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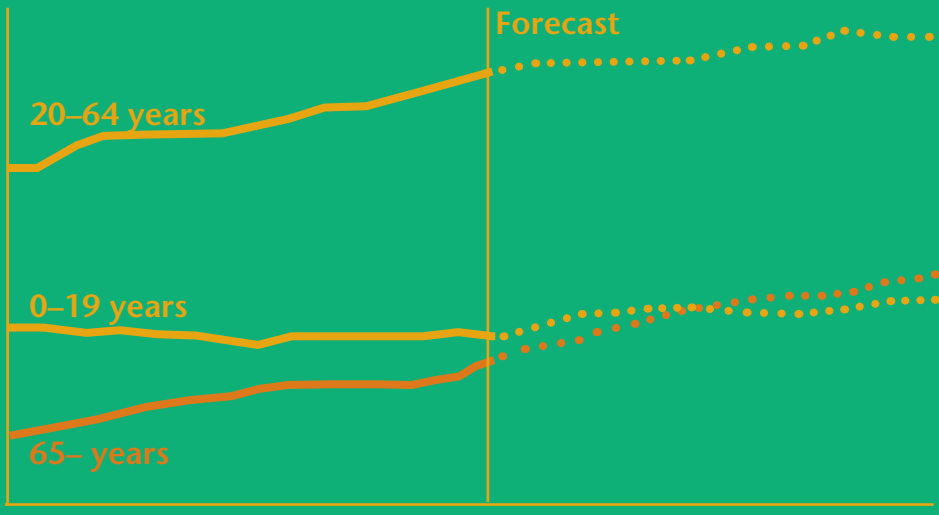

The future population of Sweden 2012–2060

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Previous publication – listed at the inside of the cover

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Cover: Ateljén, SCB

ISSN 1654-1510 (Online)
URN:NBN:SE:SCB-2012-BE51BR1202ENG_pdf

The english edition is only available in electronic form.
The Swedish edition is available in print and in electronic form.

Foreword

This report presents a forecast of the population of Sweden for the period 2012–2060. The population is broken down by sex and age as well as Swedish born persons and foreign born persons. Aside from the main alternative, there are also alternatives describing the development if future fertility were higher or lower than what is assumed in the main alternative. Likewise, the consequences of deviations from mortality and migration trends are presented. The forecast is also complemented by a stochastic forecast illustrating projection uncertainty.

In addition to this report, the results are published in tables in the Statistical Database on Statistics Sweden's website. The trends are projected up to 2110 in the statistical database and the population is divided into seven groups of countries of origin.

Statistics Sweden presents reports of this kind every three years. The last such report came out in spring 2009. During the interim years the population projection is updated with new assumptions that are presented in the series called Statistical Reports.

A considerable number of people have contributed to this report. Lotta Persson was responsible for assumptions about fertility, Christian Skarman for assumptions about migration and Örjan Hemström for assumptions about mortality assumptions. The stochastic projections have been calculated with a model developed by Gustaf Strandell. Lena Lundkvist has been responsible for overseeing the work in general.

Statistics Sweden, May 2012

Stina Andersson

Eiwor Höglund Dávíla

Statistics Sweden would like to thank
the respondents – private individuals, enterprises, government agencies and organisations –, who make it possible for Statistics Sweden to produce reliable and timely statistics that meet the demands for information from society.

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Summary

Sweden's population has increased steadily since the first census was taken in the middle of the 1700s. At that time the population of Sweden was 1.8 million. In 1800 the population had reached 2.3 million, and by 1900 it had more than doubled at 5.1 million. By 2011 the population had increased to nearly 9.5 million.

This report presents a forecast of population changes over a period of nearly 50 years, 2012–2060. The population is assumed to increase by roughly 2.1 million, or 22 percent, amounting to 11.6 million. This is a somewhat lower rate of increase than Sweden had during the most recent 50 years when the population increased by 25 percent.

The population is expected to increase because it is assumed that more births than deaths will occur, and immigration is assumed to exceed emigration. In recent years the significant net migration has been the largest contributing factor to population growth. This trend is expected to continue in the near future. During the 2020s the population increase will largely be driven by the significant birth surplus. This period will mark the coming of childbearing ages for the many people who were born in the 1990s.

A somewhat changed population structure is expected in the future. The largest change is that the population will have another age composition. The share of older persons is expected to increase. 19 percent of the population in 2011 was age 65 or older. At the end of the forecast period 25 percent of the population is expected to be in this age group. In 2011 children and young people aged 0–19 comprised 23 percent of the population. This proportion is expected to remain at around the same level even in the future. Even though the number of people in the actively working population (aged 20–64) will increase somewhat, the proportion of these people in the population will decrease somewhat. In 2011 these persons accounted for 58 percent of the population. This figure is estimated to drop to 52 percent in 2060.

As a result of the changed age structure, the demographic dependency ratio will increase from 0.71 in 2011 to 0.92 in 2060. This is a measurement that calculates the relationship between the number of people in the most actively working ages of 20–64, and the total of the population that lies outside of this age interval. According to this

forecast, for every person aged 20–64 there will be 0.92 younger and older persons.

In recent decades, the increased share of foreign born persons is another change in the composition in the population. In 1960, 4 percent of the population was born abroad. The corresponding figure in 2011 was 15 percent. According to the forecast, this percentage is expected to increase somewhat in the next few years, but will later stabilise at a level around 18 percent.

Yet another anticipated change is that the number of men will exceed the number of women. Historically up until now, there have been somewhat more women than men in the population. In 2011 there were 29 000 more women than men. The change towards more men is expected to occur from 2017 onwards. By the end of the forecast period it is estimated that there will be more than 120 000 more men than women.

The forecast about future population trends is based on assumptions about development of childbearing, immigration and emigration as well as mortality. In the assumption about childbearing, assumptions are made about the average number of children that women will have in the future. In 2011 the total fertility rate was at a level of 1.90 children per woman. This is also the level that is assumed to apply in the long-term.

Concerning migration, it is assumed that immigration will be greater than emigration during the entire forecast period. Net migration is largest at the beginning of the forecast period. This is a result of the assumption about a continued significant immigration in the next few years. This is largely due to the assessment by the Swedish Migration Board about increased immigration of refugees and family members. In the next few years net migration is expected to amount to between 50 000 and 60 000 per year. A level of roughly 17 000 is expected in the long term. This will be the net result of an immigration of around 85 000 and an emigration of around 68 000.

In the assumption about mortality trends, mortality will continue to decrease. Other factors play a part, among them reduced smoking and medical developments. The life expectancy for women in the forecast is predicted to rise from nearly 84 years in 2011 to close to 89 years in 2060. Men's lives are expected to increase from nearly 80 to roughly 87 years during the same period. The assumptions imply a reduced difference between the sexes in the long term.

The report also includes a comparison of population trends for Sweden according to this forecast with trends that Eurostat's forecast gives for Sweden. It is apparent that the total populations in the two forecasts are relatively alike in 2060.

Compared to the forecast that Statistics Sweden did in 2009, this forecast gives a larger number of inhabitants. In 2060, this report forecasts 900 000 more persons than the forecast that was done in 2009. This is because of a higher assumption of fertility, changes migration assumptions and lower assumptions for mortality.

Alternative assumptions are made in this forecast for fertility trends, migration and mortality. This allows for analysis of the population trends if any of the components were to develop differently than the way that is described in the main assumption. For instance, an alternative with a low migration rate would give a population that is 1.2 million less people, while a high migration rate would result in a population of 1.2 million more than according to the main alternative.

Statistics Sweden has been publishing population forecasts regularly since the end of the 1960s. A comparison of forecasts and results of population trends according to projections made in 1973, 1986, 1991 and 2003 showed that all had underestimated the population growth. The forecast made in 1973 actually made a correct prediction in the number of persons in 2000, but misjudged the age structure of the population. The forecasts of 1991 and 2003 both pointed towards an increase in the population, but the increase occurred quicker than what was expected. The forecast made in 1986 points to a completely different population trend, and even a decrease in the population.

1. Introduction

In this report Statistics Sweden presents the results of the forecast of Sweden's population trends for the period 2012–2060. The forecast about future population trends is based on assumptions about development of childbearing, immigration and emigration as well as mortality. The forecast goes nearly 50 years forward in time. It is difficult to make a safe assessment of the development of the various components of the population so far into the future. In the long term the forecast instead creates a scenario of a prediction of the most likely trends.

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. Therefore the population forecast has been supplemented with a stochastic forecast that describes the uncertainty of the results. Future fertility changes are uncertain, and a change in fertility quickly gains significance for determining the future number of children. It is even more difficult to predict the size of immigration and emigration. Immigration to and emigration from Sweden have varied sharply over the years, partly due to economic conditions, the globalisation of the economy, international concerns and Swedish immigration policy. But migration to and from Sweden is also due to the economic situation and social conditions of other countries and the immigration policies conducted by other countries. Mortality is a relatively stable process and is independent of fluctuations in the economic cycle. Thus, assumptions about mortality have a relative degree of short-term certainty. Uncertainty is greater in the long term. To what extent can medical advances and life style changes affect mortality?

Aside from the main alternative, there are also alternatives describing the development if future fertility were higher or lower than what is assumed in the main alternative. Likewise, the consequences of deviations from the mortality and migration developments are presented.

Chapter 2 gives an account of population changes according to the forecast's main alternative. The next three chapters describe the assumptions for fertility, immigration/emigration and mortality which form the basis of the forecast. Reference groups have been

consulted for input in support of this work. A list of the members of the reference groups is found in *Appendix 1*.

Chapters 6 and 7 give a comparison of this forecast with Eurostat's scenario (Eurostat, 2011) and Statistics Sweden's previous forecast from 2009 (Statistics Sweden, 2009a).

Chapter 8 presents calculations based on the alternative assumptions about future developments for fertility, mortality and migration.

Statistics Sweden has been publishing population forecasts regularly since the end of the 1960s. Chapter 9 presents and compares the assumptions and result that were made in several earlier forecasts. These are compared partly with the outcome and partly with the assumptions that are made in this forecast.

The chapter *Facts about the Statistics* describes models, methods and other details that are helpful to know about how the different assumptions and analyses in the forecast have been conducted.

The projection distinguished between the Swedish born and foreign born as well as by age and sex. The foreign born are divided into six different country groups in the analyses based on countries of birth. Europe is divided into three parts: The Nordic countries (except Sweden), the EU (except the Nordic countries) and the rest of Europe. Countries outside of Europe are divided into three groups according to their level of development that is measured by the Human Development Index (HDI). This is an index made annually by the United Nations that takes into account a country's gross domestic product (GDP), population life expectancy and level of education. The classification used here is from 2007. A more detailed description of the different groups the countries is in *Appendix 2*.

The results and assumptions according to the main alternative are reported in a table appendix and are also available, together with the alternative projections, on Statistics Sweden's website.

If not otherwise specified, the information source is Statistics Sweden's Population Statistics.

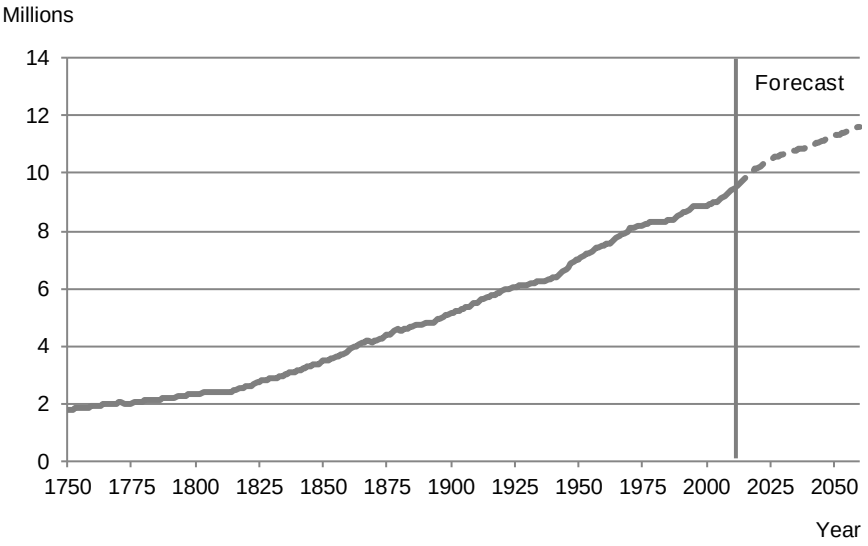
2. The future population

This chapter presents the population's development according to the assumptions of the main alternative for fertility, migration and mortality. The assumptions that are made, for example 1.90 for fertility, should be regarded as an average value. The future fertility rate is assumed to vary around this average value. At the end of the chapter a so-called stochastic projection is presented that describes the future population, given such annual variations. This is a way to measure uncertainty in the projections.

Sweden's population continues to grow

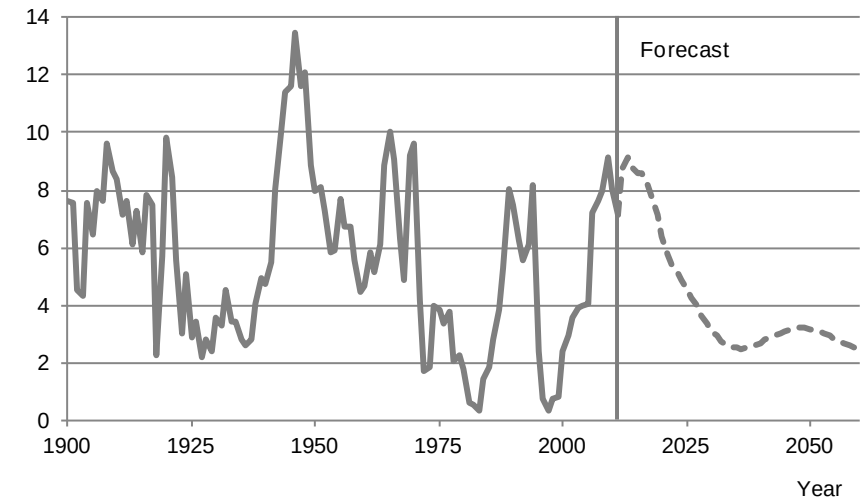
In the beginning of the 1700s there was significant worry about the growth of the population. The wars had taken a significant toll on the finances of the country. A population that grew quickly and was large was seen to be the way to increased welfare. There was concern about a lack of inhabitants, but it was not known for certain how many people actually lived in Sweden. The first census of Sweden was taken in the middle of the 18th century, and showed the population of Sweden, excluding Finland, to be 1.8 million. This figure was lower than expected. Since then the population of Sweden has increased steadily. In 1800 the population had reached 2.3 million, and by 1900 it had more than doubled at 5.1 million. The population increased to nearly 9.5 million in 2011.

Figure 2.1
Population 1750–2011 and forecast 2012–2060



The population is expected to grow also in the future. In 2018 the population is expected to surpass the ten million mark. The next million mark of 11 million is expected in the beginning of the 2040s. By the end of the forecast period in 2060, the population is expected to be 11.6 million persons.

Figure 2.2
Annual population growth rate 1900–2011 and forecast 2012–2060



The growth rate of the population has varied from year to year. Figure 2.2 illustrates the annual growth rate in thousandths from 1900 and onwards, as well as the expectations during the forecast period. The changes in growth reflect the differences in the number of immigrants and the number of births from year to year. The quickest growth rate was seen in the middle of the 1940s. This is in line with the baby boom of the 1940s and a wave of immigration of, among others, Balts in connection with World War II. Other growth peaks occurred in the middle and end of the 1960s due to many births and considerable immigration from Finland at that time. The significant increase in the population at the beginning of the 1990s is explained by the many children who were born at the same time that immigration from the former Yugoslavia was considerable. In recent years the growth rate has again been high, a result of the considerable immigration recently from countries like Iraq, Poland and Somalia. Moreover the natural population increase has been high, that is, the number of births has exceeded the number of deaths. In the near future the annual growth rate is expected to continue at a relatively high rate, and will then lie at an average rate of about 0.3 percent. The average growth rate for the entire forecast period 2012–2060 is 0.42 percent. During the period 1960–2011 it was 0.46 percent.

Birth surplus during the entire forecast period

Table 2.1 presents the population increase and the development of the different factors for change (children born, deaths, immigration and emigration). The population increase is shown as the birth surplus and as positive net migration[1].

[1] A birth surplus means children born minus deaths and net immigration means the difference between immigrants and emigrants.

Table 2.1
Annual vital events 1960–2011 and forecast 2012–2060. Thousands

Year	Births	Deaths	Birth surplus	Immigration	Emigration	Net migration	Population increase
1960–64	109.9	75.7	34.2	29.2	15.2	14.0	48.2
1965–69	117.6	80.4	37.2	45.4	19.8	25.6	62.8
1970–74	111.3	83.8	27.5	43.3	35.7	7.6	35.2
1975–79	97.5	89.6	7.9	41.4	23.9	17.5	25.4
1980–84	93.9	91.2	2.8	32.2	27.2	5.1	7.8
1985–89	106.6	93.9	12.7	46.4	22.0	24.4	37.2
1990–95	120.2	94.8	25.4	60.1	27.6	32.5	57.8
1995–99	93.3	93.9	-0.6	46.0	36.1	9.8	9.2
2000–04	95.6	93.1	2.4	61.9	34.2	27.7	30.1
2005–09	107.2	91.2	15.9	92.8	42.6	50.2	66.1
2010–11	113.7	90.2	23.5	97.6	50.0	47.6	71.1
Projection							
2012–14	115.9	89.7	26.3	108.2	49.5	58.7	85.0
2015–19	123.3	90.2	33.1	101.2	54.7	46.5	79.6
2020–24	125.4	92.2	33.2	81.2	57.8	23.4	56.6
2025–29	119.0	96.9	22.1	78.7	59.1	19.6	41.7
2030–34	114.9	103.5	11.4	79.3	60.6	18.7	30.0
2035–39	118.3	108.7	9.6	80.4	62.3	18.1	27.7
2040–44	124.4	110.3	14.0	81.8	641	17.6	31.7
2045–49	128.9	110.7	18.3	82.9	65.6	17.3	35.5
2050–54	130.4	112.5	17.9	83.7	66.7	17.0	34.9
2055–59	128.8	114.7	14.1	84.3	67.6	16.7	30.8
2060	127.5	115.4	12.1	84.7	68.1	16.6	28.7

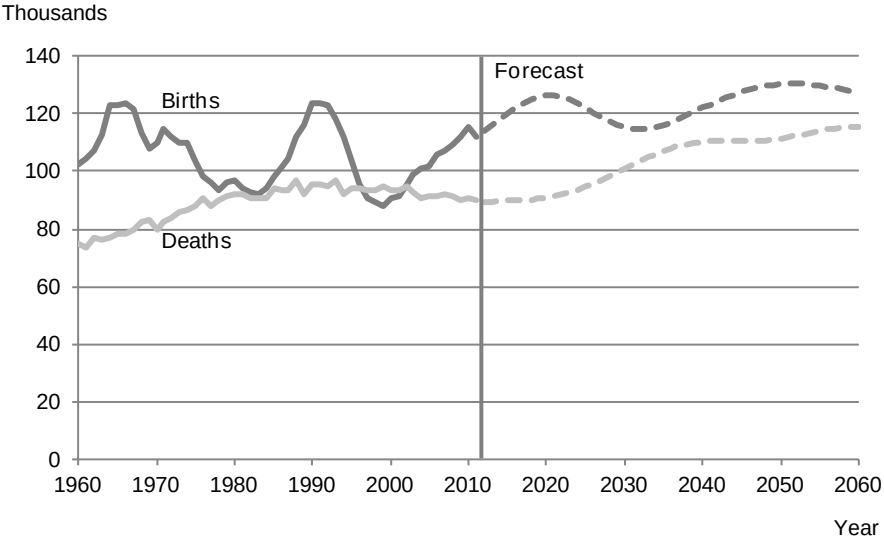
During the 1960s and the beginning of the 1970s there was a birth surplus that contributed most to the increase in the population. Since then the positive net migration has been the largest contributing factor to the increase. According to the forecast, net migration will be positive during the entire forecast period. However, during the 2020s the birth surplus will contribute the most to the population increase, but in the 2030s the birth surplus is expected to be small. That will be the time for the smaller group of people born around the year 2000 to have children, while the many people who were born during the 1940s will reach the end of their lives.

The number of births and deaths 1960–2060 is illustrated in figure 2.3. The number of births has exceeded the number of deaths for most of the years. The period 1997–2001 is an exception when more deaths than births occurred. As a result of the population's age structure, the number of births is expected to be large around the year 2020. Then it will be time for the many people born around

1990 to begin to have children. A new peak will occur about 30 years later. That is when the grandchildren of those born in the 1990s are expected.

The number of deaths has been around 90 000 in recent years. That number is expected to remain in the next coming years, but at the beginning of the 2020s the number of deaths is expected to increase. The reason for this is because the large numbers of people born in the 1940s will reach the end of their lives.

Figure 2.3
Births and deaths 1960–2011 and forecast 2012–2060



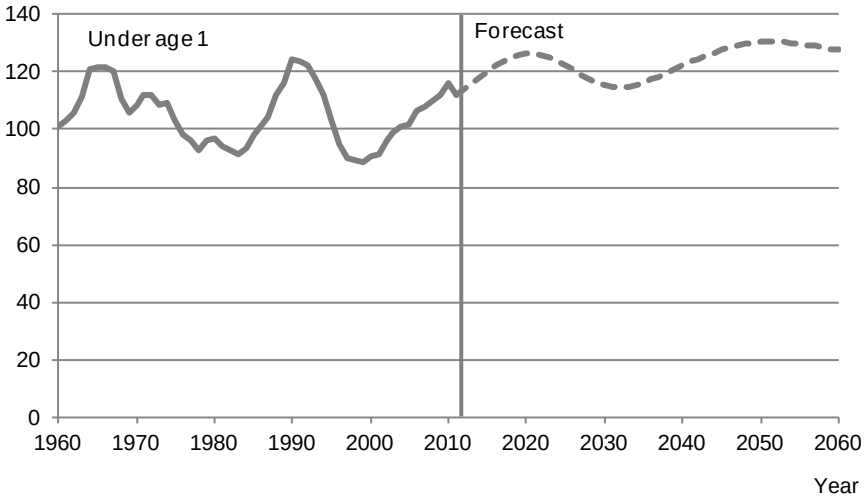
Development among different age groups

The following chapter presents the results from the main alternative of the forecast for different age groups.

Number of infants below age 1

The number of infants is expected to increase during the next few years and will reach a peak around 2020. This is when persons born during the 1990s are in childbearing ages. Afterwards the number of infants under age 1 will decrease somewhat when it is time for those born in the latter part of the 1990s and the beginning of the 2000s to have children. Around 2050 it is also expected that many children will be born. That is when the grandchildren of those born in the 1990s will be born.

Figure 2.4
Number of children under age 1 born 1960–2011 and forecast 2012–2060



Birth patterns have varied greatly from year to year. This is because childbearing has been postponed during some periods. During periods when childbearing has been postponed until later in life, fewer children are born and changes in age when having children thus leads to fluctuations in the number of children born. For example, many women refrained from having children during the crisis years of the 1990s and the age for having children increased. Women and men have adapted themselves as to when in life they choose to have children with regard to what has been optimal from an economic or practical standpoint. However, the age for having children has not changed particularly since the middle of the 2000s. If this continues, it is possible that periodical fluctuations in the future will not be as large. It is assumed in the forecast that the age of the mothers remains the same. However, it is possible that the number of those under age 1 will still vary more than what is assumed in the forecast due to temporary effects of the business cycle.

Children of preschool age 1–5 years old

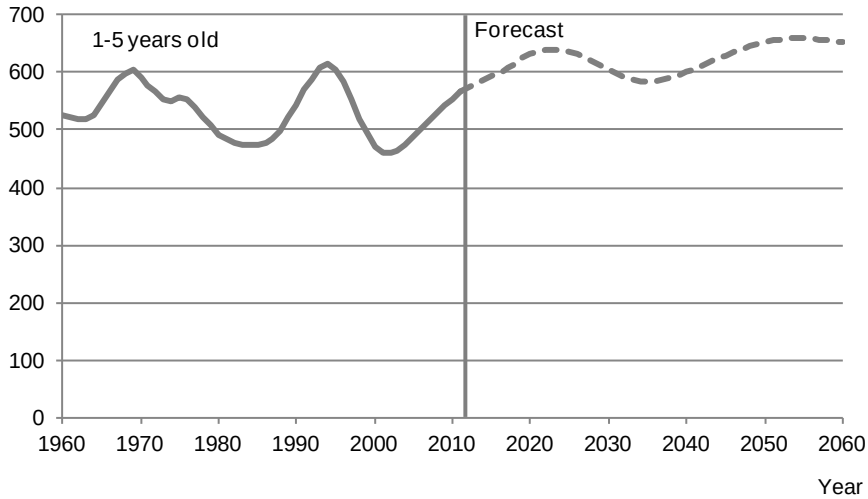
Publicly financed preschool operations have been expanded during recent decades. In 1975 roughly 100 000 children were registered in some form of preschool operations. In 2011 the number was close to 500 000, or 86 percent of all children aged 1–5 (The Swedish national agency for education, 2011a) The municipalities must offer preschool

or pedagogical child care for children from age one within three months from the time the parents have applied for such a need.

The variations in the number of births for each year place demands on the planning of child care. The number of children aged 1–5 is assumed to increase constantly during the next 10–12 years. The peak will be reached at the beginning of the 2020s when the children of those born in the 1990s reach preschool age. It is then expected that there will be 76 000 more preschool age children than there were in 2011.

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. The entire group of preschool children in the forecast period will have already been born by 2017.

Figure 2.5
Number of people aged 1–5 1960–2011 and forecast 2012–2060
Thousands



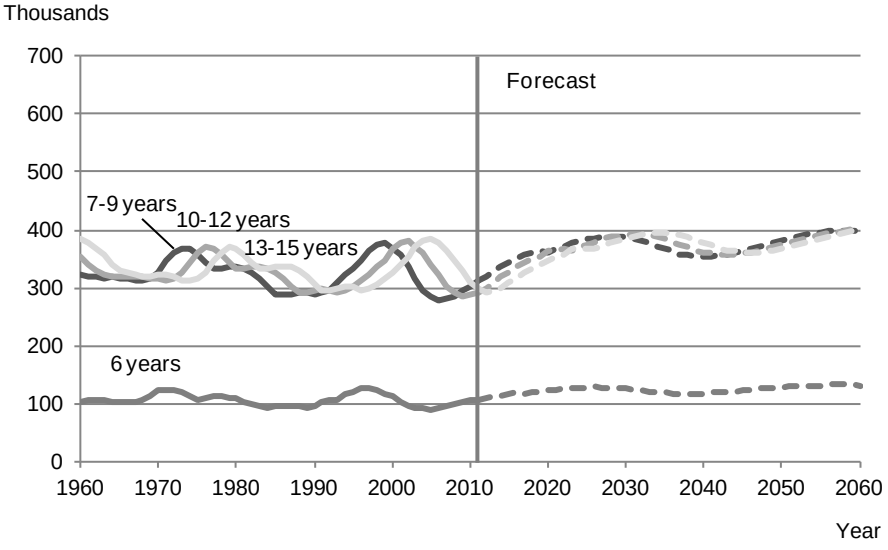
Children of compulsory school age 6–15

Previously, compulsory school was divided into three stages: lower level (years 1–3), middle level (years 4–6) and upper level (years 7–9). These divisions are not as strict nowadays, partly due to variations in the number of children born. Here we report only the number of children in compulsory school in three-year classes. However, this does not apply to those under age 6, which are

presented separately. Since 1998 the so-called preschool class has existed as a part of compulsory school; most of the 6 year-olds take part, even though it is not obligatory.

The number of pupils of compulsory school age decreased during all of the 2000s, but in 2011 the trend changed. Now we expect a steady increase that will remain until the beginning of the 2030s. Then close to 300 000 more children aged 6–15 are expected, compared to 2011.

Figure 2.6
Number of children in age-group 6 years, 7–9 years, 10–12 years and 13–15 years 1960–2011 and forecast 2012–2060



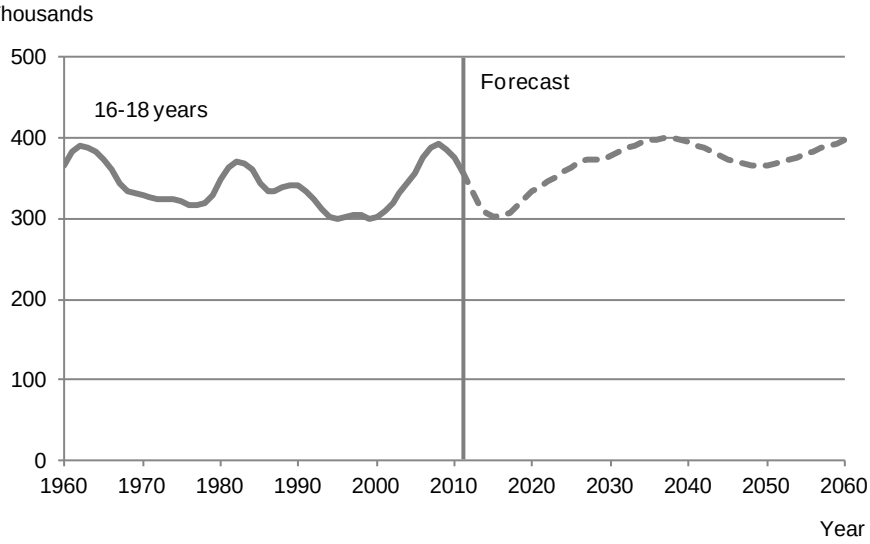
Young people in upper secondary school ages 16–18

All young people who have completed compulsory school have the right to an upper secondary school education. Nearly all pupils who finish compulsory school go on to begin upper secondary school. In autumn of 2010, nearly 99 percent of those who left compulsory school during spring term of 2010 were in upper secondary school (The Swedish National Agency for Education, 2011b).

The number of young people aged 16–18 reached a peak in 2008 with close to 400 000 people. Since then the decrease has been rapid and in 2015 it is expected that the number in the age group will be about 100 000 fewer as a result of the low birth rates at the end of the 1990s. After 2015, the number of people in that age group will

increase again and by the middle of the 2030s it will again be at 400 000.

Figure 2.7
Number of people aged 16–18 1960–2011 and forecast 2012–2060



Young people aged 19–24

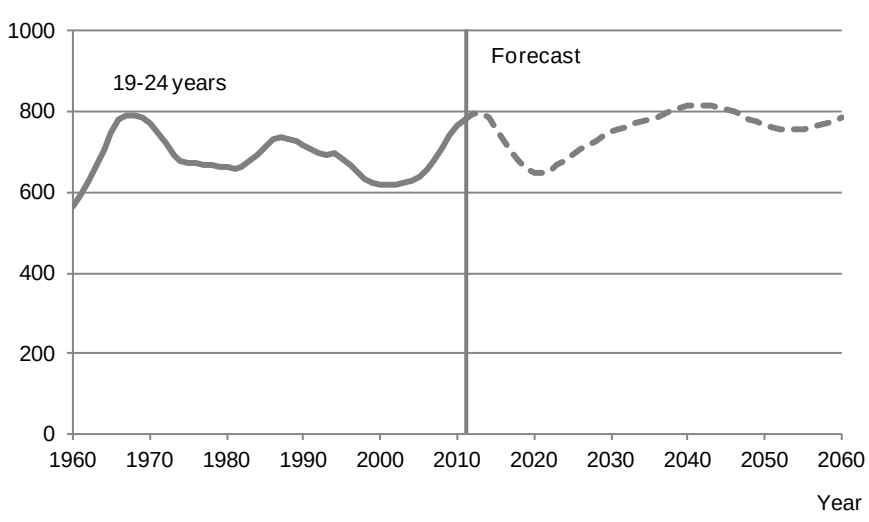
The number of young people aged 19–24 will reach a peak in 2013. It is estimated that there are close to 800 000 young women and men in this age group. This is roughly 180 000 more than the low point of 2001, when the number was roughly 620 000. It is the cohorts born around 1990 that are behind this upswing. After 2013 the number will decrease and reach a new low level in 2020 when the small cohorts born at the end of the 1990s reach these ages.

Many people in these ages study. According to statistics on the study participation of the population, 34 percent of the men and 43 percent of the women were studying during autumn term 2010. However, more of them were working. According to Statistics Sweden's Labour Force Surveys in 2011, 58 percent of the women and 61 percent of the men aged 20–24 were working. Half of the employed women and three out of four of the employed men worked at least 35 hours a week.

The high unemployment rate of young people is often debated to be one of the challenges of the future. The official unemployment rate in 2011 among people aged 20–24 was 17 percent for women and 19

percent for men[2].Unemployed persons are calculated as the percentage of the labour force that is comprised of employed and unemployed persons. Unemployed persons are those who are actively looking for work. This also includes full-time students who would like to work aside from their studies. It is possible that the decreased number of persons in this age group after 2013 can ease the establishment on the labour market for persons in this age group.

Figure 2.8
Number of young people in age-group 19–24 years 1960–2011 and projection 2012–2060



Population of those in actively working ages 25–64

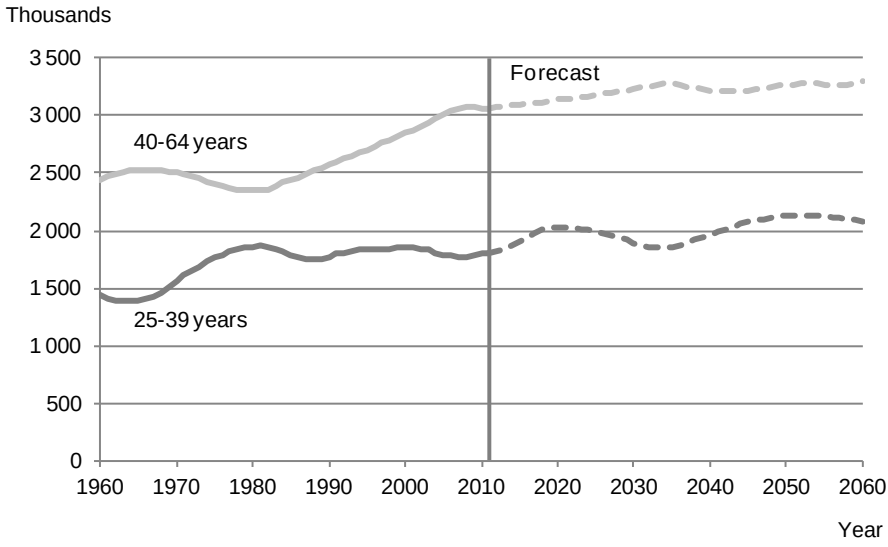
The age group of persons 25–64 years can be seen as persons in the most actively working ages. According to the Labour Force Surveys, 80 percent of the women and 86 percent of the men in this age group were employed[3].

Regarding the younger people aged 25–29 in this age group, an increase in the number is expected by roughly 200 000 up until 2020. This is because those of the large cohorts born around 1990 will then be in this group, as well as because of a contribution due to immigration. A slight increase is also expected for those aged 40–64 up until the middle of the 2030s.

[2] Statistics Sweden, Labour Force Surveys
[3] Statistics Sweden, Labour Force Surveys

It is possible that those in the most actively working ages will include persons over age 65 in the future. The trend of an aging population has led to a lively debate about the retirement age. Today those with a high education and persons born in Sweden are those who work after age 65 to the greatest extent. Women retire before age 65 to a greater extent than men (Statistics Sweden, 2011f).

Figure 2.9
Number of people in age group 25–39 years and 40–64 years 1960–2011 and forecast 2012–2060



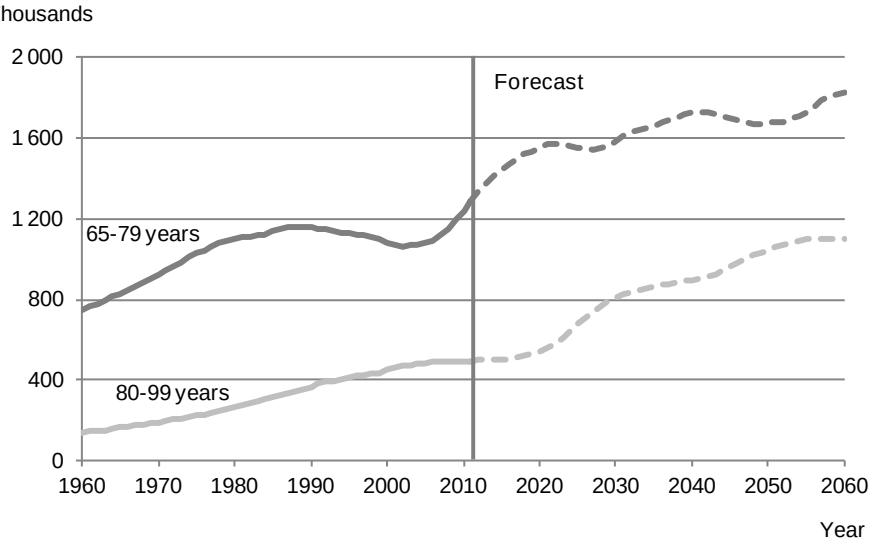
Population aged 65–99

The number of people over age 65 has increased in recent years. This mainly applies to those aged 65–79. From 2001 to 2011 the number has increased by nearly 200 000. Within the next ten years this increase is expected to continue by about 300 000 persons in these ages.

The number of people aged 80–99 has increased since the 1960s. In 1960 this group comprised roughly 140 000 people. The number in 2011 was nearly 500 000. The sharp drop in mortality has contributed to the increase of older people. According to the report *Folkhälsan i Sverige* (Public health in Sweden), the health of older persons in the population has had the best development. (The National Board of Health and Welfare & Swedish National Institute of Public Health, 2012). For instance, heart attacks and strokes have decreased more among older people than others in the population.

According to the forecast, the growth in the number of persons over age 80 will be stable up to 2020, but then a continuous increase is expected during the entire forecast period up until 2060. It is then assumed that there will be more than 600 000 more people aged 80–99 than there are today. This is more than twice as many people.

Figure 2.10
Number of people in age groups 65–79 years and 80–99 years 1960–2011 and forecast 2012–2060



100 year-olds are also included in the age group 80–99 years for the period 1960–1967.

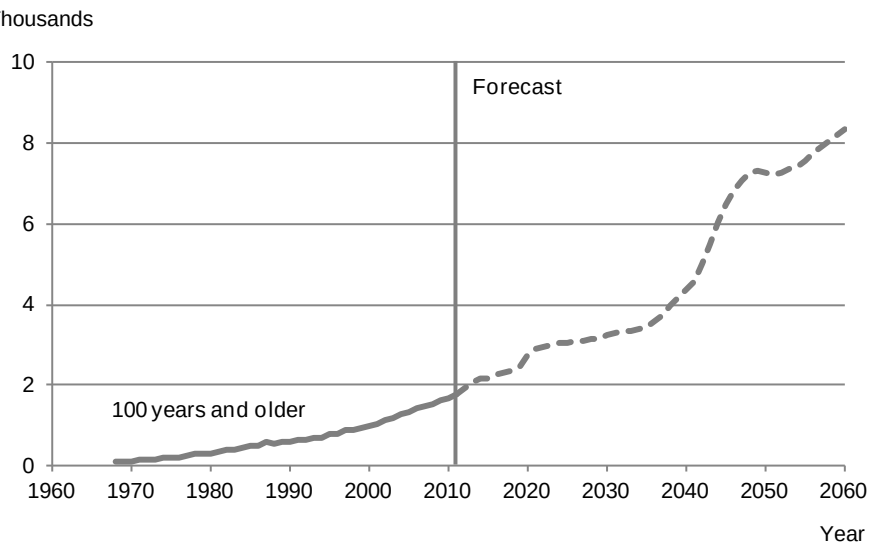
Centenarians

Few people live to be one hundred. Researchers are interested in our oldest members of society to find out about the factors that may contribute to the longevity of certain individuals. The oldest age at death in the world up to now is 122 years and 164 days. This record is held by a French woman who died in 1997.

The number of people who have reached 100 years has increased 14 times since 1970. Then there were 127 people in Sweden age 100 or above, while in 2011 there were 1 770 people who had reached age 100. The number of people who are 100 years and above is assumed to increase especially in the 2040s when the large cohorts born in the 1940s reach these ages. By the end of the forecast period the expected number of centenarians is nearly 8 400.

There are calculations that conclude that half of those born today in developed countries, including Sweden, will be alive on their 100th birthday (Christensen, Doblhammer, Rau, & Vaupel, 2009). The results of the calculations are based on an assumption of a continued linear increase in life expectancy which has been observed from the development of life expectancy of the last 200 years in countries that have had a high life expectancy. For this assumption to hold, it is important that mortality continuously decreases at high ages, among other things, a clearly decreased mortality for 90 year-olds for both women and men[4]. However, the study by Christensen and colleagues also shows that the spread of life expectancy for women has increased in countries that have a high life expectancy. In several countries including Sweden, life expectancy has increased less for women during recent decades than during the first half of the 20th century. The same observation has been made by other researchers (Lee & Carter, 1992). Statistics Sweden's assumption is based on the assumption that indicates a slowly decreasing reduction of mortality in the future, see chapter *Assumptions about mortality* and *Facts about the statistics*.

Figure 2.11
Number of people aged 100 and older 1960–2011 and forecast 2012–2060



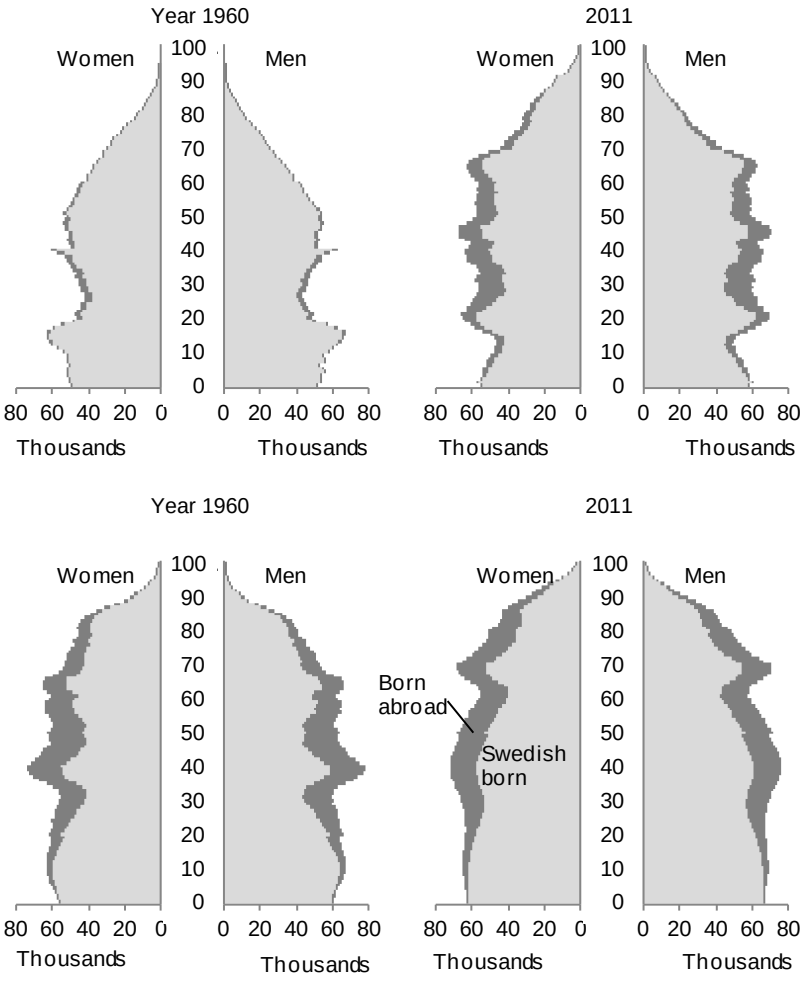
[4] Among other things Japan has had a significant decrease in mortality at high ages in recent years. It is the country with the highest life expectancy in the world today, that is, the country where we possibly could first see if there is an upper limit for life expectancy.

Changes in the population structure

More people born abroad and more elderly persons

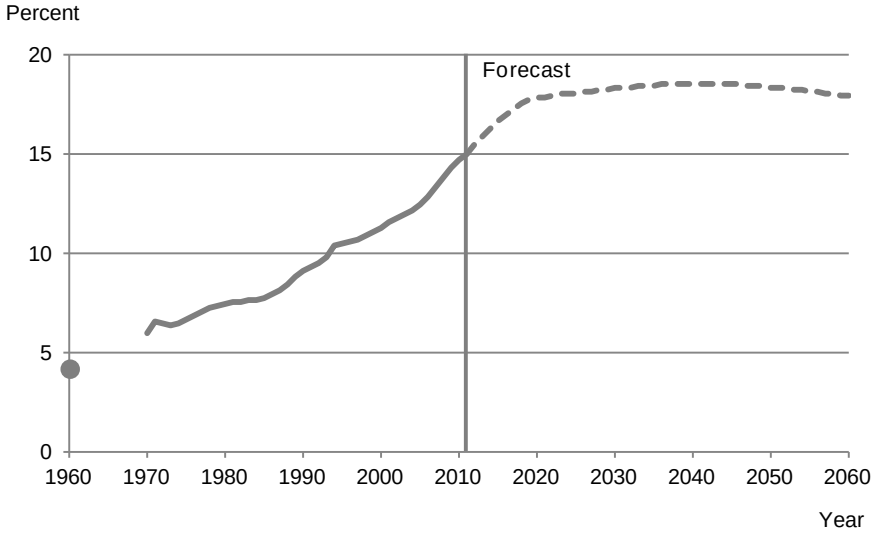
Figure 2.12 illustrates population pyramids for 1960 and 2011 as well as how the population with look according to the forecast in 2030 and 2060. The population's growth rate differs for different age groups. This is largely because the birth cohorts have varied in size over the years. For instance, we can see how the large cohorts born around 1990 move through the different ages. In 2011 these people form a bulge for those around age 20. In the pyramid for 2030 they stand out around age 40 and in 2060 they have reached the age of 70.

Figure 2.12
Population pyramids 1960, 2011, 2030 and 2060



The population pyramids clearly show that the proportion of foreign born persons has increased. The census in 1960 shows that close to 300 000, or 4 percent of the population was born abroad. The corresponding figure in 2011 was 15 percent. According to the forecast, the proportion of foreign born persons is expected to increase somewhat in the next few years, but will then stabilise at a level around 18 percent, see figure 2.12.

Figure 2.13
Share of foreign born 1960–2011 and forecast 2012–2060

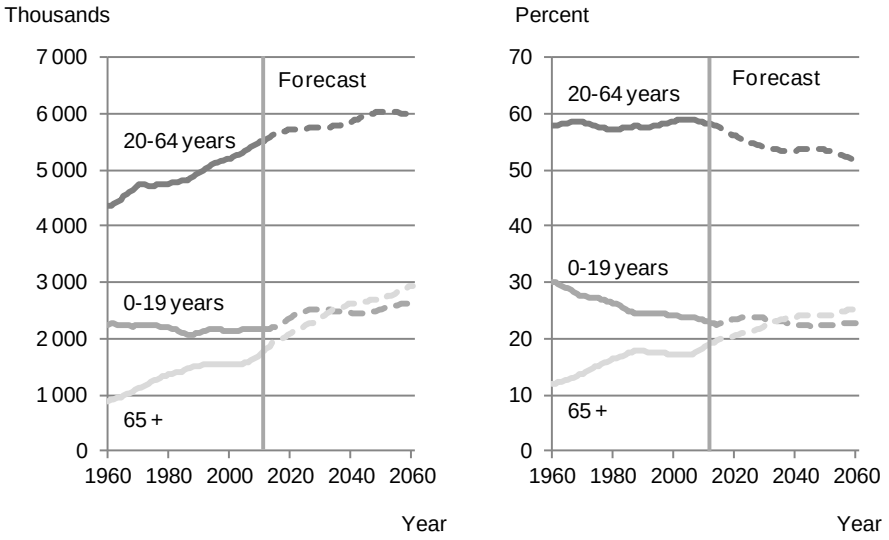


Another clear change in the population structure is an increase in the number of older persons. Life expectancy has increased and is assumed to increase in the future, leading to an increased growth in the number of older persons. Figure 2.14 shows the development of the *number* and *percentage* of persons in age groups 0–19, 20–64 and 65 and older. The elderly part of the population has increased in both number and percentage. In 2011 nearly every fifth person in Sweden was age 65 or older. At the end of the forecast period every fourth person of the population is expected to be in this age group.

The *number* of children and young people has been constant, but the *percentage* in relation to the rest of the population has decreased. From this time on, this percentage is expected to remain at about the same level. This means that both today and in the future, 23 percent of the population will be aged 0–19. The *number* of children and young people is expected to increase somewhat, at least in the next few years.

Regarding the population aged 20–64, the *number* has increased since 1960 while the *percentage* has not changed. This is because the number of older people has increased more than the number of people aged 20–64. It is estimated that in the future the percentage of persons aged 20–64 will decrease at the same time as their number increases slightly. Foreign born persons are the ones who contribute to the increase in the number of people in these ages, at least up until the 2030s.

Figure 2.14
Population in ages 0–19, 20–64 and 65 years and older 1960–2011 and forecast 2012–2060



As a result of the changed age structure, the demographic dependency ratio will increase from 0.71 in 2011 to 0.92 in 2060. This is a measurement that calculates the relationship between the number of people in the most actively working ages of 20–64, and the total of the population that lies outside of this age interval. According to this forecast, for every person aged 20–64 there will be 0.92 younger and older persons.

Soon there will be more men than women

Slightly more boys than girls are born. Therefore the percentage of boys surpasses that of girls in the 0–19 year age group, see table 2.2. This sex distribution, 49 percent women and 51 percent men, will mostly remain also for the age group 20–64 years. However, women are dominant among the older ages. In 1960 women comprised 54

percent of the group aged 65 and older. The surplus of women in these ages has decreased and will continue to decrease because the mortality of men is decreasing somewhat faster than that of women.

Among foreign born persons, the sex distribution among older people has been more skewed than in the population as a whole. It is true that somewhat more men than women immigrate, but men re-emigrate to a greater extent than women. More women than men stay in Sweden.

Historically, there have been somewhat more women than men in the population. According to the forecast there will be somewhat more men instead. This change is expected to occur starting in 2017. By the end of the forecast period it is estimated that there will be slightly more than 120 000 more men than women.

Table 2.2
Sex distribution in ages 0–19, 20–64 and 65 years and older 1960 and 2011 and forecast 2030 and 2060

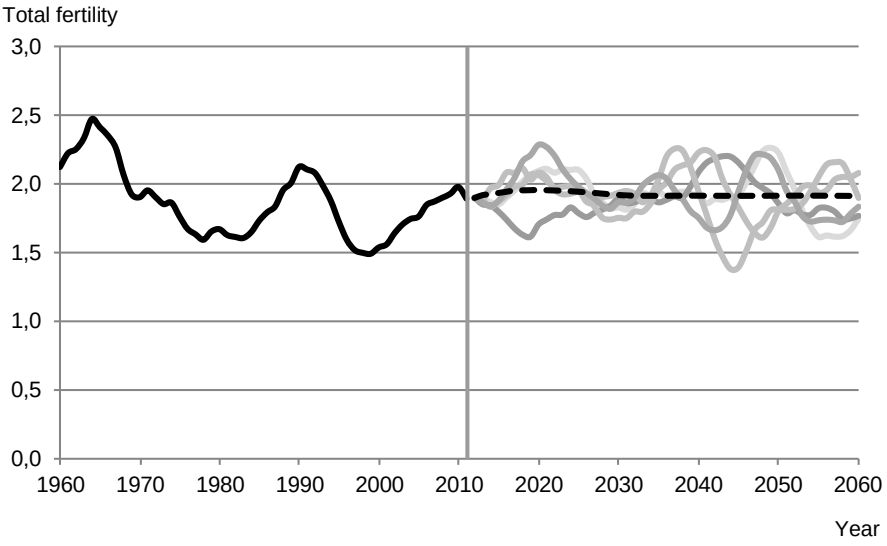
	0–19		20–64		65–		Total	
	W	M	W	M	W	M	W	M
Total								
1960	48.7	51.3	50.0	50.0	54.3	45.7	50.1	49.9
2011	48.6	51.4	49.2	50.8	54.8	45.2	50.2	49.8
2030	48.6	51.4	49.1	50.9	52.7	47.3	49.8	50.2
2060	48.6	51.4	48.9	51.1	51.5	48.5	49.5	50.5
Swedish born persons								
1960	48.7	51.3	49.7	50.3	54.1	45.9	49.9	50.1
2011	48.6	51.4	48.9	51.1	54.6	45.4	49.9	50.1
2030	48.6	51.4	48.7	51.3	52.6	47.4	49.6	50.4
2060	48.6	51.4	48.7	51.3	51.4	49.0	49.2	50.8
Foreign born persons								
1960	50.5	49.5	55.1	44.9	64.8	35.2	55.0	45.0
2011	48.4	51.6	50.7	49.3	56.6	43.4	51.3	48.7
2030	49.5	50.5	50.3	49.7	53.5	46.5	50.9	49.1
2060	49.6	50.4	49.7	50.3	53.0	47.0	50.8	49.2

Uncertainty in the forecast

To illustrate the uncertainty in the forecast, the main alternative has been supplemented with a stochastic forecast.

In the assumptions made about future fertility, mortality and migration, uncertainly is of course an issue. Historically, the total fertility rate has varied from year to year, and it is quite likely to continue so in the future with peaks and valleys. We cannot predict how high or low these peaks and valleys will be or when they will occur. The assumption we make on total fertility is what we think the average value of the fertility rate will be in the future.

Figure 2.15
Total fertility rate 1960–2011 as well as forecast 2012–2060. Examples of stochastic forecasts



In the figure 2.15 above the fertility rate of the main alternative is shown together with some stochastic projections. When we make stochastic projections we want them to have the same statistical characteristics as the fertility rate has had historically. We want the stochastic projection to reflect both the horizontal trend and the variation around the average value as in the observed time series in the figure above. Since we cannot predict the future ups and downs, we reproduce a number of possible future series of the fertility rate that all follow the same trend and have the same underlying variation. However, the scope, height and time for the different peaks and valleys are random.

With the same logic we produce several future developments of net migrations and mortality. The chapter *Facts about the Statistics* describes the statistical models that are used. In the projection model, a set of future fertility rates, net migration and mortality are then used to project the population. This gives a whole set of different population forecasts. These can be used to calculate the prediction interval around the result of the main alternative.

The interval should be interpreted that there is a 95 percent probability that the real observed value will be, given that the future variation in the demographic components will be the same type and size category as it has been historically. But there are other uncertainties in the projections that are not captured in these intervals.

Figure 2.16 shows the population according to the forecast with prediction intervals. It is clear that uncertainty increases with time. In 2060, the population varies between 10.6 and 12.7 million.

