Swedish-born men and women is calculated using an emigration risk, $u_{A_k,x}$, which is the product of a 5-year average, $\bar{u}_{A_k,x}$, a scale factor, c_A and a trend factor, tf^t. In the forecast, we assume that the emigration risks of Swedish-born people will develop over time as follows:

$$u^t_{A_k,x} = \bar{u}_{A_k,x} \cdot c_A \cdot tf^t ,$$

[24] There is another problem relating to the relationship between different causes of death, consisting of "disturbances" in the risk structure of changed survival rates. If the survival rate for one cause of death increases for some reason, such as a new medical treatment, the share with high risk behaviour increases paradoxically in the population (e.g. more heavy smokers can survive). The mortality rate for the other causes of death that are also related to smoking can then increase. Even if such shifts can occur, the age limitations we have imposed should also in this case reduce the problem (mortality is relatively low). Another reason is that illnesses often have a complex background which can mean that the effect on the composition of risks can be more unspecific with a change in the survival rate.

[25] The migration part of the forecast is under development. Work is now ongoing to develop a model and the estimation methods to be used.

where $\bar{u}_{A_k,x}$ is given by the following expression:

$$\bar{u}_{A_k,x} = \frac{\sum_{\tau=2001}^{2005} U_{A_k,x}^{\tau}}{\sum_{\tau=2001}^{2005} P_{A_k,x-1}^{\tau-1}},$$

$x = 1, \ldots, 106$ refers to the individual's age at the end of the year

A_k refers to the Swedish-born men or women, k = {man, woman}

$U_{A_k,x}^{\tau}$ is the number of emigrants in year τ

$P_{A_k,x-1}^{\tau-1}$ is the number of individuals in the population at the end of year $\tau - 1$.

c_A is a factor that adjusts the share of emigrants for the forecast in 2006 so that the number of Swedish-born emigrants matches the number observed in 2005. The scale factor is given by the following expression:

$$c_A \approx \frac{\sum_{x=1}^{106} U_{A_k,x}^{2005}}{\sum_{x=1}^{106} \bar{u}_{A_k,x} \cdot P_{A_k,x-1}^{2005}}.$$

$tf^{\,t}$ is a trend factor where

$$tf^{\,t} = \begin{cases} 1{,}0202^{\,t-2006} & t = 2007, \ldots, 2009 \\ 1{,}0202^{\,3} \cdot 1{,}0101^{\,t-2009} & t = 2010, \ldots, 2019 \\ 1{,}0202^{\,3} \cdot 1{,}0101^{\,11} & t = 2020, \ldots, 2050. \end{cases}$$

The reasoning that forms the basis for how the trend develops over time is described in more detail in Chapter 3.

The formula above describes how large the share of emigrants is in all age groups with the exception of children who were born in Sweden during each forecast year, i.e. newborn babies of 0 years. In the calculations, we cannot for obvious reasons use the one year younger population of the previous year, which is done for the other age groups.

The calculation of the emigration risks of 0 year olds is, with one exception, identical to that for the other age groups. The exception is that the population in this case is made up of the number of babies born during the year.

The emigration risks of 0 year olds are given by:

$$u^t_{A_k,0} = \frac{\sum_{\tau=2001}^{2005} U^{\tau}_{A_k,0}}{\sum_{\tau=2001}^{2005} P^{\tau}_{A_k,0}} \cdot c_A \cdot tf^{\,t}$$

where

T =2006, …, 2050

$U^{\tau}_{A_k,0}$ is the number of emigrant 0 year olds at the end of year τ

$P^{\tau}_{A_k,0}$ is the number of births at the end of year τ.

The total number of Swedish-born people who emigrated in year t is given by the emigration risks, $u^t_{A_k,x}$, multiplied by the number of individuals in the population, $P^t_{A_k,x-1}$, for age groups 1 to 106 together with the share of emigrated 0 year olds, $u^t_{A_k,x}$, multiplied by the number of babies born during year t.

$$U^t_{A_k} = \sum_{x=1}^{106} P^t_{A_k,x-1} \cdot u^t_{A_k,x} + P^t_{A_k,0} \cdot u^t_{A_k,0}\,.$$

Re-immigration of Swedish-born people

The re-immigration of Swedish-born people in year t is calculated from the observed/forecast number of Swedish-born people who have emigrated (U_A) in the most recent 10 year period and the probability of these people re-immigrating, taking into account how long their have been abroad. The probability, $s^y_{A_k,x}$, of re-immigrating y years after the time of emigration has been calculated using a probability function[26]. The estimated function is based on data covering all Swedish-born people who have emigrated during the period 1990-2005.