Figure 2.16
Population 1960–2011 and forecast 2012–2060 with prediction interval

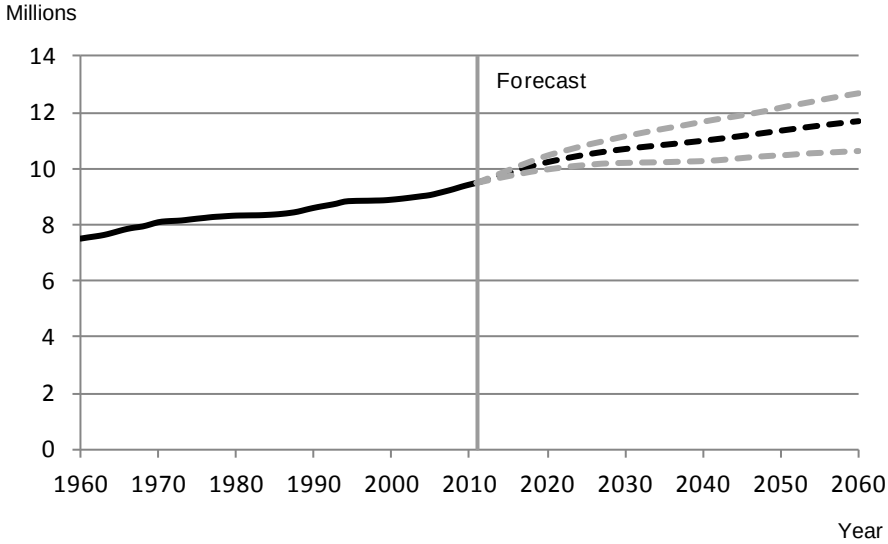
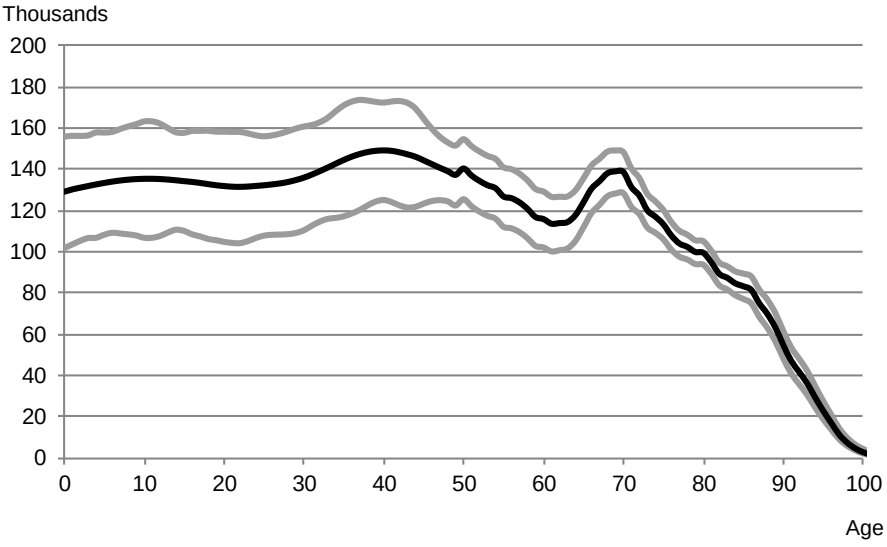


Figure 2.17 shows the age structure in 2060 with prediction intervals. It is clear that uncertainty is greater for the younger ages 0–40 and less for the older ages. This *does not* mean that we are more certain about predicting mortality, which has the greatest effect on the elderly, than about fertility – which affects the number who are born during the forecast period. The interval shows that the ups and

downs have been greater in the historical fertility rate and in the historical migration than in the historical mortality rate.

Figure 2.17
Age structure 2060 with prediction interval



In Sweden the number of births varies sharply from one time period to another. In 1990, many children were born (124 000) while in 1999 fewer children were born, 88 000. The large variation is also reflected in the uncertainty interval around the future number of children under age 1. As early as in 2015, the number of children under age one varies between 105 000 and 137 000, and uncertainty increases with time. In 2060 we have an uncertainty interval between 102 000 and 155 000 children – if our forecasted average fertility is correct.

Figure 2.18
Number children under age 1 of children born 1960–2011 and forecast 2012–2060 with prediction interval

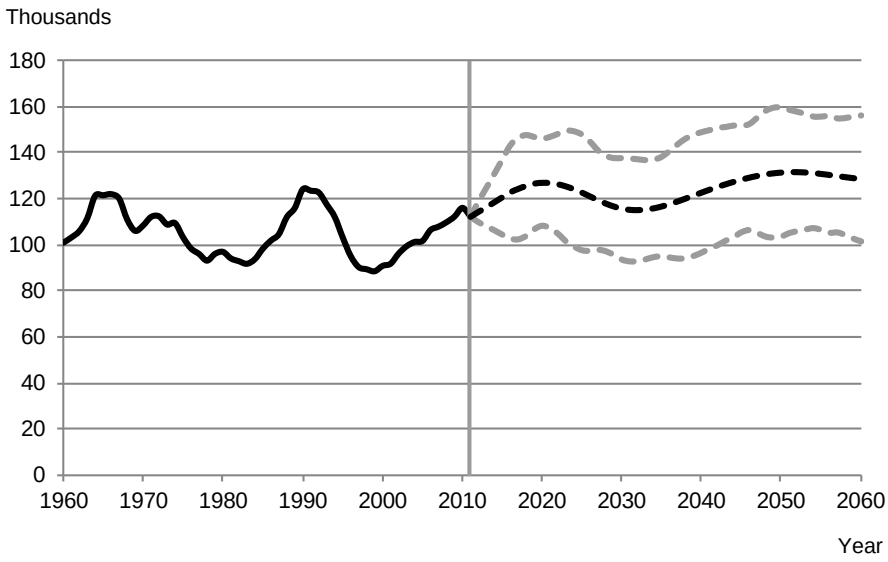
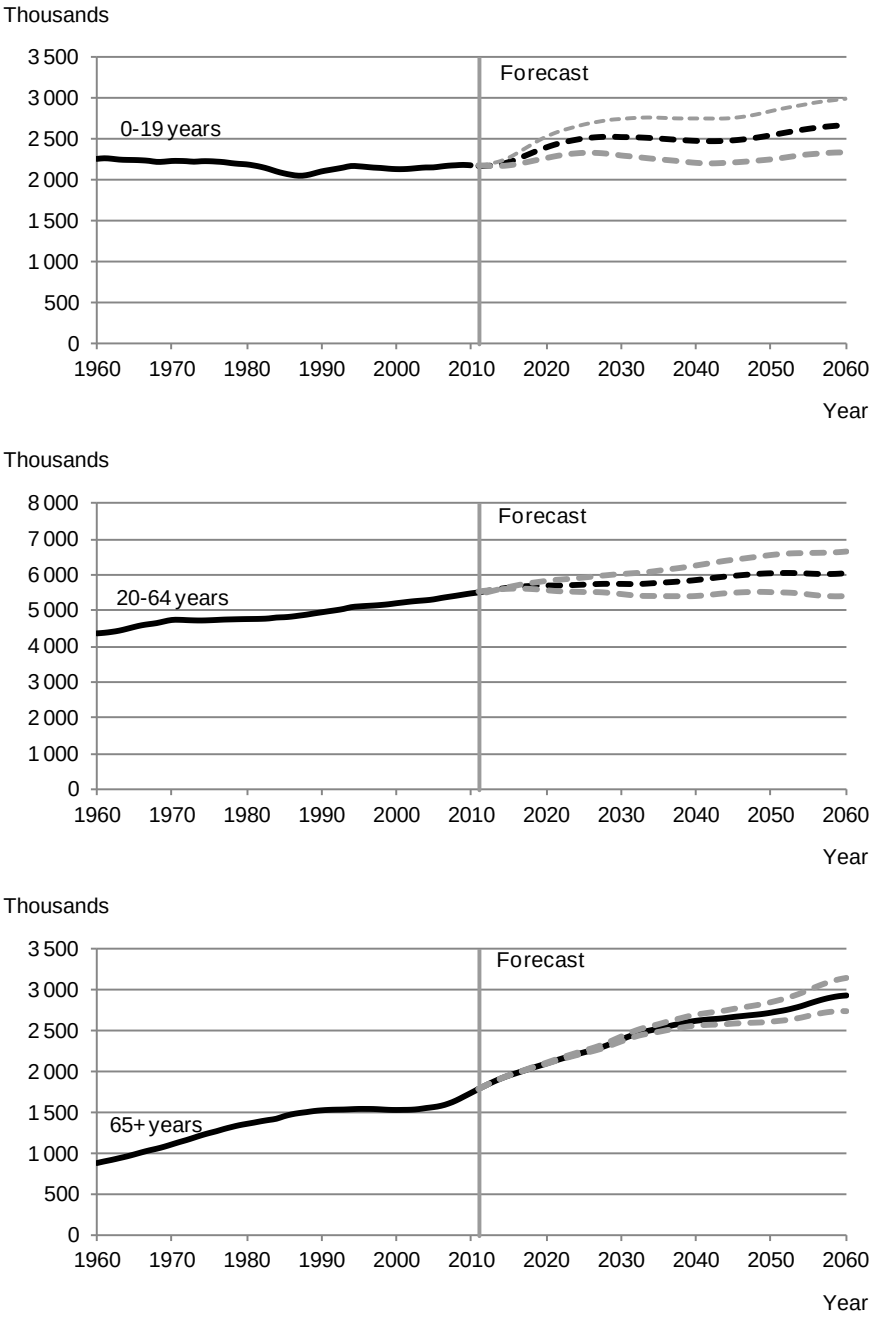


Figure 2.19 illustrates the uncertainty in three age groups. These groups include young people (under the age of 20), people of working age (20–64), and the elderly (age 65 and above). In the number counted, uncertainty is greatest for those aged 20–64, the confidence interval is 1.3 million persons in 2060, which corresponds to 21 percent. In terms of percent, deviation is largest for those aged 0–19, where the interval is nearly 650 000 persons. This is one fourth of the forecasted population in this age group. The oldest ones have the smallest interval, both in numbers, 400 000 and in percent, 14 percent.

Figure 2.19
Population in ages 0–19, 20–64 and 65 years and older 1960–2011 and forecast 2012–2060 with prediction interval



3. Assumptions on fertility

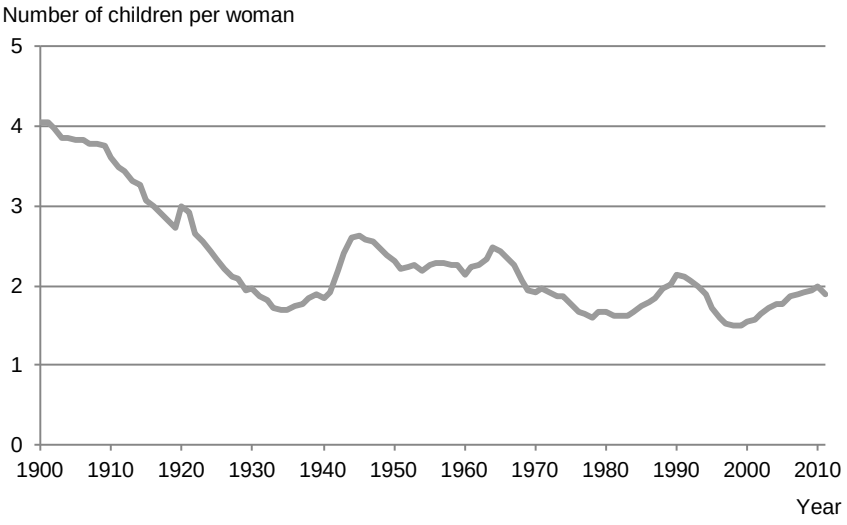
In this chapter we present the assumptions on the births of the future. We begin by describing the recent trends for fertility and the methods for the assumptions. Then we describe the overall fertility assumption of the main assumption, which is the result of different assumptions for persons born in Sweden and for those born in six different groups of countries of birth. Those who would like an in-depth study of the reasons behind the main assumption can read the section that follows where the assumptions are described for each country of birth group. Then the alternative assumptions will be presented, a high and a low alternative for fertility.

Fertility in Sweden has varied sharply from one time to another. At least since the 1940s, periods with low levels of births have alternated with periods of high levels of births. There are several reasons for the fluctuations in fertility over time. The decrease from the latter 1960s up until the middle of the 1980s occurred during a period when it was more difficult for women to combine parenthood with working life. Even the access to better and safer birth control methods contributed to the decrease. The decrease was replaced by an upturn around 1990. The so-called *baby boom* is partly due to a strong economy, but also because of the *snabbhetspremien*[5] where many chose to have their children at a quicker rate than usual.

The downturn of the 1990s is normally explained by the downturn in the economy when particularly younger women and men had problems in establishing themselves on the labour market. An increasing number went on to higher education and postponed having children. In 1999 Sweden had the lowest birth rate ever at 1.5 children per woman. Up until 2010 the total fertility rate increased continuously and culminated at 1.98 children per woman. In 2011 fertility decreased somewhat to 1.90.

[5]"Snabbhetspremien" (roughly "quickness premium") is the popular Swedish term to receive the same parental benefits as with the birth of the previous child. It was introduced in 1980, and to take advantage of it, the time interval between having children could not exceed 24 months. If this requirement was fulfilled parents could receive the same income-related benefit level as for the previous child, even if they had not worked to the same extent during the interval between the births. In 1986 the interval was extended to 30 months, which was within reach for a greater group and it was then that the "snabbhetspremien" seriously began to influence the time interval between children.

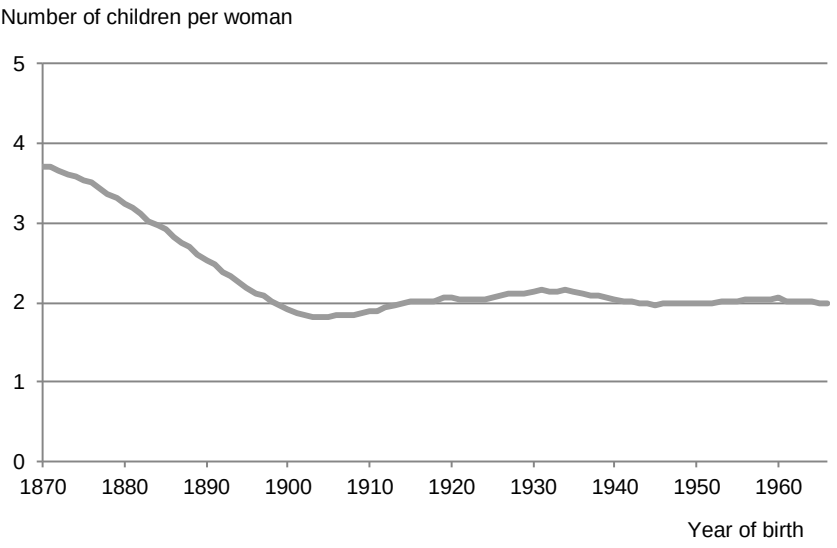
Figure 3.1
Total fertility rate 1900–2011



The total fertility rate is a measurement that gives the number of children a fictive woman would have during her total reproductive period, if the likelihood to have children in different ages remained the same as during the year that the calculation was done.

In connection with forecasting, it is advantageous to use stable processes and patterns that form the basis of assumptions for future development. Fertility trends for women born a certain *year* (cohorts) are more stable than the annual fertility rate. That which forms the basis for assumptions on future births is therefore based largely on analyses of trends for cohort fertility. Figure 3.2 presents the actual average number of children that women have had when they have completed their fertile ages. Women are considered to have finished their fertile ages at age 45. It is unusual to have children after that age. Despite the large variations in annual fertility, women born in the 1900s have generally given birth to an average of around two children.

Figure 3.2
Final number of children born to women born in 1870–1966



About the method

In the assumption of future births we differentiate between persons born in Sweden and persons born abroad. Women born outside of Sweden have been divided into six groups depending on their country of birth. Europe is divided into three parts: The Nordic countries (except Sweden), the EU (except the Nordic countries) and the rest of Europe. Countries outside Europe are divided into three groups based on their levels of development as measured by the Human Development Index (HDI)[6]. Table 3.1 shows the distribution of children born in 2011 by the mother's country of birth group. In 2011, 25 percent of the children were born by mothers who were not born in Sweden.

The levels of the total fertility rate vary among different groups. Therefore different assumptions are made for Swedish born persons and the different groups of foreign born persons. Figure 3.3 shows fertility development during the period 1980–2011 for women born in Sweden and the different groups of foreign born women.

[6]Information about which countries are included in the different birth country groups is available in *Appendix 2*.

Table 3.1
Children born by mother's birth country group 2011

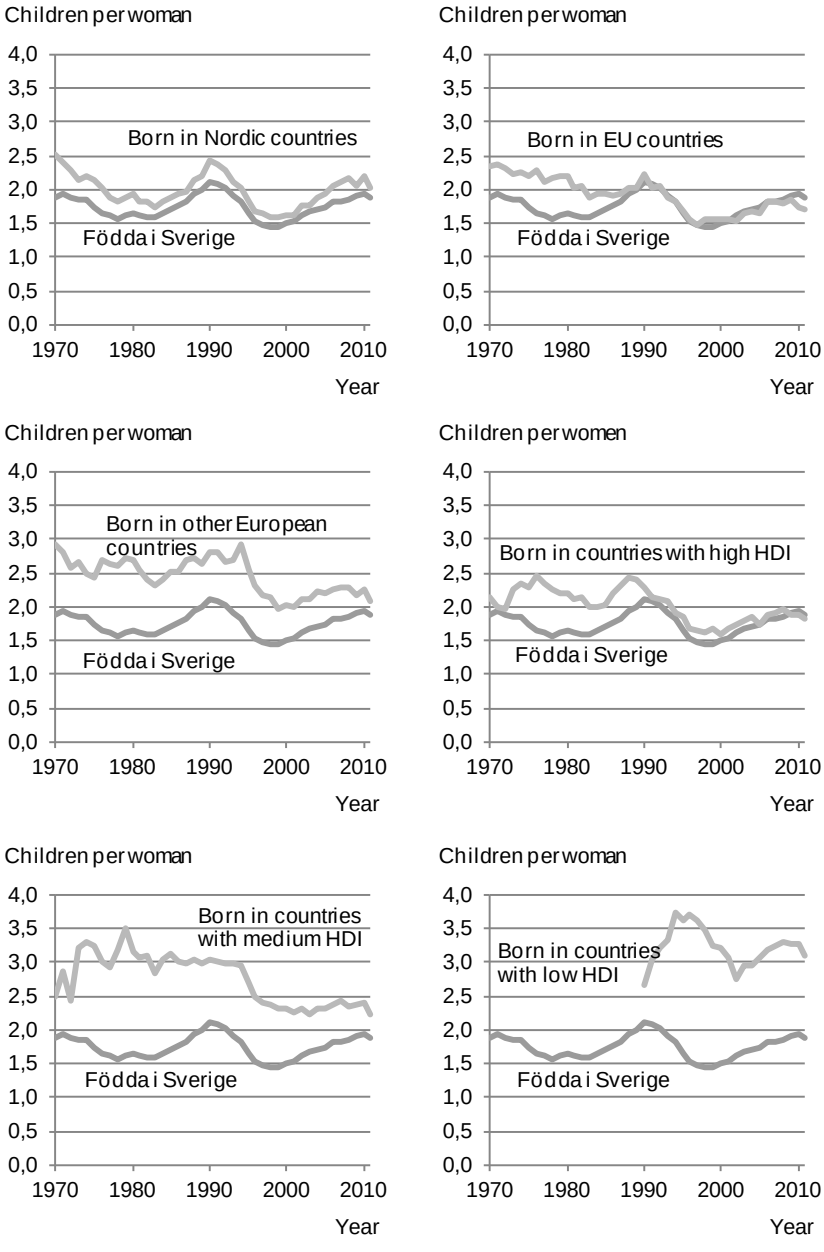
Mother's country of birth group	Percentage
Sweden	75
Nordic countries	2
EU countries	3
Other European countries	4
Outside of Europe in countries with high HDI	2
Outside of Europe with medium HDI	11
Outside of Europe with low HDI	3
Total	100

Different methods have been used to estimate the future child-bearing for Swedish born women and the different groups of foreign born women. The probability that women born a *certain year* will have their first, second, third, and fourth (or more) children is estimated for Swedish born women every year. The estimations for every cohort and parity (the child's ordinal position in the family) occur with incidence rates. The total of the cohort's incidence rates (for the first, second, third and fourth or more child) is the same as the cohort's age-specific fertility rate. These can then be converted to figures based on periods.

The method to produce the assumption for foreign born persons is based on periods and is simpler. No parity specific assumptions are made. Annual age specific fertility rates have been forecasted for each country of birth group. More information about the methods and the data material that the forecast is based on can be found in the chapter *Facts about the statistics.*

Valuable advice and viewpoints have been gathered in the work to produce fertility assumptions from a reference group with experts in the relevant areas. A list of the members of the reference group for fertility development is presented in *Appendix 1*.

Figure 3.3
Total fertility rate for Swedish born women and different groups of foreign born women 1970–2011



Before 1990 there are too few women in the group *Born in countries with low HDI* for the total fertility rate to be calculated.

Main assumption

As already mentioned, the assumptions about the fertility trends during the forecast are made for seven different groups. The summary below describes the main assumption for fertility as the result of the assumptions for the seven groups together. The section that follows describes the assumptions for each country of birth group.

Summary

Figure 3.4 and table 3.2 present the net result for total fertility during the forecast period, in part the total result and in part results broken down by those born in Sweden and those born abroad. Altogether the assumptions show a fertility level of 1.90 children per woman in the long term. In 2012 fertility is estimated to reach 1.92 children per woman.

In order to realise a situation within which the population fully replenishes itself, that is, if the replacement fertility rate is achieved, then each woman must give birth to 2.1 children. The assumption about fertility is below the replacement fertility level, which would in the long term involve a population decrease without immigration.

As already described, fertility in Sweden has varied sharply over the years. It is possible that this pattern will continue even in the future. The intention is not to predict these kinds of variation in the long term. The long term assumptions should be understood as an average future level rather than as assumptions about the most likely level in a particular year. The section *Uncertainty in the forecast* in the chapter *The future population* presents uncertainty in the calculations in the form of confidence intervals. These confidence intervals reflect the ups and downs we have previously had.

The latest trends in childbearing are taken into account for the next few years. The section *Development during the next few years* presents the short term assumptions.

Figure 3.4
Total fertility rate 1970–2011 and forecast for 2012–2060 for women born in Sweden, women born abroad, and total

Number of children per woman

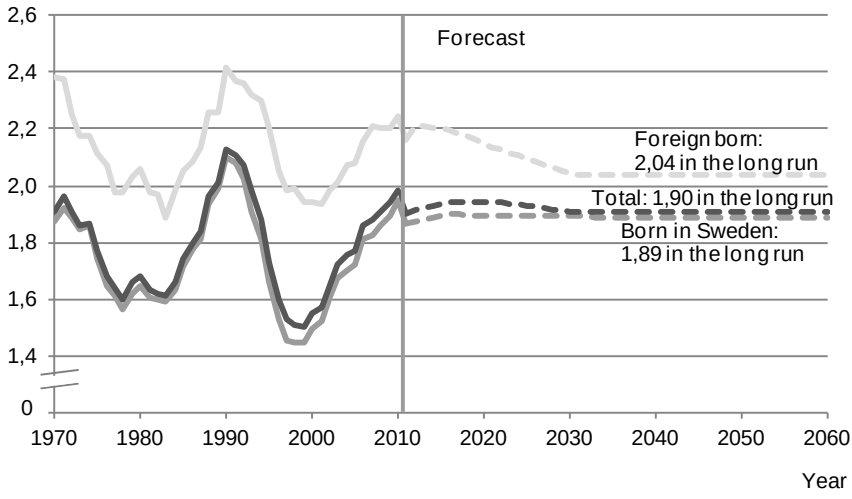


Table 3.2
Forecast of the number of children born and the total fertility rate for women born in Sweden, foreign-born women, and total for some forecast years

	Swedish born		Foreign born		Total	
	TFR	Number of births	TFR	Number of births	TFR	Number of births
2012	1.87	84 600	2.21	29 200	1.92	113 800
2013	1.88	85 400	2.21	30 400	1.92	115 800
2014	1.89	86 600	2.21	31 500	1.93	118 100
2015	1.89	87 700	2.20	32 400	1.94	120 100
2020	1.89	92 400	2.15	33 900	1.94	126 300
2030	1.89	87 000	2.04	28 100	1.91	115 100
2040	1.89	96 500	2.04	25 500	1.91	122 000
2050	1.89	106 300	2.04	24 100	1.91	130 400
2060	1.89	103 800	2.04	23 700	1.90	127 500

Swedish born persons

The method to estimate the future fertility for Swedish born is based on cohorts. This means that estimates are based on the probability that women born in a certain year will have a first, second, third or fourth child at different ages. The estimates according to age are

made with incidence rates that are defined as the number of women born a certain year at a certain age divided by the average population of women at that age. The total of the cohort's incidence rates (for the first, second, third and fourth or more child) is the same as the cohort's age-specific fertility rate.

The report *Childbearing patterns of different generations* (Statistics Sweden, 2011c) studies how many women have children in general, and how many go on to have a second, third and fourth child. The assumptions presented below are based on results from the study.

First child

For the first child, assumptions are made about how the development of the age structure of first-child mothers will develop, and assumptions about how many women will have a first child at all.

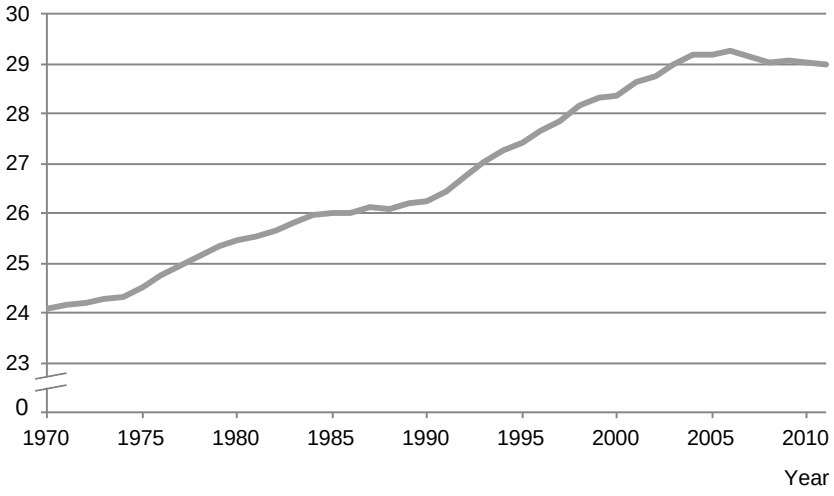
Age when first child is born

Regarding the development of age when the first child is born, there has been a continuous shift since the 1960s towards giving birth at older ages. This has been the trend up until the middle of the 2000s. However, since 2004 the average age for first-time mothers has been around age 29, see figure 3.5.

Age has significance for fertility. The ability to have children declines with increasing age. If the age of having children were to increase further, the result could be reduced childbearing. But if it became more common to have children at younger ages, it is possible that childbearing would increase.

Several factors influence the age women have children. One important factor is the age when women and men establish themselves on the labour market, since many postpone having children until they are established on the labour market. Studies show that those who are outside the labour force are less likely to have children than those who have permanent employment (Statistics Sweden, 2008a). One explanation is the connection between parental insurance and previous income from gainful employment. In a report about the *length of working life* (The Swedish Pension Agency, 2011) the average age of when working life starts has been calculated. It has been relatively constant between 22 and 23 years old since the middle of the 1990s. The start of working life here means working at least half-time and not only at summer jobs. Before the crisis of the 1990s this age was about 2–3 years younger.

Figure 3.5
Average age when first child is born among Swedish born women 1970–2011



It is entirely possible that people in the future will establish themselves on the labour market earlier than today. The reason for this kind of development is because some people are beginning their studies at universities and institutes of higher education earlier. During the last ten years the new entrants are clearly becoming younger (Swedish National Agency for Higher Education, 2012). In the 2001/02 academic year the median age was 21.6 among university entrants. In the 2010/11 the median age had decreased by nearly one year to 20.7. This is the lowest median age ever noted among new entrants. One explanation is that the admission regulations have been changed so that it is easier for young people to be accepted at universities and institutes of higher education. It is still uncertain what the consequences of childbearing will be on earlier entrance to higher education. Therefore this forecast does not make any assumptions about women becoming younger upon the birth of their first child. While we wait for any effects of an earlier start to higher education, this forecast uses the assumption that age structure of future first-time mothers has a similar age structure as in recent years.

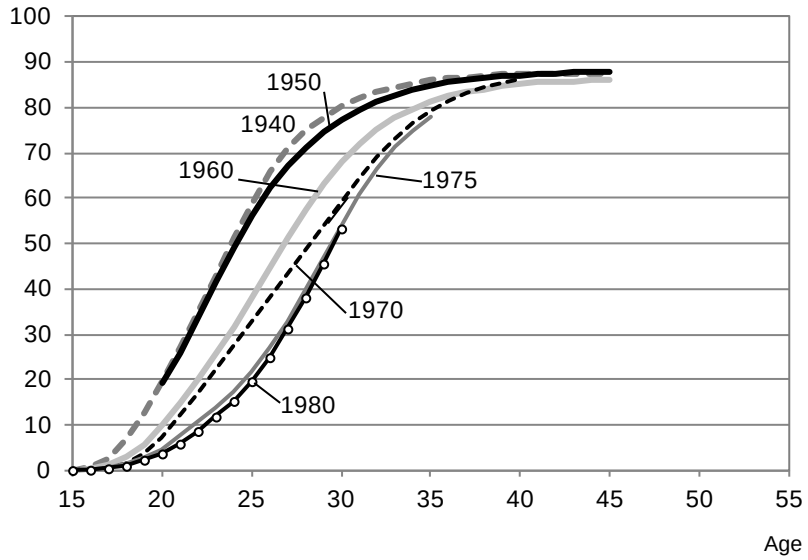
The percentage that have a first child

In the next step we make an assumption about the percentage of each cohort that will have at least one child. Regarding the development up to now, the difference is small concerning the

percentage of different cohorts who have their first child. This is seen in analyses presented in the report *Childbearing patterns of different generations* (Statistics Sweden, 2011c). Even though women born in 1960 had their first child later than those born in 1940 or 1950, nearly as large a percentage of them were able to have children at the end of their childbearing years. Even those born in 1970, 1975 and 1980 seem to be on the way to having a first child to at least the same extent as older generations, despite having children later, see figure 3.6. The percentage of those who had at least one child by age 40 was even somewhat higher for women born in 1970 compared to women born in 1960.

Figure 3.6
Proportion of women who have had at least one child, by age. Born in Sweden in 1940, 1950, 1960, 1970, 1975, 1960, 1970 and 1980

Percentage



Source: (Statistics Sweden, 2011c)

The overall assessment is that 87 percent of future generations will have at least one child. This means that a somewhat larger percentage of women of the future will be assumed to have at least one child, compared to the women of 1960 and 1965. The converse means that 13 percent will not have any children. In the forecast that was published in 2009 (Statistics Sweden, 2009a) it was assessed that 15

percent of the women of the future would be childless[7]. In recent years a decrease in childlessness has been observed, and this has been the basis for the change in the assessment.

Statistics Sweden has previously identified a number of factors that are particularly important for the assessment of future childlessness. These factors are involuntary childlessness, assisted fertilisation, voluntary childlessness and trends of relationships of couples. The development of these factors has been studied in the latest forecasts of Statistics Sweden (Statistics Sweden, 2006, Statistics Sweden 2009a) and also in this forecast the factors have been followed up and are included in the overall assessment of future childlessness.

Involuntary childlessness
Involuntary childlessness can be due to three different factors:

- Physiological factors. Age is above all the determining factor. The ability to have children declines with increasing age. As already mentioned, it is assumed that mothers of the future will have a similar age structure as that of the first-time mothers of the most recent years.
- Lifestyle factors. Drugs, sexually transmitted diseases, being overweight or underweight, stress and sexual problems are examples of lifestyle factors that *may* affect fertility negatively. Something that might have consequences in the future is the increase of chlamydia in recent years.
- Pathological factors. Illness-related infertility which is not dependent on lifestyle factors or age has not increased.

Assisted fertilisation
One of the reasons for the decrease in recent years of the percentage of childless women is believed to be because it is now easier to get help to become pregnant. This is seen in the statistics of the National Board of Health and Welfare on the number of treatments of assisted fertilisation (The National Board of Health and Welfare, 2012). In 2009 for example, close to 14 000 IVF treatments were carried out. The corresponding number in 1991 was 3 000. Slightly more than 3 700 children were born as a result of these IVF treatments. This means that slightly more that 3 percent of the children born in 2009

[7]Childlessness refers to biological childlessness, that is, it is not possible to have one's own biological child. However, they can have children via adoption.

were born with the help of IVF. If IVF treatments continue to increase, involuntary childlessness can drop further.

A survey from Statistics Sweden done in the spring of 2009 about children and plans for children also showed that it is now common to get some kind of assistance to become pregnant (Statistics Sweden, 2009b). Among the women aged 34–40 who were surveyed and had not had children but lived with a partner, about one in four had taken ovulation tests, hormone treatments, undergone insemination, IVF or some other method to become pregnant.

Public debates are now going about whether insemination for single mothers should be allowed. This is allowed in Denmark and there is no requirement that the donator is known to the child. This kind of development in Sweden could lead to a reduction of Involuntary childlessness.

Voluntary childlessness
In 2009 Statistics Sweden conducted a questionnaire survey about attitudes towards childbearing to try to estimate how common voluntary childlessness was. It was estimated at about 5 percent (Statistics Sweden, 2009b). This was the percentage of women below age 34 and men below age 36 who replied that they did not want children. The percentage is larger in the older age groups. This is probably because many of those who want to have children have already had children at that age. One fifth of the childless women aged 34–40 and one fourth of the men aged 36–44 replied that they did not want children.

Concerning the development of voluntary childlessness it is difficult to determine if it will increase or decrease. In a comparison of two surveys on attitudes conducted by Statistics Sweden in 2000 (Statistics Sweden, 2000) and 2009 (Statistics Sweden, 2009a) a slightly less positive attitude to having children was observed in the latter survey. Most of the women answer "Yes" in both surveys to the question about whether they want to have children at some time. However, the percentage that replies "yes" in 2009 is lower for all age groups. Instead, there are more "maybe" answers. The trend is the opposite among men. In the 2009 survey, more men answer "Yes" to the question if they think they will have children in the future. This could mean that men have a slightly more positive attitude towards children compared to earlier. At the same time it is difficult to draw any conclusions for men because the response rate

among childless men is low, and maybe more "children-oriented" men replied to the questionnaire.

It is thus difficult to say if there are more people who are negative to having children in 2009 compared to 2000. The trends are ambiguous. Among the younger women and men, more answered "probably not" or "no" in 2009 compared to 2000. In contrast, fewer people in the older age groups were negative to having children in the 2009 survey. That more young people answer "no" could mean that more people choose a life without children in the future. That fewer older people answer "no" could indicate a norm change where having children at older ages has become more accepted.

Couple relationships
In the 2009 survey on attitudes about having children, a majority say that one of the reasons why they do not have children is because they do not have a partner who they want to have children with (Statistics Sweden, 2009b). The older age groups in particular give this answer as a reason. Among women aged 34–40 who do not live with a partner, around 80 percent say "no partner" is the reason why they do not have children. In a comparison between the 2000 survey and the 2009 survey, it does not seem that the percentage that lists "no partner" has increased (Statistics Sweden, 2000 & Statistics Sweden 2009b). If insemination for single women were to be permitted in Sweden, it is possible that the lack of a partner would not have such a considerable significance for deciding to have children.

Second child
Most people who have a first child also go on to have a second one. Even when it comes to the second child, the differences have been small regarding the percentage who have had at least two children (Statistics Sweden, 2011c). Among women born in 1940, 71 percent had at least two children. The corresponding percentage of women born in 1960 is 73 percent and among those born in 1970 the percentage at age 40 is up at 72 percent.

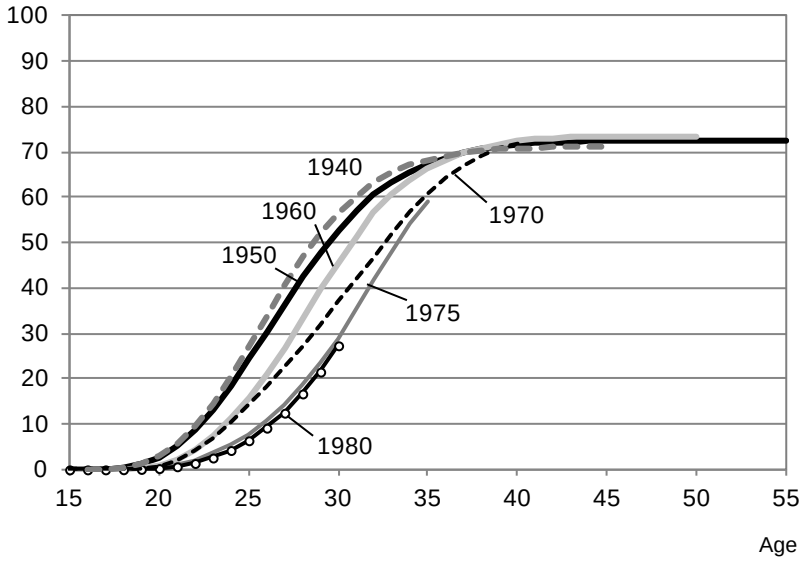
The ideal to have two children has long been supported and there are no indications that this will change. Most parents still seem to expect to have at least two children, according to a questionnaire survey about children of women and men and plans for children (Statistics Sweden, 2009b). Among those who at the time of the survey had one child but still did not have any more, most of them reply that they think they will have more children. Nearly 80

percent of the women up to age 33 answered that they thought so. The percentage drops with rising age.

In the assumption about the second child, it is assumed how many women in each cohort that at the end of their fertile ages will have at least two children[8]. The distribution of ages for childbearing is estimated with the help of transition probabilities. For a more detailed description of the method see *Facts about the statistics.*

In the future it is assumed that 72 percent of the women will have at least two children. This is a somewhat higher percentage than what was assumed in the 2009 forecast, 71 percent (Statistics Sweden, 2009a).

Figure 3.7
Proportion of women who have had at least two children, by age. Born in Sweden in 1940, 1950, 1960, 1970, 1975, 1960, 1970 and 1980



Source: (Statistics Sweden, 2011c)

Third child

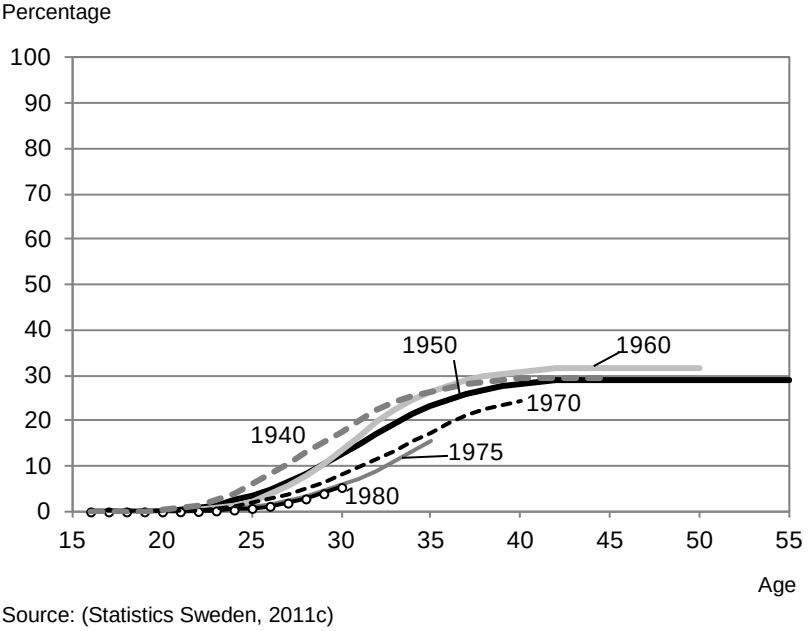
30 percent of the women born in 1940 and 1950 have had at least three children. Among women born in 1960 the percentage is somewhat higher at 32 percent. This is seen in the report *Childbearing*

[8]This is estimated by summing up the incidence rates for the second child over the ages.

patterns of different generations (Statistics Sweden, 2011c). In the future women will probably not have a third child to such a great extent. The proportion of women born in 1970 who have had at least three children (by age 40) is at 24 percent. At the same time there are patterns that speak for a new third-child trend (Statistics Sweden, 2011a). For example, third-child fertility for those aged 35 or more has reached record levels. There are also upward signs for the younger women.

The assumption of the third child is made the same way as for the second child. This means that an assumption is made about how large a percentage of each cohort that will have at least three children. In the future, this is estimated at 24 percent. This is one percentage point higher than in the 2009 forecast (Statistics Sweden, 2009a). As with the second child, the age when the women have their third child is estimated with the help of transition probabilities.

Figure 3.8
Proportion of women who have had at least two children, by age. Born in Sweden in 1940, 1950, 1960, 1970, 1975, 1960, 1970 and 1980



Source: (Statistics Sweden, 2011c)

At least four children

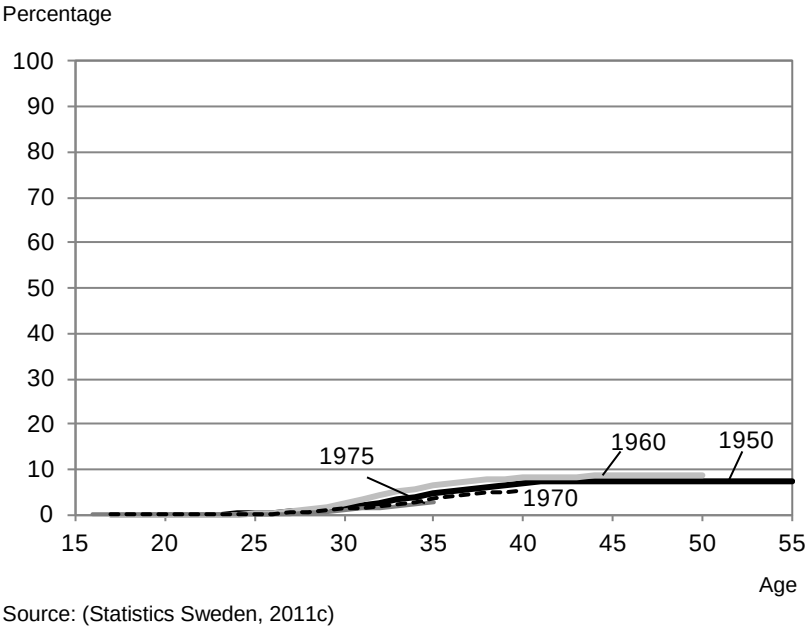
A relatively small proportion of women have a fourth child. Among women born in 1940, the share is 9 percent and among women born in 1950 it is 8 percent. Among women born in 1970 the share of those

who have had at least four children is slightly more than 5 percent by age 40 (Statistics Sweden, 2011c). Before women born in 1970 have completely ended their childbearing years, the percentage will probably increase by about one percentage point to 6 percent.

In the assumption about the fourth child, there is also an assumption about how many go on to have a fifth, sixth, seventh child etc. In recent years children with parity five or more comprised slightly more than 1 percent of all children born by Swedish born mothers. This means that one percentage point can be added to the assumption of the fourth child.

It is assumed that 5 percent of the women will have at least four children in the future. One percentage point is added to this to create the assumption about those who have children with parities higher than four. This means a total assumption of 6 percent. This is a somewhat lower proportion than the 8 percent that was assumed in the 2009 forecast (Statistics Sweden, 2009a). The age at which women have these children is estimated the same way as for child number two and three with the help of transition probabilities.

Figure 3.9
Proportion of women who have had at least two children, by age. Born in Sweden in 1950, 1960, 1970 and 1975



Source: (Statistics Sweden, 2011c)

Summary – born in Sweden

Table 3.3 shows the assumptions in the long term for women born in Sweden. We believe that it will become somewhat less usual to have 3 or more children (see Figure 3.10).

Table 3.3
Assumptions in the long term for women born in Sweden

0 children	at least 1 children	at least 2 children	at least 3 children	at least 4 children
13 percent	87 percent	72 percent	24 percent	6 percent

A more detailed description about which birth years are assumed to reach these assumptions is found in *Facts about the statistics*.

Figure 3.10
Number of children at the end of the fertile period for women born 1956–1966 and projection for women born 1967 and later. Swedish born women

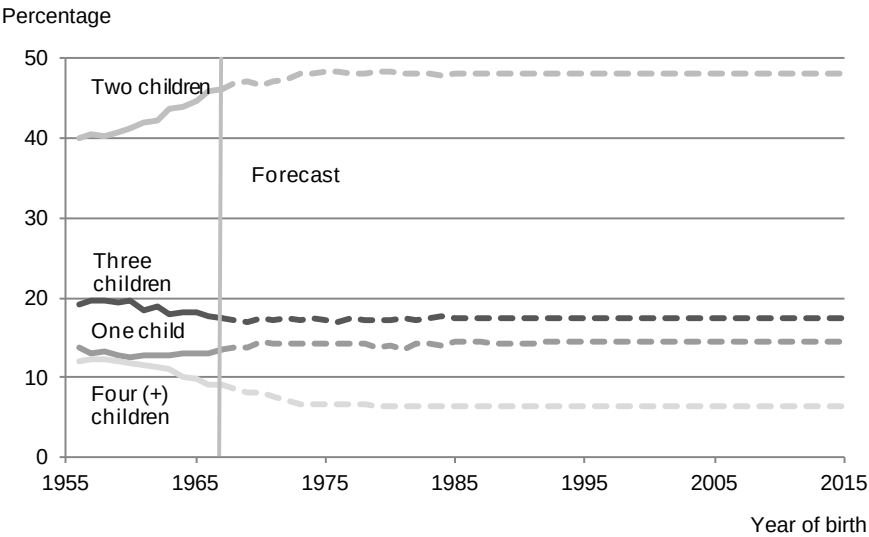


Figure 3.11 shows the assumptions as total fertility rates for the different birth cohorts. The assumption for Swedish born women born 1973 and onwards is a total fertility rate of 1.89 children per woman. Women born during the period 1900–1960 have had a total fertility rate of about 2 children per woman, so the assumption implies a somewhat lower cohort fertility in the long term. Figure 3.12 illustrates the expected development of the annual total fertility assumptions as the consequence of the assumptions for the different cohorts.

Figure 3.11
Total fertility rate for cohorts 1956–1966 and forecast for women born 1967–2015. Swedish born women

Number of children per woman

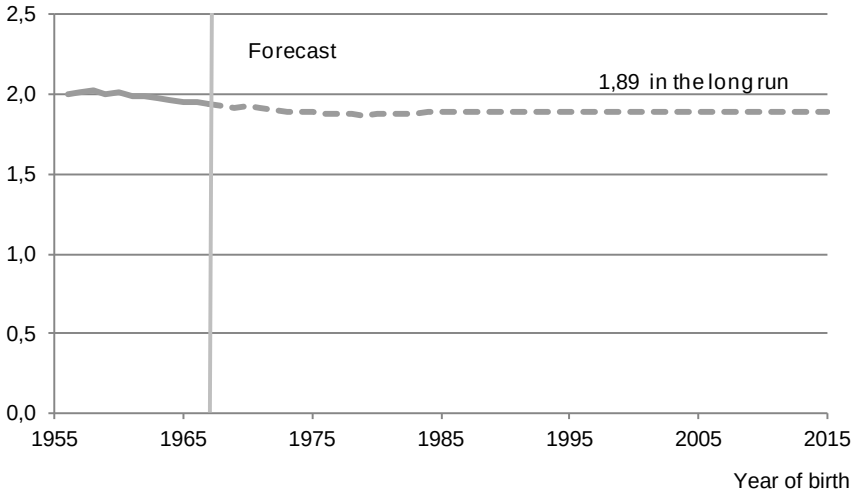
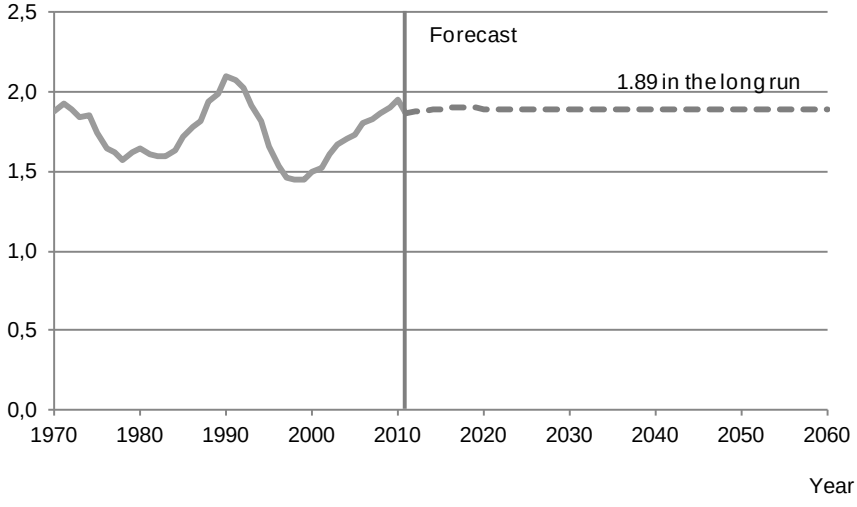


Figure 3.12
Total fertility rate 1970–2011 and forecast 2012–2060. Swedish born women

Number of children per woman



Foreign born persons

The percentage of children born by a mother who was not born in Sweden herself has increased. In 1980 this figure was 12 percent while it increased to 25 percent in 2011.

The proportion of children born by a foreign born woman will increase in the next few years to a maximum of 27 percent in 2017. Then the percentage will decrease and reach a stable level of about 18 percent around 2050.

As already mentioned, foreign born persons are broken down into six different country groups based on country of birth. Europe is divided into three parts: The Nordic countries (except Sweden), the EU (except the Nordic countries) and the rest of Europe. Countries outside of Europe are divided into three groups according to their level of development (HDI).

The method to produce the assumption for foreign born women is simpler than the one used for Swedish born women. No assumptions are made about the parity of the different children. Annual age specific fertility rates have been forecasted for each country of birth group.

Different assumptions for the different country of birth groups are made about the age trends upon giving birth. These assumptions are based on studies of the age trends upon giving birth up to this time.

In Statistics Sweden's report *Childbearing among native and foreign born* (Statistics Sweden, 2008b) fertility trends for the different groups of foreign born women are studied. The assumptions presented below for the different groups are based on results from this study. In general the results of the study show that the tendency to have children is higher for those who recently immigrated to Sweden. This higher tendency then drops with time in Sweden. Statistics Sweden has evaluated whether it would be advantageous to make different assumptions about childbearing for foreign born women based on how long they have been in Sweden. According to the evaluation (Statistics Sweden, 2012a) however, no gains are made by introducing this kind of detailed fertility model that would take time in Sweden into consideration.

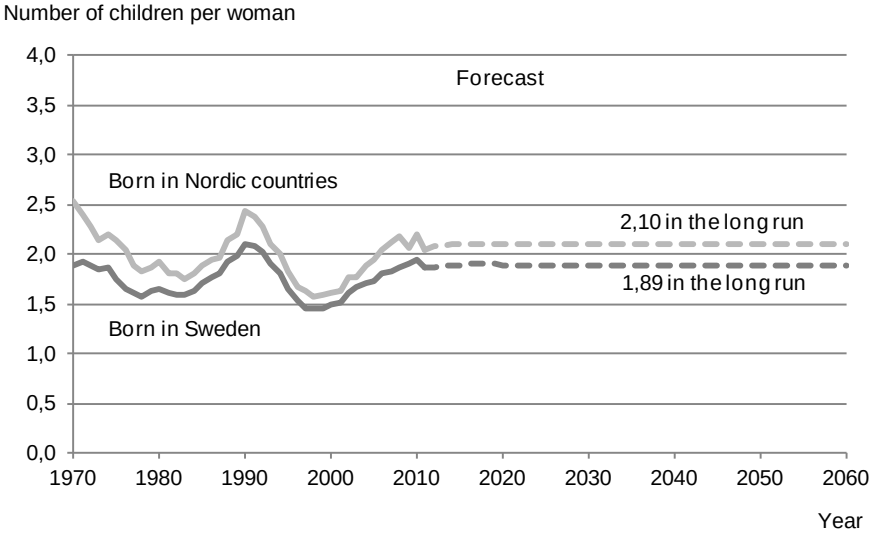
Born in the Nordic countries

The percentage of children born by a mother who was born in another Nordic country has decreased. In 1980, 7 percent of new-borns had a mother with such a background. In 2011 that figure had dropped to 2 percent. Mothers from Finland were the most common.

Compared with women born in Sweden, women born in the Nordic countries have a somewhat higher tendency to have children. Women born in the Nordic countries are assumed to have a somewhat higher fertility rate than Swedish born women, because of the increased tendency to have children for newly arrived immigrants, the so-called "migration effect". Women born in the Nordic countries also have a greater propensity to have a third and fourth child. It is assumed that Nordic born women will differ from Swedish born women as they did on average during 2002–2011. This means a total fertility rate of 2.10 children per woman in the long-term, see figure 3.13.

As mentioned earlier, the trend to have children later in life among Swedish born women has stopped. This also applies to women born in the Nordic countries. The assumption about the development of age-specific fertility rates for women born in the Nordic countries is based on the trends of recent years.

Figure 3.13
Total fertility rate 1970–2011 and forecast for 2012–2060 for women born in Sweden and women born in the Nordic countries



Born in EU countries

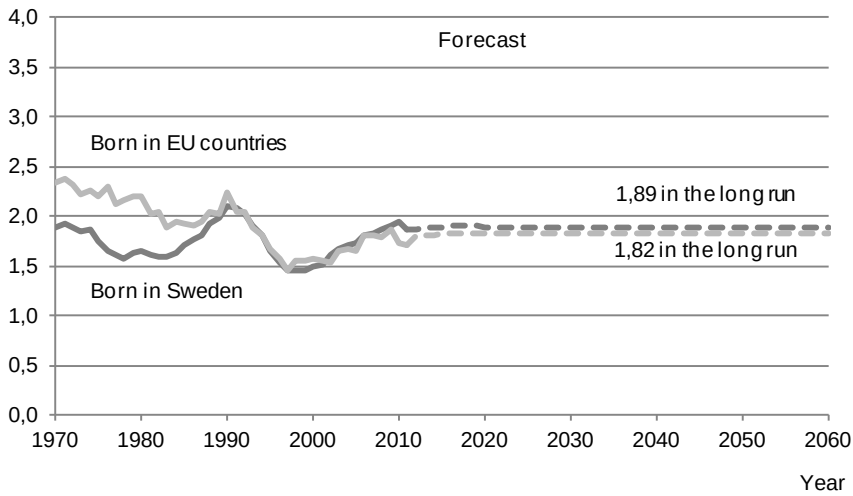
The EU country of birth group includes the EU countries excluding the Nordic countries. Relatively few children are born by women in this group. In 2011 about 3 800 children were born in this group, or roughly 3 percent of all new-born children. The single most common country of origin for mothers born in EU countries is Poland. One third of those who had children in 2011 and who were born in some EU country were born in Poland.

Since the beginning of the 1990s the total fertility rate for this group has been close to the level of Swedish born women. This trend is expected to continue. Fertility rates for women born in EU countries are assumed to differ from women born in Sweden according to the average for 2002–2011. This means a total fertility rate of 1.82 children per woman in the long-term, see figure 3.14.

Similar to women born in Sweden and the Nordic countries, it seems that the trend to have children later in life has also stopped for women born in EU countries. The assumption about age-specific fertility rates for women born in EU countries is based on the constant development of recent years.

Figure 3.14
Total Fertility Rate 1970–2011 and forecast for 2012–2060 for women born in Sweden and women born in EU countries

Number of children per woman



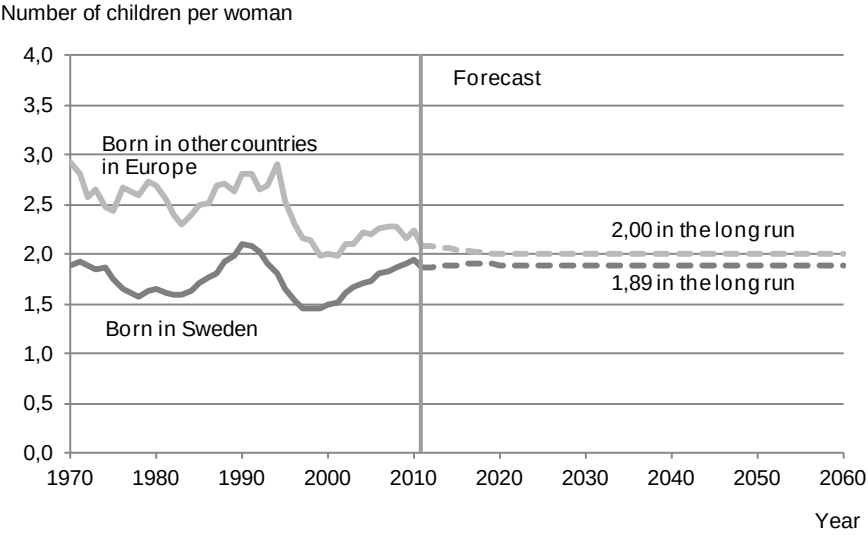
Born in other countries of Europe

The country of birth group *other countries of Europe* includes the European countries that are neither included in the EU or in the Nordic countries. In 2011 roughly 4 percent of the children had a mother who belonged to this country of birth group. These mothers were usually born in some country that belonged to the former Yugoslavia. This applied to 65 percent of those who had children in 2011 and who were born in the group *other countries of Europe.* Turkey is another common country in this group.

The total fertility rate is higher for women born in the group for *other countries of Europe* compared to the Swedish born women. The differences have dropped in recent years and are assumed to continue to drop. However, women born in *other countries of Europe* are assumed to continue to have a somewhat higher total fertility rate in the future than Swedish born women. In the long-term women born in other countries of Europe are assumed to have a fertility rate of 2.0 children per woman, see figure 3.15. They are assumed to reach this level in 2020.

Women born in other countries of Europe are younger when they have children than Swedish born women. In contrast to Swedish born women, it does not seem that having children later in life has stopped yet. This trend is expected to continue up until 2020. The drop in having children at younger ages is not assumed to completely be replaced by an increase in childbearing in later years, which results in a somewhat decreased level of fertility. From 2020 onwards it is assumed that Up until 2020 it is assumed that women born in *other countries of Europe* have about the same structure of age-specific fertility rates as women born in the Nordic countries.

Figure 3.15
Total fertility rate 1970–2011 and forecast for 2012–2060 for women born in Sweden and women born in other countries of Europe

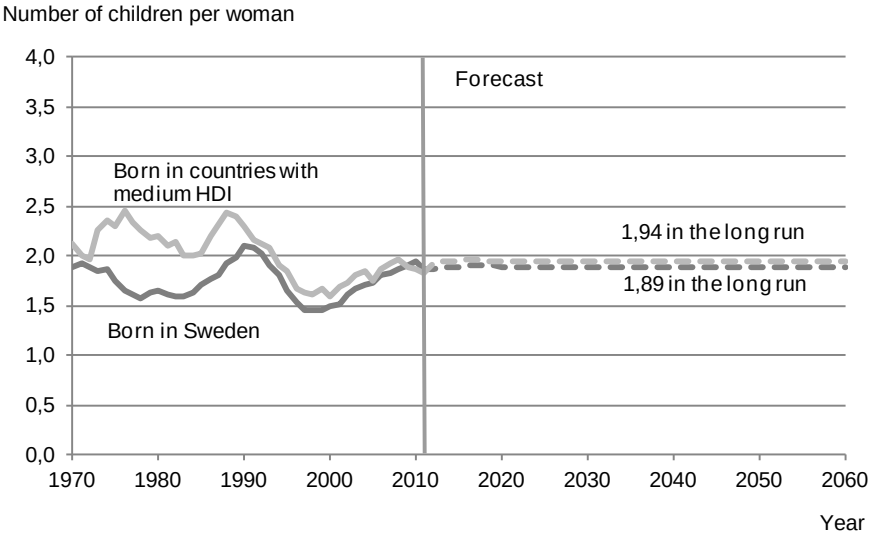


Born in countries outside Europe with a high development level
The percentage of children born by a mother who was born in a country outside Europe with a high level of development is relatively small. In 2011 slightly less than 2 percent of new-borns had a mother with such a background. The most common countries of birth for mothers in this group were Chile and South Korea. Many women born in South Korea have come to Sweden as adopted children.

Women born in countries outside Europe with a high level of development have in recent years had a fertility rate very close to that of Swedish born women. In the future it is assumed that the fertility rate will differ from the fertility rate for women born in Sweden as it did on average 2002–2011. This means that it is assumed even in the future it will be at nearly the same level as that for Swedish born women, see figure 3.16.

The assumption about the development of age-specific fertility rates for women in this country of birth group is based on the development of the most recent years. It seems that having children later in life for this group has also stopped and the age-specific fertility rates are therefore assumed to be at the same constant level during the entire forecast period.

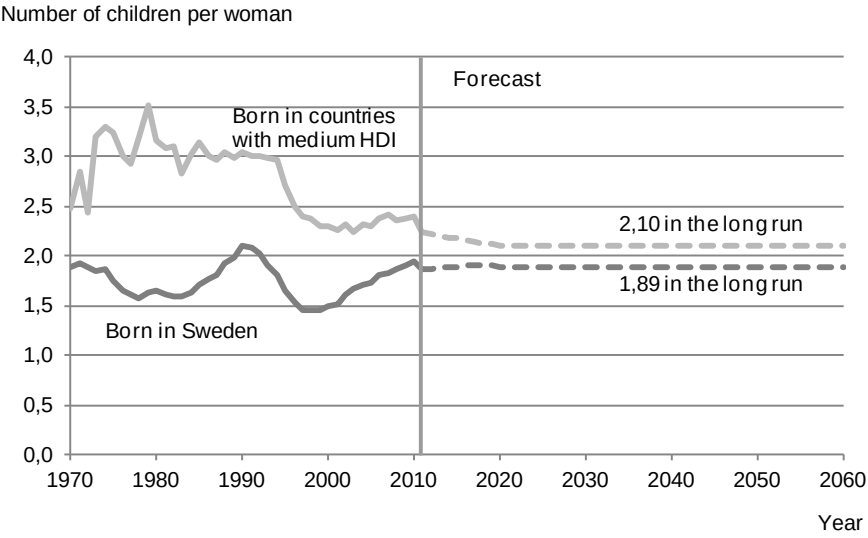
Figure 3.16
Total fertility rate 1970–2011 and forecast for 2012–2060 for women born in Sweden and women born in high HDI countries outside of Europe



Born in countries outside Europe with a medium development level

Among the children who are born by foreign born mothers, it is now the most common that the mother was born in a country with a medium development level outside of Europe. Women born in these countries gave birth to close to 11 percent, or 12 000 children born in Sweden in 2011. Many countries of birth are included in this group. Women from more than 70 countries are counted in this group that gave birth to children in 2011. The most common was that the mother had Iraq as her country of birth. This applied to nearly one third of those who had children and belonged to this group. The next most common was that the mother was born in Thailand, followed by Iran.

Figure 3.17
Total fertility rate 1970–2011 and forecast for 2012–2060 for women born in Sweden and women born in medium HDI countries outside of Europe



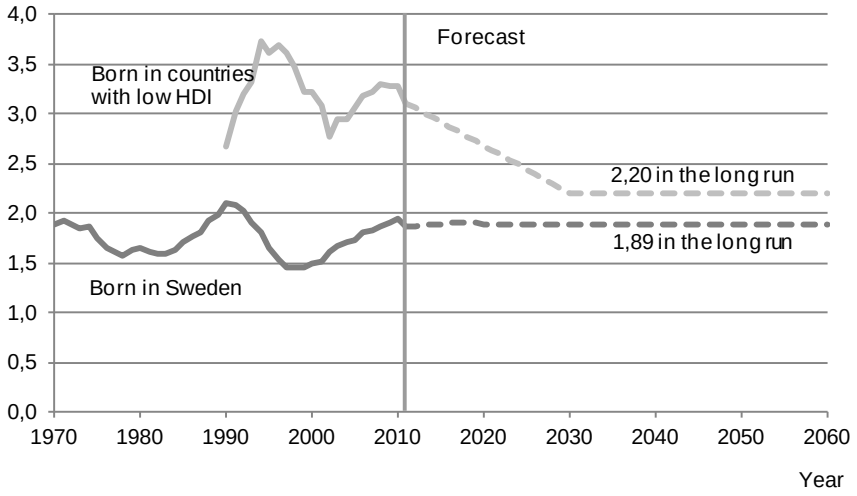
Previously, there was a considerable difference in the total fertility for Swedish born and women born in the group with medium HDI outside of Europe. The differences are still relatively large but have decreased in recent years. One of the reasons for the relatively high fertility rate of this group is that women in this group have an extra high tendency to have children just after immigrating to Sweden. This may be because asylum seekers and immigrant family members come from this group. The development towards even smaller differences compared to Swedish born women is assumed to continue, but because of the considerable "migration effect", it is also assumed that women in this group will have a higher fertility rate than Swedish born women. In the long term, fertility is assumed to be 2.1 children per women. This level is expected to be reached in 2020. A decrease in childbearing is mainly assumed for the younger ages.

Born in countries outside Europe with a low development level
The share of children born by a mother born in a country outside Europe with a low development level is a relatively small but growing group. In 2011, 3 percent of all new-borns had a mother who was born in such a country. More than half of the children born

by mothers in this group had a mother who was born in Somalia. The next most common country among mothers was Afghanistan.

Figure 3.18
Total fertility rate 1970–2011 and forecast 2012–2060 for women born in Sweden and women born outside Europe in countries with low HDI

Number of children per woman



Before 1990 there are too few women in the group *Born in countries with low HDI* for the total fertility rate to be calculated.

This group has the highest total fertility rate. In 2011 the rate was 3.11 children per woman. This can be compared to the fertility rate for women born in Sweden with 1.86 children per woman. In the beginning of the 2000s the fertility rate increased more for women born in this country of birth group than it did for Swedish born women. This is probably because of the change in the composition of the group, with an increase in women born in Somalia, who often have many children. In recent years however, the difference between them and Swedish born women has decreased. In the long term the differences are expected to decrease, but the group is still assumed to be at a higher level than Swedish born women. The so-called migration effect is strong even for this group. In the long term, fertility is assumed to be 2.20 children per women. This level is expected to be reached in 2030. Fertility is assumed to decrease for all ages.

Developments in the next ten years

To estimate fertility for the next few years, consideration is taken to the current *trends* in childbearing. Every year the short term assumptions are reviewed. This was last done in the 2011 forecast (Statistics Sweden, 2011e). A slight downturn was assumed for 2011 compared to the 2010 level of 1.98 children per woman. The fertility rate was assumed to drop to 1.96 children per woman, while the result was 1.90 children per woman. This meant that roughly 3 500 fewer children were born than was predicted in the forecast.

Childbearing in Sweden has been characterised by ups and downs and there has been a long standing connection between childbearing and the business cycle. The ups and downs we have seen during the 20th century are not expected to be as considerable in the future. The significant variations have largely been due to structural changes in society, such as more and more people begin to study. As a result, the woman's age for the birth of her first child rose, since most people wait to have children until after they have finished their education. Now the age for having the first child has stabilised and is expected to remain at today's level of around age 29 for women.

The downturn between 2010 and 2011 is not expected to be the beginning of a new downturn. To forecast the next few years ahead, forecasts of childbirth[9] and statistics of births month by month are some of the things studied to follow the current trends. These sources show an upturn in 2012 compared to 2011, but a lower figure than in 2010. Because of this, a somewhat higher fertility rate is assumed than in 2011. This means that we expect a weak upturn from 2012 onwards. In 2012 the total fertility rate is expected to be 1.92, somewhat higher than the observed value for 2011.

Table 3.4 presents the total fertility rate for 2012–2020. Up until 2015 the fertility rate is expected to increase up to 1.94 children per woman. The variations for the next few years are due to a high immigration during these years. Among other things, many immigrants from countries outside Europe with a low development level are expected, and this is a group with a relatively high level of fertility.

[9] Stockholm County Council (www.sll.se), Maternity ward, Länssjukhuset Ryhov in Jönköping& Sahlgrenska University Hospital, Gothenburg.

Table 3.4
Forecast of the total fertility rate 2012–2020. Children per women

Year	Total fertility rate (number of children per woman)
2012	1.92
2013	1.92
2014	1.93
2015	1.94
2016	1.94
2017	1.94
2018	1.94
2019	1.94
2020	1.94

Alternative assumptions

It is very possible that fertility will develop differently than how we have predicted in the main assumption. To show how the future population is affected by different fertility assumptions, two alternative assumptions are presented. The low alternative is an assumption about lower fertility and the high alternative is an assumption about higher fertility. The low and the high alternative are made for each of the different country groups, but in figure 3.19 and table 3.5, only the results for all the groups together are presented.

The difference between the high and the low alternative is about 0.5 children per woman in the long term. Concerning the number of children, the difference increases with time between the high and the low alternative. In 2015 the difference is roughly 29 000 born children and in 2060 the difference between the high and the low alternative is 57 000 born children.

Figure 3.19
Total fertility rate 1970–2011 and forecast for 2012–2060 according to the main assumption, low alternative and high alternative

Number of children per woman

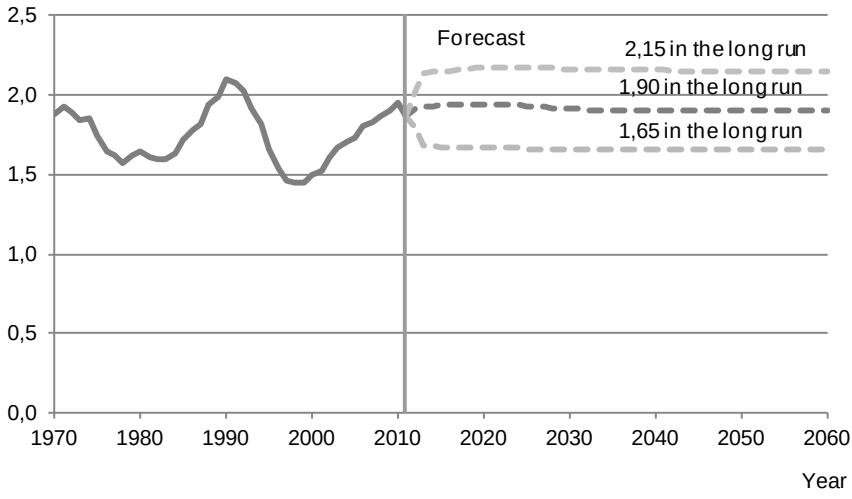


Table 3.5
Total fertility rate (TFR) and number of children born according to the main assumption and according to alternative assumptions for different forecast years. Children per woman and total number of children born

Year	Alternative					
	Low fertility		Main assumption		High fertility	
	TFR	Number of children	TFR	Number of children	TFR	Number of children
2012	1.79	106 400	1.92	113 800	2.02	120 100
2015	1.67	103 800	1.94	120 100	2.15	132 900
2020	1.67	109 600	1.94	126 300	2.17	140 600
2030	1.65	99 800	1.91	115 100	2.16	130 800
2040	1.66	103 000	1.91	122 000	2.15	142 100
2050	1.66	103 400	1.91	130 400	2.15	158 400
2060	1.65	100 500	1.90	127 500	2.15	157 900

Low fertility

In the low alternative a fertility rate of 1.65 children is assumed in the long term. Compared to the main alternative, this assumption means that mothers are assumed to be older when they have children. This is assumed to lead to increased childlessness and that fewer women give birth to child number two, three and four (or more). This postponement is not expected to be compensated by an increased intensity at older ages. Table 3.6 presents the expected distribution of the number of children that the assumption of lower fertility for women born in Sweden is based on.

Table 3.6
Percentage distribution of women born in Sweden by number of children at the end of the fertile period according to the high fertility assumption

0 children	1 child	2 children	3 children	at least 4 children
18 percent	19 percent	46 percent	14 percent	2 percent

As mentioned before, no parity-specific assumptions are made for foreign born women. For these women, childbearing is expected to decrease at a higher rate than what is expected in the main assumption. The level of the total fertility rate for each group of foreign born women has been assumed by relating it to the level for Swedish born women[10]. Table 3.7 presents the assumption in total for Swedish born women and for the different groups of foreign born women.

Many phenomena could result in lower fertility according to the low alternative. Women and men often wait to have children until after they have established themselves on the labour market. If the age for establishing themselves on the labour market rises, childbearing

[10]TFR (total fertility rate) for women born in the Nordic countries is assumed to be 0.10 higher than TFR for women born in Sweden. TFR for women born in EU countries is assumed to be 0.10 lower, and for women born in countries outside of Europe with a high development level TFR is at the same level as for Swedish born women. Women Born in other countries of Europe are assumed in the long term (as of 2016) to have a TFR that is 0.05 higher while women born in countries of Europe with a medium level of development are assumed in the long term (as of 2017) to have a TFR 0.10 higher than Swedish born women. Finally, women born outside Europe in countries with a low development level are assumed in the long term (as of 2021) to have a TFR 0.30 higher than Swedish born women.

could be affected. Another scenario could be a worsening of family policy terms, which ought to result in fewer childbirths. Another development could be a change in people's attitudes, where more want to live without children or with fewer children. It may also be that it will be more difficult or more expensive to get help to become pregnant, which would also reduce childbearing somewhat.

Table 3.7
Total fertility rate according to the assumption on low fertility by birth country group for some selected forecast years. Children per woman

Year	TFR according to the assumption about low fertility for women born in:							Total
	Sweden	Nordic countries	EU countries	Other countries in Europe	High HDI	Medium HDI	Low HDI	
2012	1.76	1.86	1.66	1.93	1.76	2.08	2.96	1.79
2015	1.65	1.75	1.55	1.73	1.65	1.92	2.55	1.67
2020	1.65	1.75	1.55	1.70	1.65	1.75	2.05	1.67
2030	1.65	1.75	1.55	1.70	1.65	1.75	1.95	1.65
2040	1.65	1.75	1.55	1.70	1.65	1.75	1.95	1.66
2050	1.65	1.75	1.55	1.70	1.65	1.75	1.95	1.66
2060	1.65	1.75	1.55	1.70	1.65	1.75	1.95	1.65

High fertility

The high alternative assumes a level of 2.15 children per woman. Compared with the main alternative, the assumption about high fertility means that women have their first child at a somewhat younger age. This would result in reduced childlessness and that more women have child number two, three, four and so forth. Table 3.8 presents the assumed future distribution of the number of children that the assumption for high fertility for Swedish born women is based on.

Table 3.8
Percentage distribution of women born in Sweden by number of children at the end of the fertile period according to the high fertility assumption

0 children	1 child	2 children	3 children	at least 4 children
10 percent	13 percent	47 percent	23 percent	10 percent

Among foreign born women, childbearing is expected to decrease to a lesser degree than what was assumed in the main alternative. The assumptions about the levels the total fertility rates for each group of foreign born women have been done, like in the low alternative, by relating to the level of the Swedish born women[11]. Table 3.9 presents the total assumption for Swedish born women and for the different groups of foreign born women.

Table 3.9
Total fertility rate according to the assumption on low fertility by birth country group for some selected forecast years. Children per woman

	TFR according to the assumption about low fertility for women born in:							Total
	Sweden	Nordic countries	EU countries	Other countries in Europe	High HDI	Medium HDI	Low HDI	
2012	1.98	2.19	1.98	2.18	2.08	2.28	3.10	2.02
2015	2.10	2.31	2.10	2.30	2.20	2.40	3.10	2.15
2020	2.10	2.31	2.10	2.30	2.20	2.40	3.10	2.17
2030	2.10	2.31	2.10	2.30	2.20	2.40	3.10	2.16
2040	2.10	2.31	2.10	2.30	2.20	2.40	3.10	2.15
2050	2.10	2.31	2.10	2.30	2.20	2.40	3.10	2.15
2060	2.10	2.31	2.10	2.30	2.20	2.40	3.10	2.15

Fertility could increase according to the high assumption if, for example, family policy terms were to improve. One example of such an improvement might be making it easier for students to have children. It may also be probable that if young men and women established themselves on the labour market, this would have a positive result on childbearing. An increase in childbearing could also occur if conditions to become pregnant through assisted fertilisation were more favourable. As mentioned earlier, Swedish law does not allow insemination for single women, and donors are required to be known to the child. These restrictions do not apply in

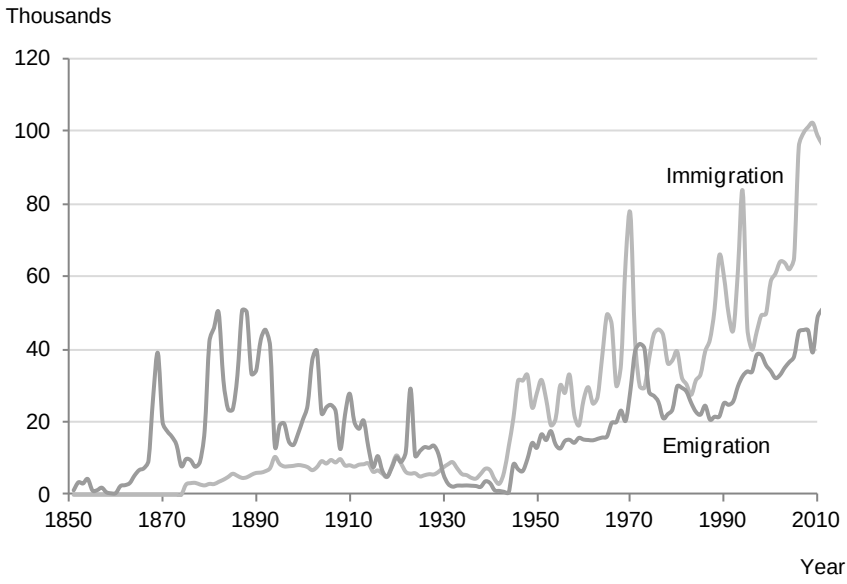
[11]TFR (total fertility rate) for women born in the Nordic countries is assumed to be 0.21 higher than for women born in Sweden, while women born in EU countries are assumed to have the same TFR as Swedish born women. Women born in other countries of Europe are assumed to have a TFR that is 0.20 higher, while women outside of Europe in countries with a high level of development are assumed to have a TFR that is 0.10 higher. Women born in countries outside Europe with a medium level of development have a 0.30 TFR difference while women born in countries with a low level of development are assumed to have the same fertility rate as they had in 2011, 3.10 children per woman.

Denmark, where the share of children born through assisted fertilesation is greater than in Sweden. In Sweden, about 3 percent of children are born via IVF. The figure in Denmark is slightly more than 4 percent. Another possible trend could be the changes in people's attitudes towards even more positive views on childbirth and large families.

4. Assumptions about migration

This chapter presents the assumptions of future immigration and emigration. We begin with a description of the summary of the assumptions about migration to Sweden. It is a result of the assumptions for persons born in Sweden and persons born in the six other country of birth groups. Those who would like an in-depth study of the reasons behind the main assumption can read the section that follows where the assumptions are described for each country of birth group.

Figure 4.1
Immigration and emigration 1850–2011



As illustrated in figure 4.1, Sweden was a country of emigration for nearly one hundred years. From 1850 to 1930, nearly 1.5 million people emigrated from Sweden. 1.2 million of these emigrants went to North America. Emigration was highest in 1881–1882 and 1887–1888 when the harvests were poor in Sweden and the economy was booming in the US. (Statistics Sweden, 2004). Roughly 20 percent of the men and 15 percent of the women born in Sweden during the latter part of the 1800s emigrated from the country. The pattern turned after World War II and since then immigration has been higher than emigration, with the exception of 1972 and 1973.

Immigration during 1950–1970 consisted mainly of foreign labour migrants. As long as labour immigration was dominant, upswings and downturns in migration varied with the business cycle. During labour shortages, immigration increased and when demand then fell, immigration fell. Since the 1980s, labour force immigration has been slight, and gradually the variations have been dominated by changes in the migration of refugees and family members. During the end of the 1980s, immigration was extensive from Iran, Chile, Lebanon, Poland and Turkey.

Migration is not only influenced by hardship abroad but also by migration policy and its regulations. In 1989 the process time for decisions on residence permits was shortened. At the same time, about 6 000 persons received permits largely due to the long wait for these applications to be processed (Statistics Sweden, 2004). In December 1989 the requirements for residence permits were made more stringent temporarily. As a result, the number of asylum seekers and granted residence permits decreased in 1990.

Immigration due to family ties, both to foreign born and Swedish born persons, has accounted for a significant part of the increase in immigration since the mid 1990s. The exceptions are 2006 and 2009 when immigration of refugees accounted for the largest part of the upturn. During those years labour force immigration also increased, mainly from EU countries outside the Nordic countries. Since the labour force reform in 2009, the number of [12] labour force immigrants from countries outside of the EU and EEA increased steadily. During the first decade of the 21st century, the number of foreign students also increased. However, this increase halted abruptly in autumn of 2011 when student fees were introduced for students who are citizens in a country outside of the EU/EES[13]. The decreased immigration of the last two years has mainly been due to a more stable situation in Iraq, student fees for foreign students and a lower number of immigrant family members from Somalia as a result of the outcome of two judgments in the Migration Court of Appeal in[14] 2010. These two judgments involved an increased requirement for identification documents that in practice meant that no one from Somalia received a residence permit as an immigrant family member during 2011.

[12] Aliens Act (2005:716), SFS 2009:1542

[13] Higher Education Act (1992:1434) SFS 2009:1037

[14]Migration Court of Appeal, UM 8296-09 and UM 1014-09

Forecasting migration

Changes in migration are difficult to foresee and may occur without warning. Migration to and from Sweden depends on conditions within the country as well as conditions outside of the country. Today the main influences for immigration to Sweden are unrest and war. But the growing number of work migrants in recent years has contributed to greater significance for economic conditions. The assumptions in the population forecast mirror the spirit of the times and thus serve to document our times. The assumptions about immigration and emigration are based on the migration laws and policies that are in force today.

The different groups of countries are analysed separately when the assumptions are produced. Analyses for persons born outside the Nordic countries and the EU are based on reasons for residence permit. This information is taken from the Swedish Migration Board and reveals whether persons have received residence permits for labour, asylum, family ties, studies or other reasons. Good quality information on reason for residence permit is missing for persons born in the Nordic countries and EU countries, and therefore this information is not used for these country of birth groups. For more information on reason for residence permit see chapter *Facts about the statistics*.

For foreign born persons, assumptions for immigration are done first. These later have consequences for emigration. The opposite situation applies to Swedish born persons, that is, emigration has consequences for re-immigration.

For the next few years more detailed assumptions will be made that later will be approaching a more long term trend. As earlier mentioned, migration can vary sharply from year to year, and the long term assumptions should be regarded as average values.

Main assumption

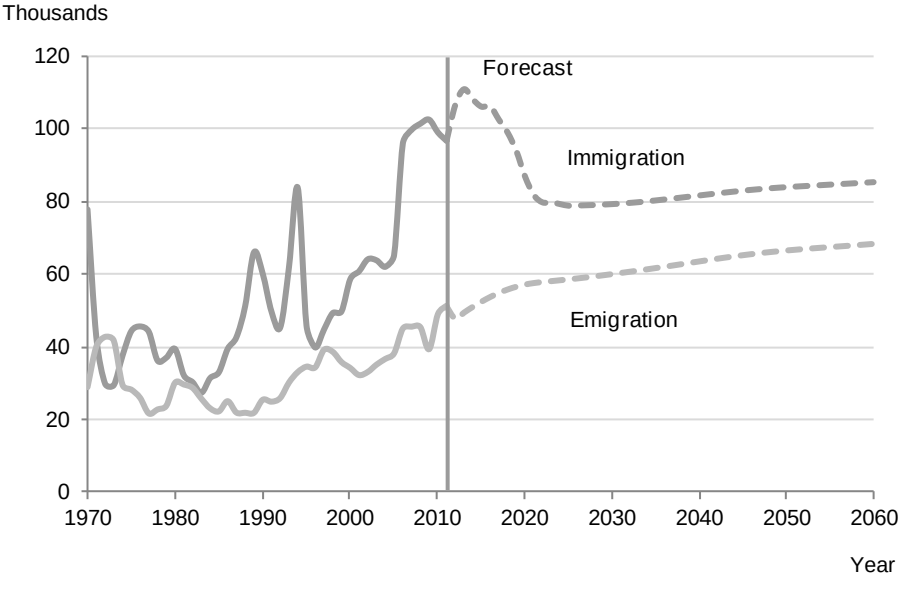
The summary below describes the main assumption for migration. The section that follows describes the assumptions for immigration and emigration for the six country of birth groups abroad. Then emigration and immigration is described for persons born in Sweden.

Summary

Immigration is expected to remain at a high level over the next few years. This is largely due to the assessment by the Swedish Migration Board about increased immigration of refugees and family members (The Swedish Migration Board, 2012). Increased labour force immigration is also expected to contribute to a high immigration during all of the 2010s. Afterwards, immigration of refugees and family members is expected to move towards a more long-term level that will be lower than today. At the same time, immigration from the EU will decrease as a result of a long period with low birth rates in many of the member states. This will lead to fewer persons in those ages when it is common to emigrate.

As of 2025 and afterwards, immigration is again expected to increase, mainly because of an increased immigration of Swedish born persons and an increased labour force immigration. Labour force immigration is expected to increase as a result of increased global mobility. The increased immigration of Swedish born persons is a result of the assumption of an increased tendency to emigrate. Thus, increased re-immigration can also be seen as a result of increased global mobility

Figure 4.2
Immigration and emigration 1970–2011 and forecast 2012–2060



In the beginning of the forecast period it is assumed that around 60 000 more will immigrate than emigrate. This so-called net migration is expected to decrease in the long term and be just under 17 000 at the end of the forecast period.

Table 4.1
Immigration and emigration for persons born in Sweden, foreign born persons, and total for some forecast years. Thousands

	Swedish born persons			Foreign born persons			Total		
	Immig	Emig	Net	Immig	Emig	Net	Immig	Emig	Net
2012	12.4	18.7	-6.3	93.9	29.1	64.7	106.3	47.9	58.4
2013	14.8	19.0	-4.2	95.8	30.6	65.2	110.5	49.5	61.0
2014	15.3	19.2	-3.9	92.5	31.9	60.6	107.8	51.1	56.7
2015	13.5	19.3	-5.8	92.2	33.1	59.1	105.7	52.5	53.3
2020	13.9	19.9	-6.0	72.7	37.3	35.4	86.5	57.2	29.4
2030	14.9	21.1	-6.3	641	38.9	25.2	79.0	60.0	19.0
2040	16.8	23.4	-6.6	64.4	40.0	24.4	81.2	63.4	17.8
2050	18.6	25.7	-7.0	64.8	40.7	24.1	83.4	66.3	17.1
2060	19.7	27.1	-7.4	65.0	41.0	24.0	84.7	68.1	16.6

Net is immigration minus emigration.

Figure 4.3 illustrates immigration and emigration for the different country of birth groups. Swedish born persons have emigrated to a greater extent in recent years. This trend is expected to continue. Re-immigration thus increases as a result of the increased emigration. Immigration is expected to increase somewhat for persons born in the Nordic countries in line with the population increase in the Nordic countries. The resulting re-immigration is thus expected to also increase. In contrast to the Nordic countries, the population in the most common emigration countries is expected to decrease in the rest of the EU; consequently, immigration of persons born in these countries will decrease. Immigration for asylum and family ties is expected to decrease for persons born in the rest of Europe and countries outside of Europe with a high development level. Immigration of persons born in these countries is assumed to a greater degree to consist of labour force immigrants and students, groups which have a higher tendency to re-immigrate. This is expected to result in higher emigration and a lower immigration surplus of persons born in these groups of countries. However, the immigration surplus is expected to be greater for those born in countries of medium and low development outside of Europe, from where the greatest part of immigration for asylum and family ties is expected.

Figure 4.3
Immigration and emigration 1970–2011 and forecast 2012–2060

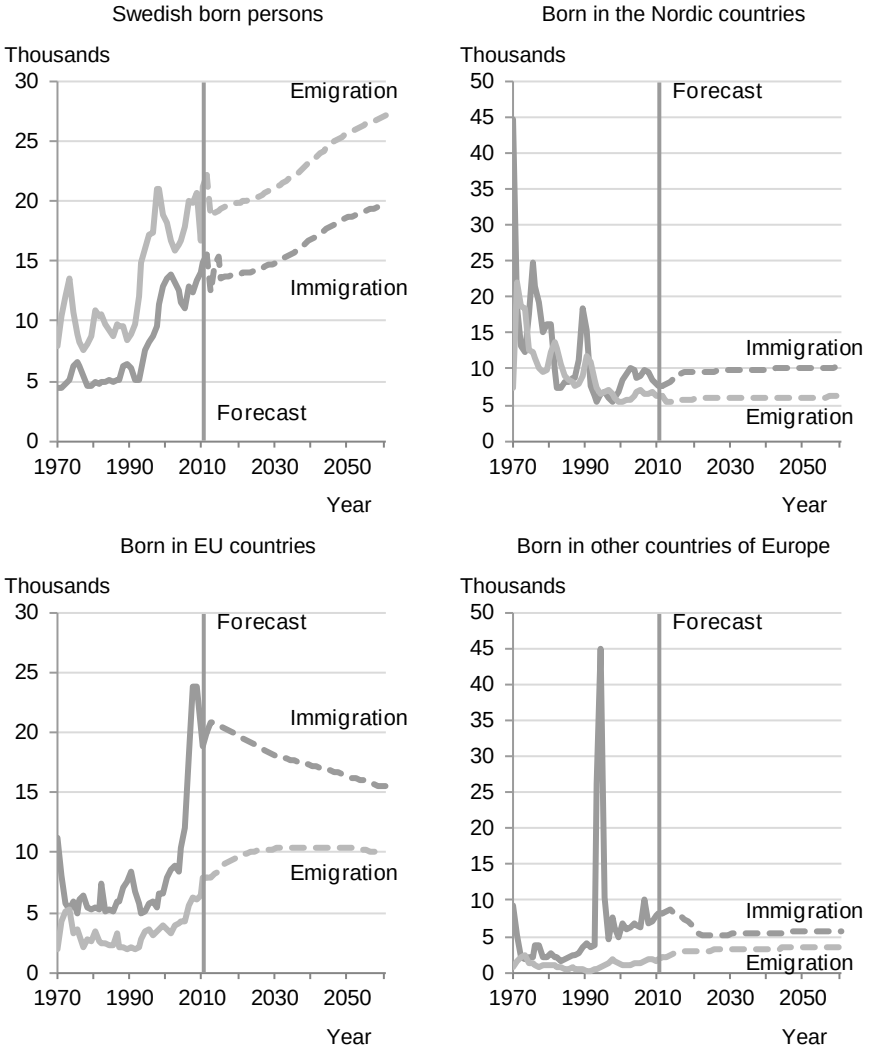
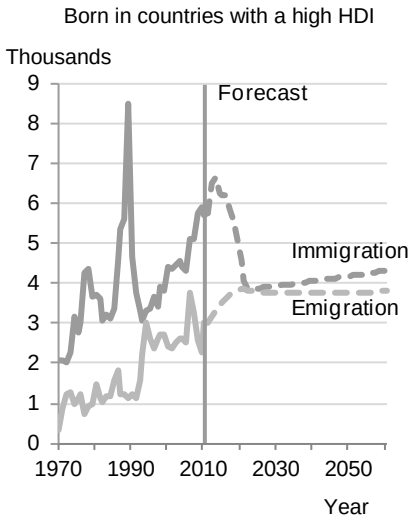
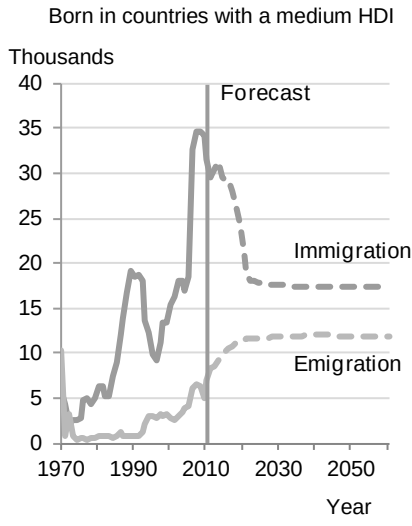
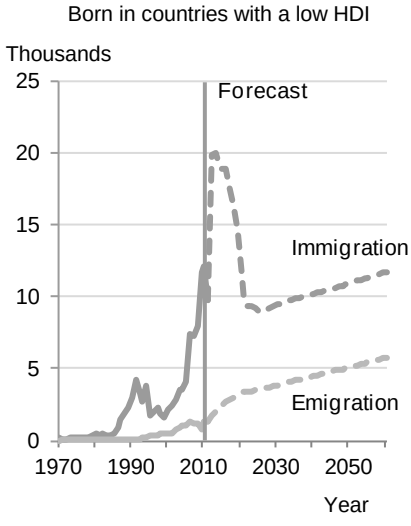


Figure 4.3 (cont.)







Migration in the long term

Today Sweden is a land of immigration. With the exception of only a few years in the early 1970s, Sweden has had an immigration surplus ever since the end of the 1930s[15]. At the end of 2011, the proportion of the Swedish population born in another country amounted to slightly more than 15 percent.

Today when we have had a period of record high immigration as a result of the wars in Iraq and Afghanistan together with the unrest in Africa, the expansion of the EU, temporary changes in asylum laws, increased numbers of foreign students, new laws that facilitate labour force immigration and the economic crisis in the EU – it is easy to believe that this situation will last "forever". From this perspective it is interesting to look back at the assumptions of the forecasts of earlier years. In 1941 Erland Hofsten wrote a forecast for the city of Stockholm for the years 1940–1960 (von Hofsten, E., 1941):

"Of course it is possible to consider a migration to Stockholm Country from foreign countries. However, this type of migration hardly seems probable."

The war that was raging in Europe was only assumed to give a temporary effect if there was to be any immigration at all. Immigration increased only a few years after this statement. The chapter *Previous forecasts* describes Statistics Sweden's assumptions in some older forecasts.

When a forecast is made with a horizon of 50 years into the future, there is a risk that too much emphasis will be placed on the trends of recent years. It may be a good idea to study the basic factors that make Sweden a land of immigration today.

Economic incentives

One reason that Sweden has become a land of immigration is probably because of the favourable economic development from the 1930s onward. Researchers believe that international mass migration is mainly driven by economic incentives (Chiswick, B. & Hatton, T. J., 2003).

Swedish industrial production started rolling during the 1930s and accelerated after World War 2. This made it possible for increased immigration to Sweden. Job opportunities and higher pay attracted immigrants from the neighbouring Nordic countries and southern Europe. Today the level of pay in the neighbouring Nordic countries

[15]Immigration surplus is the difference between immigration and emigration.

is equal or exceeds that of Sweden. Today labour force immigrants come mainly from the new EU countries in eastern Europe or from counties outside of Europe with a medium level of development. At the same time, the majority of Swedish born emigrants look for work in Denmark, Norway or other countries where the pay level is higher than in Sweden. Immigration for asylum or family ties does not have the same direct connection with employment growth and the pay level. However, if Sweden were to be hit by an economic crisis it is probable that the asylum flows would change in direction. It is also probable that emigration would increase if the pay in Sweden became lower in relation to other countries.

The OECD did a study in 2009 of the positive and negative factors of member countries with an outlook on 2030 (OECD, 2009). Concerning immigration, they proclaim that gross domestic product (GDP) per capita is particularly interesting when studying the attractiveness of a country. Research shows that migration flows between countries is strongly connected to differences in income per capita. The same report presents a forecast of GDP per capita where the OECD countries are assumed to become closer to one another. Thus the economic incentives to move within the OECD are assumed to decrease.

The OECD considers that integration and the social acceptance for immigration in Sweden is something that has a positive affect for future immigration. However, the existence of immigrant networks ranks low in Sweden. Likewise, the high participation of women on the labour market was something that did not give room for women to immigrate because of the labour market to the same degree as in certain other OECD countries (OECD, 2009).

The forecasts of the World Bank, which reach until 2025, predict that China will account for a third of the global economic growth towards the end of their forecast period (World Bank, 2011). Even so, they assume that the developed economies of USA and the EU will be the hub of the global economy. Sweden has been highlighted in the World Bank report as one of 15 potential growth poles [16] in the world.

[16] "Tillväxtpol" is a concept that is used to describe and analyse the polarised economic growth. That is, growth does not occur simultaneously but is concentrated to certain points.

The OECD's migration report (OECD, 2009) and the World Bank's economic forecast (World Bank, 2011) say that Sweden will be an attractive country to immigrate to during a foreseeable time. However, increased competition from the growing economies in Asia may lead to the assumption that the immigration surplus in Sweden will be somewhat lower than in recent years.

Global mobility

Another factor that can have significance for migration to and from Sweden is the increased global mobility. A report from OECD describes the increased immigration to the different member countries (OECD, 2011a). During the 1950s and especially the 1960s the number of foreign employees recruited to countries in north-western Europe increased and reached a peak at the end of the 1970s. At the end of the 1970s the structure of immigration changed and new groups that only had small numbers of immigrants increased, for example refugees. Immigrants who were once young, single and temporary "guest workers" had in the beginning of the 1980s become residents who were often married when they came, with partners and children coming later. The landscape changed in the aftermath of the fall of the iron curtain in 1989. Suddenly the pressure from the east increased towards countries in Western Europe. In Europe the flows from countries farther south grew and created new "migration borders" along the northern beaches of the Mediterranean. Italy, Greece, Spain and Portugal had been traditional emigration countries but now also became countries with positive net migration. These movements were a part of a larger trend towards increased globalisation of the flows. The increase that had begun at the end of the 1990s accelerated at the turn of the century (OECD, 2011a). The terms to recruit qualified foreign labour were eased in most of the OECD countries to meet the needs of the labour market. At the end of the 2000s immigration of asylum seekers dropped in general. International mobility among students increased during the 2000s and more countries changed their laws to permit international academics to remain and seek work when they finished their studies.

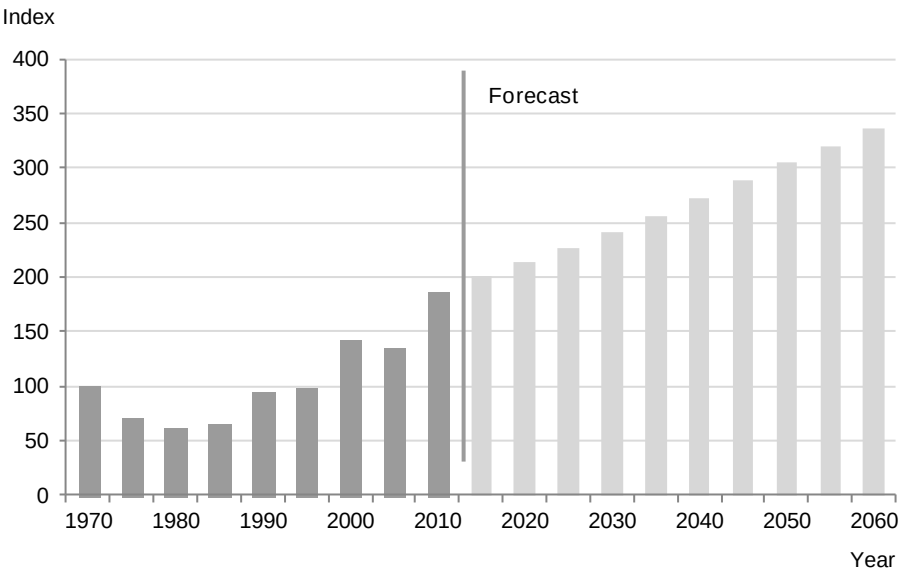
For Sweden's part it is above all interesting to see how much of these increased flows that can be assumed to go to Sweden. Even though more countries reach an economic and political situation that allows its residents to emigrate, immigration to Sweden would not automatically increase. It may be difficult to see if there is an underlying increasing trend concerning immigration to Sweden, because immi-

gration varies sharply from year to year due to the armed conflicts around the world, economic swings in the business cycle, infrastructure enforcement at the border regions, the expansion of the EU and changes in legislation that affect certain immigrant groups such as students. In an attempt to find a trend, a number of countries have been studied that have to a lesser degree been affected by the circumstances mentioned above. With the help of information about the historical immigration to Sweden from these countries and the UN forecast on the future population growth of the countries, the future rate of increase of immigration has been estimated, see figure 4.4. For more information about the calculations see chapter *Facts about the statistics*.

The projections give an annual increased immigration of 1.5 percent for the first forecast years and then a rate of increase of 1 percent up to 2060. This decrease is predicted to fall because the number of persons in the most likely ages to move will decrease, according to the UN's population forecast. However, this increased mobility is based on the assumption that Sweden, even in the future, will still be an attractive country to immigrate to.

It seems likely that the competition on immigration and especially labour force immigration will increase. Therefore, this forecast makes a more cautious assumption than the estimation according to the model above. Labour force immigration and students are assumed to increase by 0.5 percent annually and immigration for family ties by 0.2 percent. These assumptions will be explained in depth in one of the following sections.

Figure 4.4
Immigration to Sweden 1970–2010 and forecast 2010–2060. Index 1970=100



Countries that are included in the estimations are: Australia, Belgium, France, Ireland, Japan, Canada, Luxembourg, the Netherlands, New Zealand, Portugal, Switzerland, Singapore, the United Kingdom and Northern Ireland, the US and Austria.

Climate changes

This forecast also includes analyses for the effects of climate change on immigration to Sweden. While the scientific evidence for climate change becomes more and more significant, the consequences of climate change on the migration patterns of the population are more unpredictable, according to migration researchers. The environment is only a part of a broader collection of social, economic and political conditions that motivate persons to move (IOM, 2008).

According to the latest research there is little evidence up to now that climate changes has led to a sharp increase in migration, either regionally or internationally (Castles, S, 2011). This is in spite of forecasts by Myers (Myers, N, 1993) and other early forecasts that spoke of millions of climate refugees in 2010. Often it is the poorest people in countries of low development who are hit by water shortages, crop failure or soil erosion. How far a person can go to move depends on the person's resources, both economic and social. In other words: those people who are most vulnerable to climate changes are those who have the least possibility to emigrate.

For Sweden's part, nothing speaks for any dramatically increased immigration as a result of climate changes. For example, climate refugees are not considered refugees according to the UN definition and do not have a possibility to seek asylum in Sweden. It is mainly as labour force that these persons can receive residence permits in Sweden, and then in competition with other job seekers. Based on the laws and policies that are in force today, climate change in itself cannot be assumed to result in any "mass immigration" to Sweden.

Even gender distribution in the long term

Another basic assumption in this forecast is that the gender distribution of immigrants and emigrants will even out in the future. Today gender distribution differs between different groups of immigrants and emigrants. Persons who immigrate as asylum seekers, job seekers and students have in recent years been more men than women, while immigrating because of family ties has largely consisted of women. This is mainly due to the situation in the countries of emigration.

Emigration rates are generally higher for men than for women. Women are younger than men when they emigrate. In some country of birth groups, emigration rates for women in their 20s are higher than those for men, for example among Swedish born persons. The tendency to emigrate for Swedish born persons was larger among women than among men in the early 1970s. During the 1980s and 1990s the tendency to emigrate was about the same for both sexes. Only in recent years have we seen a higher tendency for men to emigrate than that for women.

The current gender distribution will probably remain for a few years. This is especially so concerning foreign born persons' immigration from countries where the position of women is not as strong as in Sweden. From these countries it can be assumed that the women in the next few years will come for family ties to a greater extent, while men will come as asylum seekers, labour force immigrants or students. However, it is difficult to predict what will happen in the long term. At the same time as many women today still follow or meet up with family members, the number of women around the world who emigrate on their own is increasing (UN, 2006). Therefore this forecast assumes that the age distribution will slowly even out and will be the same in 50 years. This convergence is expected to occur both concerning the age distribution of immigrants and the rates for emigration. For a description of how this convergence is done, see chapter *Facts about the statistics*.

Immigration of foreign born persons

The method to produce the assumptions for immigration differ among the different country of birth groups. Mathematical models are used for the groups born in the Nordic countries and the EU. The assumptions about immigration of persons born outside of the Nordic countries and the EU are based on analyses from a distribution of immigration based on reasons for residency. This information comes from the Swedish Migration Board and reveals whether persons received residence permits for labour, asylum, family ties, studies or other reasons. For more information on reasons for residency see chapter *Facts about the statistics*.

Born in the Nordic countries

Immigration of persons born in the Nordic countries has varied over the years. These variations have clearly followed the business cycle in the Nordic countries.

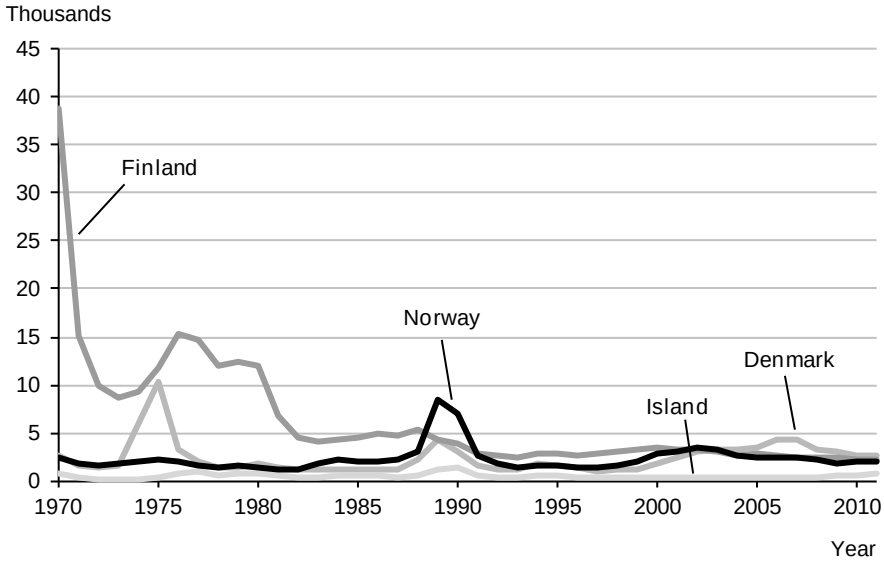
The largest migration flows within the Nordic countries have gone from Finland to Sweden. The migration flows increased during the 1950s and 1960s and reached a peak in the beginning of the 1970s. This was a period when there was a demand for labour in Sweden and a supply of labour in Finland. Studies have shown that the migration flows between Sweden and Finland followed the currency exchange rates (Svanlund, J, 2009). The Swedish krona was stronger than the Finnish mark up until the 1970s. Then the Finnish mark strengthened.

Immigration from the Nordic countries decreased from the middle of the 1970s up until the end of the 1980s. An immigration peak again occurred during the years 1989–1991, explained because Sweden entered an economic downturn somewhat later than the Nordic neighbouring countries.

Migration from Denmark to Sweden increased when the Öresund Bridge was opened. The differences in housing prices attracted the Danes to the Swedish side of Öresund (The Swedish Tax Agency et al, 2006). Immigration from Denmark has dropped since housing prices are now more similar. Immigration from Norway also increased in the beginning of the 2000s, and then decreased again. Nearly half of the increase went to Västra Götaland and mostly to the municipalities near the border. This migration to Swedish municipalities near Norway at the beginning of the 2000s were due to lower living costs in Sweden. Afterwards the differences in housing costs between Östfold Fylke and Västra Götaland decreased

from 28 percent higher in Östfold Fylke in 2002 to only 3 percent higher in 2009[17].

Figure 4.5
Immigration of persons born in the Nordic countries by country of birth 1970–2011

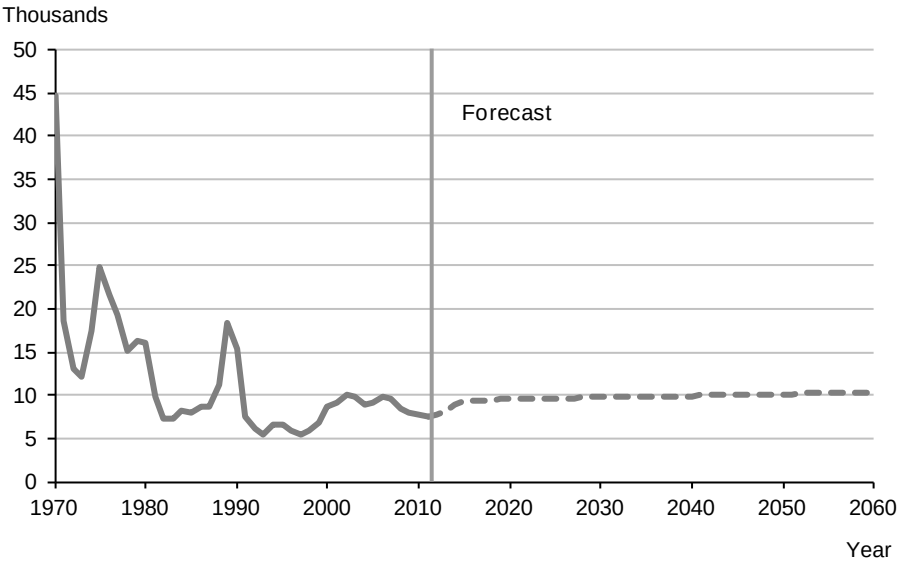


It is not possible to see any underlying trend with increased migration of persons born in the Nordic countries. Economic incentives have instead been the driving force behind the migration between the Nordic countries. Certain improvements in infrastructure in recent years have somewhat lead to an increased flow, but more as a temporary increase in the level.

The assumptions for immigration of persons born in the Nordic countries are based on the observed share who immigrated to Sweden during 2000–2011. These emigration rates are produced by the number of moves to Sweden for each country, by one-year category and sex, divided by the corresponding population in the country of birth. The calculated ratios are then used to calculate the future immigration to Sweden by multiplying them with the population according to population forecasts made by the statistical offices of each country.

[17]Cross border database, Västra Götaland region, produced by Statistics Sweden and Statistics Norway.

Figure 4.6
Immigration 1970–2011 and forecast 2012–2060 of persons born in the Nordic countries



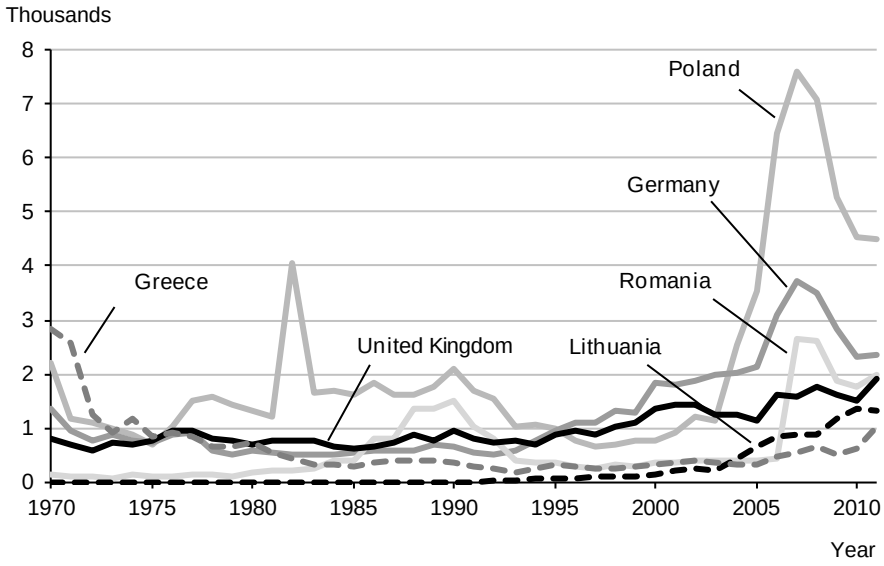
Since there does not seem to be any underlying trend for increased mobility, the emigration rates that are specific for the country, by sex and age for those who immigrate to Sweden are constant over the years. Because the population in the Nordic countries is expected to increase according to the forecasts of the statistical offices, the model gives a slightly increased immigration to Sweden. For the first three years the immigration generated by the model has been adjusted downwards by 15 percent to better reflect the migration of recent years. Norway has the highest income level in Europe[18] and that is where the largest migration flows within the Nordic countries go today. The forecasts of the National Institute of Economic Research also show a relatively weak economic growth in Sweden in the next few years. (National Institute of Economic Research, 2012).

Born in EU countries
Immigration of persons born in other EU countries is reminiscent of immigration from the Nordic countries during the 1970s and 1980s. The exception is Poland where General Jaruzelski took over power in 1981 and people in Poland left their home country to reside in Sweden. Sweden's membership in the EU in 1995 led to another

[18]Eurostat, Database

increase in immigration. After the EU expansion eastward in 2004, immigration increased significantly from the new member states and reached a peak in 2008. The largest increases were from Poland and Romania. Then immigration decreased in 2009 and 2010. In 2011 immigration again increased from the EU countries. The largest increases were from Greece and Lithuania. Several other countries also increased slightly and together contributed to a large part of the total upswing.

Figure 4.7
Immigration 1970–2011, the 6 most common counties of birth among persons born in EU countries



Immigration of persons born in EU countries is largely concentrated to those aged 20–40, see figure4.8. Among those born in the EU-17, a larger share of the immigrants are age 60 or older. Persons from Germany are the largest single group and comprise about 25 percent of the older immigrants. Other older immigrant groups are concentrated to the metropolitan Stockholm, Gothenburg or Malmö counties, while a higher share of those born in Germany settle in Småland or Värmland.