Re-immigration, $I^{t}_{A_k,x}$, is given by:

$$I^{t}_{A_k,x} = \sum_{\tau=t-9}^{t} U^{\tau}_{A_k,x} \cdot s^{t-\tau}_{A_k,x}$$

where

$x = 0, \ldots, 106$ gives the individual's age at the end of year t. The risk of re-immigration, $s^{y}_{A_k,x}$ is calculated for Swedish-born women and men taking into account the number of years spent abroad, y, where the last category, 9 years, is open and includes all those who have returned[27]. The other terms correspond to those for the emigration of Swedish-born people.

Immigration of foreign-born people

The number of immigrating foreign-born people $I^{t}_{B_k,x}$ for men and women in different age groups is given by the annual number of immigrants from each region, multiplied by an age weighting, lf_x, (10 year average) and an age-specific sex weighting, $kf_{k,x}$, (10 year average):

$$I^{t}_{B_k,x} = (I^{t}_{b_1} + I^{t}_{b_2} + I^{t}_{b_3} + I^{t}_{b_4} + I^{t}_{b_5}) \cdot lf_x \cdot kf_{k,x}$$

where

B_k refers to foreign-born men or women, divided into five country groupings: b_1 = Nordic countries, b_2 = EU25, b_3 = high HDI, b_4 = medium HDI and b_5 = low HDI. Further information on which

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[26] The calculations of the probability that Swedish-born people will re-immigrate is based on the Kaplan Meier method and is carried out in the program SAS with the procedure LIFETEST. The probabilities are calculated for women and men in each age group (one year categories). The calculations take into account how the probability of re-immigrating depends on the time the individual has been resident abroad.

[27] In the lower ages, the risks of re-immigration have been calculated upwards afterwards. This is because a register error resulted in some of the children who immigrated before reaching school age lacking a date of emigration. This meant that they were then excluded from the calculation process which meant that the risks of re-immigration for this group were underestimated.

countries are included in which country grouping can be found in Chapter 3.

lf_x is an age weighting,

$kf_{k,x}$ is the share of women and men in each age category.

lf_x, the age weighting can be written as: $lf_x = \dfrac{\sum_{\tau=1996}^{2005} I_{B_x}^{\tau}}{\sum_{\tau=1996}^{2005} (I_B^{\tau})}$ for

$x = 0, 1, \ldots, 106$.

The age-specific sex weighting can be written as:

$$kf_{k,x} = \frac{\sum_{\tau=1996}^{2005} I_{B_k,x}^{\tau}}{\sum_{\tau=1996}^{2005} (I_{B_{man},x}^{\tau} + I_{B_{kvinna},x}^{\tau})} \quad \text{for } x = 0, 1, \ldots, 106 .$$

The assumption on the number of immigrants is based as mentioned earlier on previously observed immigration to Sweden, the monitoring of world events and reference group discussions. The reasoning behind this and a more detailed description is given in Chapter 3.

Re-emigration of foreign-born people

The re-emigration of foreign-born men and women is calculated using a risk of emigration, $u_{B_k,x}$, which is based on a 5 year average of the share of emigrating foreign-born people, $\bar{u}_{B_k,x}$, adjusted by factor, c_B, and multiplied by a factor related to the composition of the foreign-born population, sf^t, changes over time, as follows:

$$u_{b_k,x}^t = \bar{u}_{B_k,x} \cdot c_B \cdot sf^t \quad .$$

The five year average for the share of emigrating foreign-born people, $\bar{u}_{B_k,x}$, has been calculated as follows:

$$\bar{u}_{B_k,x} = \frac{\sum_{\tau=2001}^{2005} U_{B_k,x}^{\tau}}{\sum_{\tau=2001}^{2005} P_{B_k,x-1}^{\tau-1}}.$$

c_B is an adjustment factor of the same type as c_A, i.e.

$$c_B \approx \frac{\sum_{x=1}^{106} U_{B_k,x}^{2005}}{\sum_{x=1}^{106} \bar{u}_{B_k,x} \cdot P_{B_k,x-1}^{2005}}.$$

sf^{t} is a scale factor, adjusting the risk for emigration over time. It is dependent on how the composition of foreign-born people from different country groupings develops over time. The factor takes into account to what extent the foreign-born part of the population comes from country groupings with a high or low inclination to re-emigrate.