Today a large share of the population in the EU are of the ages when moving is intensive (aged 20–40 – figure 4.8). Due to a low birth rate in many of the EU countries, there will be small cohorts that in the future will be in the moving-intensive ages. This means that the tendency to emigrant will have to increase so that today's immigra-

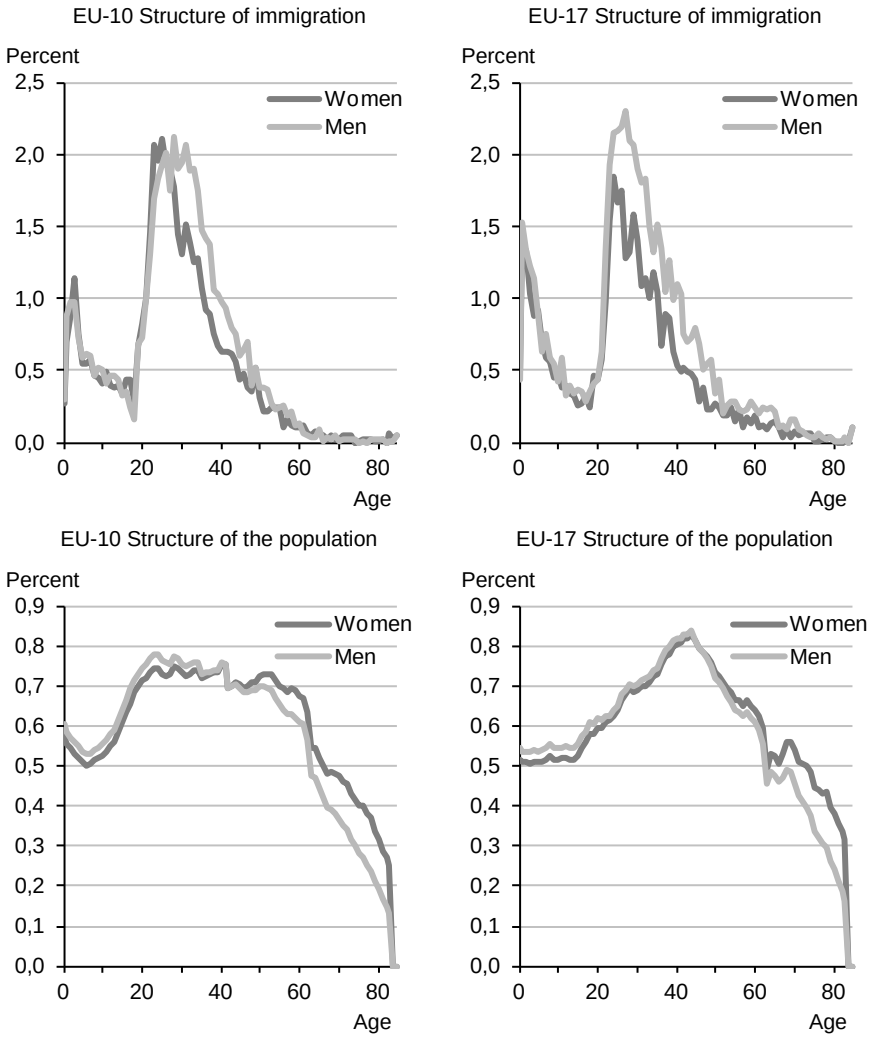
tion will be maintained. At the same time, it appears likely that the incentives to emigrate have decreased for persons born in Poland. When Poland became a member of the EU in 2004, the country had an unemployment rate of 19 percent, which was the highest in the EU[19]. Then it fell steadily to 7.1 percent in 2008.

Like assumptions for persons born in the Nordic countries, the assumptions for immigration of persons born in the EU are based on the observed share of the population that emigrated to Sweden. These shares have been produced by dividing the immigration to Sweden during 2004–2011 by the population in each country of birth. The age and gender specific emigration rates for each country have then been multiplied by Eurostat's population forecast for the EU countries. This gives a reduced immigration of persons born in EU countries. The tendency to move to Sweden has been held constant and it is only the reduced population in the moving-intensive ages that gives this decrease.

We could assume an increased mobility within the EU, but at the same time an economic equalisation is occurring within the EU that in the long term can be expected to give lower incentives for moving. These two trends are assumed to balance each other out. We can assume that the situation within the EU will be as that in the Nordic countries where the directions of the migration flows depends on which country has the most favourable economy for the time being. It is difficult to predict when these economic upswings and downturns will occur and the assumptions shown in figure 4.9 should be seen as an average. Even if a certain decrease of immigration is assumed to occur, the long term level is three times as high as before Sweden joined the EU and twice as high as before the expansion in 2004.

[19] Eurostat, Database

Figure 4.8
Sex and age distribution in percent for the population and immigrants to Sweden 2011, by born in EU-17 (non-Nordic countries) and EU-10

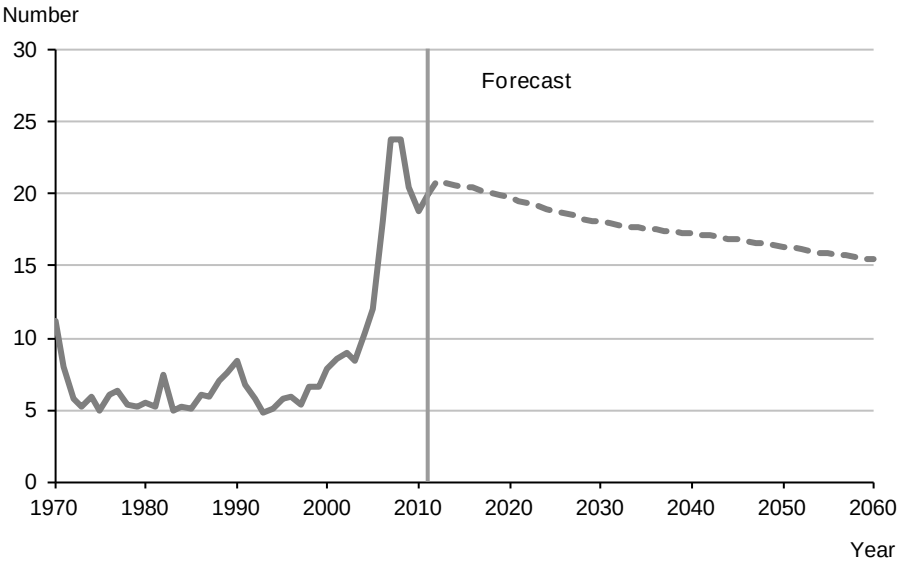


Source: Statistics Sweden for immigration to Sweden and Eurostat for the population.

EU 17: Belgium, Cyprus, Denmark, Finland, France, Greece, Ireland, Luxembourg, Malta, Netherlands, Portugal, Spain, United Kingdom, Sweden, Germany and Austria.

EU 10: Poland, Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia, Slovenia, Czech Republic, Hungary.

Figure 4.9
Immigration 1970–2011 and forecast 2012–2060, persons born in the EU countries

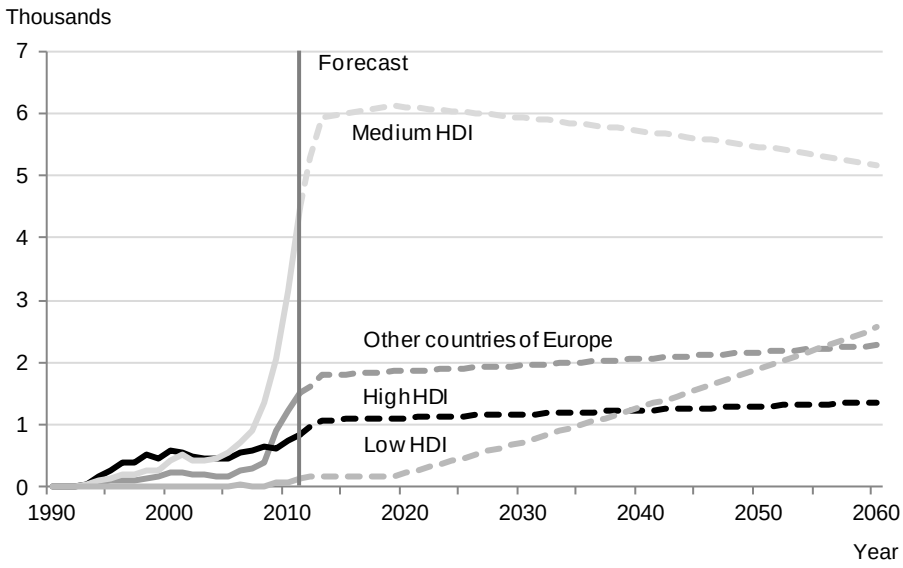


Born in countries outside the Nordic countries and the EU
Information about reason for residence permit is available for persons born outside the Nordic countries and the EU, providing us with opportunities to analyse immigration and emigration. This information comes from the Swedish Migration Board. A detailed description of the data is available in the chapter *Facts about the statistics*. In the following section persons born outside the EU and the Nordic countries are grouped by work, asylum, family ties, students and others. The estimated immigration in these reasons for residence permit are then grouped by country of birth groups.

Labour immigration
The number of labour force immigrants from countries outside of the EU and EEA has increased steadily since the labour force reform in 2009[20]. The increase has mainly occurred from countries with medium levels of development and countries in Europe outside of the EU. However, it should be noted that the statistics in figure 4.10 are only labour force immigrants who are registered in Sweden.

[20] Aliens Act (2005:716), SFS 2009:1542

Figure 4.10
Labour immigration 1990–2011 and forecast 2012–2060, persons born outside the Nordic and EU countries, by birth country groups



Sweden's new system for labour force immigration is driven by demand and is the most open system within the OECD. The OECD made an evaluation of the reform on behalf of the Swedish government (OECD, 2011b). The report indicates that labour force within highly qualified occupations tends to stay in Sweden for a shorter time, while labour force within occupations that only require low qualifications stay for a longer time, extend their contracts and take their families with them to Sweden to a higher extent.

As of 15 January 2012 the Swedish Migration Board issued more stringent requirements for proof of work permits within the most common industries. The tougher requirements mean that in connection with an application for a work permit, a company must show that the salary can be guaranteed for the employee. Regarding extensions, the salary that has been paid and statements of earnings from the National Tax board must be presented. A continued number of approved work permits are still assumed in the forecast of the Swedish Migration Board (The Swedish Migration Board, 2012).

Labour force immigration is assumed to continue to increase during the next two years by fourteen percent in 2012 and twelve percent in 2013. This is a somewhat lower rate of increase than in recent years. But the rate of increase has been declining and in 2012 economic

growth in Sweden is expected to be weak (National Institute of Economic Research, 2012). From 2013 onwards it is assumed that labour force immigration will increase by 0.5 percent annually. This increase is motivated by the previously mentioned general increased mobility between countries. In line with the increase in GDP per capita in Asia and the increase in pay, labour force immigration from these countries can be assumed to slow down. When a country's economic development begins to accelerate, there is usually an increased emigration first. Only when a country has come relatively far in its development will the transition from net emigration to net immigration occur. This means that we can expect an increased immigration from for example Africa south of the Sahara, if the incomes in these countries increase in line with the demand of raw materials (Hedberg, C & Malmberg, B, 2008).

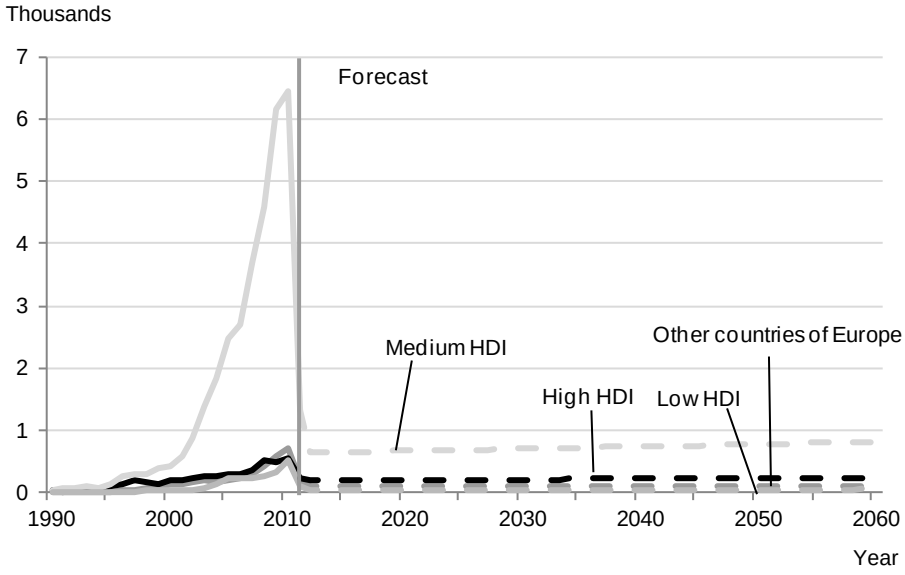
Students

Immigration of university students born in countries outside of the Nordic countries and the EU increased from about 100 persons in the beginning of the 1990s to 8 000 persons in 2010. The most common countries of birth among students who immigrated in 2011 were China, Iran, India, Pakistan and Bangladesh. Together these students accounted for nearly two thirds of the total number of students born outside of the Nordic countries and the EU. During autumn 2012 student fees were introduced for students who were citizens of a country outside of the EU/EEA[21].The law began to be applied as of autumn term and has thus only been in force for half of 2011. Even so, immigration of students in 2011 decreased to one fourth of the level in 2010.

In 2012 the law is assumed to be in full effect and the number of students will drop to half of the level for 2011. Thereafter immigration of students is assumed to increase by 0.5 percent annually as a result of increased global mobility.

[21] Higher Education Act (1992:1434) SFS 2009:1037

Figure 4.11
Immigration of students 1990–2011 and forecast 2012–2060, for persons born outside the Nordic and EU countries by birth country group



Immigration due to asylum and family ties

Immigration due to asylum and family ties has been characterised by peaks that have returned to a low level after a couple of years. In the middle of the 1990s immigration of persons born in Europe outside of the Nordic countries and the EU was considerable. The Balkan war was behind this immigration. Immigration from ex-Yugoslavia decreased quickly and instead the largest migration flows came from countries outside of Europe with a medium level of development. In connection with the temporary change in the migration law in 2006, immigration due to asylum and family ties increased significantly[22]. This higher level was then maintained by increased immigration of persons born in Iraq. When immigration of persons born in countries with a medium level of development dropped, immigration of persons born in countries with a low level of development increased.

[22] The temporary legislation was mainly directed towards families with children who had lived in Sweden for a long time and to people from countries where deportation is not possible.

Appendix 4 presents immigration for the countries of birth from which immigration to Sweden due to asylum was greatest. To give a historical overview the figures are sorted by the "oldest" refugee groups first and the "new" groups last. The figures in *Appendix 4* show that in only a few years, immigration from Chile and ex-Yugoslavia went from an immigration peak to a stable and low level. In countries such as Iran and Lebanon, the level has dropped but to a level that is somewhat higher, and then again increased at a weak rate. Immigration peaks for these four countries has mainly consisted of asylum seekers, while in the following years consisted mainly of immigration due to family ties. The somewhat higher levels of immigration for Iran and Lebanon after the peak for refugees is probably because the situation in these countries is less certain than in the Chile and ex-Yugoslavia of today. However, the recent increase of immigration from Iran can mainly be due to the increased immigration of students.

Iraq is a country that seems to follow the pattern of Iran and Lebanon. Immigration from Iraq has decreased from nearly 16 000 immigrants in 2007 to roughly 5 000 in the last two years. The slowdown of immigration in 2010 of persons born in countries in the Horn of Africa and the downturn in 2011 was mainly due to the outcome in The Migration Court of Appeal[23] that led to stricter requirements for identification papers so that hardly anyone from Somalia received a residence permit as a family member immigrant. The difficulties for asylum seekers to unite with their family members has also affected immigration of asylum seekers from Somalia. At the same time that immigration of asylum seekers and family members from Somalia decreased, immigration from Afghanistan and Syria increased.

A court decision in the Migration Court of Appeal[24] in January 2012 allows the use of DNA analysis to determine identification. The Swedish Migration Board assesses that this court decision and the change in the law prescribed by the government concerning identification requirements will lead to increased immigration of persons born in Somalia (The Swedish Migration Board, 2012). This is assumed to affect the forecasts of immigration of asylum seekers and family members by the Swedish Migration Board. Uncertainty concerning immigration of asylum seekers and family members is

[23] Migration Court of Appeal, UM 8296-09 and UM 1014-09

[24] Migration Court of Appeal, UM 10897-10

considerable. This is because of the situation in North Africa and the Middle East. The conflict in Syria can de-stabilise the entire Middle East region. Immigration from Syria has increased in recent years and seems to continue to increase during the first months of 2012. Asylum seekers from Afghanistan, including children and young persons who came alone, increased in 2011 and the Swedish Migration Board assesses that the number of Afghans seeking asylum could increase in the next few years.

Figures 4.12 and 4.13 show the forecast for immigration of asylum seekers and family members. The period 2012–2016 show the total figure based on the latest forecast from the Swedish Migration Board (The Swedish Migration Board, 2012). The Swedish Migration Board makes forecasts for five-year periods on the number of approved immigrants as asylum seekers and family members[25]. In the next few years asylum seekers are mainly expected to come from countries with a low level of development. However, the level is not expected to drop for countries with a medium level of development, because the reduced immigration from some countries, such as Iraq, are expected to balance in the increased immigration from other countries, such as Syria.

If immigration from Afghanistan, the Horn of Africa and Syria follow the patterns of previous groups of asylum seekers, we can assume that level will fall after the five years that the Swedish Migration Board forecasted a higher rate of immigration of asylum seekers. In the long term it is probable that the asylum seekers will come from countries that today have a low level of development. Several studies show there is a connection between population increases and armed conflicts. When the population increases sharply and a large part of the population consists of young people, the risk for armed conflicts is higher (Weiner, M and Stanton Russel, S, 2001, Goldstone, J A, 2002, Daumerie, 2008 and others). Of course other factors also play a part, as the economic situation and political rule. But it seems likely that it is in the countries that today have a low level of development where the risk for armed conflicts is largest in the long term. At the same time the risks are reduced in those countries that today have a medium level of development when the population composition becomes older.

[25] Because the Swedish Migration Board does not make forecasts by country of birth, the breakdown by birth country group is made based on the text in the report and in discussion with the Swedish Migration Board.

It is difficult to predict when conflicts will occur in the long term. Immigration of asylum seekers has been kept at a constant level in this forecast, and should be seen as an average of the years of significant immigration and nearly non-existent immigration of asylum seekers.

Figure 4.12
Asylum immigration 1990–2011 and forecast 2012–2060, for persons born outside the Nordic and EU countries, by birth country group

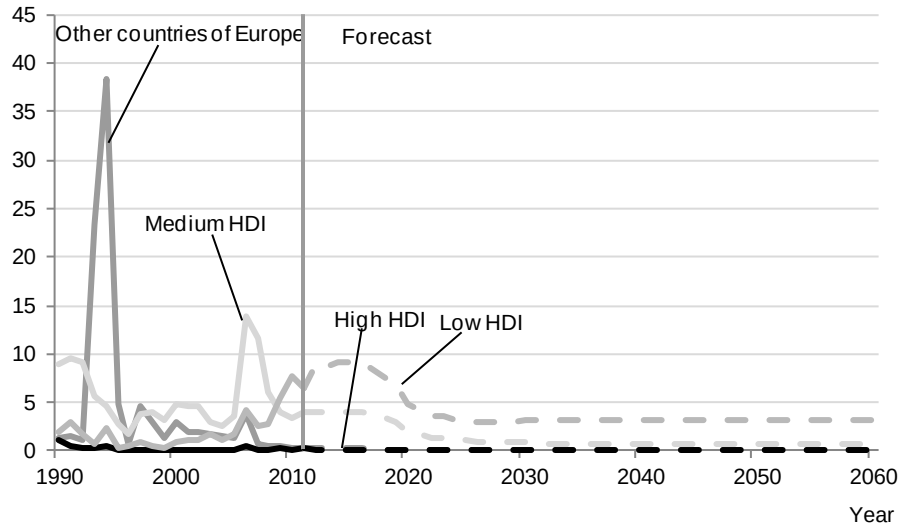
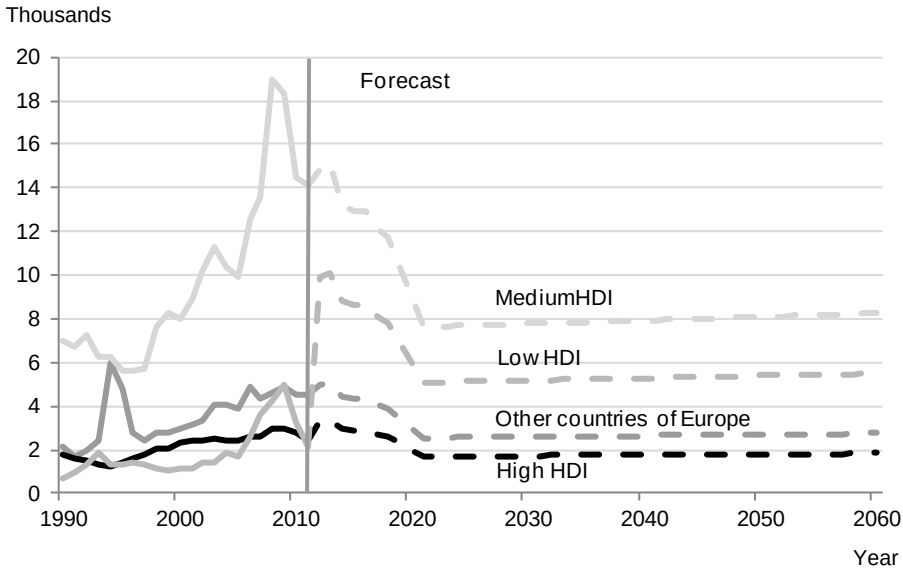


Figure 4.13
Family immigration 1990–2011 and forecast 2012–2060, for persons born outside the Nordic and EU countries, by birth country group



Immigration due to family ties follows the pattern of immigration of asylum seekers to a certain extent. During the last ten years nearly 20 percent of the immigration due to family ties born outside of the Nordic countries and the EU have come as family members to persons who have received asylum in Sweden. However, the proportion has varied sharply from 8 percent in 2006 to 29 percent in 2008. The forecast for immigration of family members, like immigration of asylum seekers, is based on the five year forecasts of the Swedish Migration Board. A decrease in immigration of asylum seekers is then expected to lead to a decrease in immigration of family members, but at a somewhat higher level than the years before the peak of immigration.

It is becoming more common that Swedish born persons marry someone born abroad. For example, during the last ten year period, Thailand has been the next most common country of birth among immigrants of family members, just after Iraq. In a future where more Swedes spend time abroad, immigration of family members could be on the increase. An increased labour force and asylum immigration from countries with a low level of development is assumed to lead to a higher proportion of immigration of family members from these countries than what has been the case in the last ten years.

Age structure

The age structure of persons born outside the Nordic countries and the EU is based on the observed distribution for the years 2004–2011. The age structure for the foreign born immigrants looks different for immigrants depending on their reason for settling in Sweden. A model has been used in the forecast where the immigrants' structures of age and sex have been calculated for five groups with different reasons for settlement. For each group of countries of birth and forecast year, the assumption of immigration for each reason for settling is multiplied by its specific age structure. In this way, assumptions on an increased labour force immigration for a certain forecast year leads to more being given a sex and age structure as observed for labour force immigrants. Just as with other distributions of age structure, the age distribution of men and women move within each reason for settlement towards the same age distribution.

Emigration of foreign born persons

Emigration is determined by so-called emigration rates. These rates present emigration as a share of the population in different ages. For immigration of persons born outside the Nordic countries and the EU, calculations are based on a division of immigration based on reason for residence permit. For more information on emigration rates and reason for residence permit see chapter *Facts about the statistics*.

Emigration and time in Sweden

The report " *Return migration by time spent in Sweden* " investigated whether the time in Sweden has such a considerable influence on the risk of emigration of foreign born persons, that there is cause to construct a model where the risks for emigration vary based on how much time has passed since immigration (Statistics Sweden, 2011d).

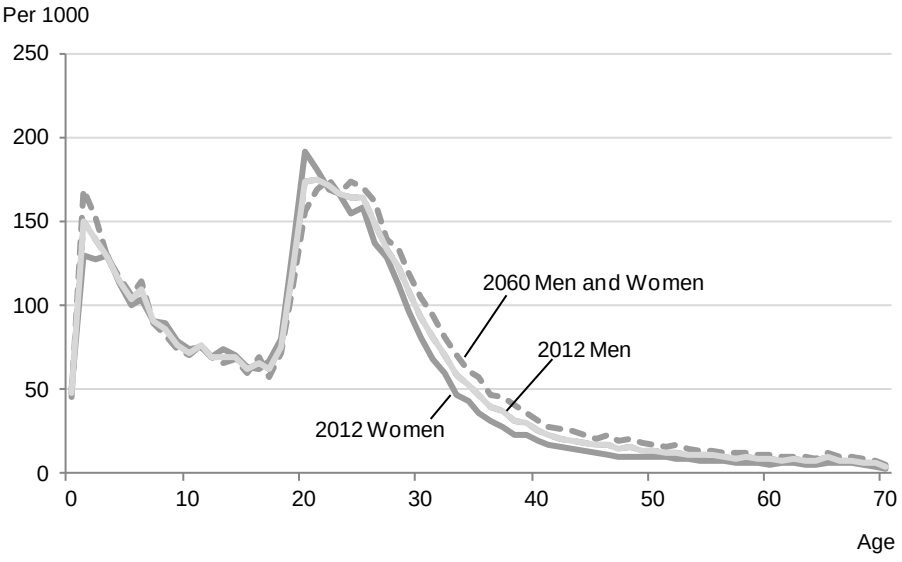
For persons born in the Nordic countries, the EU and countries outside of Europe with a high level of development, the tendency to re-emigrate is considerable the first year after immigration, but decreases with the time spent in Sweden. The tendency is not as great for persons born in the rest of Europe and in countries of medium or low development. Reasons for residence permit were seen to have a greater significance for the tendency to re-emigrate. Among persons born in countries outside of the EU and the Nordic countries, re-emigration has been greatest for those who immigrate to Sweden for employment. Those who have received asylum in Sweden have a 95 percent lower tendency to re-emigrate, while those who have come as a family member or relative have a 80 percent lower tendency than those who immigrated for employment.

If the emigration model in the population forecast is to take into account the time spent in Sweden, this would be most useful for the countries of birth groups the Nordic countries and the EU. However, immigration from these countries has a relatively constant development and thus the structure of immigration does not change regarding time spent in Sweden. Therefore the common risks for emigration are used for the groups born in the Nordic countries and the EU. The time in Sweden has a smaller influence on emigration risks for the other groups. Here it is more interesting to follow how the composition of immigration develops, based on if the persons come as labour force, asylum seekers, family members or students. Therefore a model that takes into account the reasons for settlement is used for persons born outside of the Nordic countries and the EU.

Born in the Nordic countries

The emigration rates for persons born in the Nordic countries increased from 2000. This is largely due to the increased mobility in connection with the completion of the Öresund Bridge. The emigration rates have been at a relatively constant level during the last ten years. The emigration rates in the forecast are based on the observed emigration for 2000–2011. The age-specific emigration rates for men and women move slowly towards each other during the forecast period, and are the same after 50 years.

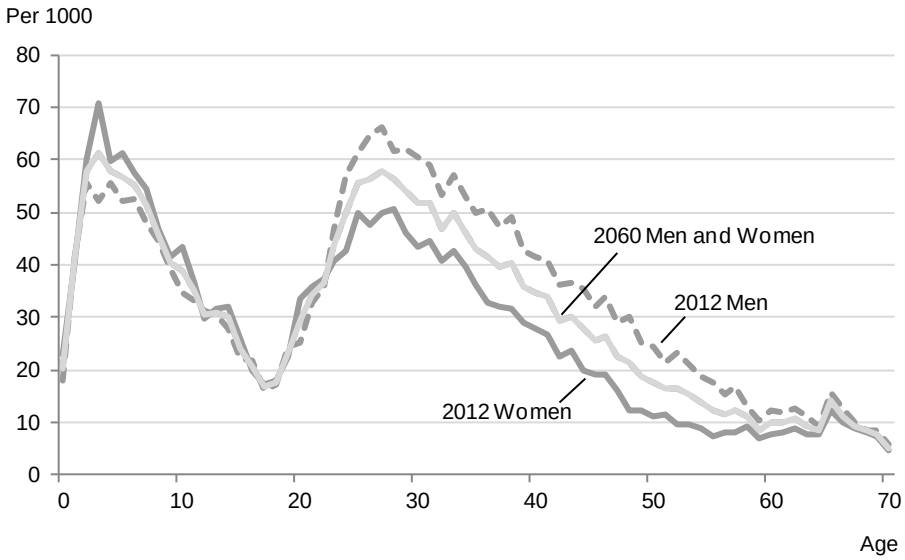
Figure 4.14
Emigration rates 2012 and 2060 for persons born in Nordic countries



Born in EU countries

For persons born in EU countries outside of the Nordic countries, emigration rates increased from the expansion year 2004 when labour immigration accelerated. In recent years the emigration rates have stabilised. The emigration rates in the forecast are based on the observed emigration 2004–2011. The age-specific emigration rates for men and women move slowly towards each other during the forecast period, and are the same after 50 years.

Figure 4.15
Emigration rates 2012 and 2060 for persons born in EU



Born in countries outside the Nordic countries and the EU

As mentioned earlier, the tendency to emigrate varies, depending on the person's reason for residence permit at the time of immigration. Information on a person's reason for residence permit is available for persons born outside of the Nordic countries and the EU. Based on this information a model has been made where the population in the country of birth groups have been given emigration rates based on the composition of the group. This model is described in detail in the report *Model for estimating re-emigration by reason for residence permit* (Statistics Sweden, 2012b).

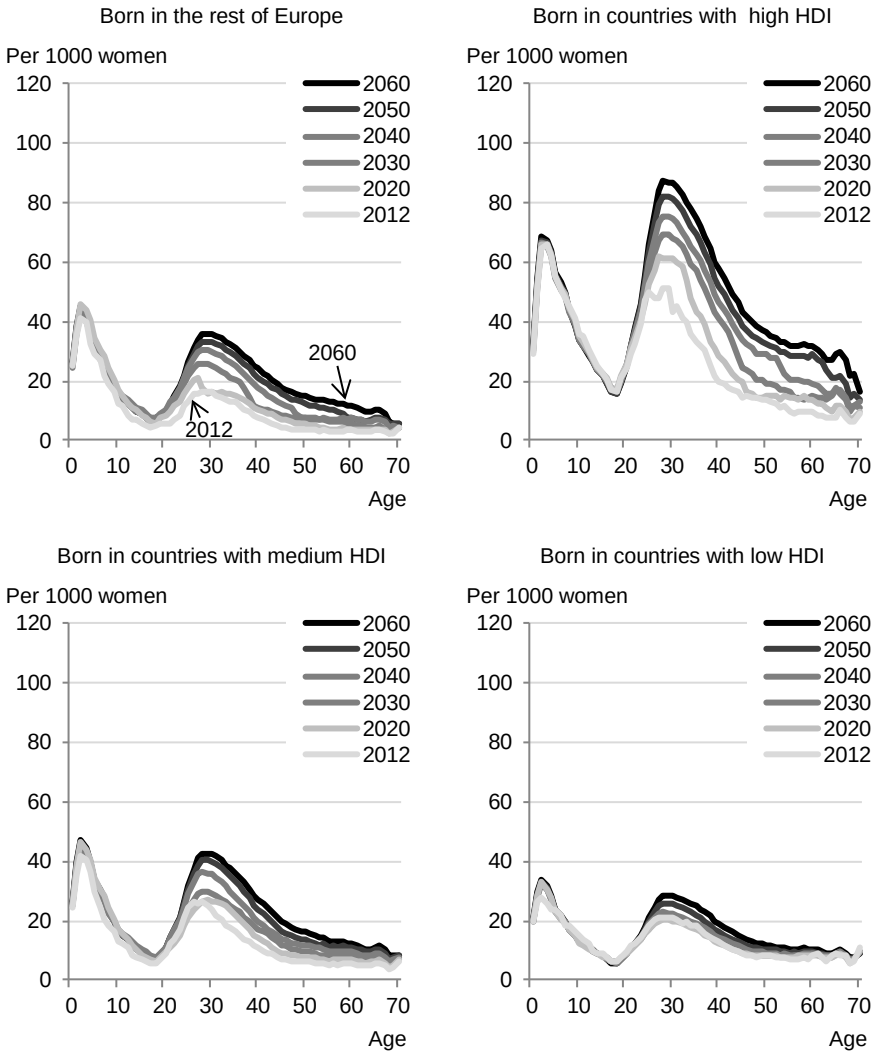
Emigration rates have been calculated for 2004–2011. An emigration rate has been calculated for each country of birth group, year, one-year category and sex, based on the composition of reason for residence permit. If the assumption in the population forecast is for

instance that labour force immigration will increase, this will lead to a higher emigration rate.

Figures4.16 and 4.17 illustrate the results of the forecast model in the form of sex- and age-specific emigration rates for the different country of birth groups. In the assumption of immigration, which was described earlier, the share of asylum seekers is expected to drop and the share of work migrants is expected to rise. This gives increased emigration rates for all four country of birth groups in line with the change in composition. After a while with nearly constant immigration, the emigration rate will stabilise, first for the younger ages, and then also the older ages.

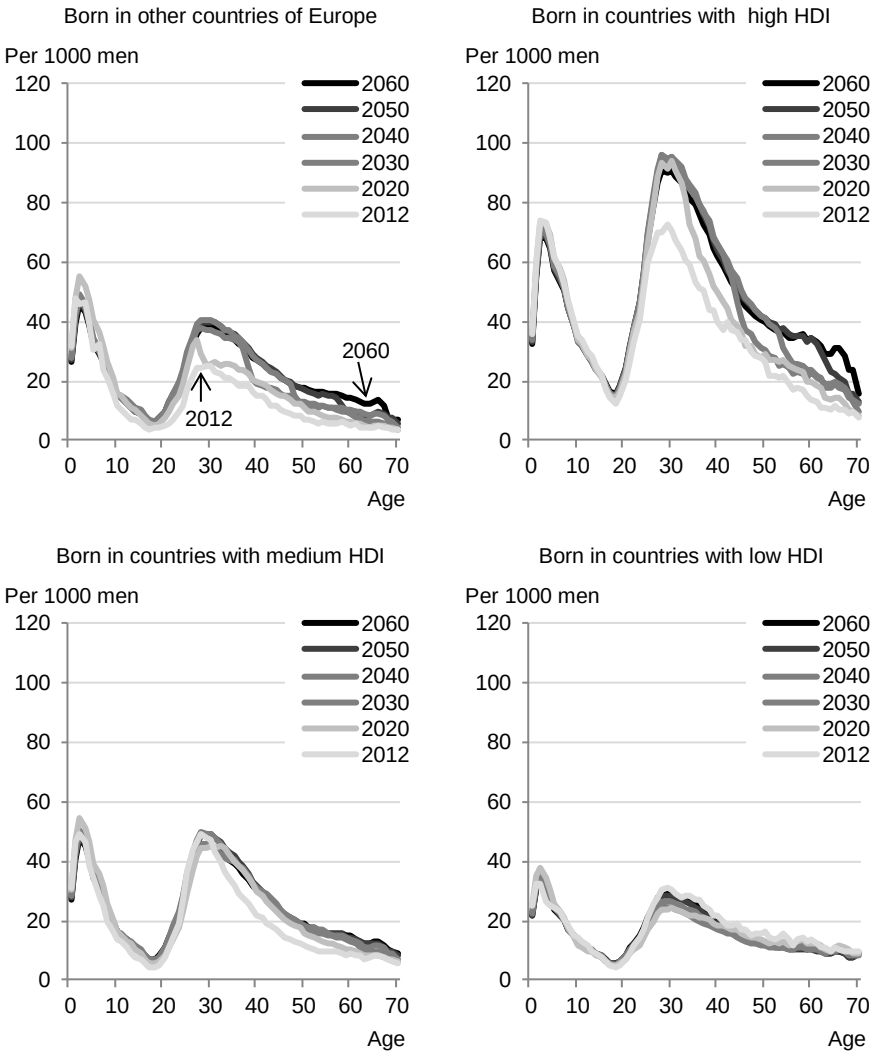
At the same time the model changes the emigration rates based on the composition of reason for residence permit, the age-specific emigration rates for men and women will become closer for each country of birth group and reason for residence permit. This is a further development that is implemented in this forecast and is not described in the report on the construction of the model.

Figure 4.16
Women's emigration rates, by birth country group for some different forecast years.



The figures only show emigration rates for selected years, but the constructed forecast model gives weighted emigration rates for each year, based on the existing composition of reason for residence permit.

Figure 4.17
Men's emigration rates, by birth country group for some different forecast years.



The figures only show emigration rates for selected years, but the constructed forecast model gives weighted emigration rates for each year, based on the existing composition of reason for residence permit.

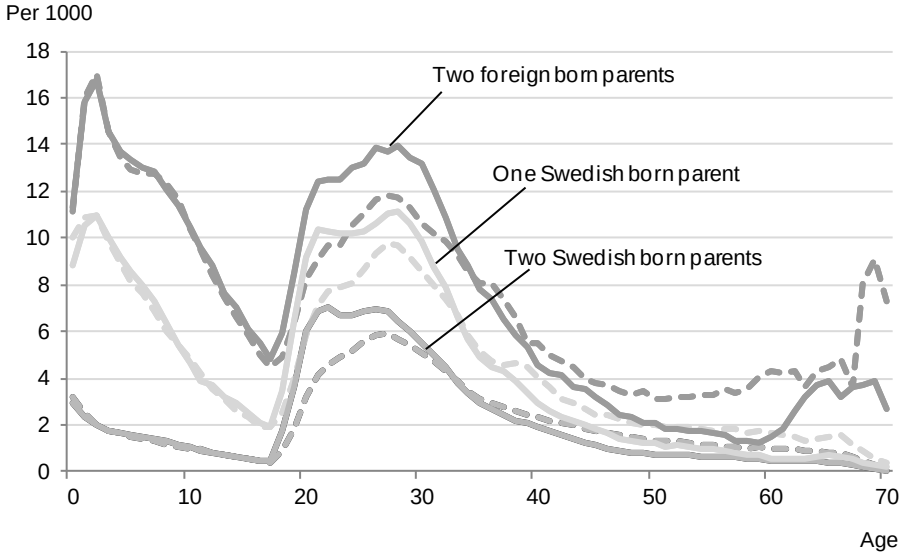
Swedish born persons

For Swedish born persons, the assumptions on emigration are calculated first. These will form the basis of the estimated re-immigration. Therefore emigration is described for the first in this section, as opposed to the assumptions for the foreign born.

Emigration

During the 1990s, the number of Swedish born emigrants doubled from some 10 000 people per year during the 1970s and 1980s to more than 20 000 people per year by 1998. Emigration then decreased for a few years but it has picked up momentum in recent years. In 2011 the number of Swedes who took up residence abroad amounted to almost 22 000 people. Nearly one third of these persons moved to Norway. Unemployment among young people in Sweden combined with higher salaries in Norway are the most likely reasons behind this relatively significant emigration to Norway. Other common countries to emigrate for Swedish born persons were the UK, the US, Denmark, China and Finland.

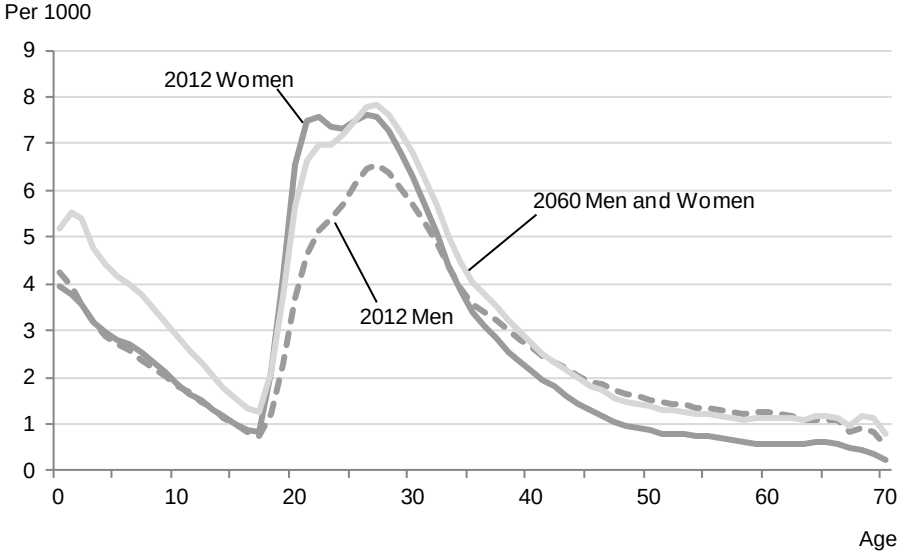
Figure 4.18
Emigration rates for Swedish-born by background. Average for 2003–2011. Solid line for women and dotted line for men



The tendency to emigrate is greater among Swedish born persons who have a parent born abroad and greatest for those with both parents who were born abroad, see figure 4.18.

It is most likely that the proportion of Swedish born persons with foreign background will continue to increase during the forecast period. This is expected to give an increased tendency to emigrate to the group of Swedish born persons on the whole. Due to the lack of a forecast on the background of Swedish born persons it has been assumed that the share with parents born abroad increase in a linear manner with the rate of increase in recent years. The proportion of those with foreign background in the Swedish born group is assumed to increase in a linear manner at the rate that was observed in 2003–2011[26]. In line with the increase of those with foreign background, their emigration rates are given larger weights. Based on the assumptions of the annual shares in the three groups, an emigration rate is weighted together for the entire group of Swedish born persons.

Figure 4.19
Emigration rates 2012 and 2060 for persons born in Sweden



Men and women have different tendencies to emigrate. This difference is assumed to gradually even out up to 2060. This means that the emigration rate for women aged 20–34 will not rise as much as the men's when the emigration rates of both sexes gradually become the same. However, the emigration rate of women will rise

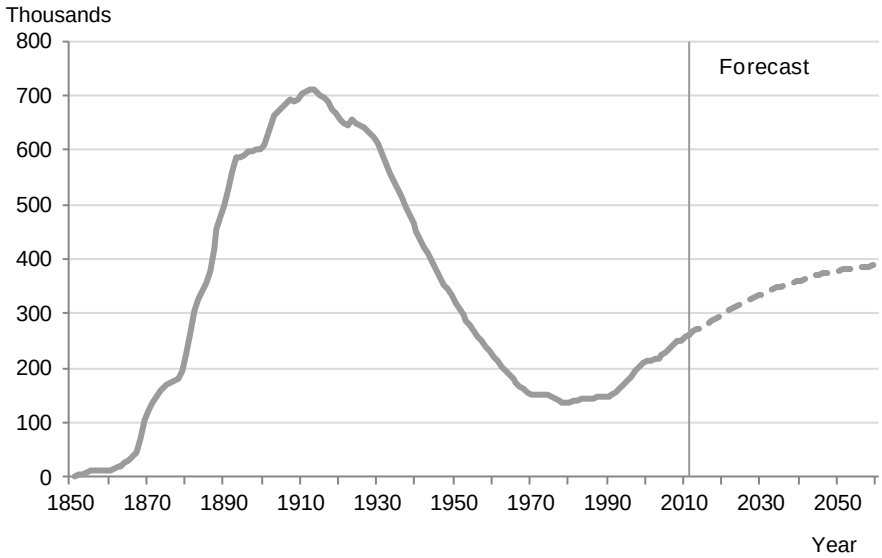
[26]This should not be seen as a forecast of how great a share of the Swedish born population has foreign background, but a method to assume how many can be considered to have an increased tendency to emigrate.

more than the men's for persons over age 35. Figure 4.19 shows the emigration rates for the first forecast year that is largely an average for the years 2003–2011 and the year 2060 where men and women have the same age specific emigration rate.

Immigration

Re-immigration of Swedish born persons is determined by a purely mathematical model. This model is based on information about immigration and emigration for the years 1851–2011. The first step is to calculate the number of Swedish born persons who live abroad. Of this population, a number of persons who re-immigrated are calculated based on sex and age specific re-immigration rates. The final number of those who re-immigrated is then given, in that the estimated emigration via an equation is combined with information about emigration of Swedish born persons three years earlier. For a more detailed description, see the report *Model to forecast re-immigration of Swedish-born persons* (Statistics Sweden, 2009c) and the chapter *Facts about the statistics*.

Figure 4.2
Estimated number of Swedes living abroad 1851–2011 and forecast 2012–2060

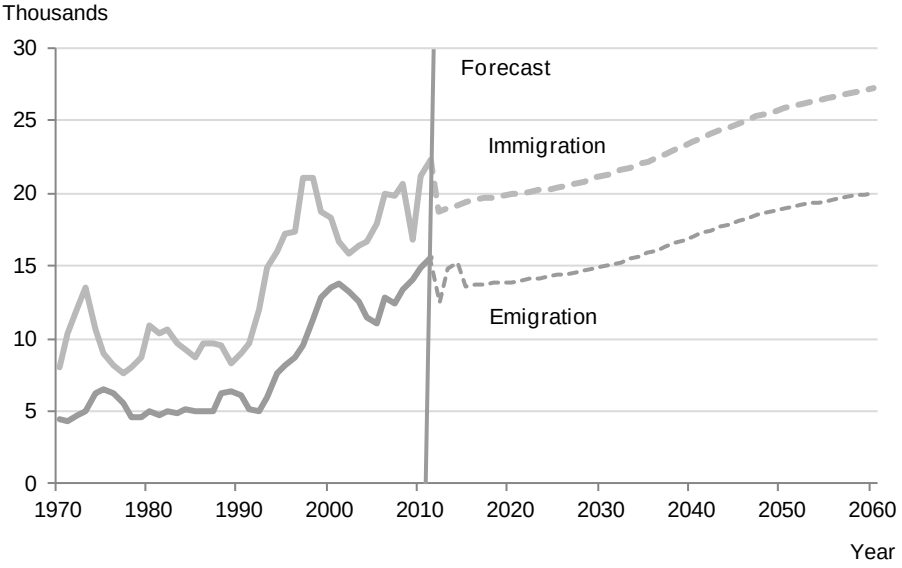


In the beginning of the forecast period, it is assumed that the number of Swedish born persons abroad will increase and then stabilise at a level just under 400 000 at the end of the forecast period. The lower rate of increase of Swedish born persons abroad is

because those who emigrated at the start of the 2000s have reached an age where death risks are high.

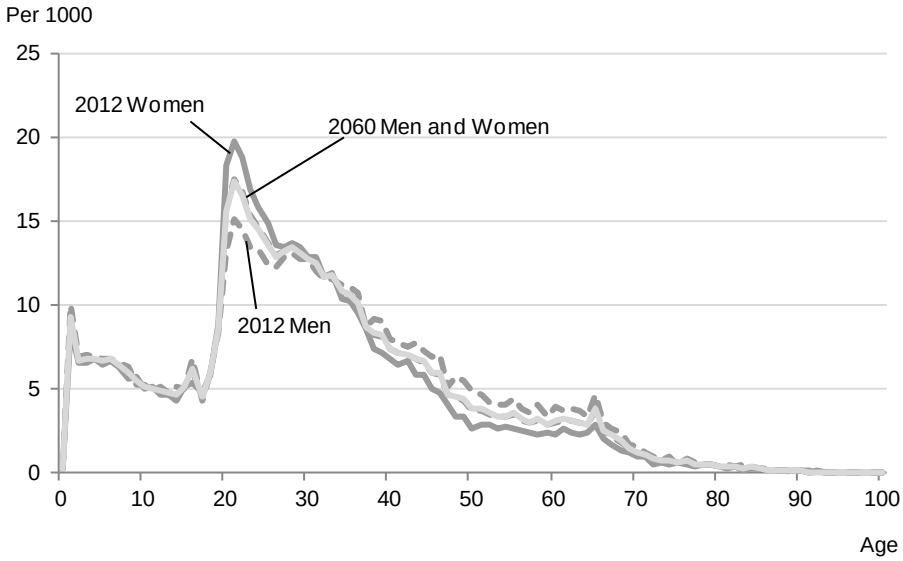
Ups and downs in re-immigration during the first forecast years, figure 4.21, are due to variations in the observed emigration three years earlier. The emigration model is based on emigration rates that are evened out as an average of the observation of emigration for several years. These give a more even increased emigration which is reflected in the straighter lines of re-immigration after a few years. The long term increase of the estimated number of persons who re-immigrated during the forecast period is due to the assumption that the number of Swedish born persons abroad will increase.

Figure 4.21
Immigration and emigration of persons born in Sweden 1970–2011 and forecast 2012–2060



Age structure
The age structure of re-immigration is based on the observed distribution for the years 2007–2011. The number of men and women among Swedish born immigrants is about the same. The women are somewhat younger than the men when they leave Sweden, which is also reflected in re-immigration. Similar to the emigration rates, it is assumed that the age distribution of women and men will slowly converge and be the same in 2060.

Figure 4.22
Sex and age structure for persons born in Sweden that are assumed to immigrate 2012 and 2060



Alternative assumptions

Migration is very difficult to predict in the long term. Even in the short term it can be difficult because changes in laws and judgments for permits in a country can change the character of immigration and emigration from one day to the next. Therefore two alternatives have been produced. The two alternative assumptions are thought be quite broad, but are not entirely inconceivable.

Figure 4.23
Immigration and emigration 1970–2011 and forecast 2012–2060 according to low (barred line) alternative and high alternative (dotted line)

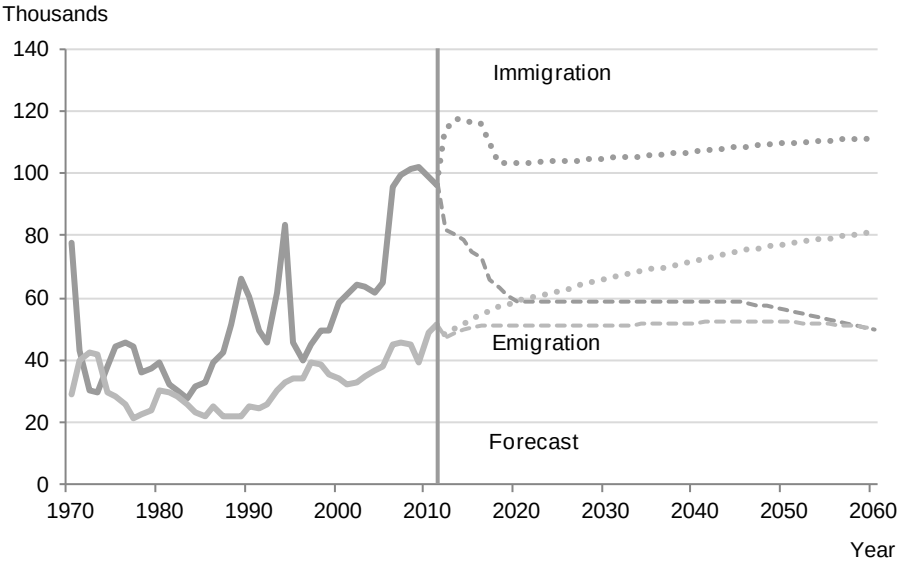


Table 4.2
Forecast of the immigration and emigration according to main assumption and low and high alternative. Thousands

	Low alternative			Main assumption			High alternative		
	Immig	Emig	Net	Immig	Emig	Net	Immig	Emig	Net
2012	81.6	47.6	34.0	106.3	47.9	58.4	113.4	48.0	65.4
2015	75.0	50.3	24.7	105.7	52.5	53.3	116.1	53.3	62.8
2020	59.0	51.4	7.6	86.5	57.2	29.4	103.4	59.0	44.5
2030	58.7	51.2	7.5	79.0	60.0	19.0	104.7	65.9	38.8
2040	59.0	52.1	6.9	81.2	63.4	17.8	107.1	72.2	34.9
2050	56.1	52.3	3.8	83.4	66.3	17.1	109.6	77.4	32.2
2060	49.8	50.6	-0.8	84.7	68.1	16.6	111.4	81.0	30.4

Net is immigration minus emigration.

Low net migration

The low alternative can be seen as a scenario where Sweden enters a sharp downturn in the economy. It is no longer as easy to recruit foreign labour and it is more difficult to maintain the domestic labour force.

Immigration of persons born in the Nordic countries is today at a relatively low level. Instead of allowing immigration from the Nordic countries increase to an average for the years 2000–2011 as in the main alternative, the level of emigration for persons who move to Sweden is held at 85 percent of the level for the period 2000–2011.

Immigration of persons born in the EU countries decreases more than in the main alternative. For persons born outside the EU and the Nordic countries, it is assumed that immigration will decrease rather quickly and in 2020 will be at the lowest observed level during the most recent 20 years. Towards the end of the forecast period immigration will decrease further.

Labour force immigrants and immigration of students have decreased to nearly zero in the low alternative.

Immigration of asylum seekers and family members will also decrease but not as much as the other groups.

Table 4.3
Net migration per birth country group according to the low alternative. Thousands

	Sweden	Nordic countries	EU	Europe	High HDI	Medium HDI	Low HDI	Total
2012	-6.3	2.2	13.0	3.8	1.7	14.3	5.3	34.0
2015	-4.2	2.5	11.8	2.5	0.9	6.7	4.6	24.7
2020	-4.2	2.7	10.0	-0.2	-0.7	-0.1	0.0	7.6
2030	-4.2	3.1	7.7	0.1	-0.3	0.8	0.2	7.5
2040	-4.2	3.3	6.8	0.3	-0.1	0.6	0.3	6.9
2050	-5.3	3.2	5.6	0.0	-0.2	0.1	0.4	3.8
2060	-6.7	3.0	4.5	-0.3	-0.5	-0.7	-0.1	-0.8

Net migration is immigration minus emigration.

High net migration

The high alternative can be seen as a scenario where Sweden's economy continues to perform better than many other countries and with a continued immigration at the high level seen in recent years.

For all the birth country groups except Sweden, immigration is held on the average of the most recent five years. A high immigration leads to an increased population, both foreign born persons and their children who are born in Sweden. An increased population in turn leads to a greater number of emigrants and net migration decreases in the long term than in the beginning of the forecast period. The increased population also gives an increased emigration of Swedish born persons that in turn results in an increased number of re-immigrants.

Table 4.4
Net migration per birth country group according to the high alternative. Thousands

	Sweden	Nordic countries	EU	Europe	High HDI	Medium HDI	Low HDI	Total
2012	-6.3	2.2	13.0	6.5	4.5	27.0	18.5	65.4
2015	-5.8	3.7	12.1	6.1	3.9	25.1	17.8	62.8
2020	-6.0	3.7	11.0	5.4	1.6	22.2	6.6	44.5
2030	-6.3	3.8	9.8	4.8	1.3	19.4	6.0	38.8
2040	-6.7	4.0	9.1	4.4	1.1	17.6	5.5	34.9
2050	-7.3	4.1	8.6	4.1	1.0	16.4	5.3	32.2
2060	-7.7	4.1	8.5	3.9	0.9	15.7	5.0	30.4

Net migration is immigration minus emigration.

5. Assumptions about mortality

This chapter presents the assumptions on mortality trends in the future. We begin with a description of the development of mortality and life expectancy up until 2011. The historic development is the basis for the main assumption about future mortality, which follows in the next section. Then the assumptions on higher and lower mortality than the main alternative are presented. Those who want an in-depth study of reasons behind the analyses of the assumptions can read more in the section Mortality assumptions in Facts about the statistics.

Mortality has changed in several ways since the middle of the 19th century. A clear trend in Sweden and most other countries is that mortality is continuously declining. Changes have also occurred in the patterns for causes of death and the age distribution of the deaths. Mortality of women and men have developed differently. These differences can be described as being global. The development in Sweden has been seen in a number of comparable countries.

The trends for mortality are sometimes summarised by using different historical transition phases, the so-called *epidemiological transition*. This is a way to describe how mortality has changed by age and causes of death.. A clear mortality decline began with decreased mortality from infectious diseases, mainly among children and young people. After a phase with small changes, mortality from different chronic diseases, such as heart attacks, also begin to decrease clearly. Some demographers mean that a change has followed so that mortality from different chronic diseases has been pushed forward towards higher ages (Caldwell, 2001). However, it may be difficult to clearly differentiate between the time that different phases begin and end[27].

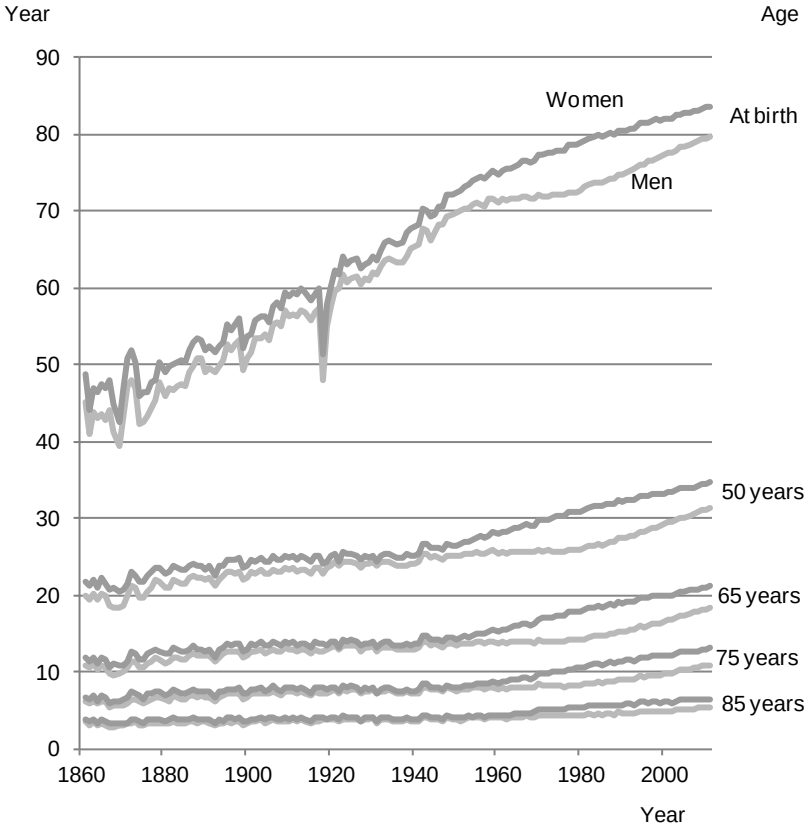
The method that is used for the mortality assumption is based on the historical mortality development for women and men in different ages. The trends in recent decades are used to estimate the annual change in mortality for women and men in different ages in the future (Statistics Sweden, 2009a).

[27]When the theory of the epidemiologic transition was launched (in the 1970s), mortality from heart disease dropped for several years among women but not among men (The National Board of Health and Welfare, 2009).

Long term trends for life expectancy

Life expectancy in Sweden[28] has increased by about 35 years during the period 1861–2011, from 49 to nearly 84 years for women and from 45 to nearly 80 years for men, as shown in figure 5.1. The length of life expectancy has increased on average by about 2.5 years per decade since 1900. However, the increase was larger up until the mid-20th century than it was afterwards.

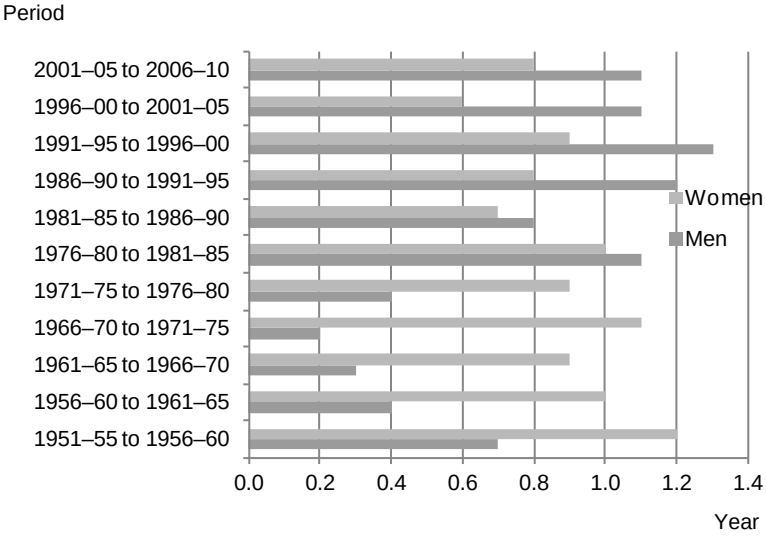
Figure 5.1
Life expectancy by sex at birth and ages 50, 65, 75 and 85 years 1861–2011



[28] Life expectancy can be calculated from different ages. For a person born during the year in question (or period), it is the number of years that on average remain to live with the death risks that applied to the year (period) at birth. It is a total index for mortality. In the report we usually speak of the average number of years remaining at birth as *life expectancy*.

Women have had a more even and unbroken increase of life expectancy than men. The remaining life expectancy at age 65 increased for instance about as much for women and men during the entire period 1861–1950. From the 1950s onwards, life expectancy of women from age 65 began to increase at a faster rate than earlier. The same clear increase from age 65 for men occurred first in the beginning of the 1980s, that is, three decades later than for women. Concerning life expectancy at birth the difference increased between the sexes, from slightly less than 3 years difference to slightly more than 6 years difference between 1950 and 1980.

Figure 5.2
Change in life expectancy at birth between five-year periods from 1951–55 to 2006–10



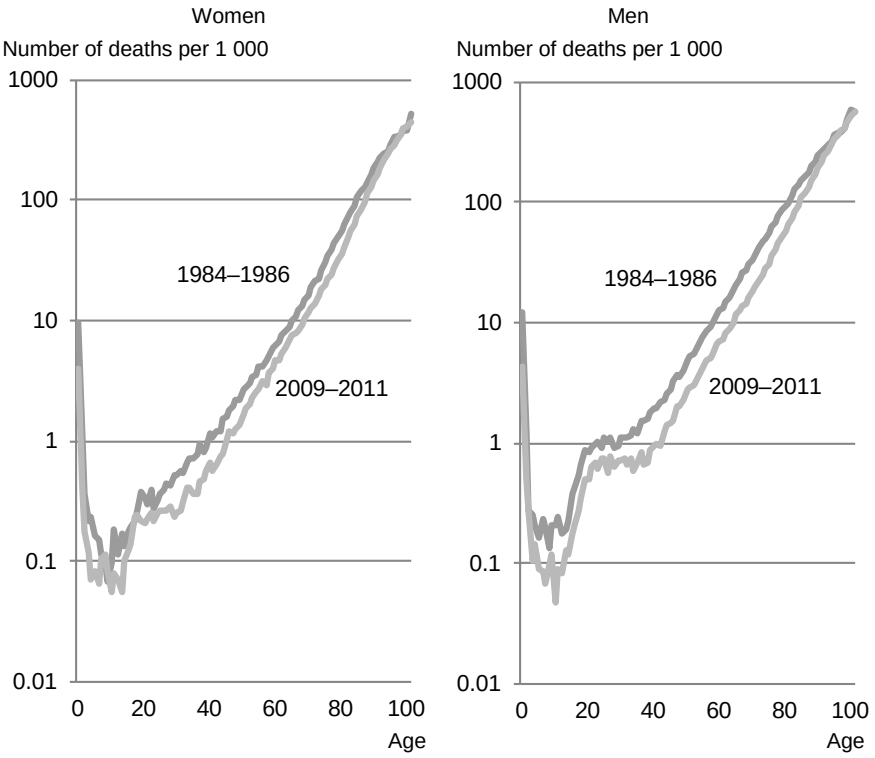
Since the end of the 1970s life expectancy has increased more for men than for women, see figure 5.2. However, this does not mean that the life expectancy for women has stagnated in the same way as it did for men during the period 1950–1980. Since the 1950s life expectancy for women has increased by between 0.6 and 1.2 years per five-year period. Between the most recent two five-year periods, 2001–05 to 2006–10, the increase for women was 0.8 years. This was near the average increase of 0.9 years per five-year period for the entire period 1951–2010 (Statistics Sweden, 2011b). The corresponding increase on average for men was 0.8 years per five-year period.

Mortality trends in recent decades

Reduced mortality has been normal for a long time, in Sweden as in most other countries (Ahlbom, Drehfahl, & Lundström, 2010). However, there are exceptions: the Spanish flu in Sweden with increased mortality and the stagnation of men's mortality in certain ages during the period 1950–1980.

As seen in figure 5.3, the death rate for women and men has decreased for all ages during recent decades. However, the changes have been small among the oldest persons. Changes have occurred in the age pattern of mortality for certain ages, such as for men where the mortality rates are in principle the same for an age interval of about 20–40 years of age. Previously mortality was clearly higher among men in their 40s than men in their 20s.

Figure 5.3
Mortality rate by sex and age for the periods 1984–1986 and 2009–2011



Logarithmic scale. The information refers to annual average values in each period for one-year age groups. Age at the end of the year.

The long term trends of mortality can roughly be summarised as relatively even changes, mostly with a slowly decreasing mortality. However, the annual fluctuations can be considerable, especially for those ages where deaths seldom occur.

There has been a shift over time for the age that deaths occur. (Statistics Sweden, 2011b). In line with more people reaching higher ages, mortality in the population becomes more and more concentrated to higher ages. Table 5.1 shows how the number of deaths are distributed in age groups of different widths in three periods with intervals of about 50 years. During the most recent period (2006–2010) about 0.5 percent of deaths occur in the 0–19 year age group. Slightly more than 7 out of 10 deaths among women occur at age 80 or older. The corresponding share among men is slightly less than 6 out of 10. At the beginning of the 20th century deaths were more evenly distributed among the different age groups. In the middle of the 20th century the largest proportion of deaths occurred in the 65–79 year age group.

Table 5.1
Proportion of deaths by sex and age group estimated from life tables 1901–1910, 1956–1960 and 2006–2010. Percent

Age	Women			Men		
	1901–10	1956–60	2006–10	1901–10	1956–60	2006–10
0–19 years	16.9	2.2	0.5	18.4	3.2	0.6
20–44 years	12.2	2.4	1.0	12.6	3.8	2.0
45–64 years	16.1	12.1	6.3	18.9	16.9	9.5
65–79 years	31.0	40.2	21.5	30.7	42.2	30.5
80–89 years	20.1	34.6	39.5	17.0	28.4	39.6
90+	3.7	8.5	31.2	2.5	5.4	17.8
Total	100	100	100	100	100	100

The distribution of deaths is based on a standard population of 100 000 and the observed age-specific death risks in the different periods. This is a way to be able to compare periods that have different age distributions.

Since the deaths are skewed in the distribution of ages, it is the assumptions of future mortality in those ages where the most deaths occur that are the most significant for the calculations of for example future life expectancy or the number of older persons in the population.

Trends for causes of death

It is necessary to understand the reasons behind the trends for mortality in order to predict the trends for the future. One way to come closer to this understanding is to describe the trends for different causes of death.

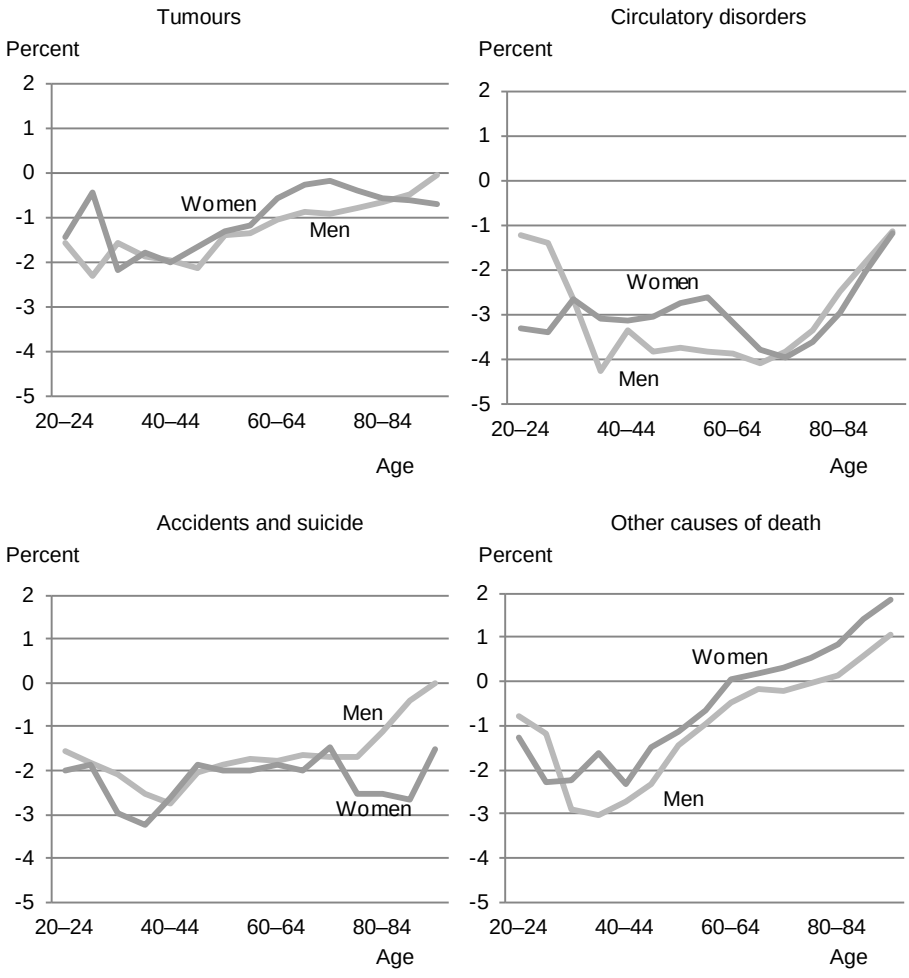
During the last three decades death among younger and middle aged persons has decreased significantly for both men and women in the four larger groups of causes of death that are presented here, i.e. tumours, circulatory disorders, accidents and suicide and other causes of death, see figure 5.4.

A more varied picture is seen for the older part of the population (age 65 and older). Deaths from tumours have decreased for most ages, with the exception of women in their 70s and men in the oldest age group (90 and older), where figures have mostly been unchanged. For other causes of death, among them respiratory diseases and digestive system disorders, mortality has increased in the older ages. The increase has been gradual with rising age, for women from the 60–64 year age group and upwards, and for men from the 80–84 year age group and upwards.

The somewhat different development for causes of death indicates several processes that have varying degrees of significance for different causes of death. Different changes in risk factors have probably caused the difference in the trends of causes of death. Mortality from circulatory diseases have decreased the most during the last three decades, 3–4 percent per year for women and men alike at the entire age interval of 30–79 years. Deaths of women from accidents and suicide have decreased by 1.5–3 percent per year for all age groups. This also applies to men aged 20–74. However, mortality from accidents and suicide for men of older ages has had a smaller decline than that for women.

Other causes of death have decreased more for men than for women who are middle aged, while they have increased for women aged 60–79 and decreased for men. At age 80 and older, women have had a larger increase in mortality than men.

Figure 5.4
Average annual change in mortality rates for four main causes of death by sex and age group 1978–1980 to 2008–2010



Source: Processed statistics from the National Board of Health and Welfare and Statistics Sweden. The change is calculated on the annual average values 2008–2010 compared to 1978–1980 per cause of death, sex and five-year age group (starting with age group 20–24 years until age group 85–89 years) and an age group 90 years and older. A more detailed description of the calculations is available in *Mortality assumptions* in the section *Facts about the statistics*.

The somewhat varying trends of causes of death over time, especially among older persons, make the assumption on the future mortality trends more difficult since the distribution of the causes of death gradually change. During the last three decades the proportion of deaths from different circulatory disorders has decreased. Instead

the proportion of deaths caused by tumours and other causes of death has increased (Statistics Sweden, 2011b). It is possible that mortality from certain chronic diseases, such as deaths from tumours, change according to a cohort pattern[29]. Then a decrease in mortality from tumours in recent decades for middle-aged persons could indicate an expected decrease among older persons in the future.

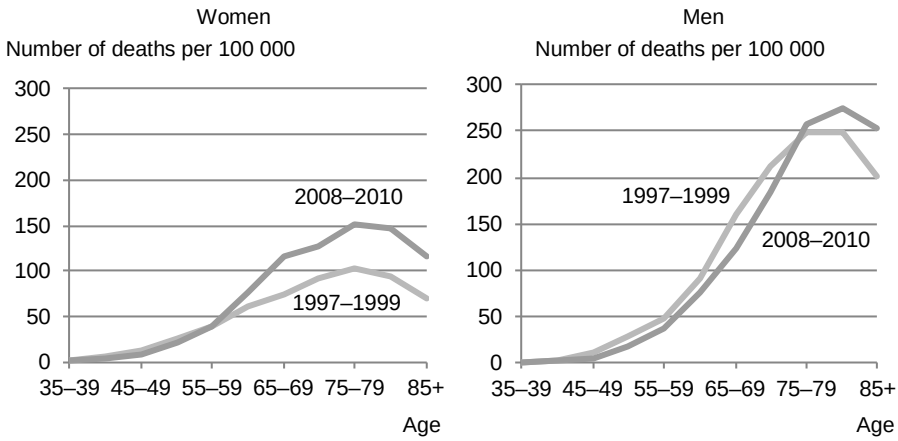
Certain lifestyle-related causes of death

Are there trends for known risk factors that have contributed to the different trends in causes of death? Causes of death that have a well-documented connection with smoking, such as lung cancer and chronic diseases in the lower respiratory passages (such as chronic obstructive pulmonary disease COPD), have in recent years had a development that to a certain extent is similar to other causes of death presented in figure 5.4. Mortality from lung cancer has increased in recent years, especially among older women. This is shown in Figure 5.5. In contrast, mortality from lung cancer has decreased among men in the 35–74 year age interval. Despite several decades of reduced smoking among men, mortality from lung cancer has still not begun to decrease among the oldest men. Even though lung cancer mortality is low for persons under age 60, it is important to note a decline from lung cancer mortality among women and men in these ages.

Mortality from chronic diseases in the lower respiratory passages such as COPD has developed in about the same way as lung cancer since the end of the 1990s. However, mortality from this cause of death group has also decreased somewhat even for men in the oldest age groups since the end of the 1990s. For women age 70 and older, mortality from chronic diseases in the lower respiratory passages has increased during the same period. Figure 5.4 includes this specific cause of death group in other causes of death.

[29]If a certain birth cohort has been exposed to particular health risks more than others, which have remaining health effects during the rest of their lives, mortality will increase for younger ages first. The increase will then gradually spread to older ages. When the birth cohorts with special risk factors are replaced by birth cohorts without risk factors, the decrease in mortality will begin for younger ages and gradually spread with time to older ages. Such proposals for mortality changes per cohort are among other things found for smoking (Wang & Preston, 2009).

Figure 5.5
Lung cancer mortality by sex and age group 1997–1999 and 2008–2010

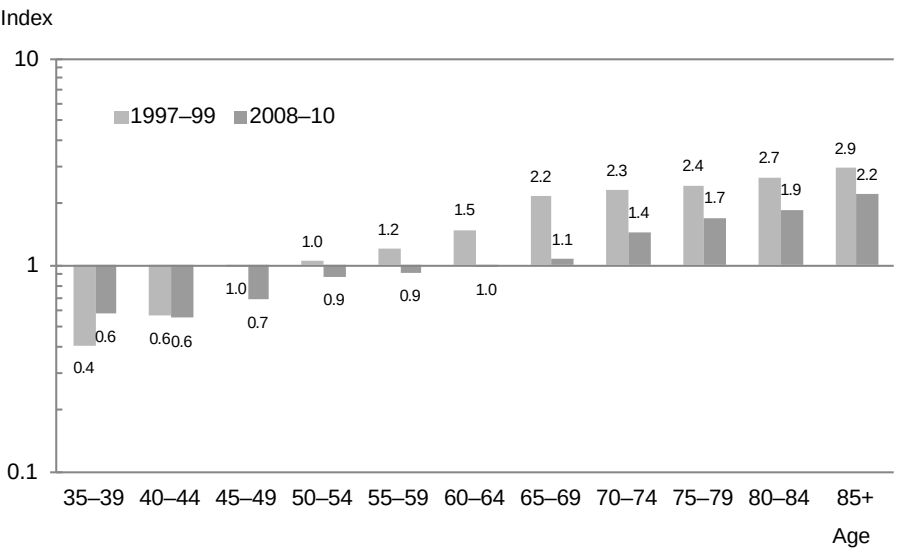


Source: Calculations from the information that was collected from the statistical database of the National Board of Health and Welfare in January 2012. The information is from annual average values for each period.

The difference in lung cancer mortality between the sexes has changed in a short time, as seen in figure 5.6. At the end of the 1990s men had a higher frequency of lung cancer mortality than women. Those differences changed one decade later. In the younger ages (35–54 years), women's lung cancer mortality was as high or higher than men's as early as the end of the 1990s. In the older ages the difference between the sexes has decreased, but men still have twice as high lung cancer mortality as women in ages 80 and older. The change between 1997–99 and 2008–10 shows the trend that is probable in the near future. The percentage of daily smokers has been somewhat higher among women than women since the middle of the 1990s. (The National Board of Health and Welfare & Swedish National Institute of Public Health, 2012)[30]. At the same time, since the end of the 1980s a higher percentage of men than women report occasional smoking (The Swedish National Institute of Public Health, 2011). In a few decades the trends of smoking habits should also show a little or no difference between the sexes in lung cancer mortality even in the oldest age groups.

[30]National information about smoking in a longer historical perspective come from Statistics Sweden's Living Conditions Surveys and are limited to ages 16–84.

Figure 5.6
Difference in lung cancer mortality between women and men in various age groups 1997–1999 and 2008–2010. The difference is calculated as a ratio between the mortality rate for men compared to the mortality rate for women

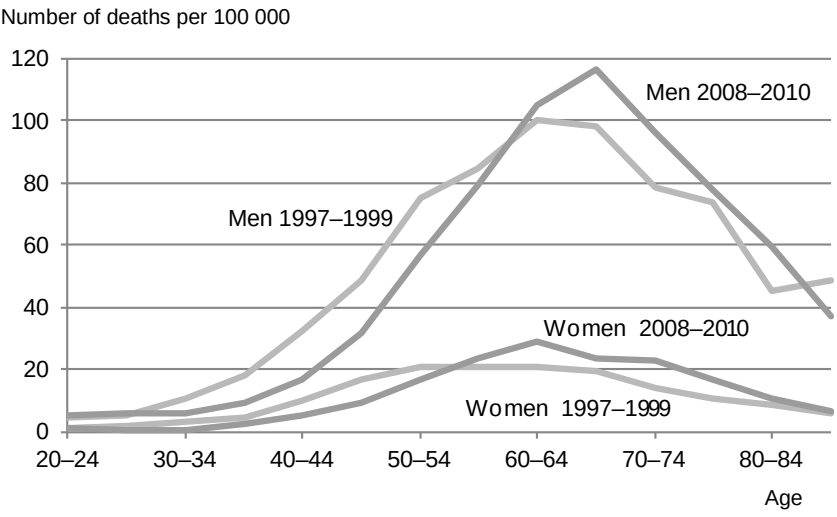


A logarithmic scale has been used so the bars in the figure will be comparable in terms of size, regardless if the index value is smaller or larger than 1. An index value greater than 1 means that men have a higher mortality than women and a value of less than 1 that women have a higher mortality than men.

Source: Calculations from the information that was collected from the statistical database of the National Board of Health and Welfare in January 2012. The information is based on annual average values for each period.

Just like lung cancer, alcohol-related causes of death have contributed to reduced mortality in certain ages but increased mortality in others. During the last decade mortality from these causes of death have increased somewhat for ages 60–84, but decreased or remained unchanged for other ages, see figure 5.7. Mortality from alcohol-related deaths is several times higher among men than among women. In contrast to lung cancer, the difference between the sexes has not changed particularly for these causes of death. During the years 1997–1999 as well as 2008–2010, men had at least three times higher mortality than women in the different age groups.

Figure 5.7
Mortality from alcohol-related causes of death by sex and age group 1997–1999 and 2008–2010



Source: Calculations from the information that was collected from the statistical database of the National Board of Health and Welfare in January 2012. The information is based on annual average values for each period. Alcohol-related deaths are defined as either from underlying or contributing causes of death according to the index from the National Board of Health and Welfare (The National Board for Health and Welfare, 2011a).

The same mortality trends for women and men?

A number of factors may have caused the different mortality trends for men and women. But an important contributing factor has been the historical trends of smoking among men and women (Hemström, 1999). The shrinking difference in mortality between women and men that has been seen in several countries in recent years is largely centred on causes of death that have a clear connection to smoking, among other things heart and circulatory diseases, cancer and respiratory diseases (Pampel, 2002). Sweden has had a small difference between the sexes for several years. The effects of this smoothing out have already been seen in ages up to 69 years where women and men have largely the same mortality from lung cancer, see figure 5.6. In the theory about the global spreading of the tobacco epidemic, the percentage of smoking-related deaths in the population will decrease for men before they decrease among women (Lopez, Collishaw, & Piha, 1994).

Other causes of death with considerable differences among the sexes, which are largely directly related to lifestyle have not shown any clearly shrinking differences in mortality among the sexes.

Among other things, this applies to accidents and suicide as well as alcohol and drug-related mortality. However, these causes of death have developed about the same for women and men in recent decades. This means that in the long term we assess that women and men will have about the same mortality trend. It also means that life expectancy between men and women will largely remain the same.

Main assumption

The largest contribution to the increase in recent decades of life expectancy comes from a sharply reduced mortality from circulatory diseases, see figure 5.4. It is not only mortality from these diseases that has decreased. The incidence of myocardial infarctions and strokes have decreased, and the largest decrease has occurred among older persons (The National Board of Health and Welfare & Swedish National Institute of Public Health, 2012).

Several underlying changes ought to have contributed to decreasing mortality in recent years. Better living conditions, increased measure to prevent accidents and unhealthy lifestyles, as well as better treatment methods when diseases strike, should have all contributed in different ways. Concerning heart and circulatory disorders, which have contributed most to the decrease in mortality, the most important factors have been reduced smoking, falling levels of cholesterol and better treatment methods (The National Board of Health and Welfare, 2009). More effective pharmaceuticals and changes in diet could lie behind dropping levels in cholesterol.

Smoking is the factor that is foremost concerning reasons for a shorter life expectancy, followed by diet and alcohol abuse (Weeks, 2005). These risk factors have changed in recent decades. The trend towards reduced smoking applies in nearly all groups for women and men alike (The National Board of Health and Welfare, 2009).

In the long term the gradual decrease of smoking in recent decades is an important factor for the mortality decline to continue at about the same rate as in recent decades. Certain analyses show that mortality in certain ages in the future will even decrease more than today as an effect of reduced smoking of recent decades (Wang & Preston, 2009). Long term follow ups have shown that the death risk decreases after a person quits smoking, but those who quit after age 30 do not come down to the same low death risk as a non-smoker (Doll, Peto, Boreham, & Sutherland, 2004). The death risk after one quits smoking decreases rapidly, even during the first year, for heart

and circulatory disease (The National Board of Health and Welfare, 2009) However, it takes about 5 years before the death risk for lung cancer starts to drop after one quits smoking (Boffetta & Trichopoulos, 2002).

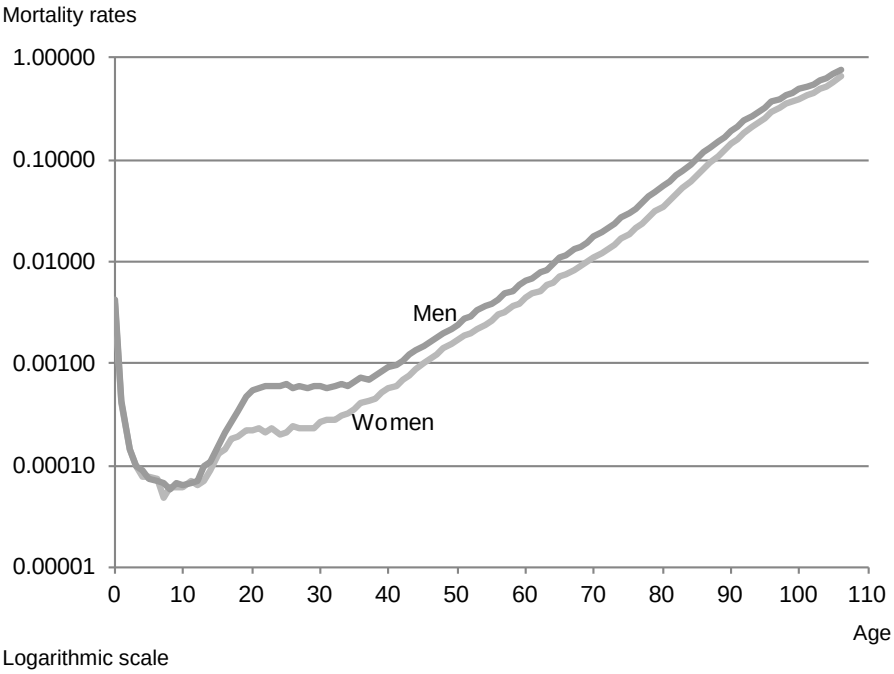
Many deaths that are today caused by daily smoking, smoking now and then, smoking earlier in life, or exposure to passive smoking, are expected to decrease in the future because these different types of exposures for tobacco smoke gradually decrease. The reduced mortality from lung cancer in middle-aged persons that has been observed for several years is expected to spread to the oldest ages with a certain delay. However, this does not only apply to lung cancer but also other types of cancers that have been connected with smoking, such as cancer of the stomach, liver, nose, mouth, trachea, oesophagus, throat, pancreas, kidneys and bladder, certain chronic respiratory diseases and cardiovascular diseases (The National Board of Health and Welfare, 2009).

There are other factors that change in line with the slow decrease in mortality, among others medical developments and increased level of education in the population. The latest report on cancer development from the National Board of Health and Welfare shows that survival after a cancer diagnosis on the whole has increased in recent years (The National Board of Health and Welfare, 2011b).

The analysis and the assumptions that are used in this forecast do not differ in principle from those that were done for the forecasts of 2003–2050 (Statistics Sweden, 2003), 2006–2050 (Statistics Sweden, 2006) or 2009–2060 (Statistics Sweden, 2009a). However, the assessment of the current trends in the future is somewhat different than those from the three previous forecasts.

Mortality rates for 2012, first forecast year, are shown in figure 5.8. The mortality rates used are from the Lee-Carter model trend forecast for 2012. For details on the mortality rate for the starting year, see section *Assumptions on mortality* in *Facts about the statistics*. The reason we do not begin with the year with the most recently known level of mortality (2011) is to avoid random variations that will be the result of using only one year's mortality rate for the one-year age groups that are used.

Figure 5.8
Mortality rate for first forecast year 2012 by age and sex



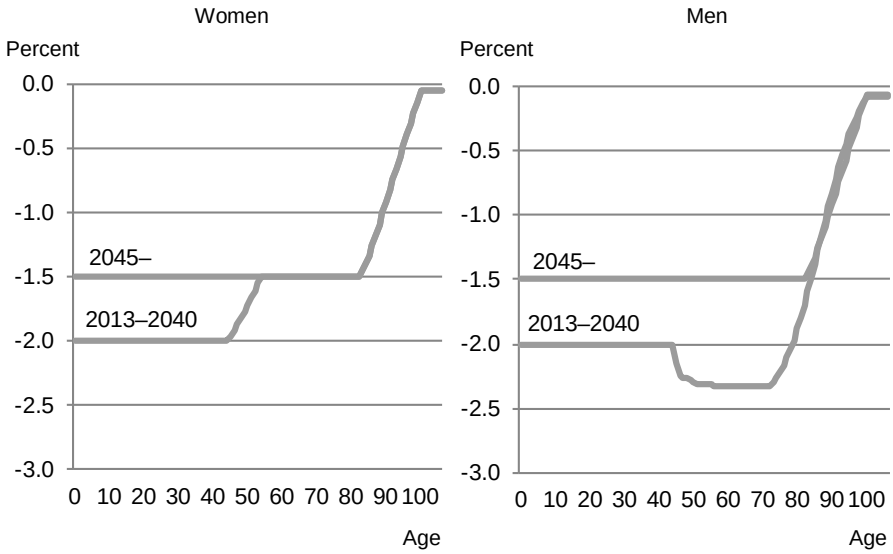
The mortality rates are low up until age 45. Only about 1.5 percent of deaths for women and 2.5 percent for men are expected to occur in these ages, see table 5.1. This is insignificant for the forecast results. It is important that the assumptions on relative annual changes of mortality correspond to the different number of deaths in different ages. In a forecast with the same relative rates, mortality changes in an exponential way, i.e. less and less.

In ages up to 44 years, the annual reduction of the mortality rates is assumed to be 2 percent. This is an average for women and men in these ages when the change in mortality between the life tables of 1996–2000 and 2006–2010 were calculated. As of 2045 the mortality reduction will decrease to 1.5 percent per year for ages 0–44.

The assumption in the ages 45 and older is based on mortality development for 1985–2011 and is a result of the Lee Carter method, see *Assumptions on mortality* in *Facts about the statistics*. During the most recent decades mortality has dropped more for men than for women in the 45–85 year age interval. This means that the mortality assumption is also different for women and men during part of the

period, see figure 5.9. As of 2045 the same annual reduction of the mortality rate is assumed for women and men. One reason that the mortality trends for men are assumed to become close to those of women is because the rapid decrease in mortality now occurring for men in certain ages has not been stable over time. The mortality trends for women have been more even. In the long term the same even development is assumed for both sexes, see the section *The same mortality trends for women and men?*

Figure 5.9
Predicted annual change in mortality rates for women and men by age and period



The annual mortality reduction for women will decrease from 2 to 1.5 percent between ages 44 and 54. A reduction of 1.5 percent is assumed for ages 55–82. The annual mortality rate reduction gradually declines for higher ages up to 100 years. The average reduction rate for age 100 also applies to ages over 100 years. This assumption about mortality trends for women is expected to continue until 2040. Then the reduction will decrease for younger ages so that it will be 1.5 percent for the entire age interval 0–82 up until 2045. For women age 54 and older, the same reduction of the mortality rate is assumed during the entire forecast period.

The current trend for men, with a greater mortality decline than for women aged 45–85, is expected to continue until 2040, and then will gradually change to the same reduction rate as for women in 2045.

In the beginning of the forecast period it is assumed that mortality for men will decrease by roughly 2.3 percent annually for ages 50–73, and will gradually decrease in older ages up to age 100.

The assumptions are based on the outcome according to the Lee-Carter method and have been evened out somewhat, as in the previous forecasts (Statistics Sweden, 2009a). The annual reduction rates at the beginning of the forecast period differ somewhat in this forecast from the assumptions that were used in the beginning of the period during the most recent forecasts. At the end of the period 1985–2011, men's mortality in higher ages has dropped somewhat more than at the beginning of the period. This makes the results for men less stable over time than for women.

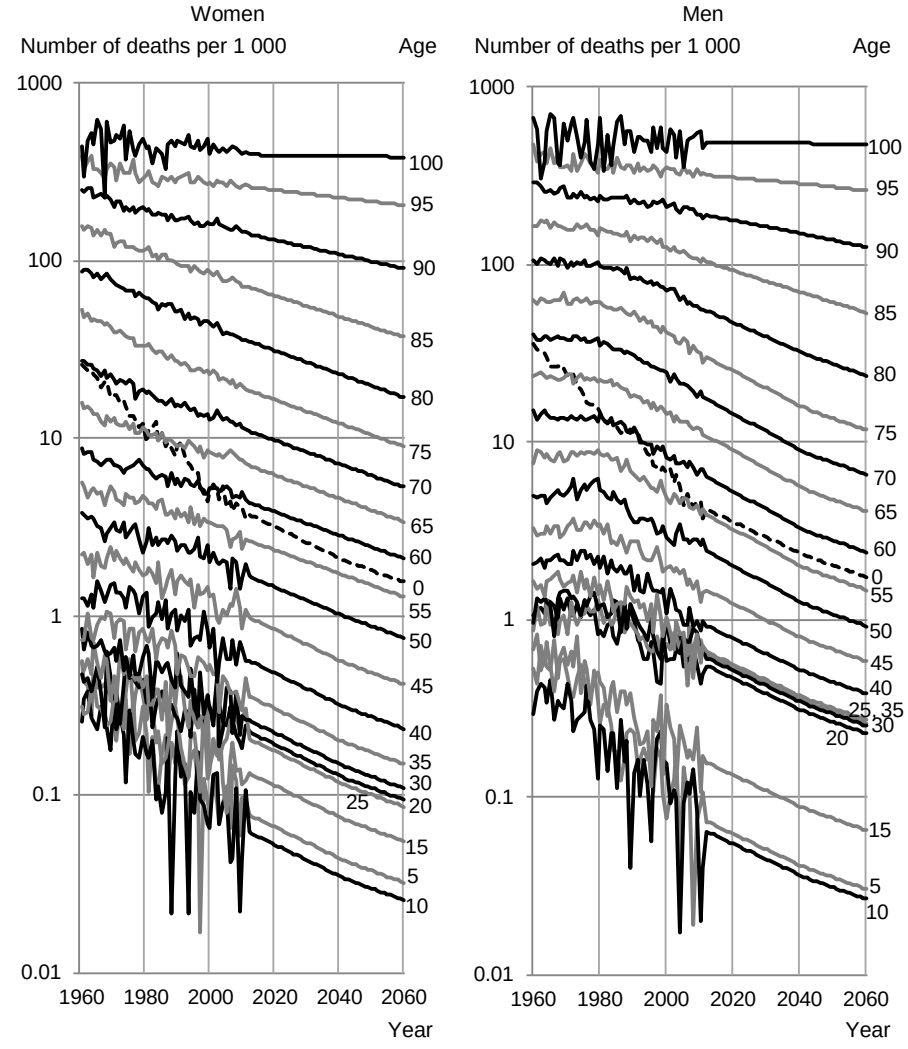
A forecast of smoking habits that is available today, with a small difference between the sexes, leads us to expect an even sex distribution of smoking habits in all ages in about 2030 or 2040. In terms of the forecast it is assumed that causes of death that are related to smoking, that have long had different developments for women and men, should then have about the same development. This is in line with what has been suggested earlier (Pampel, 2002). Even other factors that have significance for mortality trends, such as medical developments, are assumed to lead to the same mortality changes for women and men during the forecast period.

There is a discussion about whether there is an upper limit for life expectancy, but the trends for several countries including Sweden do not indicate that the trends for increased life expectancy are easing off (Ahlbom, Drehfahl, & Lundström, 2010). This is a reason for us to let the mortality trends for recent times continue until 2060, especially for older women. This is also what has been proposed by Lee and Carter (Lee & Carter, 1992).

Decreased mortality and increased life expectancy

Mortality trends during the period 1960–2060 are summarised in figure 5.10. The logarithmic scale allows comparison of all ages. Parallel curves mean the same percentage decline.

Figure 5.10
Mortality rate by sex and age 1960–2011 and forecast 2012–2060

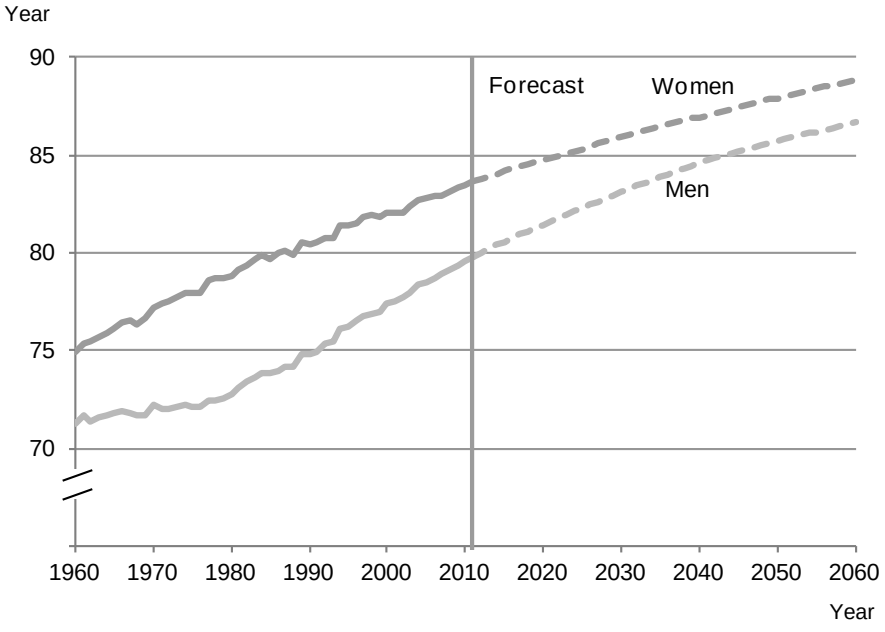


Logarithmic scale

The changes in the mortality rates that are assumed are largely a projection of the mortality trends of recent years in different ages. With these assumptions life expectancy is predicted to increase as shown in figure 5.11. In 2011 life expectancy in Sweden was nearly 84 years for women and nearly 80 years for men. It is estimated to be close to 89 years for women and nearly 87 years for men in 2060, that is, an increase of 5 years for women and 7 years for men. However, the increase is expected to be less during the period 2011–2060

than it was during 1980–2011. The average increase for each decade is estimated to be 1.1 years for women and 1.4 years for men. During the period 1980–2011 the corresponding increase was larger: 1.6 years for women and 2.3 years for men

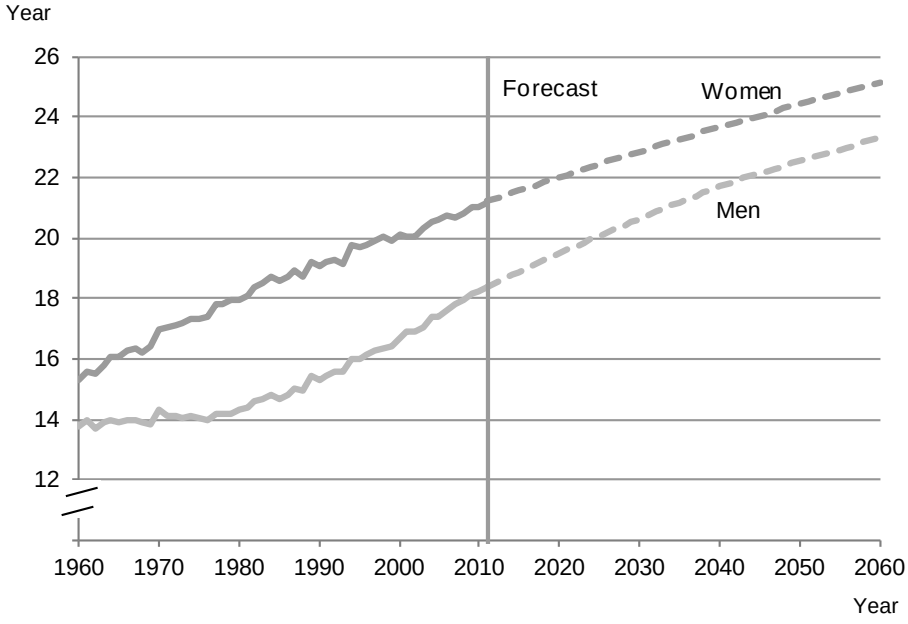
Figure 5.11
Life expectancy at birth 1960–2011 and forecast 2012–2060



The slower increase of life expectancy is illustrated in figure 5.11. This trend is a consequence of the use of the relative reduction figure of mortality, which gives a gradual slowdown of the increase in life expectancy during the forecast period (Lee, 2000).

During the period 2011–2060 life expectancy at age 65 is expected to increase from 21 to 25 years for women and from 18 to 23 years for men, that is, an increase of 4 years for women and of 5 years for men.

Figure 5.12
Remaining life expectancy at age 65, 1960 and forecast 2011–2060

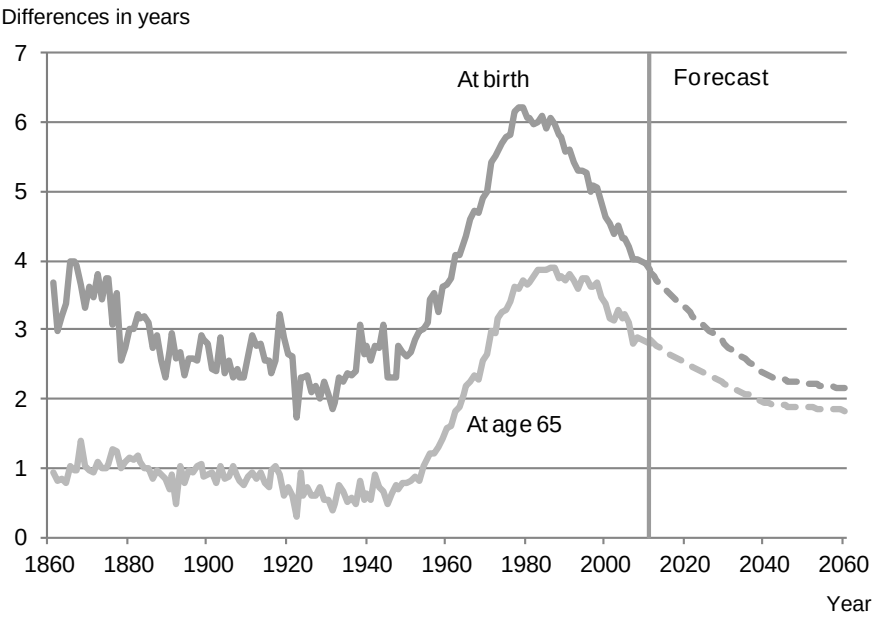


Less difference between the sexes

The difference in life expectancy between women and men has varied, not only during the 20th century but also during the 19th century, see figure 5.13. Women have had a longer life expectancy than men during the whole period, with at least slightly less than 2 years during the 1920s and at most 6 years at the end of the 1970s.

The trend of the last three decades of decreasing differences between the sexes is expected to continue in about the same way up until the 2040s, and will then be at about the same level. At the end of the forecast period the difference in life expectancy between the sexes is expected to be slightly more than 2 years at birth and slightly less than 2 years at age 65. The changed age structure of mortality, with a greater share of deaths at older ages, means that mortality in ages younger than 65 will have less significance for life expectancy. This also applies to the difference in life expectancy between the sexes.

Figure 5.13
Sex difference in life expectancy at birth and at age 65 1860–2011 and forecast 2012–2060



Alternative assumptions

Mortality can also develop in another way than what we assumed in the main alternative. By using alternative assumptions about mortality trends, one for higher mortality and one for lower mortality than in the main alternative, we can describe how the structure of the population is affected by the mortality assumption. Compared with the alternative assumptions on fertility and migration, where the low alternatives mean a lower population increase, the alternative with lower mortality means that population growth will be greater. High mortality means smaller population growth.

Low mortality

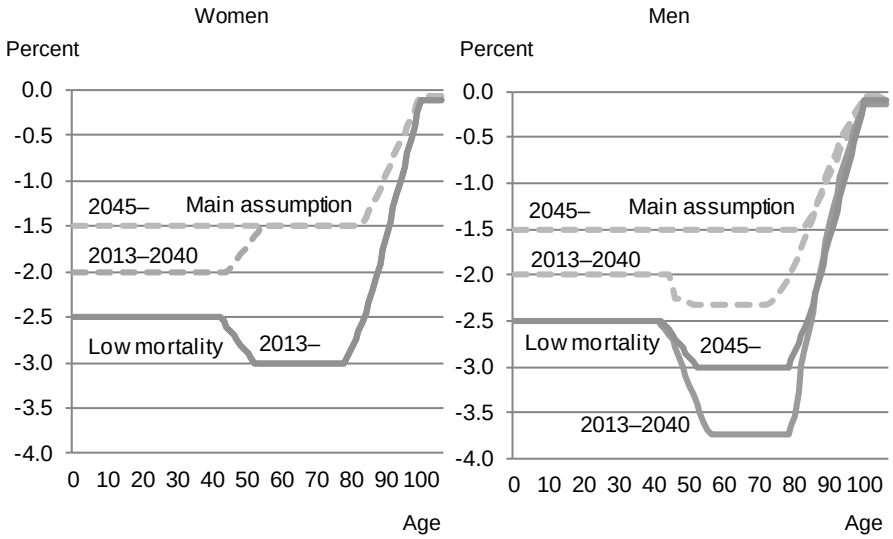
In an alternative assumption with lower mortality than the main assumption, the mortality decline is greater than the main alternative, i.e. mortality decreases more quickly than the recent trends. The annual reduction for ages 0–44 is 2.5 percent instead of 2 percent as in the main alternative, see figure 5.14. This greater reduction then continues steadily during the forecast period.

The same mortality reduction is assumed for women during the entire forecast period. The mortality reduction for women in the alternative with low mortality is considerably greater, 3 percent instead of 1.5 percent per year for ages 52–78. At age 83 and above, the mortality reduction is assumed to be 75 percent greater than the main alternative.

Like in the main alternative, men have a greater decrease in mortality than women in ages 45–84. During the period 2013–2040 an annual reduction of 3.75 percent per year is assumed for ages 56–78. This is about 1.5 percentage points greater than the reduction in the main alternative. As of 2045 women and men have the same mortality reduction in the different ages.

Greater decreases in mortality than the main alternative can occur if significant medical progress is made, such as in treating cancer. Healthier lifestyles can also reduce mortality more than the main alternative. The recent downturn in mortality has for example been slowed down by high and risky alcohol consumption. The slow downturn in smoking in recent decades can reduce mortality from cancer more than has already occurred, especially for women.

Figure 5.14
Predicted annual change in mortality rates by sex, age and period. Assumption with low mortality and main assumption



High mortality

The alternative with higher mortality than the main assumption assumes no change in mortality in the future. Mortality is locked at the level of 2012. This alternative has been presented in earlier forecasts and gives a basic level of how mortality can affect population changes. Unchanged mortality could be the result if some lifestyles become less healthy. Resistance to antibiotics could cause increased mortality from infectious diseases. The factors that have up until now led to reduced mortality can be counteracted by those factors that lead to increased mortality (Statistics Sweden, 2009a).

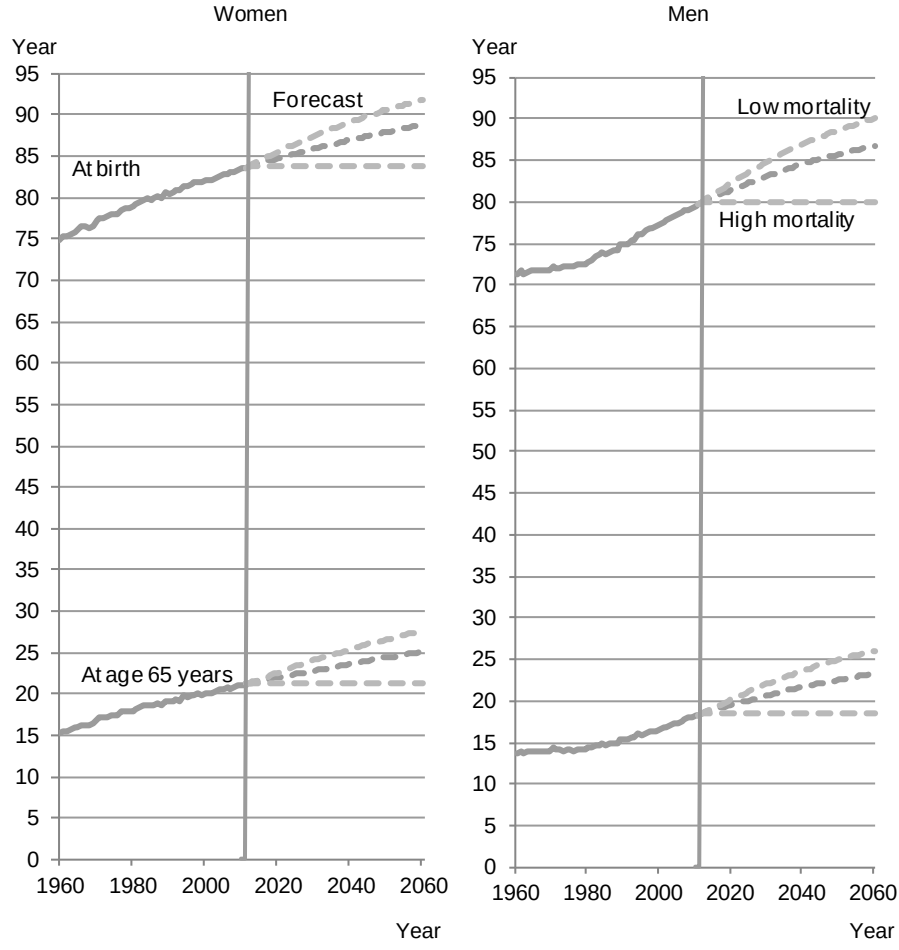
Considerable difference in life expectancy

The calculations with the different assumptions begin from the starting year 2012. Life expectancy at birth is assumed to be nearly age 84 for women and 80 years for men. For the starting year, at age 65, life expectancy is calculated to roughly 21 years for women and roughly 18 years for men. If the trends up until 2060 were to follow the assumption on lower mortality, life expectancy at birth would be 92 years for women and 90 years for men, see figure 5.15. This is 3 years higher than the main alternative for both sexes.

In the assumption about lower mortality, remaining life expectancy at age 65 is estimated at slightly less than 28 years for men and 26 years for men. The corresponding figures for the main alternative are slightly more than 25 years for women and slightly more than 23 years for men.

In the assumption for high mortality, the estimate for mortality and life expectancy remains at the same level as 2012 all the way up to 2060. The main alternative estimates life expectancy for men will be slightly less than 7 years higher than in the alternative for high mortality. The corresponding difference for women is 5 years.

Figure 5.15
Life expectancy by sex at birth and age 65 years 1960–2011 and forecast with main assumption and alternative assumptions for 2012–2060



6. Comparison with Eurostat's forecast

This section presents a comparison of results of our main assumptions and the results of Eurostat's forecast for countries in Europe. The chapter begins with a comparison of the results for population development and then gives a comparison for each component: fertility, migration and mortality the source used for the comparison in the entire chapter is EUROPOP2010 – Convergence scenario, national level and the most recent observations of information have been collected from Eurostat's database.

Eurostat's forecast is a so-called convergence scenario. This means that they assume that all countries in Europe will have the same fertility rates and life expectancy far into the future (2150). There is also an assumption that net immigration will be zero at some time far into the future. Eurostat makes its forecast for the 27 member countries in the EU as well as for Iceland, Norway, Switzerland and Liechtenstein.

Figure 6.1
Population by age 2060 according to Eurostat and according to the main alternative

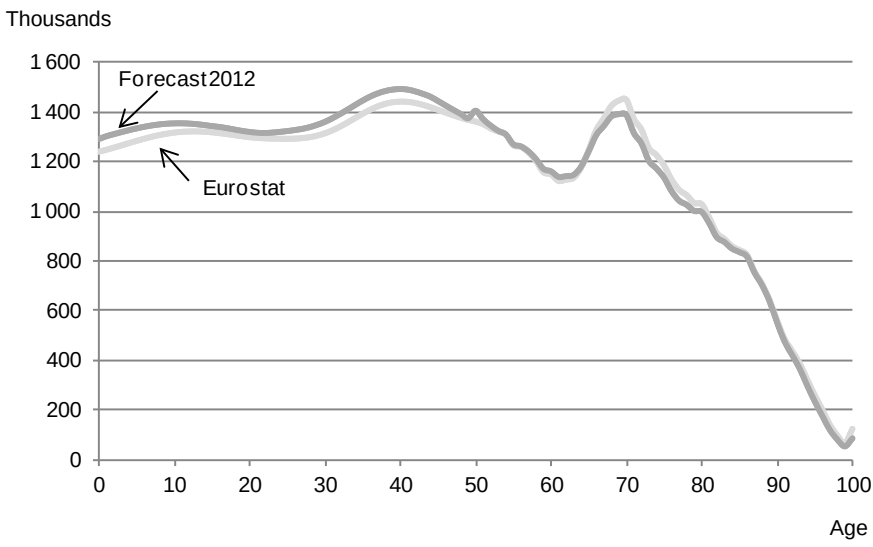


Table 6.1
Population 2009 and forecast 2060 (in thousands) and increase 2009–2060 (percent) according to Eurostat

Country	2009 Thousands	2060 Thousands	Increase percent
Ireland	4 468	6 575	47.2
Luxembourg	502	730	45.4
Cyprus	803	1 138	41.7
Iceland	318	438	37.8
Norway	4 858	6 606	36.0
United Kingdom	62 008	79 159	27.7
Belgium	10 840	13 476	24.3
Sweden	**9 341**	**11 548**	**23.6**
Switzerland	7 786	9 314	19.6
France	64 714	73 769	14.0
Spain	45 989	52 192	13.5
Denmark	5 535	6 085	9.9
Italy	60 340	64 859	7.5
Finland	5 351	5 747	7.4
Liechtenstein	36	38	6.5
Austria	8 375	8 858	5.8
Netherlands	16 575	17 044	2.8
Slovenia	2 047	2 051	0.2
Greece	11 305	11 259	-0.4
Czech Republic	10 507	10 437	-0.7
Portugal	10 638	10 228	-3.8
Slovakia	5 425	5 090	-6.2
Malta	413	386	-6.4
Hungary	10 014	8 823	-11.9
Estonia	1 340	1 168	-12.9
Poland	38 167	32 504	-14.8
Germany	81 743	65 940	-19.3
Romania	21 462	17 172	-20.0
Lithuania	3 329	2 661	-20.1
Latvia	2 248	1 658	-26.3
Bulgaria	7 564	5 492	-27.4

The table is sorted by population increase in percent, 2009–2060.