As the population forecast calculates the foreign-born population as a unified group and does not forecast every country grouping separately, the scale factor, sf^{t}, is based on a rough estimation. The five country groupings are divided on the basis of whether the risk of emigration is high or low. The factor calculates how the share with a high risk of emigration in the foreign-born population changes during the forecast period 2006-2050. It does not take into account age or sex. As the share of foreign-born people with a high risk of emigration falls, the inclination to emigrate among the foreign-born population also falls.

The population in the country groupings is calculated by adding together the previous year's sub-population and the net immigration figure for the relevant forecast year.

$P_{b_i}^{t} = P_{b_i}^{t-1} + N_{b_i}^{t}$ for country grouping $i = 1, \ldots, 5$ and $t = 2006, \ldots, 2050$

where

$$P_{b_i}^{2005} = \sum_{x=0}^{106} P_{b_i,x}^{2005}$$

and

$$N_{b_i}^{t} = I_{b_i}^{t} \cdot \left(1 - \frac{\sum_{\tau=1996}^{2005} U_{b_i}^{\tau}}{\sum_{\tau=1996}^{2005} I_{b_i}^{\tau}}\right).$$

The net immigration figure is calculated approximately as the number of emigrants in relation to the number of immigrants over the last observed 10 year period, i.e. over the period 1996-2005.

Foreign-born people from the Nordic countries (i=1), the EU member states (i=2) and countries with a high HDI (i=3) have a high inclination to re-emigrate. When their share in the foreign-born population decreases, the scale factor adjusts the risks of re-emigration downwards for the foreign-born population, as follows:

$$sf^{t} = \frac{h^{t}}{h^{2006}}$$

where

$$h^{t} = \frac{\sum_{i=1}^{3} P_{b_i}^{t}}{\sum_{i=1}^{5} P_{b_i}^{t}} = \frac{\sum_{i=1}^{3} P_{b_i}^{t}}{P_{B}^{t}}.$$

The scale factor is thus described as an index with 2006 as the base year.

The total number of foreign-born people who emigrate in year t is given by the share of emigrants, $u_{B_k,x}^{t}$, multiplied by the population, $P_{B_k,x-1}^{t}$, summed for the ages 1 to 106 years.

$$U_{B_k}^t = \sum_{x=1}^{106} P_{B_k,x-1}^t \cdot u_{B_k,x}^t \, .$$

The emigration of children born outside of Sweden, 0 year olds, is considered insignificant.

Accuracy of the statistics

The projections deal with the future and measurements of accuracy as used in traditional statistics cannot therefore be calculated.

The size and compilation of the future population is determined by the start population and by the demographic change factors: fertility, mortality and international migration. The accuracy regarding the population born before the beginning of the forecast period is considered to be very good during the first part of the forecast period but gradually decreasing. The accuracy regarding those born during the forecast period is naturally lower.

One way to express uncertainty is to use alternative forecasts; low, medium and high assumptions for each of the change factors. This also provides a basis for partial variations of the factors.

In general, the following applies:

- for the coming years, the forecast is relatively certain but becomes more uncertain the further forward in time it goes. Uncertainty is greater in the forecast's calculations for older people.

- the forecast is the most accurate for people born in the period before the forecast begins.

- the forecast is uncertain for people born during the forecast period.

Follow-up of the forecasts, i.e. comparisons between the forecast and the actual results have been presented in the report series Demographic Reports since the middle of the 1980s.

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The future population of Sweden 2006–2050

The population of Sweden continues to increase. From 1995 to 2005 the population increased by nearly 211 000 persons. During the next ten year period 2006–2015 the population is expected to grow by slightly more than 410 000 persons. The increasing growth rate is primarily due to an increased number of births coupled with a positive net migration. According to this year's projection, the population will increase from 9.1 million in 2005 to 9.5 million in 2015. In 2050 the population is expected to be 10.5 million.

Life expectancy for women is predicted to increase from 82.8 years in 2005 to 86.3 years in 2050. The corresponding expected increase for men is from 78.4 to 83.6 years.

The fertility rate is expected to rise from today's 1.77 children per woman to average 1.85 children per woman until 2050. The percentage women remaining childless is expected to increase slightly.

In 2006 immigration is expected to be unusually high due to the temporary asylum law. Net migration is expected to reach 41 000 for 2006, drop to 28 000 the following year and reach a level around 24 000 at the end of the projection period. Immigration and emigration of both Swedish born and foreign born persons is expected to increase.

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