Eurostat's assumptions on life expectancy and net-immigration on the long term are higher, while the assumption on fertility is at the same level as our main assumption. The differences are quite small for all components. As a result the total populations in the two forecasts are relatively alike in 2060. In our main alternative, Sweden has 100 000 more people in 2060 than according to Eurostat's scenario. Looking at the age structure in 2060, our main alternative has somewhat more younger persons and somewhat fewer older persons compared to Eurostat.

In our main alternative the population is expected to increase by 24.7 percent from 2009 to 2060. That is at the level of Eurostat's scenario that predicts Sweden's population will increase by 23.6 percent by 2060. The populations of Ireland and Luxembourg will increase by nearly 50 percent according to Eurostat. Some other countries that will increase more quickly than Sweden are Norway the UK. There are also many countries, mainly in eastern Europe, that will decrease in population according to Eurostat. The populations of Bulgaria and Latvia will have decreased by more than one fourth.

Assumption about fertility

In relation to most countries in Europe, Sweden has a high fertility rate. In 2010 only Iceland, Ireland and France had a higher fertility rate than Sweden. Many countries in Europe today have very low fertility rates; nearly half of the countries had a rate below 1.5 children per woman in 2010. By 2060 those countries that today have very low levels will increase their fertility rates somewhat, and all countries are expected to lie above 1.5 children per woman. Sweden is still expected to be on top together with Iceland, Ireland, France, Norway and the UK. Eurostat's assumption on fertility for Sweden in 2060 is 1.90 children per woman, which is in line with this forecast.

Table 6.2
Total fertility rate in 2010 and forecast 2060 according to Eurostat. Number of children per woman

Country	2010	2060
Iceland	2.20	2.09
Ireland	2.07	1.99
France	2.03	1.95
Sweden	**1.98**	**1.90**
Norway	1.95	1.94
United Kingdom[1]	1.94	1.91
Denmark	1.87	1.84
Finland	1.87	1.86
Belgium[1]	1.84	1.84
Netherlands	1.79	1.81
Estonia	1.63	1.70
Luxembourg	1.63	1.68
Slovenia	1.57	1.65
Lithuania	1.55	1.66
Switzerland	1.52	1.62
Cyprus[1]	1.51	1.62
Greece	1.51	1.64
Bulgaria	1.49	1.67
Czech Republic	1.49	1.62
Austria	1.44	1.56
Italy	1.41	1.57
Liechtenstein	1.40	1.76
Slovakia	1.40	1.57
Germany	1.39	1.54
Malta	1.38	1.59
Poland	1.38	1.56
Romania[1]	1.38	1.55
Spain	1.38	1.56
Portugal	1.36	1.51
Hungary	1.25	1.51
Latvia	1.17	1.51

1) The information for the United Kingdom, Belgium, Cyprus and Romania refers to 2009.
The table is sorted by the total fertility rate 2010.

Assumptions about migration

The two left columns in table 6.3 show net migration in thousands and the two right columns show net migration per 1 000 inhabitants. Migration to Sweden is high, but far from the highest in Europe. Of these countries, Sweden had the sixth highest net migration in 2010 in relation to the population.

Table 6.3
Net migration 2010 and forecast 2060 (thousands) and number per 1 000 inhabitants according to Eurostat

	Number		Per 1 000 inhabitants	
	2010	2060	2010	2060
Luxembourg	7.7	2.6	15.1	3.6
Norway	42.2	12.0	8.6	1.8
Belgium	89.3	32.0	8.2	2.4
Switzerland	60.6	27.2	7.7	2.9
Malta	2.2	0.4	5.4	1.0
Sweden	**49.7**	**19.5**	**5.3**	**1.7**
Italy	311.7	244.3	5.2	3.8
Liechtenstein	0.2	0.1	4.6	1.5
Austria	27.4	25.8	3.3	2.9
Denmark	16.8	8.7	3.0	1.4
United Kingdom	163.1	133.6	2.6	1.7
Finland	13.8	7.3	2.6	1.3
Netherlands	32.5	6.2	2.0	0.4
Germany	130.2	72.3	1.6	1.1
Czech Republic	15.6	18.3	1.5	1.7
Spain	59.8	185.2	1.3	3.5
Hungary	11.5	18.9	1.2	2.1
France	71.6	62.9	1.1	0.9
Slovakia	3.4	6.8	0.6	1.3
Portugal	3.8	27.8	0.4	2.7
Romania	-0.8	7.6	0.0	0.4
Estonia	0.0	0.0	0.0	0.0
Greece	-0.9	25.3	-0.1	2.2
Poland	-2.1	14.1	-0.1	0.4
Slovenia	-0.5	3.8	-0.3	1.8
Bulgaria	-24.2	0.7	-3.2	0.1
Latvia	-7.9	0.6	-3.5	0.4
Cyprus	-3.3	4.1	-4.1	3.6
Iceland	-2.1	0.6	-6.5	1.4
Ireland	-33.6	15.6	-7.5	2.4
Lithuania	-77.9	0.8	-23.7	0.3

The table is sorted by net migration per 1000 inhabitants in 2010.

Some countries have had a larger emigration than immigration in 2010. This applies to some countries in eastern Europe as well as Ireland that had a significant emigration in 2010 after many years of high immigration. In 2060 is assumed that thirteen of the countries shown in table 6.3 have a higher net migration per 1 000 inhabitants than Sweden.

Eurostat's assumption for net migration for Sweden will be down to about 19 500 persons in 2060. This is 2 500 more than in the main assumption in this forecast. Net migration for Sweden in Eurostat's scenario for the period 2012–2060 is slightly more than 1.3 million, which is 150 000 more than the assumption in this forecast.

Assumption about mortality

Differences in life expectancy are now considerable among the different countries in Europe. In 2010, there is a 7 year difference in life expectancy among women in France and Bulgaria, see table 6.4. The differences are even larger among men. Swiss men had a 12 year higher life expectancy than men in Lithuania in 2010. Some of these differences remain, but in the very long term, up until 2150, the differences among countries are assumed to completely disappear.

Mortality trends up to 2150 have been estimated with the Lee-Carter method. The mortality rate trends for a group of countries that today have a high life expectancy have been used as a vision for future development of other countries. The trend development of the analysis has then been able to be in effect up until 2150 when all countries will have the same mortality and life expectancy. The assumption about this harmonisation among countries results in that countries with low life expectancy today will have a quicker increase in life expectancy in the future. Between 2010 and 2060 life expectancy for women is expected to increase by 5 years in France and 11 years in Bulgaria.

Eurostat assumes that the difference in life expectancy between women and men will largely remain the same. In Sweden life expectancy for both sexes is expected to increase by roughly 6 years between 2010 and 2060. Eurostat's assumption does not take into account that women and men in Sweden, like in many other countries, have had different mortality trends. However, the assumptions about harmonisation among countries have the following consequences: In countries with a large difference in life

expectancy between the sexes, the difference gradually decreases. In countries with a large difference in life expectancy between the sexes, life expectancy is low while life expectancy is high in countries with a small difference between the sexes.

Statistics Sweden's main assumption on mortality trends result in a 0.5 year shorter life expectancy for women than Eurostat's. Men have roughly a 1 year higher life expectancy according to Statistics Sweden's assumptions compared to the calculations done by Eurostat.

Table 6.4
Life expectancy by sex 2010 and forecast 2060 according to Eurostat

Women			Men		
	2010	2060		2010	2060
France	85.3	90.0	Switzerland	80.3	86.0
Spain	85.3	89.9	Iceland	79.8	85.6
Switzerland	84.9	90.0	**Sweden**	**79.6**	**85.5**
Italy[1]	84.6	89.7	Liechtenstein	79.5	86.2
Liechtenstein	84.3	90.1	Italy[1]	79.4	85.5
Iceland	84.1	89.3	Malta	79.2	84.9
Sweden	**83.6**	**89.3**	Spain	79.1	85.4
Cyprus[1]	83.6	89.0	Norway	79.0	85.2
Malta	83.6	88.9	Netherlands	78.9	85.2
Luxembourg	83.5	89.5	Ireland	78.7	84.5
Finland	83.5	89.2	Cyprus[1]	78.6	85.1
Austria	83.5	89.1	Greece	78.4	84.9
Norway	83.3	89.2	United Kingdom[1]	78.3	85.2
Ireland	83.2	88.9	France	78.3	85.1
Slovenia	83.1	88.8	Germany	78.0	84.8
Netherlands	83.0	89.1	Luxembourg	77.9	84.9
Germany	83.0	88.9	Austria	77.9	84.8
Belgium[1]	82.8	89.0	Belgium[1]	77.3	84.6
Portugal	82.8	88.6	Denmark	77.2	84.4
Greece	82.8	88.3	Finland	76.9	84.4
United Kingdom[1]	82.5	89.1	Portugal	76.7	84.2
Denmark	81.4	88.4	Slovenia	76.4	84.0
Czech Republic	80.9	87.8	Czech Republic	74.5	83.2
Estonia	80.8	88.0	Poland	72.1	82.4
Poland	80.7	87.9	Slovakia	71.7	82.2
Slovakia	79.3	87.4	Hungary	70.7	81.9
Lithuania	78.9	87.1	Estonia	70.6	81.6
Hungary	78.6	87.4	Bulgaria	70.3	81.7
Latvia	78.4	87.2	Romania[1]	69.8	81.8
Romania[1]	77.4	86.7	Latvia	68.6	81.1
Bulgaria	77.4	86.6	Lithuania	68.0	80.7

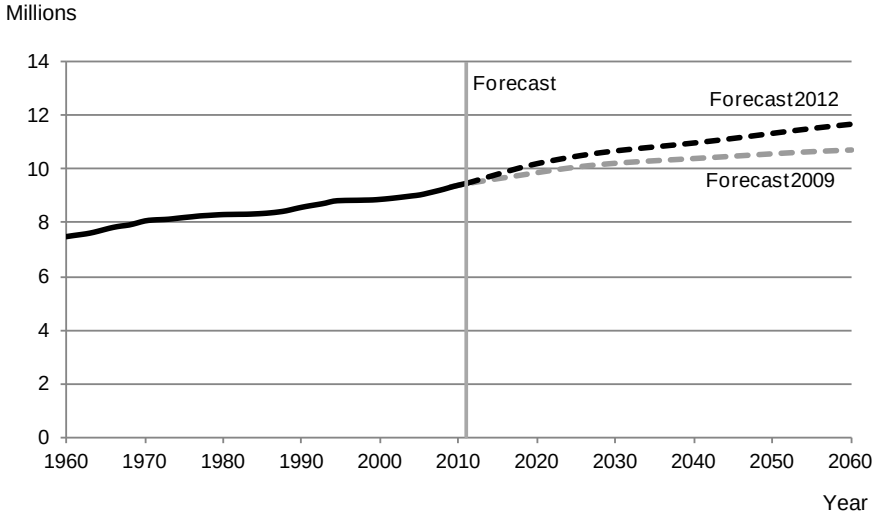
1) Information for Belgium, Cyprus, Italy, Romania and the United Kingdom is from 2009.
The table is sorted by life expectancy 2010/2009.

7. Comparison with forecast 2009

The last time Statistics Sweden did a forecast like this one was in 2009, and only small adjustments on assumptions in the short term have been made for the following years. This chapter compares the results and assumptions according to the main alternative in this report with the main alternative in the forecast from 2009. The source used in the entire chapter is Sweden's future population 2009–2060 (Statistics Sweden, 2009a).

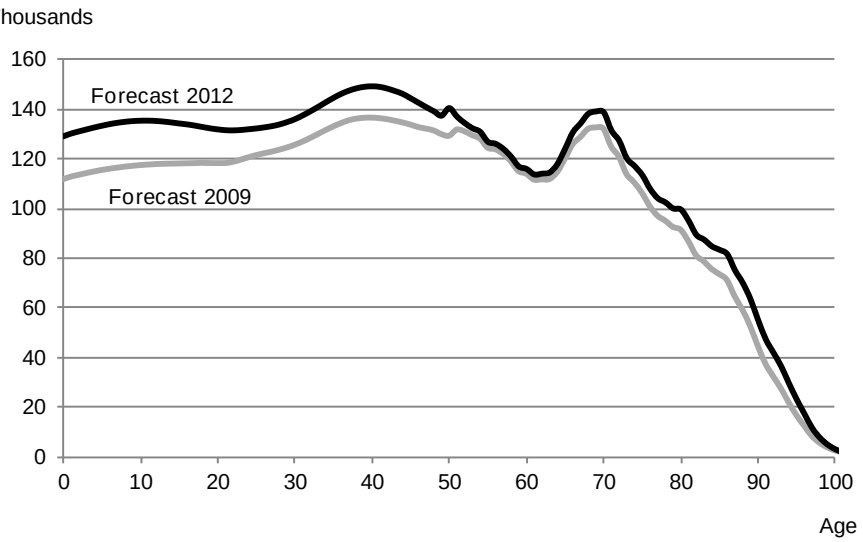
This forecast gives a larger number of inhabitants than in the forecast from 2009. The average population growth in this forecast is 44 000 per year, while in the previous forecast it was 26 000 per year. This means that in 2060 there will be nearly 900 000 more persons than in the previous forecast.

Figure 7.1
Population 1960–2011 and forecast 2012–2060 according to forecast 2009 and 2012



Compared to the forecast from 2009, this forecast gives a larger population in 2060 for all age groups. The largest difference is in the ages under age 50, that is, those who were born during the forecast period. The largest relative difference is among the older persons.

Figure 7.2
Population by age 2060 according to according forecast 2009 and 2012



All the components, fertility, migration and mortality contribute to the population increase more in the 2012 forecast than in the 2009 forecast. The changed assumption about migration has the largest effect. Of the increase of nearly 900 000, roughly 400 000 can be attributed to the changed assumption about migration. But of these 400 000, nearly 300 000 can stem from the assumption about the high immigration in the next coming five-year period. The higher fertility assumption contributes to 300 000 of the increase and the changed assumption about mortality to 200 000.

Assumption about fertility

In the long term the assumptions for fertility in this forecast have been revised upwards compared to earlier years. It was assumed in the 2009 forecast that the share of childless persons would increase. In contrast, the most recent studies indicate a decrease in childlessness. Therefore this forecast assumes that childlessness will decrease somewhat. One reason that fewer persons are childless is because it is easier to get help with having children at older ages, such as IVF treatments.

Even the share of persons who have a second child is expected to increase compared to what was assumed in the 2009 forecast. There are no indications that the two-children norm will weaken, and the

recent trend that the share who have at least two children has increased. In the 2012 forecast it is also assumed that somewhat more people will have a third child than was assumed in the forecast for 2009.

On the whole, the increase in future long term assumptions compared to the forecast of 2009 can be summarised as follows: The generations that recently finished their childbearing years, despite having children at a later age, have succeeded to catch up with their childbearing more than what was assumed in 2009. In the end, they landed at a fertility rate that was close to previous generations.

According to the assumptions in this forecast, it is estimated that 16 000 more children will be born in 2060 compared to the 2009 forecast, and roughly 600 000 more in total between 2012 and 2060. This increase is nearly as much due to a changed assumption on migration as the new assumption about fertility.

Table 7.1
Assumptions on the total fertility rate for some forecast years according to forecast 2009 and 2012. Children per woman

Year	Forecast 2009	Forecast 2012
2012	1.86	1.92
2020	1.85	1.94
2030	1.83	1.91
2040	1.83	1.91
2050	1.83	1.91
2060	1.83	1.90

Assumptions about migration

In the next few years this forecast assumes there will be a higher immigration rate compared to the 2009 forecast. This is largely due to the assessment by the Swedish Migration Board about increased immigration of refugees and family members. Continued labour force immigration also contributes to this.

In the long term this forecast predicts both a higher immigration and higher emigration than the forecast from 2009, but net migration will be somewhat lower in this forecast than what was assumed earlier. This can be explained by the growing economies in Asia will compete for immigration and will attract more migrants. In the 2009 forecast it was assumed that net migration for 2012–2060 would be 1.06 million. This forecast predicts it will be 1.17 million.

The distribution of the sexes of migrants has also changed in the long term. In the 2009 forecast there was a higher share of men, among immigrants as well as emigrants. In this forecast, the distribution of the sexes predicts that by the end of the forecast period there will be an equal number of men and women who immigrate, and the emigration risks will be the same for both sexes.

Table 7.2
The migration assumptions for some forecast years according to forecast 2009 and 2012. Thousands

	Forecast 2009			Forecast 2012		
	Immi-gration	Emigra-tion	Net migration	Immi-gration	Emigra-tion	Net migration
2012	82	47	35	106	48	58
2020	73	50	23	87	57	29
2030	74	52	22	79	60	19
2040	75	54	21	81	63	18
2050	76	56	20	83	66	17
2060	76	57	19	85	68	17

Assumption about mortality

The assumptions about mortality trends in this forecast have been determined by using the same methods as in the most recent. In the near future the same reduction rates are used for ages up to 44 years, as in the 2009 forecast. Minor adjustments have been made for the older ages. The trend analysis pointed towards a somewhat larger decrease in mortality for ages 45–84. In this age span the annual reduction rate is 0.2 percentage points larger in the 2012 forecast compared to the 2009 forecast. This difference does not result in any great difference in estimated life expectancy up until 2020, see table 6.3.

In the 2009 forecast the reduction rates were written downwards in two steps, first to 75 percent (gradual transition in the period 2021–2025) and then to 50 percent of the original mortality reduction (transition in the period 2031–2035). A similar write-down of the reduction rates was done for the younger ages in this forecast, but only in one step (gradual transition in the period 2041–2045). A new assumption compared to the 2009 forecast is that men are given the same reduction rate as women as of 2045. Women in older ages have the same reduction rate during the entire forecast period in the 2012 forecast.

Table 7.3
Life expectancy at birth and age 65 for some forecast years according to forecast 2009 and 2012

Year	Women				Men			
	At birth		At age 65		At birth		At age 65	
	2009	2012	2009	2012	2009	2012	2009	2012
2012	83.6	83.8	21.1	21.3	79.9	80.0	18.4	18.5
2020	84.5	84.8	21.7	22.0	81.2	81.5	19.3	19.5
2030	85.4	85.9	22.3	22.9	82.5	83.1	20.1	20.6
2040	86.0	87.0	22.8	23.7	83.5	84.6	20.8	21.7
2050	86.5	87.9	23.2	24.4	84.2	85.7	21.3	22.5
2060	87.0	88.8	23.5	25.1	84.8	86.7	21.8	23.3

From 2045 onwards no changes occur in the reduction during the forecast period. As of this year the annual reduction rates differ more in the 2012 forecast and the 2009 forecast. In the age interval 45–84 years, the reduction in the mortality assumption in 2012 is on average 0.8 percentage points greater for women and 0.5 percentage points greater for men, compared to the corresponding assumption in 2009. Compared to the 2009 assumptions, the ones in 2012 give an extra increase in life expectancy with about half a year per decade from 2030 onwards. With the 2012 assumptions, the remaining life expectancy at birth is slightly less than 2 years higher, and at age 65 about 1.5 years higher than the 2009 assumption, see table 7.3.

8. Forecasts with alternative assumptions

It is of course possible that fertility, mortality and migration will develop differently than described in the main assumptions. This chapter presents the effects of the future population if development of the components differ considerably from the main assumption. It gives the reader an understanding about how the different components influence the size and composition of the population.

We show calculations 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 each chapter). We have chosen to examine how the size of the population is affected when we vary one factor at a time. For instance, this means that we assume a high alternative for the future level of fertility, while the assumptions for mortality and migration are the same 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 after several years.

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. For the forecasts on older people, the mortality assumption is more important.

The migration assumption affects most age groups more or less. Most immigrants come at ages 20–30 and the emigrants are on average a few years older, thus they directly affect those age groups. They also influence the number in the younger ages by the children they have in Sweden. Because the population grows older, immigration also affects the older age groups after several years.

Below is a compilation of the different alternative for fertility, mortality and international migration. The different alternatives are discussed in their respective chapter. Please note that the alternatives with high fertility and high migration lead to an increased population, while the opposite holds for mortality, an alternative with high mortality leads to a decreased population.

Table 8.1
Total fertility rate 2011 and forecast for 2012–2060. Children per woman

Year	Low fertility	Main-assumption	High-fertility
2011		1.91	
2012	1.79	1.92	2.02
2020	1.67	1.94	2.17
2030	1.65	1.91	2.16
2040	1.66	1.91	2.15
2050	1.66	1.91	2.15
2060	1.65	1.90	2.15

Table 8.2
Mortality 2011 and forecast 2012–2060. Life expectancy in years

Year	Low mortality		Main assumption		High mortality	
	Women	Men	Women	Men	Women	Men
2011			83.7	79.8		
2012	83.8	80.0	83.8	80.0	83.8	80.0
2020	85.5	82.3	84.8	81.5	83.8	80.0
2030	87.4	84.8	85.9	83.1	83.8	80.0
2040	89.1	86.9	87.0	84.6	83.8	80.0
2050	90.6	88.6	87.9	85.7	83.8	80.0
2060	91.9	90.0	88.8	86.7	83.8	80.0

Table 8.3
Migration 2011 and forecast 2012–2060. Thousands

Year	Low net migration			Main assumption			High net migration		
	Immi-gration	Emi-gration	Net	Immi-gration	Emi-gration	Net	Immi-gration	Emi-gration	Net
2011				96.5	51.2	47.6			
2012	81.6	47.6	34.0	106.3	47.9	58.4	113.4	48.0	65.4
2020	59.0	51.4	7.6	86.5	57.2	29.4	103.4	58.9	440.4
2030	58.7	51.2	7.5	79.0	60.0	19.0	104.7	65.9	38.8
2040	59.0	52.1	6.9	81.2	63.4	17.8	107.1	72.2	34.9
2050	56.1	52.3	3.8	83.4	66.3	17.1	109.6	77.4	32.2
2060	49.8	50.6	-0.8	84.7	68.1	16.6	111.4	81.0	30.4

Development of the total population

The assumption on a high fertility rate quickly results in an increased population, and after 10 year the population is nearly 140 000 higher than in the main alternative. However, in the long term the assumption about a high migration rate gives the largest population and in 2060 this alternative results in a population that is slightly more than 1 million than in the main alternative. Meanwhile the higher fertility rate would result in a population of roughly 900 000 more than in the main alternative.

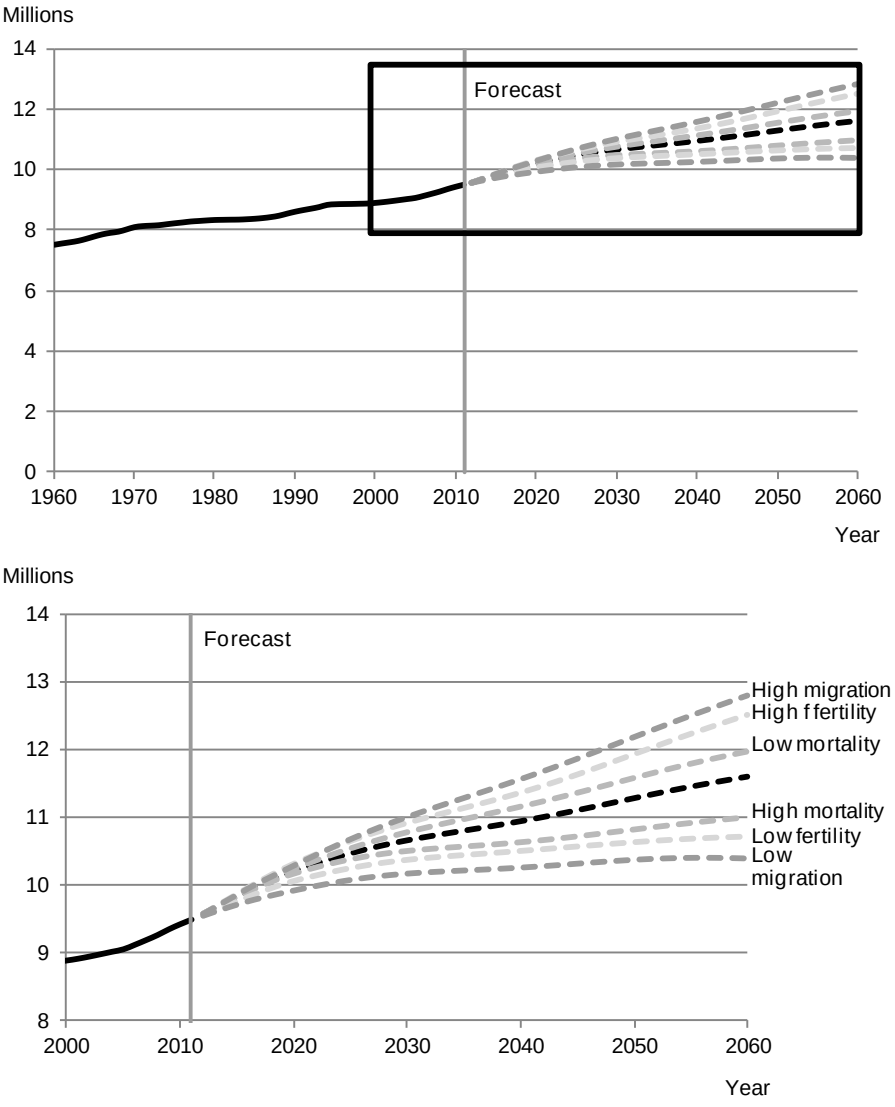
The alternative with low migration is the alternative that gives the smallest population compared to the main alternative. In 2060 the population is 1.2 million fewer people than in the main alternative. The alternative with low fertility also gives a clearly decreased population, almost 900 000 fewer people in 2060 than the main alternative.

The alternatives with low and high mortality deviate the least from the main alternative. In 2060 the population in these alternatives are respectively 350 000 more people and 600 000 fewer people than the main alternative.

In all the alternatives, Sweden's population will reach 10 million between 2017 and 2023. During the 2030s the 11 million mark will be reached in the alternative with high fertility, high migration and low mortality. In the alternative with low fertility, low migration and high mortality, the population will not reach 11 million during the forecast period. In the alternative with high migration the 12 million mark will even be reached during the forecast period.

In the alternative with low migration, a weak decrease in the population will begin at the end of the forecast period.

Figure 8.1
Population 1960–2011 and forecast 2012–2060 according to different assumptions



Development among different age groups

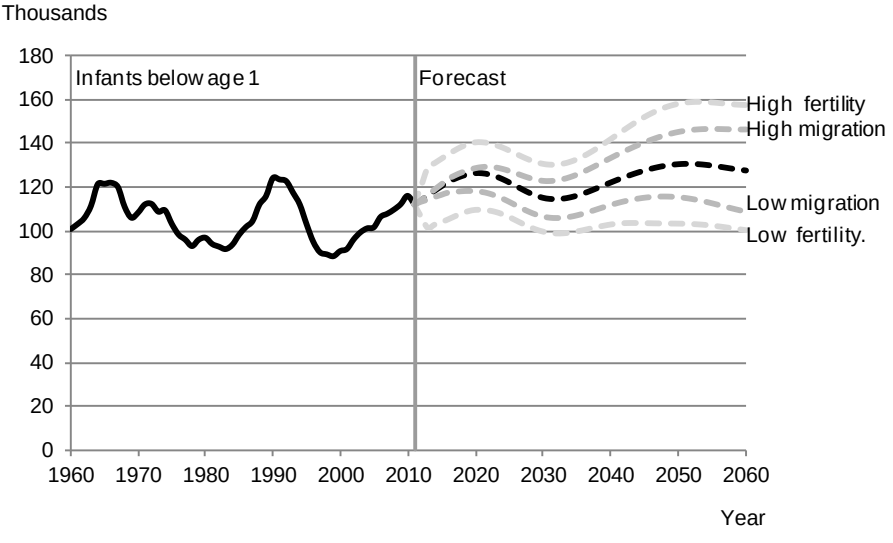
The following section presents the results from the different alternative forecasts for different age groups.

Number of infants below age 1

The assumption about fertility affects the number of infants below age 1 from the first forecast year onwards. After 20–30 years the assumption on fertility affects the number of infants two times, since those who are born during the period in turn become mothers, as seen clearly in figure 8.2 in the alternative with high fertility, where the number of infants increases sharply after 2035. In 2060 the different alternatives about fertility give around 30 000 more or fewer infants compared to the main alternative.

The number of infants is affected by immigration, directly with immigration of infants, but above all indirectly by immigration of women in childbearing ages. At the end of the forecast period, the alternatives with high and low net migration result in 20 000 more or fewer infants than the main alternative.

Figure 8.2
Number of zero-year-olds 1960–2011 and forecast 2012–2060 by main alternative and different fertility and migration assumptions



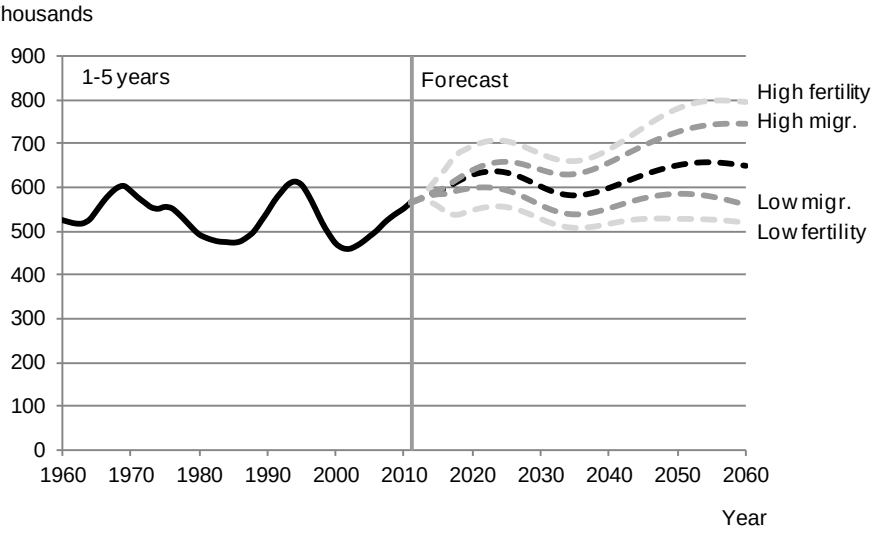
Different assumptions about mortality affect infants marginally. In 2060 the figures are about 100 more or 500 fewer than in the main alternative with the assumptions on low and high mortality. Therefore the alternative on mortality is not included in figure 8.2.

In the alternatives with low fertility and low migration there will be fewer infants in 2060 than today.

Number of children in preschool ages 1–5 years

The trends for the number of children aged 1–5 are very similar for the trends in the number of infants, but since we are dealing with five ages, deviations will be five times greater.

Figure 8.3
Population in ages 1–5 years 1960–2011 and forecast 2012–2060 by main alternative and different fertility and migration assumptions



As early as 2018 the different fertility assumptions result in deviations from the main alternative of 60 000 more or 80 000 fewer children. In 2060 the deviations are 140 000 more respectively fewer children compared to the main alternative.

The deviation from the main alternative is somewhat smaller in the migration alternative. In 2060 the deviations are 90 000 more or fewer children in preschool ages compared to the main alternative.

The alternative assumptions about future mortality hardly affect the number of children aged 1–5, in 2060 the difference is around 500 more or 2 500 fewer children compared to the main alternative. Therefore the alternative on mortality is not included in figure 8.3.

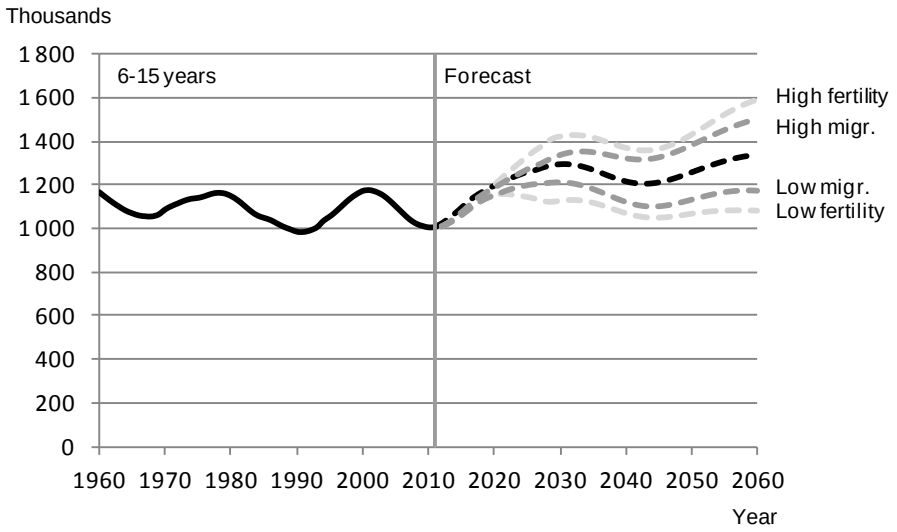
In the alternative with low fertility the number of preschool-aged children will be lower in 2060 than today, and in the alternative with low migration it will be about the same as today.

Number of children in school aged 6–15

The number of children in school aged 6–15 is not affected by the alternative assumptions for fertility until after seven years, and completely affected after 15 years. Migration also has a slight effect during the first forecast years. In this age group it is clearly seen that it is not migration that directly affects the results, but rather the indirect influence of children who are born by women who have immigrated. In these ages the net immigration is about 2 000 per year in the alternative with low immigration and 6 000 per year in the alternative with high immigration.

Mortality in these years has only a slight influence on the number of children, in 2060 this figure is about 1 000 compared to the main alternative.

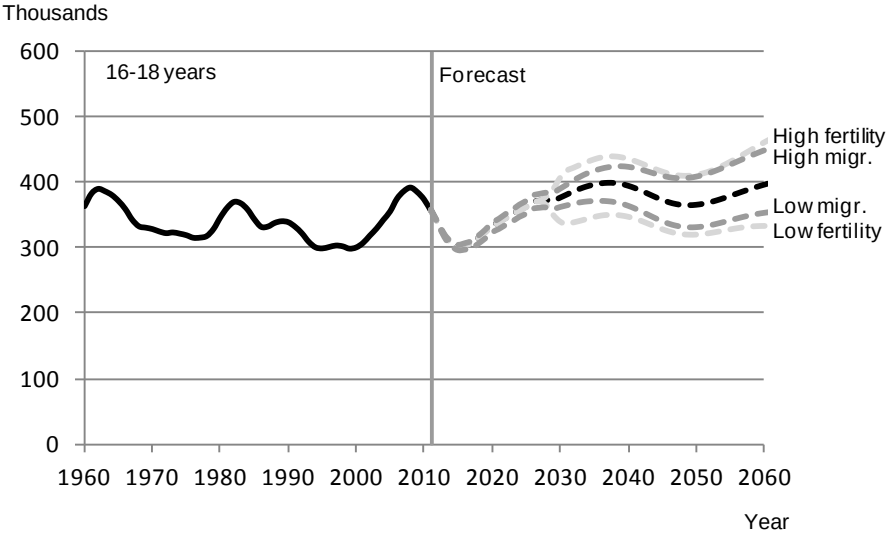
Figure 8.4
Population in ages 6–15 years 1960–2011 and forecast 2012–2060 according to main alternative and different fertility and migration assumptions



Young people in upper secondary school ages 16–18

The number of young people aged 16–18 years is mainly affected by the alternative with low migration. In 2030, when those born during the first forecast years have all entered upper secondary school ages, the alternative with high fertility gives 30 000 more in this group and the alternative with low fertility gives 35 000 fewer people. In 2060, these differences have increased to roughly 60 000 more young people respectively fewer young people compared to the main alternative. In the long term the alternative with high migration gives 50 000 more in this age class and the alternative with low migration gives 45 000 fewer people than the main alternative.

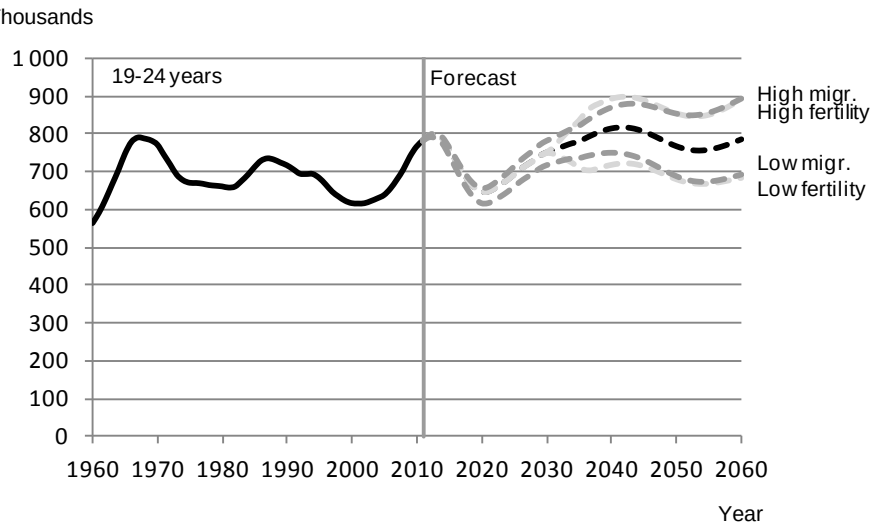
Figure 8.5
Population aged 16–18 years 1960–2011 and forecast 2012–2060 according to main alternative and different fertility and migration assumptions



Young people aged 19–24

The number of young people aged 19–24 are affected the first twenty years of the forecast years only by the migration assumptions. In the long term the alternative migration and fertility assumptions affect this age class equally. In the alternative with high immigration, net immigration is around 10 000 per year for this age class and about 3 000 per year in the alternative with low net migration.

Figure 8.6
Population aged 19–24, 1960–2011 and forecast 2012–2060 according to main alternative and different fertility and migration assumptions



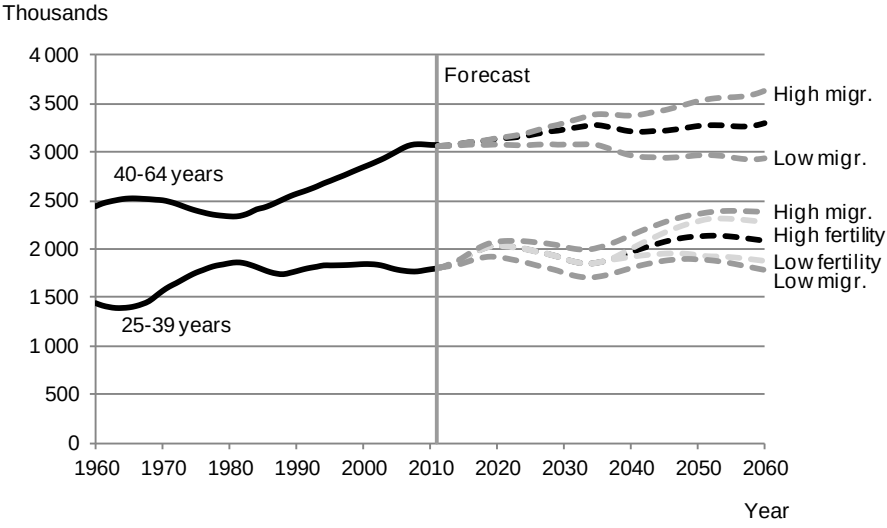
Population in actively working ages 25–64

For these ages it is mainly the alternative for migration trends that give rise to deviations from the main alternative during the forecast period. For the younger age class of 25–39 years, the annual net immigration is an average of 2 500 in the low alternative and slightly more than 15 000 in the alternative with high immigration. In the older age class the alternative with low migration results in a net emigration of 750 persons per year. Even the alternative with high migration results in a net emigration at the end of the forecast period for this age group, but during the entire forecast period net immigration averages roughly 1 500 persons annually. This is a deviation from the main alternative of 700 000 fewer persons or 600 000 more persons in the entire age group 25–64 years compared to the main alternative at the end of the forecast period. In the alternative with low migration the number of these age classes is less in 2060 than in 2011. However, it is important to keep in mind that the population in these age classes is not only influenced by migration in these ages but also by migration of younger persons in earlier forecast years. For instance, it is clear in figure 8.7 that the number of persons aged 40–64 are affected by the high migration alternative only after 20 forecast years.

The different fertility assumptions of course affect then number of persons aged 25–39 only after 2037, and the number of persons aged 40–64 only after 2052. Even so, the number of persons aged 25–39 at the end of the forecast period are basically affected just as much by the alternative fertility assumptions as the migration assumptions.

Mortality in these ages is already low today. In 2060, the alternative with low mortality results in fewer than 2 500 deaths and the alternative with high mortality roughly 11 000 deaths for the entire age interval 25–64 years. This means that in 2060 the deviation for the entire age interval is slightly less than 20 000 more persons or 60 000 fewer persons compared to the main alternative.

Figure 8.7
Population aged 25–39 and 40–64, 1960–2011 and forecast 2012–2060 according to main alternative and different fertility and migration assumptions



People aged 65–99

The estimates of the number of people aged 65–79 are influenced by the different assumptions on migration and mortality during the forecast period.

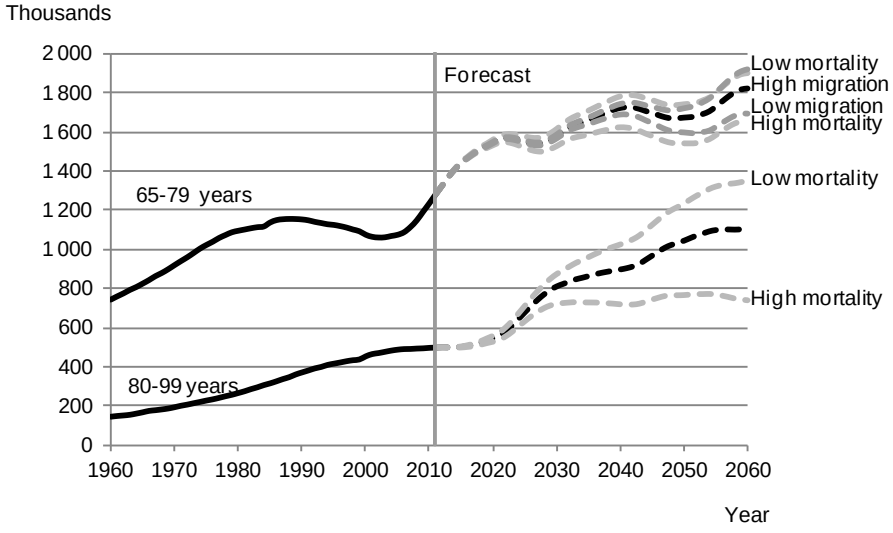
Neither the alternative with high/low migration nor high/low mortality affect these age groups to a high degree before 10–15 forecast years.

The alternative with high mortality and low migration affects the age group 65–79 years nearly just as much with 130 000–170 000 fewer persons at the end of the forecast period compared to the main alternative. The alternative with low mortality and high migration affects the age group to a lesser degree.

The 80–99 year age group is mainly affected by the different mortality alternatives. The migration alternative gives a deviation from the main alternative in the size of 20 000–30 000. In the alternative with low mortality the number in this age group in 2060 will 250 000 more than in the main alternative and with high mortality nearly 400 000 fewer persons. Since the alternative with high mortality implies unchanged mortality from the level of today, this also means that without any downturn in mortality at all this age group will be about 250 000 more persons than today.

Fertility assumptions of course do not affect this age group at all since those who were born during the first forecast year will not have reached age 65 during the forecast period.

Figure 8.8
Population aged 65–79 and 80–99 years 1960–2011 and forecast 2012–2060 according to main alternative and different mortality and migration assumptions

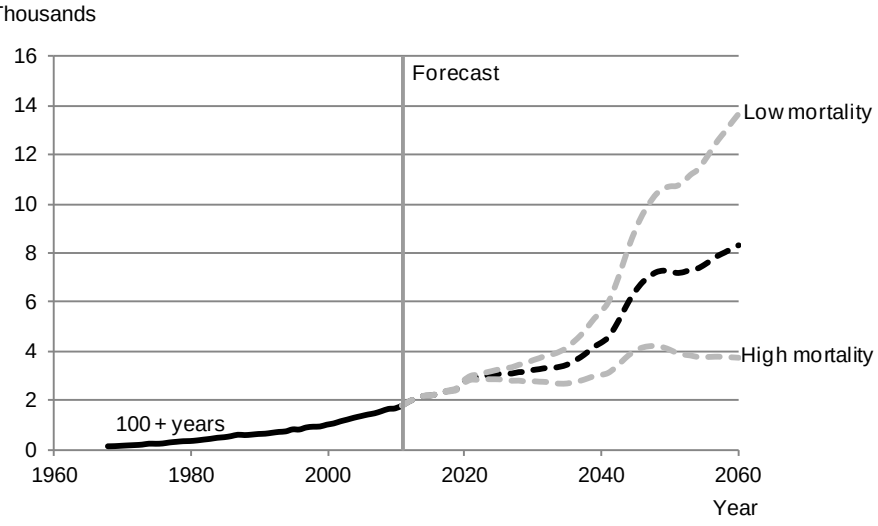


Centenarians

Today there are slightly fewer than 2 000 persons who are 100 years or older. The number of centenarians in the future mainly depends on the assumption for mortality, and above all for the oldest ages. In

the alternative with high mortality, that is, unchanged from today, the number in 2060 will be nearly 5 000 fewer persons than in the main alternative. Meanwhile, the alternative with low mortality will result in slightly over 5 000 more persons than in the main alternative.

Figure 8.9
Population aged 100 years and older in 1960–2011 and forecast 2012–2060 according to main alternative and different mortality assumptions



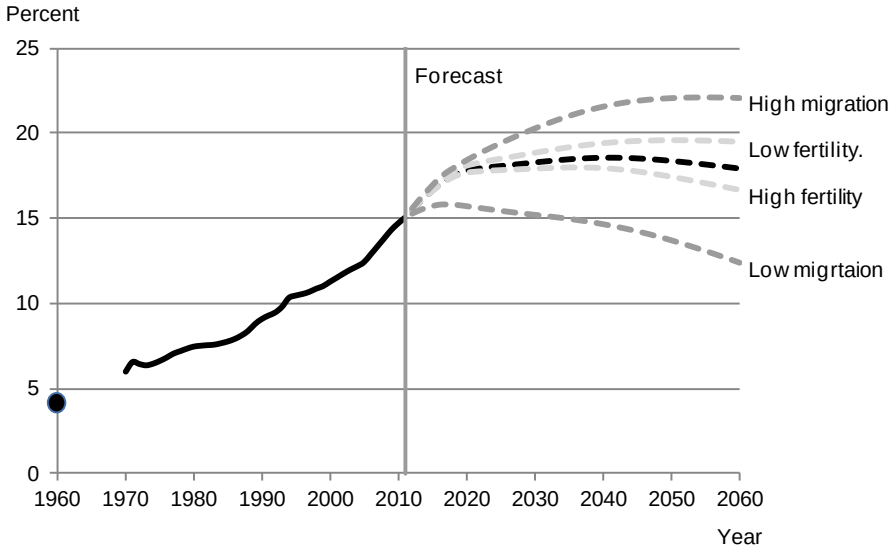
Changes in the population structure

In chapter 2, *The future population,* several clear trends in the population structure are shown. There will be more elderly people, more foreign born people and more men than women in the future. These trends also apply to the alternative forecasts to varying degrees.

The assumption about mortality does not affect the share of foreign born persons. This is because we have the same mortality assumptions regardless of country of birth. The assumption about high net migration gives the largest share of foreign born persons in Sweden. In this alternative the share of foreign born persons is slightly more than 22 percent at the end of the forecast period. The alternative with low migration gives the lowest share of foreign born persons. At the end of the period the share will be roughly 12 percent. Even the assumption of fertility affects the share of foreign born persons. If fertility is high the number of persons born in Sweden increases and thus the share of foreign born persons decreases, and vice versa

for the alternative with low fertility. The number of foreign born persons stagnates in the alternative with high migration because these persons in turn give birth to children in Sweden, which increases the number of Swedish born persons and the share of foreign born persons stagnates, despite a high immigration.

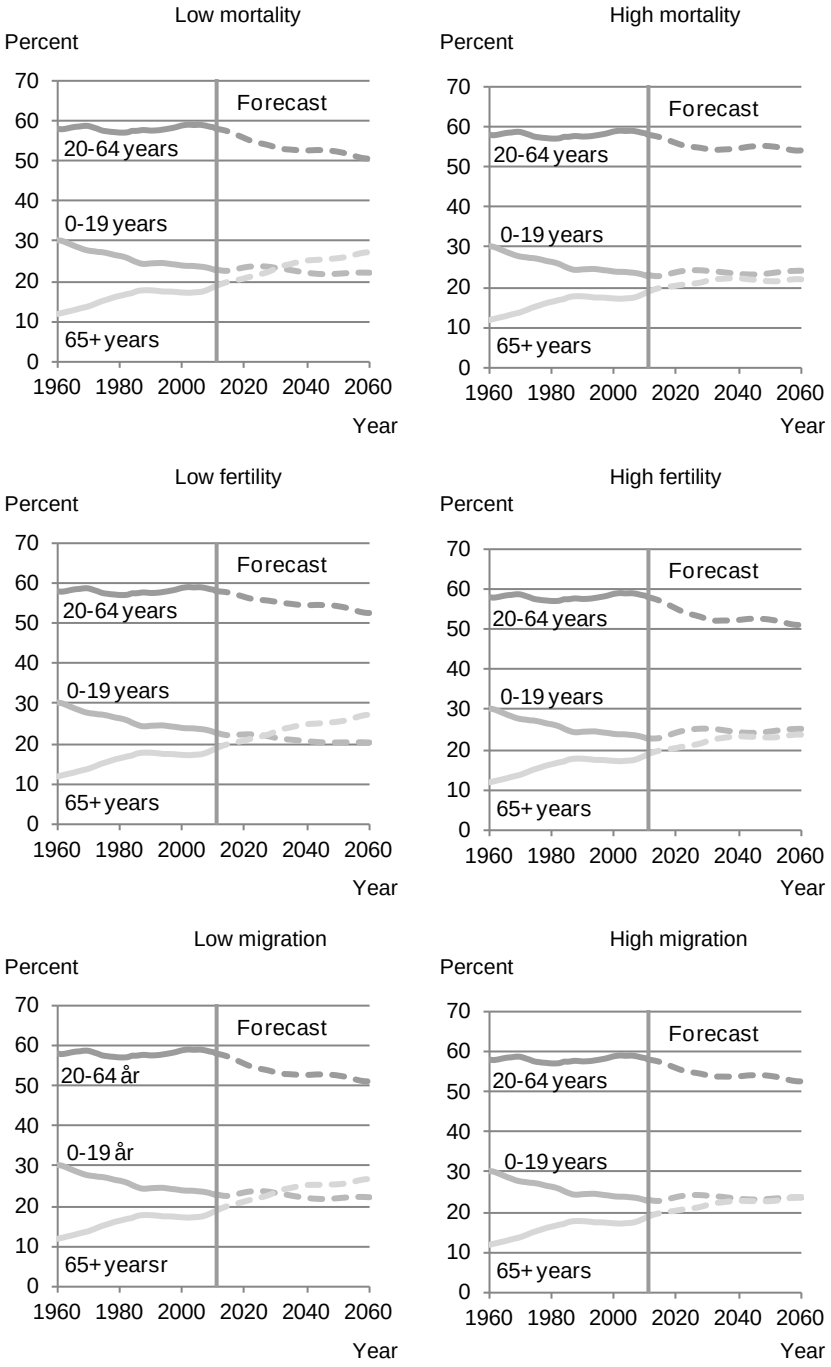
Figure 8.10
Share of foreign born 1960–2011 and forecast 2012–2060 according to main alternative and different migration and fertility assumptions



Sex distribution is not particularly affected by the different alternatives. In all the alternatives, the number of women exceeds men at some time during the years 2017–2019.

Figure 8.11 presents the share of the population in three age classes: 0–19, 20–64 and 65 and older according to the different alternatives. The pattern is the same in all the figures. Today 60 percent of the population is aged 20–64, and this share decreases to just above 50 percent in all the alternatives. The share of older persons also rises in all the alternatives, from today's 18 percent to between 22 and 27 percent. The lowest share of older persons is found in the alternative with high mortality, and the highest share in the alternative with low fertility, but it is nearly as high in the alternative with low mortality. Today 23 percent of the population is under age 20. This proportion will remain the same in nearly all the alternatives. Only in the alternatives with low and high fertility do we see this proportion change from 20 and 25 percent respectively.

Figure 8.11
Population aged 0–19, 20–64 and 65 years and older 1960–2011 and forecast 2012–2060 with prediction interval



9. Previous forecasts

Statistics Sweden has been publishing population forecasts regularly since the end of the 1960s. This section presents and compares the assumptions and the results that were made in some of the previous forecasts. The forecasts that have been chosen were done in 1973 (Statistics Sweden, 1973), 1986 (Statistics Sweden, 1986), 1991 (Statistics Sweden, 1991) and 2003 (Statistics Sweden, 2003), that is, one per decade. These are compared partly with the outcome and partly with the assumptions that are made in this forecast.

Much has changed during the 40 years that have passed since the forecast in 1973 was published. Even if the methods to make population forecasts are basically the same, the access to register data and the possibilities to analyse them are completely different. We can also see that the requirements for documentation and transparency were not as strict as today.

Much has also changed in society. The change which has probably had the greatest impact for demographics is the increased level of education in the population. Forty years ago 7 percent of the population had a post-secondary education while that figure today is 34 percent. Other significant changes are the increased globalisation and Sweden's membership in the EU. Despite these, and many other changes in society, all forecasts point to an increased percentage of older persons in the population.

Table 9.1
List of the compared forecasts

Projection	Began	Finished
Projection 1973	1973	2000
Projection 1986	1986	2025
Projection 1991	1991	2025
Projection 2003	2003	2050
Projection 2012	2012	2060

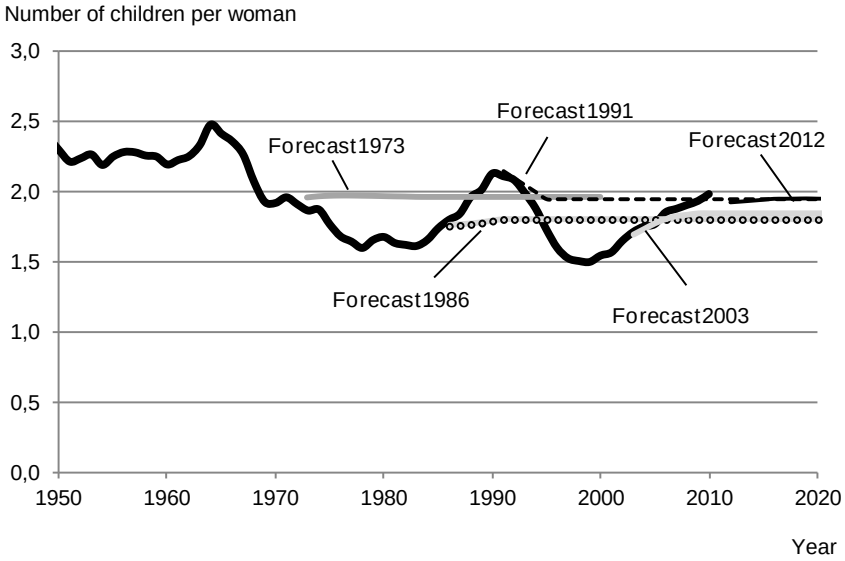
The following is a review of the assumptions for each of the three components fertility, mortality and migration; and how we have arrived at the different assumptions in each projection.

Assumption about fertility

During the period 1970–2011, the average age of mothers when they have their first child has increased from 25 to 29 years, largely because of the increased level of education among young women. At the same time medical technology has developed. In 1982 the first test-tube baby was born in Sweden and in 2009 over 3 700 children (more than 3 percent of all children born) came to the world with the help of IVF treatments. (The National Board of Health and Welfare, 2012).

The annual variations in the total fertility rate can never be predicted. The forecast consists of the average value of the total fertility rate. In the long term this is the same as cohort fertility.

Figure 9.1
Total fertility rate 1950–2011 and assumptions according to forecast 1973, 1986, 1991, 2003 and 2012



During the 1960s the total fertility rate had dropped to a level just below two children per woman. One of the explanations for this was the improved access to birth contraceptives. We could say that the cohorts who then were in their most fertile years or had just passed those years did not reach the level of 2.0 children (which was assumed in previous forecasts) and the assumption for the future was a total fertility rate of 1.96. At that time a drop in fertility began to be observed for women over age 35 and therefore in the forecast of 1973 the same age distribution of mothers was assumed in the

future and that which was observed, but with a drop in the oldest ages.

During the 1970s the total fertility rate fell to 1.6 in 1979 and then increased to 1.7 in 1985. In the 1986 forecast, it was estimated that women born in 1945 (who had then nearly finished their fertile years) would reach an average number of children around 1.9, and for women born after 1945 trends pointed to another decrease in fertility. This led to the assumption of a future level of the total fertility rate at 1.8. In retrospect we see that this was a real assumption, and during the period 1986–2010 the average fertility rate was exactly 1.8. In addition we saw that the younger birth cohorts had waited to have their first child, something that was expected to be compensated by an increased fertility after age 30.

During the latter 1980s, the total fertility rate continued to increase and reached a peak in 1990 at 2.1. In the 1991 forecast it was assumed that the total fertility rate would drop from this high level and in the long term be at a level of 1.95. When this forecast was made a delay in childbearing was seen, and it was thought that this would be compensated by increased fertility at later ages. Now we can see that the downturn was predicted correctly, but then continued until 1999 when the fertility rate reached 1.5, the lowest ever in Sweden.

In the 2003 forecast an increase of the total fertility rate was assumed in the years that immediately followed, and then reached an average level of 1.85 children per woman. Among other things the assumption was based on an assumed share of childless women at 16 percent, which was higher than for women that had recently finished their childbearing years when this forecast was published. Behind this assumption of an increased childlessness was the observed gradual postponement of having a first child. This was motivated by the fact that it is somewhat more difficult to become pregnant at older ages, that time is scarce and many women can hesitate to be a first-time parent when they are reaching age 35.

In this forecast for 2012, a long term level of total fertility is assumed at 1.90.

Assumptions about migration

During the last 40 years immigration to Sweden has changed from previously labour force immigration to the immigration of refugees and family members today. EU membership in 1995 changed the regulations for immigration from other member states and more member states have also joined since Sweden became a member. Our world has changed over the years: the Berlin wall has fallen, Iran has had a revolution, civil war has occurred in the ex-Yugoslavia, the 11 September marked the terrorist attacks and most recently the Arabic spring took place.

The increased level of education in Sweden has contributed to more and more people studying and working abroad for one or several years.

Figure 9.2
Immigrants 1950–2011 and assumptions according to forecast 1973, 1986, 1991, 2003 and 2012

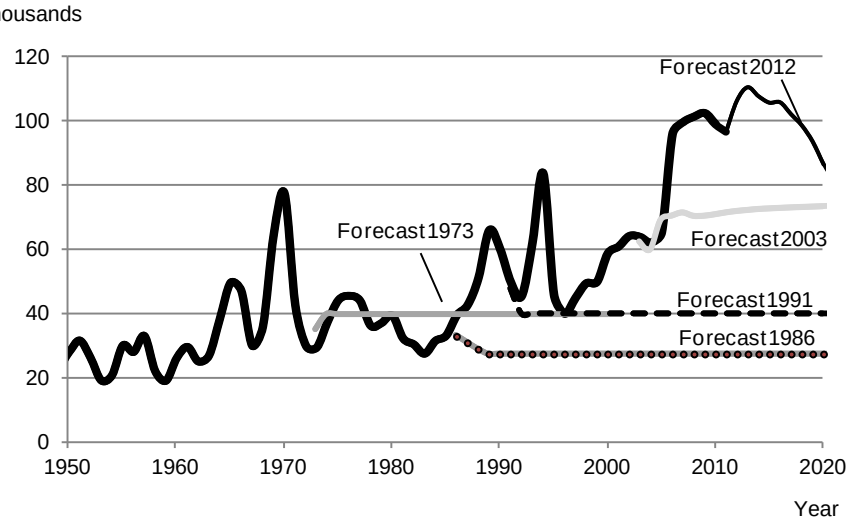
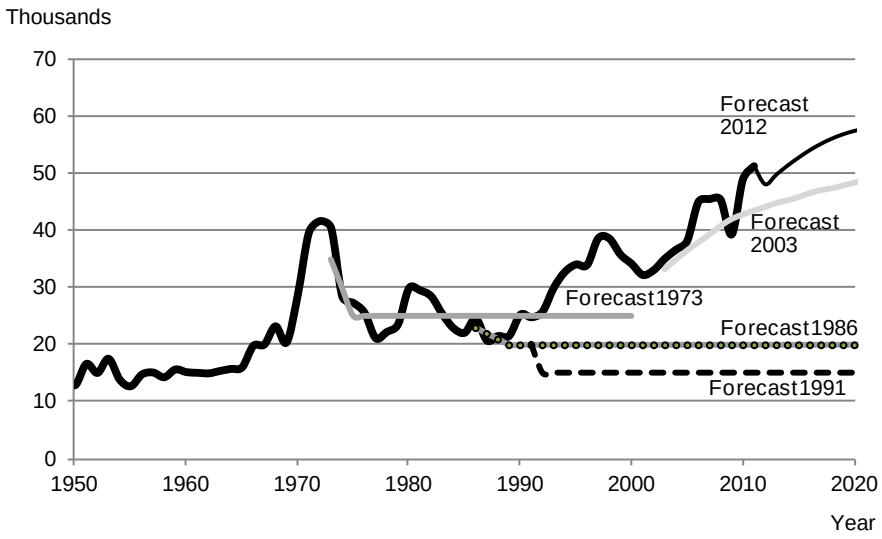


Figure 9.3
Emigrants 1950–2011 and according to forecast 1973, 1986, 1991, 2003 and 2012



In 1972, more emigrants than immigrants were registered for the first time since 1929. Just a few years before in 1970, the immigration surplus was close to 50 000. In the forecast of 1973 a trend value of 40 000 immigrants was assumed annually. It was also assumed that emigration would be around 25 000 annually, based on the assumption that 45 percent of the immigrants would re-emigrate and that Swedish citizens emigrate to the same extent as in recent years.

In 1976 immigration reached a peak but then the number of immigrants decreased up until 1984 when there was a slight increase, above all due to asylum seekers. Labour force immigration from countries outside of the Nordic countries had basically ceased in the beginning of the 1980s and most of the immigrants were refugees and family members of earlier immigrants. In the 1986 forecast it was assumed that asylum seekers would continue to increase, but reported that it was difficult to determine the level, and immigration was assumed to be 27 500 per year. Emigration was assumed to be due to previous emigration and the assumed level was 20 000 per year.

During the first years of the 1990s the number of refugees to Sweden decreased and in the 1991 forecast it was concluded that the trend pointed towards immigration of refugees that was similar to the mid 1980s. This forecast also discussed the effect of immigration if Sweden would become a member of the EU and referred to the Långtidsutredningen 90[31] that said that Sweden would only be affected to a limited degree. The long term level of net immigration was assumed to be 15 000. The level was decided based on the difference between the average immigration and emigration during the period of regulated immigration 1967–1990. This corresponds to roughly 40 000 immigrants and 25 000 emigrants.

But immigration to Sweden increased during the 1990s and was at a peak in 1994 when many sought refuge from the war in the Balkans. In the 2003 forecast it was assumed that migration from the EU 15 would continue to be at the level of today, while immigration from the candidate countries existing at that time was assumed to double in 10 years' time. Immigration from other countries was, as in all forecasts, difficult to predict. Immigration from countries outside of Europe was assumed to be roughly 30 000 per year. This forecast also discussed the future labour force shortage in Sweden and about any liberalised immigration rules, thus enabling an increased labour force immigration.

Emigration of Swedish born persons was thought to have stabilised and would lie at a level of 15–20 000 per year. Re-immigration of foreign born persons was assumed to increase somewhat in the future, as an effect of the future immigration that was assumed to increase from the Nordic countries and the EU to a greater extent than the years before 2003.

In later years immigration to Sweden has reached record levels, first in 2006, partly as an effect of the temporary asylum law. In recent years immigration of refugees and family members has been high, above all from Iraq and the countries in the Horn of Africa.

Emigration from Sweden has been high in recent years, and in 2011 the number of emigrants was the highest ever, even higher than during the peak year of emigration to America in 1887.

[31] Långtidsutredning 90" translates to "Long term investigation 90" and is a government publication that is issued regularly as a tool for economic policy-making.

This forecast assumes that immigration will be about 87 000 and emigration 57 000 in 2020.

Assumption about mortality

Since 1970 average life expectancy for men has risen by eight years, from slightly less than 72 to slightly less than 80 years, and for women by seven years, from 77 to 84 years.

Lifestyle changes and medical developments have influenced trends for life expectancy.

Fatal heart attacks for men were halved between 1987 and 2006 (The National Board of Health and Welfare, 2009). For instance, pace-maker operations, which were previously unusual (and risky) are now practically seen as routine procedures.

The increased level of education in Sweden may have also influenced trends of life expectancy since life expectancy is higher for those with a high education compared to those with a low education.

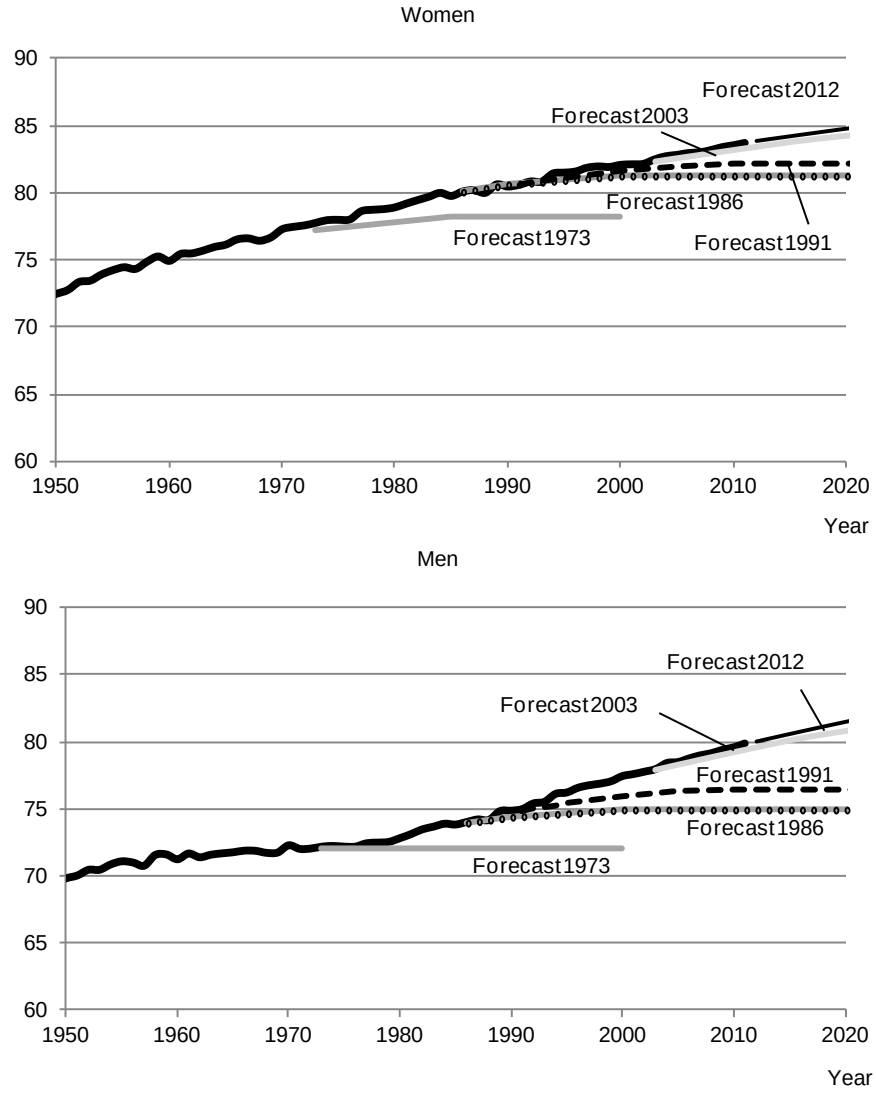
During the 1950s and 1960s life expectancy increased for women by about 2.5 months per year, but the increase was slower for men at about half the rate of women. From about 1960 to the end of the 1970s, the survival of middle-aged men even decreased. This development as well as a certain stagnation of infant mortality was observed prior to the 1973 forecast. Therefore it was assumed that mortality up until 2000 would be at the same level as in the beginning of the 1970s, except for women over age 60 where mortality was assumed to decrease until 1985.

The stagnation that occurred for life expectancy for men ended and towards the end of the 1970 onwards there was a downturn for mortality for both men and women of all ages. The largest improvement was for children, young men and older women. In the 1986 forecast it was assumed that the death risks for the adult population would continue to decrease in this manner during the remaining part of the 1980s.

The downturn in mortality continued during the rest of the 1980s, and now somewhat quicker for men than for women. The largest decrease was in the somewhat older ages, even though not for the oldest people. In the 1991 forecast it was thus assumed the decrease would be in line with these observations. The downturn for the oldest ages was assumed to be very slight.

The trend for reduced mortality continued during the 1990s at about the same pace for both men and women, and life expectancy increased by two months per year.

Figure 9.4
Remaining life expectancy by sex 1950–2011 and assumptions according to forecast 1973, 1986, 1991, 2003 and 2012



In the 1991 forecast it was discussed whether the mortality picture that had been seen would change, especially for women. This forecast reports: "It is very possible that the downturn in mortality that has lasted for about 40 years can slow down. Later generations of

women have been exposed to greater health risks such as smoking and stress of working life". Even for men, there was hesitation to assume an unchanged rate of decrease of mortality during the forecast period. The death risks of men were said to be nearly double those of women but it is uncertain how much of men's death risks could be pressed down in the future. "Could a healthier lifestyle with reduced smoking, more exercise etc. reduce the risks further? Will the increased break-ups of families affect future mortality at higher ages?"

Another reason that it was assumed in the 1991 forecast that life expectancy would stop increasing in 2010 is because it was thought that there were physiological, genetic and medical boundaries for the possibilities to save human lives.

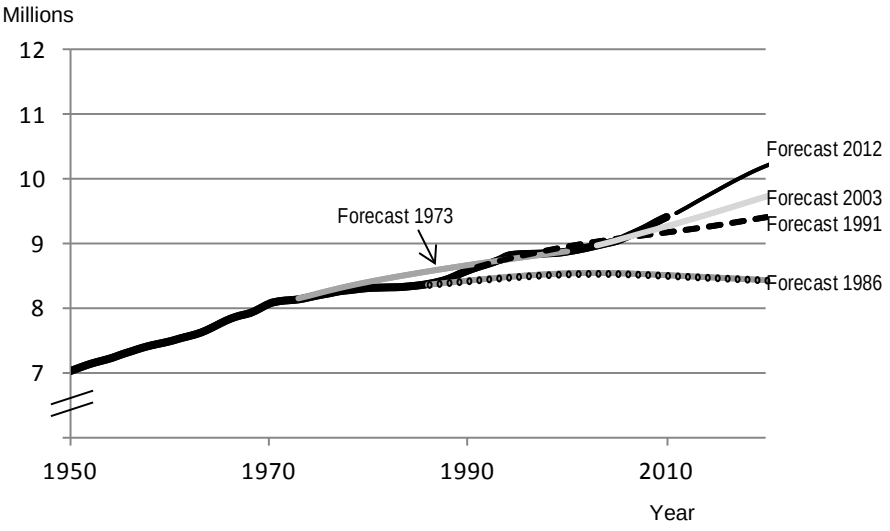
During the 1990s life expectancy continued to increase and now at a quicker pace for men than for women. Mortality hardly decreased at all for young people, and it was above all the older age groups (although not the oldest ages) that improvements occurred.

In the 2003 forecast it was assumed that the mortality downturn that was observed for those aged 41–90 in recent decades would continue up until 2015 and then slow down as a result in the changes of the distribution of the causes of death. In this forecast the mortality reduction continues during the entire forecast period (to 2050), quicker in the beginning and more for those under age 80 than for older ages. The quickest downturn is assumed for men aged 50–65.

Results

All of the forecasts studied, except for the one done in 1986, show a population increase. The 1973 forecast succeeded very well in predicting the total population in 2000 with an error of only 8 000 persons. The forecasts of 1991 and 2003 both pointed towards an increase in the population, but the increase occurred quicker than what was expected. Above all it was the significant immigration after 2005 that contributed to a quicker population increase than predicted. The forecast made in 1986 points to a completely different population trend, and even a decrease in the population. This forecast succeeded to predict the average value of the fertility rate correctly, but gave an assumption on migration that was way too low and an assumption on mortality that was too high and resulted in a population decrease.

Figure 9.5
Population 1950–2011 and according to forecast 1973, 1986, 1991, 2003 and 2012



It is not only the total population that is significant; even more important is the age structure of the population. In all of these forecasts, one of the main results we arrive at is that we will have an aging population. The proportion of older people will increase, the proportion of younger people will decrease and the share with the most people in actively working ages will be about the same.

The figure below shows the age structure, both from observation and from the forecast, for the years 2000 and 2010. The figure clearly illustrated that uncertainty in the projections are less for those who have not been born during the forecast period. And since it is not possible to predict the "business cycle" in childbearing, the size of the different birth cohorts is missing. In 2000 the forecast of the number of persons in the most actively working ages is relatively good, while it is worse in 2010. This is a result of the high immigration during the 2000s, that no forecaster could predict. Despite that all forecasts underestimated the downturn in mortality, all forecasts were able to estimate the number of older persons relatively well.

Figure 9.6
Population by age in 2000 and according to forecast 1973, 1986 and 1991

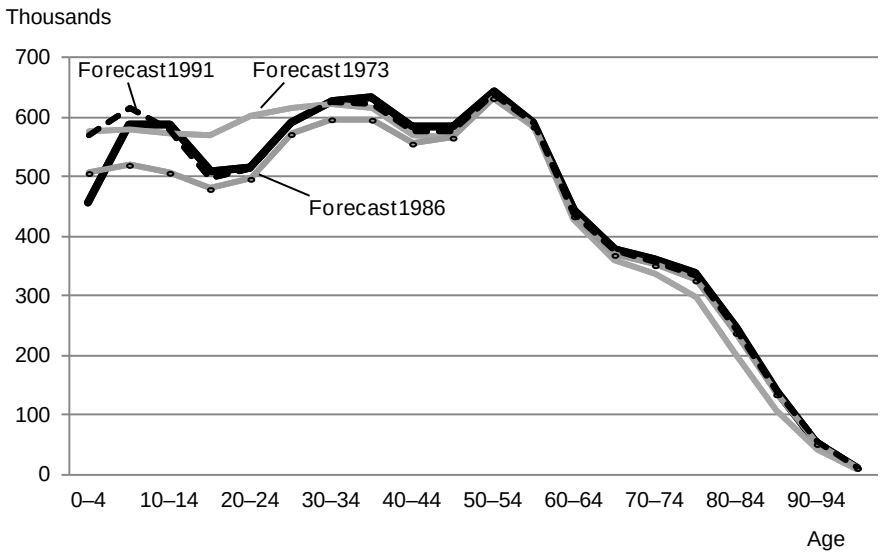


Figure 9.7
Population by age in 2010 and according to forecast 1986, 1991 and 2003

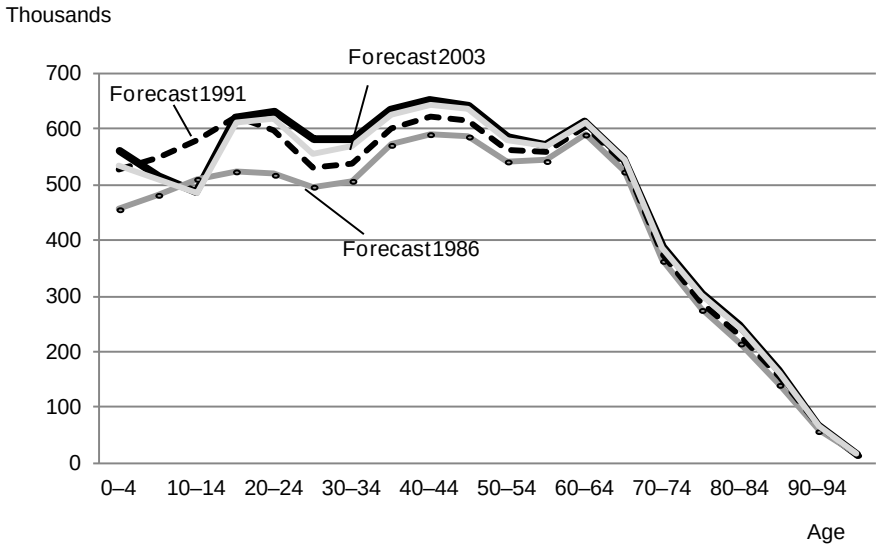
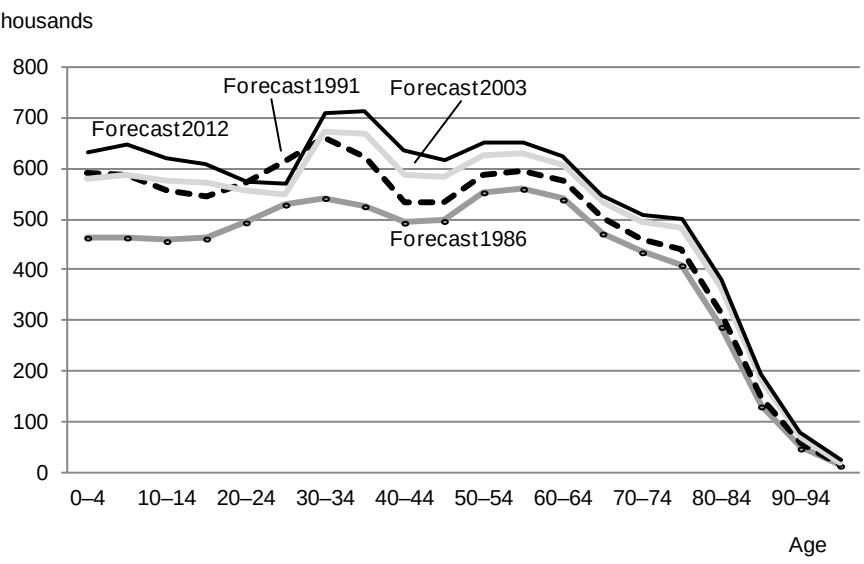


Figure 9.8
Population by age in 2025 according to forecast 1986, 1991, 2003 and 2012



Facts about the statistics

Scope of the statistics

Population forecasts or projections have been carried out by Statistics Sweden since the 1960s. The main objective for the statistics is to carry out projections of Sweden's population, broken down by age and sex, as a basis for social planning. Beginning with the forecast period 2003–2050, the population has been broken down by those born in Sweden and those born abroad. Starting with the forecast for the period 2008–2050 the population is divided into birth countries in seven different country groups. Persons born outside of Sweden have been divided into six different groups depending on their country of birth. Europe is divided into three parts: The Nordic countries (except Sweden), the EU (except the Nordic countries) and the rest of Europe. Countries outside Europe are divided into three groups based on their levels of development as measured by the Human Development Index (HDI)[32].

The population forecast presented is based on the population on 31 December 2011 and extends over every year until 31 December 2060.

The forecast refers to those entered in the population register
The population forecast is a projection of the *registered* population. The forecast does not take into account the measurement errors that occur due to errors in the population register.

To be regarded as an immigrant and thus be registered, one must intend to reside in the country for at least one year, and the same applies to emigrants. This means that persons who temporarily reside abroad or in Sweden are not included in the projections.

Definitions and explanations

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).

[32]Information about which countries are included in the different birth country groups is available in *Appendix 2*.

Mortality rates
The number of deaths at a certain age divided by the average population during a period of time. A conversion of the mortality rates to death risks is achieved as follows: $1-\exp^{-mortalityrate/1000}$, for age 0 is used $1-\exp^{-0,5\cdot mortalityrate/1000}$.

Immigrants
To be registered as an immigrant one must intend to stay in Sweden for at least one year. Only persons that are entered into the population register are counted as immigrants. This publication uses the word immigrant only for persons who are registered as immigrants during that year.

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.

Average population
Average population during a period.

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

Total fertility rate
This is the sum of the age-specific fertility rates. The rate shows how many children a woman would give birth to on average during her reproductive years based, at the time point of the calculation, on available fertility information.

Emigrant
In order to be registered as an emigrant one must intend to be living abroad for at least one year. Only persons who report this to the population register are considered emigrants. When emigrating to another Nordic country, the registration rules of that country one moves to apply. This could mean that the person is registered as an emigrant even though that person does not intend to settle abroad for at least one year, if the rules are such in the country the person moves to. In this publication the word emigrant is only used if the person is registered as an emigrant during that year.

Age-specific fertility rate
This figure measures the number of children born to women at a given age in relation to the average population of women at that given age.

Remaining life expectancy
Life expectancy at birth is a measure, or actually an index, that measures mortality for all ages during a specific year. It is thus not the life expectancy that a person born in a specific year will have but a collective measure on mortality for all ages during that year the person is born.

Remaining life expectancy is estimated in the forecast within the frame of the life tables, and in the same way that is described in the report *Cohort Mortality in Sweden* (Statistics Sweden, 2010).

How the statistics are produced

The information for the assumptions is from the various registers at Statistics Sweden. The population statistics are of course used the most, but other registers are also used. These include the Multi-Generation Register and the Historical Population Register, which are processed from the official population statistics. Information on grounds for residency are taken from SIV, a register based on information from the Swedish Board of Migration.

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 made by a division of the individual's country of birth group 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 below.

Separate calculations are made in the projection for individuals who are in the country at the beginning of the year and individuals who arrive, immigrants or new-borns, during the year.

Individuals who are in Sweden from the beginning of the year
For individuals who are in the country at the beginning of the year, the percentage who remain at the end of the year are calculated:

$B_t = B_{t-1} \cdot \exp^{-(m+e)}$, where m stands for death rate and e for emigration rate

The number of deaths and the number of emigrants are calculated:

$$D_t = (B_t - B_{t-1}) \cdot \frac{m}{m+e}$$

$$E_t = (B_t - B_{t-1}) \cdot \frac{e}{m+e}$$

Average population of individuals in Sweden at the beginning of the year is calculated:

$$M_t = B_{t-1} \cdot \frac{1-\exp^{-(m+e)}}{m+e}$$

The number of children born during the year by persons in Sweden at the beginning of the year:

$F_t = M_t \cdot f_t$, where f is fertility rate

Individuals who immigrate during the year
Immigrants who during the year run the risk of bearing children, dying, or emigrating. Let I_{t+1} be the number of immigrants who come during the year. The number of immigrants remaining at the end of the year is:

$$B_t^I = I_t \frac{1-e^{-(m+e)}}{m+e}$$

The number of deaths and emigrants among those who immigrated during the year:

$$D_1^I = (B_t - B_{t-1}) \cdot \frac{m}{m+e}$$

$$E_t^I = (B_t - B_{t-1}) \cdot \frac{e}{m+e}$$

Average population during the year for those who immigrated:

$$M_t^I = \frac{I_t}{m+e} + I_t \cdot \frac{e^{(-(m+e))} - 1}{(m+e)^2}$$

and the number of children born during the first year:

$F_t^I = M_t^I \cdot f_t$, where f is fertility rate

Children who were born during the year
The total number of children born during the year is calculated:

$$F_t^{tot} = F_t + F_t^I$$

The number of children remaining at the end of the year is calculated:

$$B_t^F = F_t^{tot} \cdot \frac{1 - e^{-(m+e)}}{m+e}$$

The number of deaths and emigrants of those who were born during the year:

$$D_t^F = (F_t^{tot} - B_t^F) \cdot \frac{m}{m+e}$$

$$E_t^F = (F_t^{tot} - B_t^F) \cdot \frac{e}{m+e}$$

Assumptions on fertility

In the assumption of future births we differentiate between persons born in Sweden and persons born abroad. Different methods have been used to estimate the future childbearing for Swedish born women and the different groups of foreign born women. Below is a description of the different methods.

Assumptions for Swedish born women
For Swedish born persons, the incidence rate *observed* up to this point is estimated for each cohort's first, second, third and fourth (or more) child. The incidence rate is estimated as follows:

$$f_x^p = F_x^p \Big/ \left[(B_x + B_{x-1})/2\right]$$

F_x^p is the number of children born with *parity p* to women at *age x* years (at the end of the year). The measure relates to the number of

children born by *parity p* to the average population of women at *age x* years.

The future incidence rates are estimated for cohorts that still have not completed their fertile years. The incidence rates are estimated for the first, second and third child. The incidence rates for parities over four have been added to the fourth child.

When estimating incidence rates for the first child, an assumption is made on the size of the total incidence rate for the first child for the cohorts that have still not completed their childbearing years. The assumptions made are presented in table A. The total incidence rates can be expressed as follows:

$$\sum_{x=14}^{54} f_x^1$$

The total incidence rate can thus consist of both the observed incidence rate and the expected incidence rate. The non-observed incidence rates are then estimated with weights and so that the cohorts reach the assumed total incidence rate. The weight that is used for each age are the average age-specific incidence rates for the years 2008–2010.

Table A
Assumptions on total incidence rates for different birth cohorts

Birth cohort	Total incidence rates			
	First child	Second child	Third child	Fourth (+) child
1960	0.8510			
1961	0.8470	0.7200		
1962	0.8510	0.7230	0.3000	
1963	0.8540	0.7260	0.2891	
1964	0.8540	0.7240	0.2840	
1965	0.8562	0.7250	0.2780	0.0970
1966	0.8584	0.7280	0.2700	0.0920
1967	0.8606	0.7250	0.2650	0.0900
1968	0.8628	0.7250	0.2570	0.0850
1969	0.8628	0.7230	0.2530	0.0810
1970	0.8650	0.7200	0.2550	0.0790
1971	0.8650	0.7200	0.2500	0.0760
1972	0.8650	0.7200	0.2450	0.0710
1973	0.8650	0.7200	0.2400	0.0660
1974 and later	0.8650	0.7200	0.2400	0.0650

The assumptions are based on observed trends up until now. When the assumptions are missing for a birth cohort, this means that they are assumed to have reached their final total incidence rate.

The assumption for the second child is done in the same way as for the first child with an assumption about the total incidence rate for each cohort, see table A. The incidence rates are distributed on the mother's age with the help of weights so that the cohorts reach the pre-determined total of incidence rates. The weight for each cohort and age that is used is estimated as follows:

$$v_x^2 = \sum_{j=14}^{x} f_j^1 \times \hat{p}_{j,x-j}^{\ 2}$$

where f_j^1 is the cohort's incidence rate for the first child at age j and $\hat{p}_{j,x-j}^2$ 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 that women who during a certain year and at a certain age had their first child (occurrence A) had gone on to have a second child at a certain time after the birth of the previous child (occurrence B) is measured with so-called transition probabilities. This probability is labelled P(B | A) and is called the characteristic probability for B if A has occurred.

$$\hat{p}_{j,x-j}^2 = P(B|A) = P(A \cap B) / P(A)$$

The probability to have the next following child t+0 (the same calendar year), t+1 (the following calendar year), t+2, t+3,...., t+11(+) has been calculated. When calculating the transition probabilities, data up until 2010 has been used. The average of the three most recent observations for transition probabilities have been used.

The incidence rates for the third and fourth + child are estimated in the same way as for the second child. The assumptions about the size of the total incidence rates for the third and fourth (+) child are presented in table A.

The total fertility rate (TFR) of the cohort is calculated as:

$$TFR = \sum_{x=14}^{54} (f_x^1 + f_x^2 + f_x^3 + f_x^{4+})$$

The cohort-based rates are then transformed to period-based rates. The period-based rates for the next few years are adjusted to take into account the most recent trends in childbearing.

Assumptions for foreign born women

The method for producing the assumptions for foreign born women is more simple than the one used for Swedish born women. No parity-specific assumptions are made for foreign born, but the fertility rate by age is projected forward for each group and each forecast year.

The assumptions for three of the country groups are made in relation to the assumptions for the Swedish born women. It is assumed that in the future they differ from the Swedish born women in the same way that they have done on average for the last ten-year period (2002–2011). This type of assumptions apply to women born in the Nordic countries, women born in the EU and women born in countries outside Europe with a high level of development.

Fertility development has been different for the other three country groups. Differences in the fertility level from Swedish born women has decreased over time and the relative difference in the forecast has been assumed to continue to decrease. The assumptions for these three groups have been prepared by analyses of fertility trends in recent years.

Assumptions about migration

The forecast divides the migration to and from Sweden into 14 flows: *Swedish born persons*, and the six country groups for immigration and emigration of foreign born persons. Each flow is broken down by age (one year classes) and by women and men. The projection is made with different methods for the flows.

For all the flows, it has been assumed that the differences in the age structures that exist today between the sexes have been evened out. The age distribution of the sexes move slowly towards each other and become the same after 50 years. The smoothing out is done so that the distribution of the first forecast year is created by multiplying the age distribution of the one sex by one and the age distribution of the other sex by zero. In the second forecast year the distribution of the one sex is multiplied by 0.99 and the distribution of the other sex by 0.01. In the third forecast year the distribution of the one sex is multiplied by 0.98 and the distribution of the other sex by 0.02, and so on until the distribution of the one sex is multiplied by 0.5 and the opposite sex by 0.5.

Increased mobility
Countries that are included in the estimations are: Australia, Belgium, France, Ireland , Japan, Canada, Luxembourg, the Netherlands, New Zealand, Portugal, Switzerland, Singapore, the United Kingdom and Northern Ireland, the US and Austria. A total of 4 100 persons from these countries immigrated in 1970 and 7 700 persons in 2010. By dividing the number of persons that immigrated to Sweden who were born in the above-mentioned countries with information about the populations of the countries, a sex and age-specific emigration rate to move to Sweden is created. These emigration rates are then summed up for each year. Based on the total rates, a trend line is estimated that gives the underlying rate of increase for 1970–2010. The sex and age-specific risks of moving to Sweden have then been adjusted after this rate of increase and multiplied by the population according to the UN forecast for the populations of countries 2010–2060 (UN, 2010).

Reason for residence permit
Information about reason for residence permit come from the Swedish Migration Board. The information is available in the SIV database for the years 1987–2011. The quality of this information is considered better for the years 2004–2011. (Statistics Sweden, 2011g). Because citizens of the Nordic countries do not need to contact the Swedish Migration Board to apply for a residence permit, there are no data about reason for residence permit for most persons born in the Nordic countries. A large share of the EU citizens register directly with the National Tax Board without first contacting the Swedish Migration Board and therefore information on reason for residence permit is often lacking for persons born in an EU country.

Immigration
The method to produce the assumptions for immigration differ among the different birth country groups. Mathematical methods are used for Persons born in Sweden, the Nordic countries and the EU. For countries outside the Nordic countries and the EU, analyses are based on reason for residence permit.

Swedish born persons
To estimate re-immigration of Swedish born persons, a model has been produced that is described in the report *Model to forecast re-immigration of Swedish born persons* (Statistics Sweden, 2009c). The following only describes the differences between the model used here and the one described in the report.

Re-immigration of Swedish born persons is a purely mathematical model and is now based on migration data for the years 1851–2011. Based on this information and information about mortality risks during the same period, the number of persons born in Sweden who live abroad are estimated. Of this population, re-immigrants based on sex and age-specific re-immigration rates are estimated. These re-immigration rates are estimated for the years 2007–2011. The final number of those who re-immigrated is then given, in that the emigration rates are combined with information about emigration of Swedish born persons three years earlier. This is done with a regression equation. The equation that is used to estimate re-immigration in the previous forecast has been estimated again and is now based on the years 1980–2011, which is a longer time period than the previous forecast. The regression equation that is shown below has a coefficient of determination of 96 percent (R^2=0.96).

$$\hat{I}_t^{reg} = -5553 + 0{,}67212 \cdot \hat{I}_t^{r} + 0{,}49233 \cdot E_{t-3}$$

where E_t is the number of emigrants in the year t

where $\hat{I}_t^{r}$ is re-immigration estimated from re-immigration rates.

The calculated re-immigration is then broken down by age and sex based on the observed distribution for the years 2007–2011.

Born the Nordic countries and the EU

For persons born in the Nordic countries and the EU, emigration rates are estimated by dividing the immigration to Sweden by the population in each birth country group. For persons born in the Nordic countries, the emigration rates are based on the observed immigration to Sweden for 2000–2011, and for persons born in the rest of the EU the emigration rates are based on the years 2004–2011. Then the future immigration is calculated by multiplying the emigration rates with the forecasted population in each birth country. For persons born in the Nordic countries, the population forecasts of each country's statistical offices are used, and for persons born in the rest of the EU, Eurostat's population forecast is used (Eurostat, 2011).

Born outside the Nordic countries and the EU
Persons born in countries outside the Nordic countries and the EU are grouped by reason for residence permit broken down by employment, asylum, family ties, studies and others. The estimated immigration in these reasons for residence permit are then distributed among the birth country groups. For a more detailed description, see the section *Born in countries outside the Nordic countries and the EU* in the chapter *Assumptions about migration*.

Emigration
Common for all birth country groups is that emigration is determined by so-called emigration rates. Emigration rates (e) comprise the ratio between the number of emigrants by age at the end of the year and the exposure time (average population by age at the end of the year) for a given calendar year.

The emigration rates are broken down by sex and one year classes. (x, age at the end of the year).

$$e_x^t = \frac{U_x^t}{(B_{x-1}^{t-1} + B_x^t)/2},$$

U_x = emigrated during year t at age x

B_x = population at the end of the year at age x

Swedish born persons
Emigration of persons born in Sweden is determined by emigration rates calculated for the years 2003–2011. These emigration rates are broken down into persons with two Swedish born parents, one foreign born parent, and two foreign born parents. The spare with one or two parents born abroad is assumed to continue to increase at the rate observed 2003–2011. Based on the assumptions of the annual shares in the three groups, an emigration rate is weighted together for the entire group of Swedish born persons.

Born in the Nordic countries and the EU
Emigration for persons born in the Nordic countries and the EU is determined by the emigration rates that are held constant during the entire forecast period. For persons born in the Nordic countries the emigration rates is based on emigration 2000–2011 and for persons born in the EU it is based on 2004–2011.

Born outside the Nordic countries and the EU
Emigration of persons born outside the Nordic countries and the EU is determined by a model where the emigration rates vary depending on the composition of the reasons for residence permit for the birth country groups. This model is described in detail in the report *Model for estimate re-immigration by reason for residence permit* (Statistics Sweden, 2012b).

Assumptions about mortality

Here mortality has been estimated by mortality rates according to the cohort method. Age is then defined as age at the end of the year. The mortality rate (*m*), which is somewhat higher than the corresponding mortality risks (probability to die in a certain age category)[33], is calculated as the ratio between the number of deaths and the average population size for one year (*t*). The mortality rates are broken down by sex and one-year age classes.

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

D= number of deaths during the year *t*, at age *x* (age at the end of the year)

B = population size at the end of the year *t*-1 and *t* at age *x*-1 and *x* (cohort).

Trend analysis
There are different methods to calculate mortality trends in the future. Normally the assumptions are based on different types of trend analyses from a base period. Depending on the choice of base period, these analyses can lead to different results, that is, different assumptions about the mortality trends of the future.

In Sweden and in many other countries, men have had unchanged or increased mortality at certain ages for several decades. This means that the choice of a long base period that includes small mortality decreases for men will give relatively greater decreases in mortality for women than for men. In recent decades men have instead had greater decreases in mortality than women in most of the age groups.

[33]Mortality risks are normally used to calculate life expectancy, and then age is defined as that reached upon death. Mortality rates can also be re-calculated to mortality risks.

If a short base period is used, for instance 1990–2011, men's mortality will come closer to that of women's, and at certain ages even be lower than women's, if the trends in this period are assumed to apply at an unchanged rate far into the future. Based on current patterns of sex differences in different causes of death, it is probable that men will have higher mortality rates than women during the coming 50 years. An analysis of the trends of the different causes of death for women and men is thus an important complement to the assumptions about the most probable mortality development in the future (see the section on *Trends of causes of death in chapter 5*).

It is of course impossible to predict how changes in mortality will change in the future. The results of the assumptions based on the different trend analyses are that the trends that have been observed up to now will continue in the future. Different trend analyses have been carried out and compared before this mortality forecast, such as a Lee-Carter model and an empirical trend analysis for five-year age classes.

Lee-Carter model

From 2003 onwards Statistics Sweden has used a method for mortality assumptions in population projections that was proposed by Lee and Carter (Lee & Carter, 1992). Mortality in an observed base period is used to estimate a mortality trend that is extrapolated for mortality trends of the future. In the forecasts of 2003 (Statistics Sweden, 2003), 2006 (Statistics Sweden, 2006) and 2009 (Statistics Sweden, 2009a) however, the results of the estimations of the model have not been allowed to be used during the entire forecast period.

A critical viewpoint of the model is that if a break in the trend occurs over time, the result of the model could be misleading for the ages that have had such a break in the trend. It is particularly important to consider any changes in the speed of the mortality changes in different ages. Such changes have occurred since the beginning of the 20th century and mortality reduction has been about the same, about 2 percent per year, for an extended age interval, about 15–80 years, in several countries (Lee & Miller, 2000). If for instance mortality decreases more among older people than among younger people at the end of a base period, the mortality decline of the future can be underestimated. This may be a reason that mortality forecasts based on the Lee-Carter model with long base periods tend to somewhat underestimate the mortality decline

in the long term. A smaller underestimation of the mortality decline has been evaluated (Lee & Miller, 2000).

When men and women have had different trends in mortality in recent years, it has been observed that the model has led to increased sex differences in mortality and not decreases (Lee, 2000). Such a result would also be the effect of using a long historical base period for Sweden. The last 25 years has been proposed as a suitably long base period to capture the different trends of a mortality decline for women and men (Lundström & Qvist, 2004).

The parameters of the Lee-Carter model are estimated with an original matrix of mortality rates per age, sex and time. The model uses a logarithm of mortality rates per sex, age and time. The following expression describes the model according to Lee and Carter:

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

a_x = age-specific average level of mortality

b_x = age-specific weight for trends over time

k_t = trends over time in the mortality rate

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

If the mortality rates for a time period were to lack a change in the trend, it would be sufficient to describe the logarithm of the mortality rate with the average level of mortality (first term) and the random term (third term) in the above formula.

Normally mortality changes, at least over a long period of time. The change in mortality in the model is divided into two separate parts or vectors (factors in the 2nd term on the right side) which represent the dependency on age and time in the mortality rate. The vectors for the time effect k_t are thus assumed to be common for all ages.

The vector for the age effect b_x is assumed to reflect how the time effect is distributed in the mortality changes at different ages.

The effects of age and time, b_x and k_t, are estimated using the method "singular value decomposition" (SVD) for men and women.[34]

Before calculating the effects of age and time, the matrix is centred by the logarithmic mortality rates with the help of subtraction of the average of these mortality rates over time age by age (by rows). With this procedure, the first term in the model is avoided when estimating the changes in time.

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 rate

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 to calculate the parameters. The calculations are carried out in SAS using the sub-routine SVD. The result does not however have 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. This recalculation is a standardisation that has been proposed by the creators of the model (Lee & Carter, 1992). Estimations are unweighted. Thus there has been no weighting of the results in relation to the number of deaths. Such an unweighted estimation can be made if the inner structure of development over time is homogenous in different ages[35].

To calculate the future mortality, the time vector is extrapolated k_t. This can be done using an ARIMA model. We have chosen to apply a

[34] This multi-variant analysis method has similarities with principal component analysis and is, with quadratic symmetric origin matrices, the same as diagonalisation in eigenvalue problems.

[35] Mortality has decreased for all ages during the period analysed.

simple variation by assuming that the development is linear[36]. It is clear from the model that the annual changes show the relative changes in the mortality rate.

The Lee-Carter method is normally used on data that extends over very long time periods. In several cases, all of the 20th century has been used. The age effect for Sweden is not particularly stable for such long time series. At the beginning of the century, there was primarily a mortality decline in young people and, at the end of the century, this decline related more to older people (Lundström & Qvist, 2004). We have therefore limited our study to the period of 1975–2011[37].

Simplified trend estimation

To compare the different results of the Lee-Carter models, a simplified method was also used to estimate mortality trends at different ages. This if often called trend estimation with the empirical intensity of mortality (Olsén, J, 2005). The mortality rate for an age category is then compared with a starting year *i* and a finishing year *j*. The average annual change c_x, was calculated as follows:

$$c_x = \left(\frac{\mu_x^j}{\mu_x^i} \right)^{1/(j-i)} - 1$$

The annual average values are used in the calculation for a period of three years to avoid the random error that can easy be the result of only using one starting and one finishing year. The notation *i* and *j* in the above expression thus stand for an annual average for a short period. The difference between *j* and *i* is the number of years between the starting period and the finishing period. The rate of change c_x gives the relative change in mortality per year for each age

[36] We then get the annual time change as the difference between the highest and lowest values in the kt curve, divided by the number of points in time minus one (slope coefficient). The relative annual factors of change intended for extrapolating mortality rates at different ages are received by weighting the age factor with the average mortality trend. Some equalisation is required. The projection of mortality implies that the slope coefficient is multiplied by the number of years in the forecast.

[37] Three base periods of different lengths were analysed, 1975–2011, 1985–2011 and 1995–2011. The Lee-Carter method was also used for women and men in three different age intervals, 0–49, 50–100 and 0–100 years.

category for 1–99 years. The age categories that are used are 1–4 years and five-year age groups starting with 5–9 years up until 95–99 years.

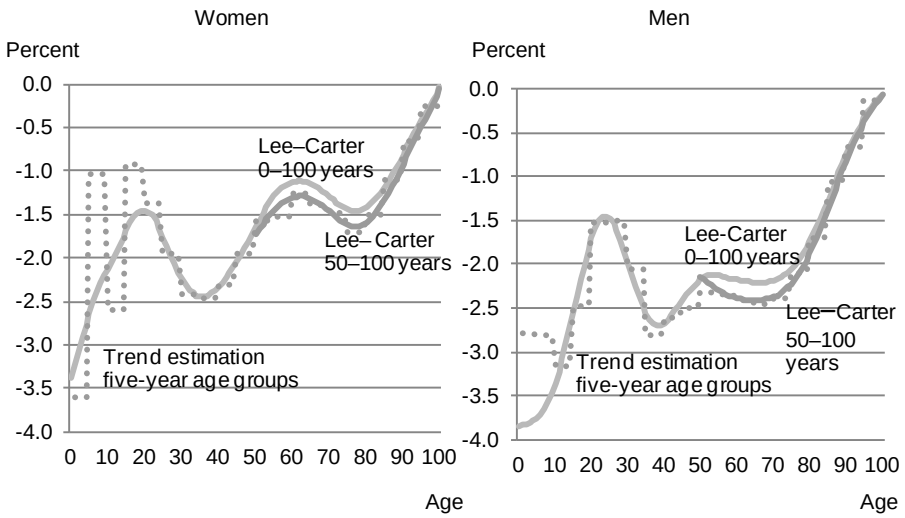
The annual changes in mortality between two life tables for one-year age groups aged 0–44 and the annual changes per sex, age group and cause of death were also calculated with the above expression.

Evaluation of different trend analyses

The assumptions about future changes in mortality are mainly based on mortality trends from the 1970s up until 2011. The period that comprises the main observation period (base period) is 1985–2011, that is, about that which was previously proposed as a suitably long period to estimate the partially different mortality trends for men and women since the beginning of the 1980s.

Different estimations of annual mortality rates based on trend analyses for the period 1985–2011 consistently show negative values (figure B). The rates of change can therefore be seen as reduction rates.

Figure B
Percentage annual change in mortality rates by sex and age with three different estimations 1985–2011



For trend estimation with five-year age groups, the annual average values for mortality rates 1984–1986 and 2009–2011 have been used as starting and finishing years.

Figure B shows the reduction rates that are the result of the Lee-Carter calculation give evened reduction rates over the ages, but relatively significant swings in ages less than 50 years. For men up

to age 50, the simple trend estimation gives nearly identical reduction rates as a Lee-Carter model for ages 0–100 years. At older ages the simple trend estimation is instead completely in line with the result of a Lee-Carter model for ages 50–100 years. For women the age specific trend estimation gives greater fluctuations than the Lee-Carter model for younger women. For older women the reduction rates from the simple trend estimations follow the outcome of the Lee-Carter model for ages 50–100 years.

The Lee-Carter model for all ages (0–100 years) seems to underestimate the mortality reduction among older persons compared to the simple trend estimation. The results therefore speak for choosing the results of the Lee-Carter model for ages 50–100 years as the main alternative[38]. Up until about age 50 the trends in mortality are not stable. The results from the Lee-Carter method have therefore been concentrated to ages 50 and older, which is about the same as in the previous forecasts of most recent years.

The number of deaths below age 50 comprise a small part of mortality and have little significance in the context of forecasts. Further, the weights for age have not been especially stable at younger ages (Lundström & Qvist, 2004). For younger ages, 0–44 years, the annual average change in mortality is used between the life tables 1996–2000 and 2006–2010. The change (mortality decline) is calculated as a total for women and men at 2 percent annually. For the oldest ages (101–106) the same annual change rates are used as the results for age 100 of the Lee-Carter model.

For women the choice of a base period 1975–2001, 1985–2011 or 1995–2011 has little significance on the mortality reduction that will be assumed in the future. For men the decrease in mortality at certain ages has been quicker at the end of the period 1975–2011 than at the beginning. This means that there is greater uncertainty in the mortality assumption for men than for women, especially for those aged 65 and older. The results from the base period 1985–2011 are mainly used for both sexes.

Mortality rates for 2012 (the starting year of the forecast)
The mortality rates for the first year of the forecast have been determined in a way similar to previous forecasts. The results from

[38]It is most common to use all ages. But the results may be because the evaluations of the results of the Lee-Carter model showed a certain underestimation of mortality reduction in the long term (Lee & Miller, 2000).

different Lee-Carter models for the year 2012 have been used. For women the trend estimations are completely based on mortality trends during the period 1985–2011. For ages 0–49 the results from 2012 are used from a Lee-Carter model that includes all ages 0–100 years. A corresponding model for ages 50–100 is used for the mortality rates for 2012 for ages 50–98 years.

For men the mortality rates for 2012 have been determined in the same way as for women aged 0–64. The mortality rates for men aged 65–99 all in all showed somewhat higher mortality rates in 2012 with the estimations from the Lee-Carter model compared to the observed mortality rate for 2011. For ages 65–98 the mortality rates are therefore used from a Lee-Carter model for ages 50–100 years from the base period 1995–2011. A Lee-Carter model from the longer base period (1985–2011) seems to have underestimated the increased downturn in mortality among older men. This could possibly be taken as beneficial to further write down the mortality decline at the beginning of the forecast period that is used for older men in the main assumption. But an assumption also lies in the main assumption that the strong decrease in mortality for men is temporary. The shorter base period is only used to adjust the mortality rate for older men when the forecast is beginning.

The death rates among the oldest persons are not stable over time. For ages 99–106 a smoothing method is therefore used to estimate the mortality level for 2012. The estimated mortality rates with the Lee-Carter models for age 98 have been multiplied with an smoothing factor to arrive at the mortality rates for women and men aged 99–106 years (table C). The smoothing factor corresponds to the differences in mortality between the age categories in the most recent forecast (Statistics Sweden, 2011e)[39].

[39]The death rate is presented in table 3 in the previous publication.

Table C
Smoothing factor of projected mortality rates 2012 by sex in the age interval 99–106 years. Mortality rate at age 98 = 1

Age	Women	Men
99	1.07	1.09
100	1.12	1.16
101	1.21	1.21
102	1.30	1.30
103	1.40	1.39
104	1.51	1.49
105	1.62	1.60
106	1.85	1.77

Stochastic projection

The main alternative of the basic model has been complemented by a stochastic forecast illustrating projection uncertainty. The model for projection with stochastic variation is based on a model created by Gustaf Strandell (Eurostat/UNECE, 2007).

Fertility

In the stochastic forecast, fertility is only controlled by the value of total fertility rate, TFR. We maintain a constant age structure when we calculate age-specific fertility rates for each year.

To project the future fertility rate, we use an AR(2)-model:

$$TFR_t = a_1 TFR_{t-1} + a_2 TFR_{t-2} + \mu(1 - a_1 - a_2) + e_t$$

The model is adapted after observed TFR for the years 1980–2011. The intensity μ is adjusted so that the projection of TFR with the AR(^{2})-model is consistent with the main alternative, it is an independent N(0,σ^2), where σ is the residual variance from the model.

Migration

In the stochastic projection, immigration and emigration are not handled separately (as in the main alternative). Net migration is used here instead. Net migration is treated as an exogenous variable in the sense that the future size of the population does not influence net migration. Net migration is projected forward with an AR(1) model in a way similar to that for fertility.

$$Migr_t = a_1 Migr_{t-1} + \mu(1 - a_1) + e_t$$

The model is adapted after observed net migration for the years 1980–2011. The parameter μ is adapted so that the projection of migration with the AR(1)-model is consistent with the main alternative. e_t is an independent $N(0,\sigma^{2)}$, where σ is the residual variance from the model. Net migration is broken down by sex and age.

Mortality

We use the Brass model to project mortality. The future sex and age-specific mortality is determined in the Brass model by two parameters, alpha and beta (actually one alpha and one beta for each sex). When the Brass model is used in population projections, normally two steps are taken. First, alpha and beta are calculated for past years on observed data. The calculated time series for alpha and beta are projected with some time series model, and finally alpha and beta are transformed back to future death risks.

A somewhat different method is used here. Even if we technically use the Brass model, we have a somewhat different approach. It is described here with life expectancy at 0 years. Both TFR and net migration are treated as stochastic processes that follow a stationary process, where the differences among the years mostly look like random ups and downs. The difficulty to predict future life expectancy is not in predicting when and how large the peaks and valleys are. Life expectancy in Sweden will most likely continue to increase in Sweden, but the question is how rapidly.

The stochastic projection of life expectancy is based on the assumption of future life expectancy in the main alternative. If $Life(main, y), y = 2012,....2060$ is the projection of life expectancy in the main alternative.

Our stochastic projection of life expectancy then consists of 100 projections of the form:

$$Life(k, y) = Life(main, y) + d(k)(y - 2011) + e(k, y),$$

$$k = 1,.....100$$

$$y = 2012,.....2060$$

The 100 d(k) and the 4 900 e (k,y) are random and independent.

In other words, we produce 100 new life expectancies by adding linear random coefficients for the direction, d(k) and by adding noise e(k,y) to life expectancies in the main alternative.

An evaluation of earlier forecasts of life expectancy has shown that in ten years' time, the average error is about 1 year. The variance in the direction coefficient d(k) has been determined by that.

Calculations
100 future populations are calculated with a normal cohort model, where fertility is randomly selected from 100 different simulations of TFR, net migration is randomly selected from 100 different simulations of net migration, and mortality is randomly selected from 100 simulations of life expectancy.

From these 100 population projections, we can for example calculate a 95 percent confidence interval.

Reliability of the statistics

The forecast is based on the population statistics. It should be noted that there is both overcoverage and undercoverage 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 converse is undercoverage which means that the register includes people residing in the country but not registered here. This could for instance apply to illegal immigrants. In the forecast we disregard measurement errors of this type and the population forecast is thus a projection of the *registered* population.

In this report, several attempts have been made to describe uncertainty in the assumptions.

At the end of chapter 2, *The future population*, stochastic forecasts are presented to estimate uncertainty in the projections. The section presents a 95 percent confidence interval for the total population and several age groups.

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

Another way to describe uncertainty is to look at the assumptions and the results from earlier projections, as shown in chapter 9.

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.
- It is difficult to forecast immigration.

Helpful information

The forecast has been made every year for the last twelve years. Every third year (this year's forecast), a more extensive analysis is made on the assumptions with detailed descriptions in the publication series " Demographic Reports" In the years in between, a more concise report is made in the Statistical Report series.

In addition to this report, the results are published in tables in the Statistical Database on Statistics Sweden's website. The trends are projected up to 2110 in the statistical database and the population is divided into seven country groups.

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Appendix 1

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Appendix 2

Countries in the different country groups

Sweden

Nordic countries (excluding Sweden)
Denmark
Finland
Iceland
Norway

EU countries (excluding Nordic countries)
Austria
Belgium
Bulgaria
Cyprus
Czechoslovakia
Czech Republic
Estonia
France
Gdansk
German Democratic Republic (DDR)
Germany
Gibraltar
Great Britain and Northern Ireland
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Romania
Slovakia
Slovenia
Spain

The rest of Europe (except Nordics and EU countries)
Albania
Andorra
Belarus
Bosnia-Herzegovina
Croatia
Kosovo
Liechtenstein
Macedonia
Moldavia
Monaco
Montenegro
Russia
San Marino
Switzerland
Serbia
Serbia and Montenegro
Turkey
Ukraine
Vatican City
Yugoslavia

Countries outside Europe with high HDI
Antigua and Barbuda
Argentina
Australia
Bahamas
Bahrain
Barbados
Bermuda
Brazil
Brunei Darussalam
Canada
Chile
Costa Rica
Cuba
Hong Kong
Israel
Japan
Korea, South
Kuwait
Libya
Malaysia, Free Federation of Malaysia
Mauritius
Mexico
New Zealand
Oman
Panama

Countries (outside of Europe) with high HDI con't
Qatar
St Kitts and Nevis
Saudi Arabia
Seychelles
Singapore
Taiwan
Tonga
Trinidad and Tobago
United Arab Emirates
Uruguay
USA

Countries (outside Europe) with medium HDI
Algeria
Anguilla
Arab Republic of Egypt
Armenia
Azerbaijan
Bangladesh
Belize
Bhutan
Bolivia
Botswana
Cambodia
Cameroon
Cape Verde
China
Colombia
Comoros, Union of the
Congo
Congo, Democratic Republic
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
Equatorial Guinea
El Salvador
Fiji
French Morocco
Gabon
Gambia
Gaza
Georgia
Ghana
Grenada
Guatemala
Guyana
Haiti
Honduras
India

Countries (outside of Europe) with medium HDI con't Indonesia
Iraq
Iran
Jamaica
Jordan
Kazakhstan
Kenya
Kiribati
Korea, North
Kyrgyzstan
Laos
Lesotho
Lebanon
Liberia
Madagascar
Maldives, the
Marshall Islands, the
Mauritania
Micronesia
Mongolia
Morocco
Myanmar
Namibia
Nauru
Nepal
Nicaragua
Pakistan
Palau
Palestine
Papua New Guinea
Paraguay
Peru
Philippines, the
St Lucia
St Vincent and the Grenadines
Solomon Islands
Samoa
Sao Tome and Principe
Sikkim
Sri Lanka
Sudan
Surinam
Swaziland
South Africa
South Yemen
South Sudan
Soviet Union
Syria
Tajikistan
Thailand
Togo
Tunisia

Countries (outside of Europe) with medium HDI con't
Turkmenistan
Tuvalu
Uganda
Uzbekistan
Vanuatu
Venezuela
Vietnam
Vietnam, Republic of
West Bank
Western Samoa
Virgin Islands, British
Yemen
Zimbabwe
East Timor

Countries (outside Europe) with low HDI
Afghanistan
Angola
Benin
Burkina Faso
Burundi
Central African Republic
Chad
Côte d'Ivoire
Eritrea
Ethiopia
Guinea
Guinea-Bissau
Malawi
Mali
Mozambique
Niger
Nigeria
Rwanda
Senegal
Sierra Leone
Somalia
Tanzania
Zambia
Zanzibar

Persons who do not have a known country of birth have been placed in the group "countries with medium HDI outside of Europe"

Appendix 3

Previous population forecasts

Population forecasts or projections have been carried out by Statistics Sweden since the 1960s. The following is a list of the forecasts published by Statistics Sweden since 1971.

Befolkningsprognos för riket 1971–2000. Information i prognosfrågor 1971:6

Befolkningsprognos för riket 1972–2000. Information i prognosfrågor 1972:5

Befolkningsprognos för riket 1973–2000. Information i prognosfrågor 1973:6

Befolkningsprognos för riket 1976–2000. Information i prognosfrågor 1976:3

Befolkningsprognos för riket 1978–2000. Information i prognosfrågor 1978:5

Befolkning år 2000 – Prognos för Sverige 1980–2000 – med utblick mor 2025. Information i prognosfrågor 1980:6

Sveriges framtida befolkning – Prognos för åren 1983–2025. Information i prognosfrågor 1983:2

Sveriges framtida befolkning – Prognos för åren 1986–2025. Demografiska rapporter 1986

Sveriges framtida befolkning – Prognos för åren 1989–2025. Demografiska rapporter 1989:1

Sveriges framtida befolkning – Prognos för åren 1991–2025. Demografiska rapporter 1991:1

Sveriges framtida befolkning – Framskrivning för åren 1994–2050. Demografiska rapporter 1994:3

Sveriges framtida befolkning – Befolkningsframskrivning för åren 2000–2050. Demografiska rapporter 2000:1

Sveriges framtida befolkning 2001–2050. Reviderad befolkningsprognos från SCB. BE 18 SM 0101

Sveriges framtida befolkning 2002–2050. Reviderad befolkningsprognos från SCB. BE 18 SM 0201

Sveriges framtida befolkning – Befolkningsframskrivning för åren 2003–2050. Demografiska rapporter 2003:4

Sveriges framtida befolkning 2004–2050. Reviderad befolkningsprognos från SCB. BE 18 SM 0401

Sveriges framtida befolkning 2005–2050. Reviderad befolkningsprognos från SCB. BE 18 SM 0501

Sveriges framtida befolkning 2006–2050. Demografiska rapporter 2006:2

Sveriges framtida befolkning 2007–2050. Reviderad befolkningsprognos från SCB. BE 18 SM 0701

Sveriges framtida befolkning 2008–2050. Reviderad befolkningsprognos från SCB. BE 18 SM 0801

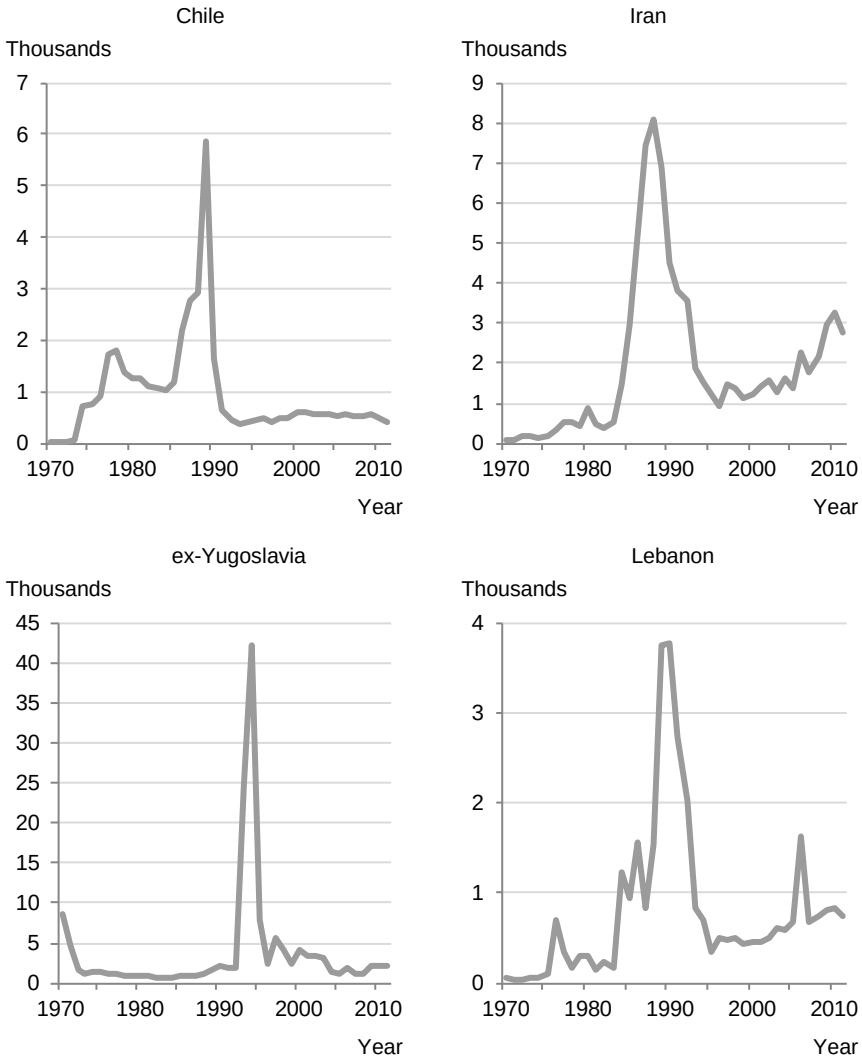
Sveriges framtida befolkning 2009–2060. Demografiska rapporter 2009:1

Sveriges framtida befolkning 2010–2060. BE 18 SM1001

Sveriges framtida befolkning 2011–2060. BE 18 SM1101

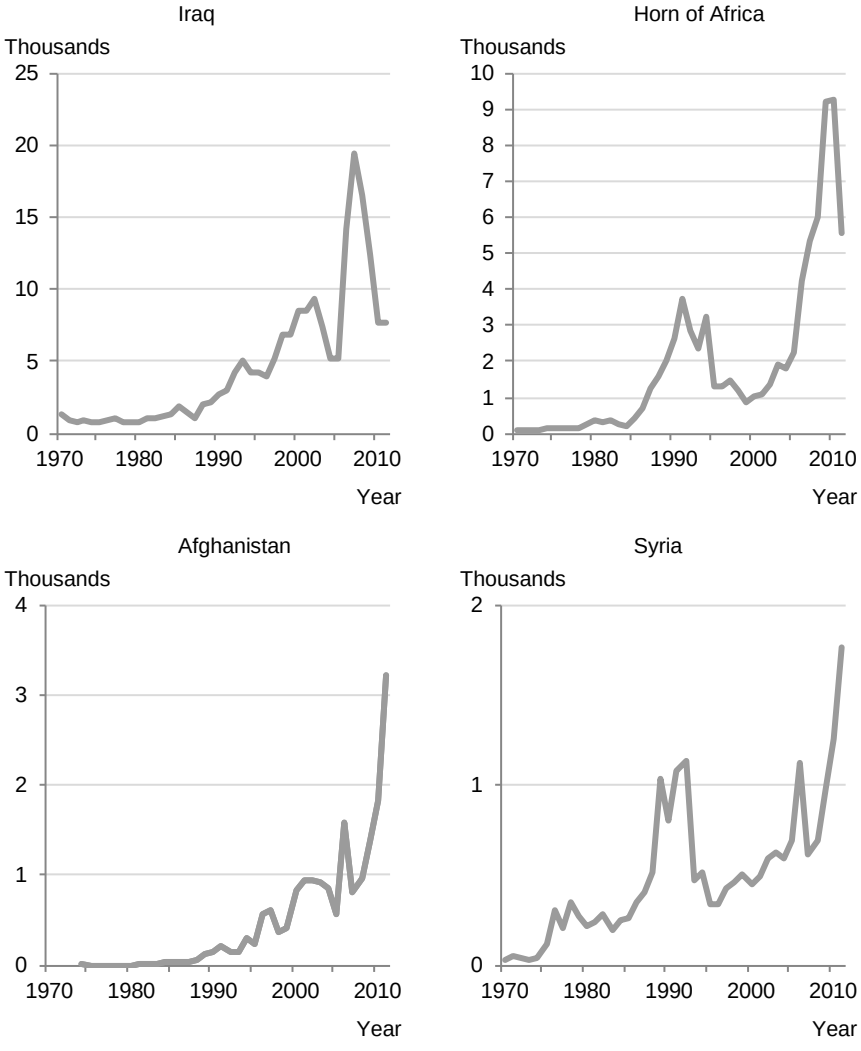
Appendix 4

Figure B.1.
Immigration 1970–2011 from the birth countries from which asylum migration has been the greatest



Please note that the scale differs for the different birth country groups.

Figure B.1. (con't.)



Please note that the scale differs for the different birth country groups.

Table Appendix

Assumptions in the main alternative

Table T.1
Overview of assumptions about migration, fertility, and mortality 2012–2060

Year	Immigration thousands	Emigration thousands	Net migration	Total fertility	Life expectancy	
					Women	Men
2012	106	48	58	1.92	83.8	80.0
2013	111	50	61	1.92	83.9	80.2
2014	108	51	57	1.93	84.0	80.4
2015	106	52	53	1.94	84.2	80.6
2016	106	54	52	1.94	84.3	80.7
2017	102	55	47	1.94	84.4	80.9
2018	99	56	43	1.94	84.5	81.1
2019	94	57	37	1.94	84.6	81.3
2020	87	57	29	1.94	84.8	81.5
2021	82	58	24	1.94	84.9	81.6
2022	79	58	22	1.94	85.0	81.8
2023	79	58	21	1.94	85.1	82.0
2024	79	58	21	1.93	85.2	820.1
2025	79	59	20	1.93	85.3	82.3
2026	79	59	20	1.93	85.5	82.5
2027	79	59	20	1.92	85.6	82.6
2028	79	59	19	1.92	85.7	82.8
2029	79	60	19	1.91	85.8	82.9
2030	79	60	19	1.91	85.9	83.1
2031	79	60	19	1.91	86.0	83.3
2032	79	61	19	1.91	86.1	83.4
2033	79	61	19	1.91	86.2	83.6
2034	80	61	18	1.91	86.3	83.7
2035	80	62	18	1.91	86.4	83.9
2036	80	62	18	1.91	86.5	84.0
2037	80	62	18	1.91	86.7	84.2
2038	81	63	18	1.91	86.8	84.3
2039	81	63	18	1.91	86.9	84.4
2040	81	63	18	1.91	87.0	84.6
2041	82	64	18	1.91	87.1	84.7
2042	82	64	18	1.91	87.2	84.9
2043	82	64	18	1.91	87.3	85.0
2044	82	65	17	1.91	87.4	85.1

Table T.1 (con't.)

Year	Immigration thousands	Emigration thousands	Net-migration	Total fertility	Life expectancy	
					Women	Men
2045	83	65	17	1.91	87.5	85.2
2046	83	65	17	1.91	87.6	85.3
2047	83	66	17	1.91	87.7	85.4
2048	83	66	17	1.91	87.7	85.5
2049	83	66	17	1.91	87.8	85.6
2050	83	66	17	1.91	87.9	85.7
2051	84	67	17	1.91	88.0	85.8
2052	84	67	17	1.91	88.1	85.9
2053	84	67	17	1.91	88.2	86.0
2054	84	67	17	1.91	88.3	86.1
2055	84	67	17	1.91	88.4	86.2
2056	84	67	17	1.91	88.5	86.3
2057	84	68	17	1.91	88.6	86.4
2058	84	68	17	1.91	88.7	86.5
2059	85	68	17	1.91	88.8	86.6
2060	85	68	17	1.90	88.8	86.7

Table T.2
Number of children born per 1000 women by age at end of the year for some forecast years

Age	Year								
	2012	2013	2014	2015	2020	2030	2040	2050	2060
14	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0
16	1	1	1	1	1	1	1	1	1
17	2	3	3	3	3	3	3	3	3
18	5	5	6	6	6	5	5	5	5
19	10	11	11	11	11	10	10	10	10
20	19	20	20	21	20	19	18	18	18
21	31	31	32	32	32	30	29	30	29
22	40	41	43	43	43	41	40	40	40
23	52	51	54	54	55	52	51	51	51
24	64	63	66	66	67	65	64	63	64
25	77	77	80	79	80	79	78	77	78
26	91	91	94	93	93	93	92	92	92
27	105	105	108	108	108	108	107	107	108
28	120	119	121	122	122	122	123	123	123
29	132	131	133	133	134	135	135	136	136
30	143	140	141	142	144	144	145	146	145
31	148	145	143	146	147	147	148	149	149
32	148	145	142	144	144	145	146	147	146
33	137	135	132	134	133	133	134	134	134
34	125	124	122	123	121	121	121	121	121
35	111	113	108	110	108	107	107	107	107
36	94	95	93	92	92	90	90	90	90
37	74	78	77	76	75	72	72	72	72
38	58	61	63	61	61	58	58	57	57
39	45	47	47	48	48	45	45	44	44
40	31	34	34	34	35	32	32	31	31
41	23	23	24	23	24	23	23	22	22
42	13	15	15	15	16	15	15	14	14
43	8	8	9	8	9	8	8	8	8
44	4	5	4	5	5	4	4	4	4
45	3	2	3	2	3	3	2	2	2
46	1	1	1	1	1	1	1	1	1
47	1	1	1	1	1	1	1	1	1
48	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0

Table T.3
Mortality rates[40] for 2012 by sex and age at the end of the year. Per thousand

Age	Women	Men	Age	Women	Men	Age	Women	Men
0	3.76	4.17	35	0.36	0.65	70	11.03	17.47
1	0.41	0.44	36	0.40	0.71	71	12.16	19.12
2	0.14	0.14	37	0.43	0.70	72	13.40	21.54
3	0.10	0.10	38	0.45	0.77	73	14.95	23.70
4	0.08	0.09	39	0.53	0.85	74	16.79	26.81
5	0.08	0.07	40	0.57	0.92	75	18.65	30.07
6	0.07	0.07	41	0.60	0.99	76	20.93	33.28
7	0.05	0.07	42	0.70	1.08	77	23.72	37.93
8	0.06	0.06	43	0.77	1.22	78	26.78	42.82
9	0.06	0.07	44	0.86	1.32	79	30.64	47.76
10	0.06	0.06	45	0.99	1.46	80	35.29	54.95
11	0.07	0.07	46	1.12	1.62	81	40.44	61.73
12	0.06	0.07	47	1.21	1.81	82	46.09	70.83
13	0.07	0.10	48	1.40	1.99	83	53.02	79.18
14	0.09	0.11	49	1.54	2.19	84	60.64	90.97
15	0.13	0.16	50	1.68	2.42	85	70.79	103.45
16	0.14	0.21	51	1.87	2.70	86	81.48	117.06
17	0.18	0.27	52	1.99	2.90	87	93.44	132.70
18	0.19	0.34	53	2.17	3.29	88	107.60	149.98
19	0.22	0.48	54	2.40	3.59	89	124.34	168.04
20	0.23	0.55	55	2.67	3.90	90	141.01	189.51
21	0.24	0.56	56	2.99	4.33	91	161.57	209.41
22	0.21	0.61	57	3.21	4.80	92	184.46	239.82
23	0.23	0.60	58	3.63	5.15	93	206.98	270.42
24	0.20	0.60	59	3.92	5.83	94	232.81	298.53
25	0.21	0.63	60	4.38	6.36	95	259.46	318.88
26	0.24	0.57	61	4.81	6.95	96	292.36	365.83
27	0.23	0.61	62	5.18	7.68	97	322.31	394.31
28	0.23	0.58	63	5.77	8.44	98	353.57	425.82
29	0.23	0.59	64	6.32	9.61	99	376.82	463.16
30	0.26	0.61	65	7.05	10.80	100	394.31	493.11
31	0.28	0.57	66	7.55	11.76	101	426.23	516.34
32	0.28	0.59	67	8.27	13.03	102	459.84	553.61
33	0.30	0.62	68	9.07	14.09	103	495.62	593.18
34	0.32	0.61	69	9.91	15.69	104	533.53	635.28
						105	572.76	680.16
						106	653.46	752.23

[40]The above so-called mortality rates are calculated as the number of deaths divided by the average population size. To convert mortality rates to death risks see *Facts about the statistics.*

Table T.4a
Annual reduction of death rates for women 2013–2060. Percent

Age	2013–2040	2041	2042	2043	2044	2045–2060
0–44	2.00	1.90	1.80	1.70	1.60	1.50
45	1.97	1.87	1.78	1.69	1.59	1.50
46	1.92	1.83	1.75	1.67	1.58	1.50
47	1.87	1.79	1.72	1.65	1.57	1.50
48	1.82	1.75	1.69	1.63	1.56	1.50
49	1.76	1.71	1.66	1.61	1.55	1.50
50	1.72	1.68	1.63	1.59	1.54	1.50
51	1.67	1.63	1.60	1.57	1.53	1.50
52	1.61	1.59	1.57	1.54	1.52	1.50
53	1.55	1.54	1.53	1.52	1.51	1.50
54–82	1.50	1.50	1.50	1.50	1.50	1.50
83	1.46	1.46	1.46	1.46	1.46	1.46
84	1.40	1.40	1.40	1.40	1.40	1.40
85	1.33	1.33	1.33	1.33	1.33	1.33
86	1.26	1.26	1.26	1.26	1.26	1.26
87	1.18	1.18	1.18	1.18	1.18	1.18
88	1.09	1.09	1.09	1.09	1.09	1.09
89	1.01	1.01	1.01	1.01	1.01	1.01
90	0.92	0.92	0.92	0.92	0.92	0.92
91	0.83	0.83	0.83	0.83	0.83	0.83
92	0.74	0.74	0.74	0.74	0.74	0.74
93	0.66	0.66	0.66	0.66	0.66	0.66
94	0.57	0.57	0.57	0.57	0.57	0.57
95	0.48	0.48	0.48	0.48	0.48	0.48
96	0.40	0.40	0.40	0.40	0.40	0.40
97	0.31	0.31	0.31	0.31	0.31	0.31
98	0.23	0.23	0.23	0.23	0.23	0.23
99	0.14	0.14	0.14	0.14	0.14	0.14
100–106	0.06	0.06	0.06	0.06	0.06	0.06

Table T.4b
Annual reduction of death rates for men 2013–2060. Percent

Age	2013–2040	2041	2042	2043	2044	2045–2060
0–44	2.00	1.90	1.80	1.70	1.60	1.50
45	2.15	2.02	1.89	1.76	1.63	1.50
46	2.25	2.10	1.95	1.80	1.65	1.50
47	2.26	2.11	1.96	1.80	1.65	1.50
48	2.27	2.12	1.96	1.81	1.65	1.50
49	2.28	2.12	1.97	1.81	1.66	1.50
50	2.30	2.14	1.98	1.82	1.66	1.50
51–72	2.32	2.15	1.99	1.83	1.66	1.50
73	2.30	2.14	1.98	1.82	1.66	1.50
74	2.27	2.11	1.96	1.81	1.65	1.50
75	2.22	2.08	1.93	1.79	1.64	1.50
76	2.17	2.04	1.90	1.77	1.63	1.50
77	2.11	1.99	1.87	1.74	1.62	1.50
78	2.04	1.93	1.83	1.72	1.61	1.50
79	1.97	1.87	1.78	1.69	1.59	1.50
80	1.88	1.81	1.73	1.65	1.58	1.50
81	1.79	1.74	1.68	1.62	1.56	1.50
82	1.70	1.66	1.62	1.58	1.54	1.50
83	1.60	1.57	1.54	1.52	1.49	1.46
84	1.49	1.47	1.45	1.44	1.42	1.40
85	1.38	1.37	1.36	1.35	1.34	1.33
86	1.27	1.27	1.26	1.26	1.26	1.26
87	1.16	1.16	1.16	1.17	1.17	1.18
88	1.05	1.05	1.06	1.07	1.08	1.09
89	0.94	0.95	0.96	0.98	0.99	1.01
90	0.83	0.85	0.87	0.88	0.90	0.92
91	0.73	0.75	0.77	0.79	0.81	0.83
92	0.63	0.65	0.68	0.70	0.72	0.74
93	0.54	0.56	0.59	0.61	0.63	0.66
94	0.45	0.48	0.50	0.52	0.55	0.57
95	0.38	0.40	0.42	0.44	0.46	0.48
96	0.31	0.33	0.34	0.36	0.38	0.40
97	0.24	0.26	0.27	0.29	0.30	0.31
98	0.19	0.19	0.20	0.21	0.22	0.23
99	0.13	0.13	0.14	0.14	0.14	0.14
100–106	0.08	0.07	0.07	0.07	0.06	0.06

Table T.5
Number of immigrants born in Sweden and foreign born 2012–2060. Thousands

Year	Women		Men		Total	
	Swedish born persons	Foreign born persons	Swedish born persons	Foreign born persons	Swedish born persons	Foreign born persons
2012	6.0	44.6	6.4	49.3	12.4	93.9
2013	7.2	45.4	7.6	50.4	14.8	95.8
2014	7.4	43.3	7.9	49.2	15.3	92.5
2015	6.6	43.2	7.0	49.1	13.5	92.2
2016	6.6	43.2	7.0	49.0	13.7	92.2
2017	6.7	41.3	7.1	47.1	13.7	88.4
2018	6.7	39.6	7.1	45.2	13.8	84.8
2019	6.7	37.0	7.1	42.7	13.8	79.8
2020	6.8	33.5	7.1	39.2	13.9	72.7
2021	6.8	30.9	7.2	36.7	14.0	67.6
2022	6.8	30.0	7.2	35.5	14.0	65.5
2023	6.9	30.0	7.2	35.4	14.1	65.4
2024	6.9	29.8	7.3	35.0	14.2	64.8
2025	7.0	29.6	7.3	34.6	14.3	64.3
2026	7.0	29.6	7.4	34.5	14.4	64.2
2027	7.1	29.7	7.4	34.5	14.5	641
2028	7.2	29.7	7.5	34.4	14.6	641
2029	7.2	29.8	7.5	34.3	14.7	641
2030	7.3	29.8	7.6	34.2	14.9	641
2031	7.4	29.9	7.7	34.2	15.0	641
2032	7.4	30.0	7.7	34.1	15.2	641
2033	7.5	30.0	7.8	34.1	15.3	641
2034	7.6	30.1	7.9	34.0	15.5	641
2035	7.7	30.2	8.0	34.0	15.8	64.2
2036	7.9	30.3	8.1	34.0	16.0	64.2
2037	8.0	30.3	8.2	33.9	16.2	64.3
2038	8.1	30.4	8.3	33.9	16.4	64.3
2039	8.2	30.5	8.4	33.9	16.6	64.3
2040	8.3	30.6	8.5	33.8	16.8	64.4
2041	8.4	30.7	8.6	33.8	17.1	64.5
2042	8.5	30.7	8.7	33.8	17.3	64.5
2043	8.6	30.8	8.8	33.7	17.5	64.5
2044	8.7	30.9	8.9	33.7	17.7	64.6
2045	8.8	31.0	9.0	33.6	17.9	64.6
2046	8.9	31.1	9.1	33.6	18.0	64.7

Table T.5 (con't.)

Year	Women		Men		Total	
	Swedish born persons	Foreign born persons	Swedish born persons	Foreign born persons	Swedish born persons	Foreign born persons
2047	9.0	31.1	9.2	33.6	18.2	64.7
2048	9.1	31.2	9.3	33.5	18.4	64.7
2049	9.2	31.3	9.3	33.5	18.5	64.8
2050	9.2	31.4	9.4	33.4	18.6	64.8
2051	9.3	31.5	9.4	33.3	18.8	64.8
2052	9.4	31.6	9.5	33.3	18.9	64.8
2053	9.4	31.6	9.5	33.2	19.0	64.8
2054	9.5	31.7	9.6	33.2	19.1	64.9
2055	9.6	31.8	9.6	33.1	19.2	64.9
2056	9.6	31.8	9.7	33.1	19.3	64.9
2057	9.7	31.9	9.7	33.0	19.4	64.9
2058	9.7	32.0	9.8	33.0	19.5	65.0
2059	9.8	32.1	9.8	32.9	19.6	65.0
2060	9.8	32.2	9.9	32.9	19.7	65.0

Table T.6
Number of emigrants born in Sweden and foreign born 2012–2060. Thousands

Year	Women		Men		Total	
	Swedish born persons	Foreign born persons	Swedish born persons	Foreign born persons	Swedish born persons	Foreign born persons
2012	9.2	12.0	9.6	17.2	18.7	29.1
2013	9.3	12.5	9.7	18.0	19.0	30.6
2014	9.4	13.1	9.8	18.8	19.2	31.9
2015	9.4	13.6	9.9	19.5	19.3	33.1
2016	9.5	14.2	10.0	20.1	19.5	34.3
2017	9.5	14.7	10.1	20.6	19.6	35.3
2018	9.6	15.1	10.1	21.0	19.7	36.1
2019	9.6	15.5	10.2	21.3	19.8	36.8
2020	9.6	15.8	10.3	21.5	19.9	37.3
2021	9.7	16.0	10.3	21.6	20.0	37.6
2022	9.7	16.2	10.4	21.6	20.1	37.8
2023	9.8	16.3	10.4	21.6	20.2	37.9
2024	9.8	16.5	10.5	21.6	20.3	38.1
2025	9.9	16.6	10.5	21.6	20.4	38.2
2026	9.9	16.7	10.6	21.6	20.5	38.3
2027	10.0	16.8	10.6	21.6	20.6	38.5
2028	10.1	17.0	10.7	21.6	20.8	38.6
2029	10.2	17.1	10.8	21.7	21.0	38.7
2030	10.3	17.2	10.9	21.7	21.1	38.9
2031	10.3	17.3	11.0	21.7	21.3	39.0
2032	10.4	17.4	11.1	21.7	21.5	39.1
2033	10.5	17.5	11.2	21.7	21.7	39.2
2034	10.7	17.6	11.3	21.7	21.9	39.4
2035	10.8	17.8	11.4	21.7	22.1	39.5
2036	10.9	17.9	11.5	21.7	22.4	39.6
2037	11.0	18.0	11.6	21.7	22.6	39.7
2038	11.1	18.1	11.7	21.7	22.9	39.8
2039	11.3	18.2	11.9	21.7	23.1	39.9
2040	11.4	18.3	12.0	21.7	23.4	40.0
2041	11.5	18.4	12.1	21.7	23.7	40.1
2042	11.6	18.5	12.3	21.7	23.9	40.2
2043	11.8	18.6	12.4	21.6	24.2	40.3
2044	11.9	18.7	12.5	21.6	24.4	40.3
2045	12.0	18.8	12.7	21.6	24.7	40.4
2046	12.1	18.9	12.8	21.5	24.9	40.5

Table T.6 (con't.)

Year	Women		Men		Total	
	Swedish born persons	Foreign born persons	Swedish born persons	Foreign born persons	Swedish born persons	Foreign born persons
2047	12.2	19.0	12.9	21.5	25.1	40.5
2048	12.3	19.1	13.0	21.5	25.3	40.6
2049	12.4	19.2	13.1	21.4	25.5	40.6
2050	12.5	19.3	13.2	21.4	25.7	40.7
2051	12.6	19.4	13.3	21.3	25.8	40.7
2052	12.6	19.5	13.3	21.3	26.0	40.8
2053	12.7	19.6	13.4	21.2	26.1	40.8
2054	12.8	19.7	13.5	21.2	26.2	40.8
2055	12.8	19.7	13.5	21.1	26.4	40.9
2056	12.9	19.8	13.6	21.1	26.5	40.9
2057	13.0	19.9	13.7	21.0	26.7	40.9
2058	13.1	20.0	13.7	21.0	26.8	41.0
2059	13.1	20.1	13.8	20.9	26.9	41.0
2060	13.2	20.2	13.9	20.9	27.1	41.0

Results – main alternative

Table T.7
Population and population changes 1960–2011 and forecast 2012–2060. Thousands

Year	Births	Deaths	Birth surplus	Immi-gra-tion	Emi-gra-tion	Net migra-tion	Popula-tion in-crease	Popula-tion-size 31 Dec
1960	102.2	75.1	27.1	26.1	15.1	11.0	36.1	7 498.0
1970	110.2	80.0	30.1	77.3	28.7	48.7	77.0	8 081.2
1980	97.1	91.8	5.3	39.4	29.8	9.6	14.9	8 317.9
1990	123.9	95.2	28.8	60.0	25.2	34.9	63.6	8 590.6
2000	90.4	93.3	-2.8	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	641	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	36.4	9 047.8
2006	105.9	91.2	14.7	95.8	44.9	50.8	65.5	9 113.3
2007	107.4	91.7	15.7	99.5	45.4	54.1	69.7	9 182.9
2008	109.3	91.4	17.9	101.2	45.3	55.9	73.4	9 256.3
2009	111.8	90.1	21.7	102.3	39.2	63.0	84.3	9 348.6
2010	115.6	90.5	25.1	98.8	48.9	50.0	74.9	9 415.6
2011	111.8	89.9	21.8	96.5	51.2	45.3	67.3	9 482.9
Projection								
2012	113.8	89.6	24.3	106.3	47.9	58.4	82.7	9 565.5
2013	115.8	89.7	26.2	110.5	49.5	61.0	87.2	9 652.7
2014	118.1	89.7	28.4	107.8	51.1	56.7	85.0	9 737.8
2015	120.1	89.8	30.3	105.7	52.5	53.3	83.5	9 821.3
2016	122.2	90.0	32.2	105.8	53.8	52.1	84.3	9 905.6
2017	123.6	90.1	33.5	102.2	54.9	47.3	80.7	9 986.3
2018	124.8	90.3	34.5	98.6	55.8	42.8	77.3	10 063.6
2019	125.8	90.6	35.1	93.6	56.6	37.0	72.2	10 135.8
2020	126.3	91.0	35.3	86.5	57.2	29.4	64.7	10 200.5
2021	126.3	91.5	34.8	81.5	57.6	24.0	58.8	10 259.2
2022	125.8	92.1	33.7	79.5	57.8	21.6	55.4	10 314.6
2023	124.9	92.8	32.1	79.5	58.1	21.4	53.5	10 368.1
2024	123.7	93.6	30.0	79.0	58.3	20.7	50.7	10 418.8
2025	122.2	94.6	27.6	78.5	58.6	20.0	47.6	10 466.4
2026	120.5	95.6	24.9	78.6	58.8	19.8	44.7	10 511.0
2027	118.9	96.8	22.1	78.6	59.1	19.6	41.6	10 552.7
2028	117.4	98.1	19.3	78.7	59.4	19.3	38.6	10 591.3
2029	116.1	99.4	16.7	78.8	59.7	19.1	35.8	10 627.1
2030	115.1	100.8	14.3	79.0	60.0	19.0	33.3	10 660.4
2031	114.6	102.2	12.4	79.1	60.3	18.8	31.2	10 691.6

Table T.7 (con't.)

Year	Births	Deaths	Birth surplus	Immi-gra-tion	Emi-gra-tion	Net migra-tion	Popula-tion in-crease	Popula-tion-size 31 Dec
2032	114.5	103.5	11.0	79.3	60.6	18.6	29.6	10 721.2
2033	114.7	104.8	9.9	79.5	61.0	18.5	28.4	10 749.6
2034	115.3	106.1	9.2	79.7	61.3	18.4	27.6	10 777.2
2035	116.1	107.2	8.9	79.9	61.6	18.3	27.2	10 804.4
2036	117.1	108.1	9.0	80.2	62.0	18.2	27.2	10 831.5
2037	118.2	108.9	9.3	80.4	62.3	18.1	27.4	10 859.0
2038	119.5	109.5	10.0	80.7	62.7	18.0	28.0	10 886.9
2039	120.8	109.9	10.8	81.0	63.1	17.9	28.7	10 915.7
2040	122.0	110.2	11.8	81.2	63.4	17.8	29.7	10 945.3
2041	123.3	110.3	12.9	81.5	63.8	17.7	30.7	10 976.0
2042	124.4	110.4	14.1	81.8	641	17.6	31.7	11 007.7
2043	125.5	110.4	15.2	82.0	64.5	17.6	32.7	11 040.4
2044	126.6	110.4	16.2	82.3	64.8	17.5	33.7	11 074.1
2045	127.5	110.4	17.1	82.5	65.1	17.4	34.5	11 108.6
2046	128.3	110.5	17.9	82.7	65.4	17.3	35.2	11 143.9
2047	129.1	110.6	18.5	82.9	65.6	17.3	35.7	11 179.6
2048	129.7	110.8	18.8	83.1	65.9	17.2	36.0	11 215.6
2049	130.1	111.1	19.0	83.3	66.1	17.1	36.1	11 251.8
2050	130.4	111.5	18.9	83.4	66.3	17.1	36.0	11 287.8
2051	130.6	111.9	18.6	83.6	66.5	17.0	35.6	11 323.4
2052	130.5	112.4	18.1	83.7	66.7	16.9	35.1	11 358.4
2053	130.4	113.0	17.4	83.8	66.9	16.9	34.3	11 392.8
2054	130.1	113.5	16.6	83.9	67.1	16.8	33.5	11 426.3
2055	129.7	114.0	15.8	84.1	67.3	16.8	32.6	11 458.8
2056	129.3	114.4	14.8	84.2	67.4	16.8	31.6	11 490.5
2057	128.8	114.8	14.0	84.3	67.6	16.7	30.7	11 521.2
2058	128.3	115.1	13.2	84.5	67.8	16.7	29.9	11 551.0
2059	127.9	115.3	12.6	84.6	67.9	16.6	29.2	11 580.2
2060	127.5	115.4	12.1	84.7	68.1	16.6	28.7	11 608.9

Table T.8
Population born in Sweden and foreign born 1960–2011 and forecast 2012–2060. Thousands

Year	Swedish born persons	Foreign born persons	Total
1960	7 1950.2	299.9	7 1950.2
1970	7 5430.1	5380.1	8 0810.2
1980	7 6890.3	628.6	8 317 9
1990	7 799.8	790.9	8 590.6
2000	7 8790.0	1 003.8	8 882.8
2001	7 8810.1	1 0280.0	8 9090.1
2002	7 8870.3	1 0530.4	8 940. 8
2003	7 897.6	1 0780.1	8 9750.7
2004	7 9110.1	1 1000.3	9 0110.4
2005	7 922.0	1 125.8	9 0470.8
2006	7 9380.0	1 1750.2	9 1130.3
2007	7 9550.2	1 227.8	9 182 9
2008	7 974.8	1 281.6	9 2560.3
2009	8 002.7	1 3380.0	9 340.7
2010	8 030.6	1 3850.0	9 415.6
2011	8 055.6	1 4270.3	9 482.9
Projection			
2012	8 083.1	1 482.4	9 565.5
2013	8 114.9	1 537.8	9 652.7
2014	8 149.5	1 588.2	9 737.8
2015	8 184.4	1 636.9	9 821.3
2016	8 221.4	1 684.1	9 905.6
2017	8 260.0	1 726.3	9 986.3
2018	8 299.8	1 763.8	10 063.6
2019	8 340.5	1 795.3	10 135.8
2020	8 381.6	1 818.9	10 200.5
2021	8 422.4	1 836.8	10 259.2
2022	8 462.4	1 852.1	10 314.6
2023	8 501.1	1 867.0	10 368.1
2024	8 538.0	1 880.8	10 418.8
2025	8 572.7	1 893.7	10 466.4
2026	8 604.9	1 906.1	10 511.0
2027	8 634.6	1 918.0	10 552.7
2028	8 661.8	1 929.5	10 591.3
2029	8 686.6	1 940.5	10 627.1
2030	8 709.3	1 951.0	10 660.4
2031	8 730.4	1 961.2	10 691.6

Information for 1960 comes from the 1960 Population and Housing Census and refers to 1 November

Table T.8 (con't.)

Year	Swedish born persons	Foreign born persons	Total
2032	8 750.3	1 970.9	10 721.2
2033	8 769.5	1 980.1	10 749.6
2034	8 788.2	1 989.0	10 777.2
2035	8 807.0	1 997.4	10 804.4
2036	8 826.1	2 005.4	10 831.5
2037	8 845.9	2 013.0	10 859.0
2038	8 866.7	2 020.2	10 886.9
2039	8 888.7	2 027.0	10 915.7
2040	8 912.0	2 033.4	10 945.3
2041	8 936.6	2 039.4	10 976.0
2042	8 962.7	2 045.0	11 007.7
2043	8 990.2	2 050.2	11 040.4
2044	9 019.1	2 055.1	11 074.1
2045	9 049.1	2 059.5	11 108.6
2046	9 080.3	2 063.6	11 143.9
2047	9 112.3	2 067.3	11 179.6
2048	9 145.1	2 070.6	11 215.6
2049	9 178.3	2 073.5	11 251.8
2050	9 211.7	2 076.0	11 287.8
2051	9 245.1	2 078.2	11 323.4
2052	9 278.4	2 080.0	11 358.4
2053	9 311.3	2 081.5	11 392.8
2054	9 343.7	2 082.6	11 426.3
2055	9 375.5	2 083.4	11 458.8
2056	9 406.6	2 083.8	11 490.5
2057	9 437.1	2 084.0	11 521.2
2058	9 467.1	2 083.9	11 551.0
2059	9 496.7	2 083.5	11 580.2
2060	9 526.1	2 082.9	11 608.9

Table T.9a
Population by age 1960–2011 and projection 2012–2060. Thousands

31 Dec. year	Total	of which by age					
		0–4	5–9	10–14	15–19	20–24	25–29
1960	7 4980.0	519.9	533.5	610.2	594.1	466.2	435.0
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
2006	9 113.3	512.6	468.0	569.0	619.7	541.6	547.7
2007	9 182.9	525.3	476.2	540.2	637.0	557.5	554.5
2008	9 256.3	537.0	488.7	516.7	641.4	580.3	562.9
2009	9 340.7	548.2	503.9	497.3	638.5	605.5	571.8
2010	9 415.6	561.8	515.7	487.5	618.6	6320.0	581.9
2011	9 482.9	567.4	530.9	4860.0	592.4	650.9	595.1
Projection							
2012	9 565.5	574.6	544.2	494.4	564.1	668.2	610.6
2013	9 652.7	582.0	555.9	506.9	540.5	674.1	633.1
2014	9 737.8	588.6	567.7	521.9	520.4	671.7	655.0
2015	9 821.3	593.0	582.5	534.4	511.1	652.9	679.2
2016	9 905.6	603.0	588.9	550.6	510.1	627.1	699.7
2017	9 986.3	612.2	595.6	563.0	517.6	598.3	715.7
2018	10 063.6	620.5	601.8	573.6	528.8	573.5	719.3
2019	10 135.8	627.2	607.1	584.2	542.2	552.1	714.2
2020	10 200.5	632.2	609.9	597.3	552.9	540.7	692.5
2021	10 259.2	635.0	617.8	601.9	566.7	537.0	663.3
2022	10 314.6	636.2	625.2	606.8	577.1	541.8	631.7
2023	10 368.1	635.6	631.9	611.6	586.1	550.8	604.6
2024	10 418.8	633.2	637.5	615.8	595.4	562.5	581.7
2025	10 466.4	628.9	641.8	618.0	607.9	572.2	569.5
2026	10 511.0	623.1	644.5	625.8	612.3	585.4	565.5
2027	10 552.7	616.2	645.6	633.1	617.2	595.5	569.9
2028	10 591.3	608.7	645.0	639.8	621.9	604.3	578.4
2029	10 627.1	601.2	642.5	645.4	626.1	613.6	589.6
2030	10 660.4	594.1	638.2	649.8	628.3	626.0	599.0
2031	10 691.6	588.3	632.5	652.5	636.1	630.5	611.8

Table T.9a (con't)

31 Dec. year	Total	of which by age					
		0–4	5–9	10–14	15–19	20–24	25–29
2032	10 721.2	583.9	625.6	653.7	643.5	635.4	621.8
2033	10 749.6	581.3	618.1	653.0	650.2	640.1	630.6
2034	10 777.2	580.6	610.6	650.6	655.9	644.4	639.9
2035	10 804.4	581.5	603.7	646.3	660.3	646.8	652.3
2036	10 831.5	584.0	597.8	640.6	663.1	654.6	657.0
2037	10 859.0	587.7	593.6	633.8	664.3	661.9	662.1
2038	10 886.9	592.4	591.0	626.4	663.7	668.7	667.0
2039	10 915.7	597.9	590.2	618.9	661.3	674.4	671.4
2040	10 945.3	603.8	591.1	612.0	657.1	678.9	674.0
2041	10 976.0	609.9	593.6	606.3	651.4	681.7	681.7
2042	11 007.7	616.1	597.2	602.0	644.7	683.0	689.1
2043	11 040.4	622.1	601.8	599.5	637.3	682.5	695.9
2044	11 074.1	627.8	607.2	598.7	630.0	680.2	701.6
2045	11 108.6	633.2	613.0	599.6	623.2	676.2	706.1
2046	11 143.9	638.2	619.1	602.0	617.5	670.7	709.0
2047	11 179.6	642.8	625.1	605.6	613.3	664.2	710.5
2048	11 215.6	646.8	631.0	610.2	610.8	657.1	710.1
2049	11 251.8	650.3	636.6	615.5	610.0	650.0	708.0
2050	11 287.8	653.2	641.9	621.3	611.0	643.4	704.2
2051	11 323.4	655.3	646.8	627.2	613.4	637.9	698.9
2052	11 358.4	656.7	651.2	633.2	616.9	633.9	692.6
2053	11 392.8	657.4	655.1	638.9	621.5	631.5	685.8
2054	11 426.3	657.4	658.5	644.5	626.8	630.9	679.0
2055	11 458.8	656.7	661.2	649.7	632.5	631.9	672.7
2056	11 490.5	655.4	663.3	654.5	638.4	634.3	667.5
2057	11 521.2	653.7	664.6	658.8	644.3	637.9	663.7
2058	11 551.0	651.6	665.2	662.6	650.1	642.5	661.5
2059	11 580.2	649.4	665.1	665.9	655.6	647.7	661.0
2060	11 608.9	647.2	664.3	668.6	660.7	653.4	662.1

Table T.9a (con't.)

31 Dec. year	of which by age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
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
2006	602.0	631.4	656.3	584.4	581.3	612.9	604.8
2007	593.2	626.5	671.7	588.6	582.8	598.3	622.7
2008	585.2	626.7	674.3	600.2	582.1	585.9	629.9
2009	580.1	634.5	663.1	621.1	585.1	575.4	625.5
2010	581.9	633.9	652.2	642.5	584.7	571.4	614.1
2011	585.1	625.9	645.7	662.4	584.5	574.4	597.4
Projection							
2012	592.8	618.0	641.6	677.9	589.0	576.3	583.6
2013	602.3	610.8	642.4	681.4	600.9	576.0	572.1
2014	609.9	605.3	650.1	670.5	621.5	579.2	562.2
2015	618.4	607.7	650.6	661.1	643.2	579.5	559.0
2016	632.1	611.5	643.3	655.3	663.3	579.6	562.3
2017	645.9	617.2	634.4	650.7	678.3	583.9	564.3
2018	665.7	623.9	625.4	650.4	681.2	595.3	564.1
2019	685.1	628.8	618.2	656.8	669.9	615.1	567.2
2020	706.1	634.5	618.4	655.8	659.9	636.1	567.3
2021	723.0	644.8	619.6	647.0	653.4	655.3	567.3
2022	735.6	655.7	622.8	636.6	647.9	669.6	571.4
2023	736.4	673.1	627.2	626.3	646.9	672.0	582.3
2024	729.3	690.8	630.4	618.0	652.4	660.6	601.5
2025	707.0	710.8	635.1	617.3	650.9	650.6	622.0
2026	678.2	727.4	644.7	618.0	641.8	644.1	640.7
2027	647.4	740.0	655.3	620.7	631.3	638.7	654.7
2028	621.0	741.0	672.5	624.8	621.0	637.6	657.2
2029	598.7	734.1	690.2	627.6	612.6	642.9	646.1
2030	586.8	712.4	710.2	632.1	611.7	641.3	636.4
2031	582.9	684.2	726.8	641.6	612.2	632.3	630.2

Table T.9a (con't.)

31 Dec. year	of which by age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
2032	587.2	654.0	739.5	652.1	614.7	621.8	625.1
2033	595.4	628.2	740.7	669.2	618.5	611.6	624.0
2034	606.2	606.5	734.0	686.8	621.1	603.2	629.2
2035	615.5	594.8	712.7	706.7	625.6	602.2	627.6
2036	628.1	591.0	685.0	723.4	634.9	602.7	618.7
2037	638.0	595.2	655.4	736.2	645.3	605.0	608.5
2038	646.7	603.4	630.1	737.6	662.3	608.7	598.4
2039	656.1	614.0	608.7	731.1	679.9	611.3	590.3
2040	668.5	623.2	597.2	710.2	699.8	615.7	589.4
2041	673.4	635.7	593.6	683.0	716.5	624.9	589.8
2042	678.7	645.5	597.8	653.8	729.4	635.2	592.1
2043	683.7	654.3	605.9	628.8	730.9	652.2	595.7
2044	688.2	663.8	616.5	607.8	724.6	669.7	598.2
2045	690.9	676.1	625.6	596.6	704.0	689.5	602.6
2046	698.6	681.2	638.0	593.0	677.2	706.2	611.7
2047	706.0	686.6	647.8	597.3	648.5	719.0	622.0
2048	712.8	691.7	656.6	605.3	623.9	720.7	638.7
2049	718.6	696.2	666.1	615.8	603.3	714.6	656.2
2050	723.2	699.0	678.4	624.9	592.2	694.5	675.9
2051	726.1	706.8	683.5	637.1	588.7	668.1	692.5
2052	727.6	714.2	689.0	646.9	593.0	639.9	705.3
2053	727.4	721.0	694.1	655.7	600.9	615.8	707.0
2054	725.4	726.8	698.7	665.2	611.4	595.5	701.2
2055	721.7	731.4	701.6	677.4	620.4	584.6	681.6
2056	716.7	734.4	709.4	682.6	632.6	581.3	655.8
2057	710.6	735.9	716.8	688.1	642.3	585.6	628.3
2058	704.1	735.8	723.6	693.3	651.1	593.5	604.7
2059	697.5	733.8	729.4	697.9	660.5	603.8	584.9
2060	691.5	730.3	734.0	700.9	672.7	612.8	574.4

Table T.9a (con't.)

31 Dec. year	of which by age							
	65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
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
2006	432.6	348.8	309.8	253.8	160.8	60.6	13.6	1.4
2007	454.5	353.8	309.1	250.7	163.4	61.4	14.1	1.5
2008	481.8	365.1	305.0	248.6	166.5	61.9	14.5	1.5
2009	513.8	378.6	304.1	246.2	168.2	63.5	14.9	1.6
2010	547.7	389.6	303.0	245.7	165.5	68.9	15.2	1.7
2011	578.5	401.4	306.6	244.9	163.3	72.8	15.5	1.8
Projection								
2012	596.0	422.6	311.8	245.5	162.3	74.2	16.0	1.9
2013	603.4	448.8	322.6	243.0	162.3	76.0	16.3	2.1
2014	599.5	479.1	335.3	242.9	161.4	76.9	16.8	2.2
2015	589.4	511.4	345.7	243.0	162.1	76.4	18.6	2.2
2016	574.0	540.6	356.8	246.9	162.4	76.0	19.8	2.2
2017	561.3	557.5	376.5	252.2	163.4	75.8	20.1	2.3
2018	550.7	564.9	400.9	261.8	162.5	76.4	20.5	2.4
2019	541.5	561.7	428.9	272.9	163.1	76.3	20.8	2.5
2020	538.7	552.9	458.5	282.1	164.1	77.2	20.8	2.7
2021	542.0	538.8	485.2	292.0	167.7	77.8	20.8	2.9
2022	544.0	527.5	500.9	309.2	172.3	78.6	20.8	2.9
2023	544.0	518.1	508.2	330.6	179.7	78.5	21.1	3.0
2024	547.1	510.0	506.2	355.0	188.1	79.2	21.2	3.0
2025	547.4	507.8	498.9	380.4	195.1	80.2	21.6	3.1
2026	547.6	511.4	487.0	403.2	202.7	82.6	21.8	3.1
2027	551.8	513.8	477.6	417.0	216.0	85.5	22.2	3.1
2028	562.5	514.2	470.0	423.9	232.4	89.8	22.2	3.1
2029	581.3	517.6	463.4	423.1	251.0	94.5	22.5	3.2
2030	601.3	518.3	462.3	417.9	269.8	98.3	22.9	3.2
2031	619.6	519.0	466.3	408.9	286.3	102.6	23.8	3.3
2032	633.3	523.4	469.1	402.1	296.6	110.2	24.8	3.3
2033	635.9	534.0	470.3	397.0	302.3	119.7	26.2	3.3
2034	625.4	552.4	474.0	392.5	302.6	130.2	27.7	3.4
2035	616.3	571.8	475.2	392.7	299.7	140.3	28.9	3.4
2036	610.5	589.6	476.5	397.1	294.2	148.9	30.3	3.6

Table T.9a (con't.)

31 Dec. year	of which by age							
	65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
2037	605.8	603.0	481.2	400.5	290.5	154.3	32.8	3.8
2038	604.9	605.8	491.7	402.4	288.2	157.6	36.0	4.0
2039	610.1	596.1	509.5	406.4	286.2	158.2	39.5	4.2
2040	608.6	587.8	528.1	408.2	287.6	157.2	42.5	4.4
2041	600.1	582.8	545.1	410.3	291.9	154.7	45.0	4.6
2042	590.3	578.7	558.1	415.4	295.5	153.6	46.6	5.0
2043	580.5	578.2	561.0	425.5	297.9	153.5	47.6	5.5
2044	572.8	583.3	552.5	442.1	301.8	153.3	47.9	6.0
2045	572.0	582.2	545.3	459.3	304.0	155.0	47.6	6.5
2046	572.5	574.1	541.2	474.8	306.8	158.1	47.0	6.8
2047	574.7	564.9	538.0	486.6	311.8	160.9	47.0	7.1
2048	578.2	555.7	538.0	489.6	320.8	163.0	47.3	7.2
2049	580.8	548.6	543.1	482.7	334.9	165.6	47.5	7.3
2050	585.2	547.9	542.4	477.2	349.0	167.5	48.4	7.3
2051	594.1	548.6	535.2	474.6	361.7	169.9	49.6	7.2
2052	604.3	550.9	526.8	472.8	371.3	173.8	50.8	7.2
2053	620.9	554.4	518.6	473.6	373.9	180.0	51.6	7.3
2054	638.1	557.0	512.3	478.9	369.4	189.4	52.6	7.4
2055	657.6	561.5	512.2	478.7	366.2	198.3	53.4	7.5
2056	674.0	570.4	513.2	472.9	365.7	205.9	54.5	7.7
2057	686.7	580.5	515.7	466.1	365.9	211.7	56.1	7.9
2058	688.6	596.7	519.2	459.4	367.7	213.3	58.6	8.1
2059	683.1	613.7	522.0	454.7	372.6	211.1	62.3	8.2
2060	664.1	632.9	526.7	455.3	373.2	210.2	65.4	8.3

Table T.9b
Population by age 1960–2011 and projection 2012–2060, women. Thousands

31 Dec. year	Total	of which by age					
		0–4	5–9	10–14	15–19	20–24	25–29
Women							
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
2006	4 589.7	249.7	227.5	277.7	301.5	264.1	268.4
2007	4 619.0	255.7	231.7	263.7	309.3	272.2	270.9
2008	4 652.6	261.0	238.1	251.7	311.7	283.5	274.6
2009	4 691.7	266.4	245.4	242.0	310.5	295.9	278.5
2010	4 725.3	272.9	251.2	237.2	300.4	309.0	282.7
2011	4 756.0	275.7	258.7	236.1	287.6	318.0	289.2
Projection							
2012	4 794.8	279.4	264.8	240.3	274.0	325.8	297.6
2013	4 835.8	283.2	270.1	246.7	262.0	328.9	309.0
2014	4 875.5	286.6	275.8	253.7	252.1	327.7	320.1
2015	4 914.6	288.7	282.9	260.1	247.6	318.2	332.1
2016	4 954.2	293.2	286.4	268.0	246.8	305.9	341.8
2017	4 992.1	297.7	289.7	273.7	250.7	291.9	348.9
2018	5 028.6	301.6	293.0	278.6	256.5	279.3	350.7
2019	5 062.4	304.9	295.7	283.7	262.8	268.7	348.1
2020	5 092.7	307.3	297.0	290.0	268.4	263.0	337.1
2021	5 120.0	308.6	300.5	292.6	275.3	260.8	323.1
2022	5 145.8	309.2	304.1	295.1	280.1	263.2	307.6
2023	5 170.8	308.9	307.3	297.7	284.2	267.8	293.8
2024	5 194.6	307.6	310.0	299.8	288.8	273.3	282.5
2025	5 217.0	305.6	312.1	300.9	294.9	278.3	276.4
2026	5 238.1	302.8	313.3	304.3	297.4	284.9	274.0
2027	5 257.8	299.4	313.8	307.9	299.9	289.6	276.3
2028	5 276.1	295.8	313.5	311.1	302.5	293.6	280.6
2029	5 293.0	292.1	312.3	313.8	304.6	298.2	285.9

Table T.9B (con't.)

31 Dec. year	Total	of which by age					
		0–4	5–9	10–14	15–19	20–24	25–29
Women							
2030	5 308.7	288.7	310.2	315.9	305.7	304.2	290.8
2031	5 323.4	285.8	307.4	317.2	309.2	306.7	297.2
2032	5 337.3	283.7	304.1	317.8	312.8	309.3	301.8
2033	5 350.5	282.5	300.5	317.5	316.0	311.8	305.9
2034	5 363.2	282.1	296.8	316.2	318.8	314.0	310.5
2035	5 375.6	282.5	293.4	314.2	320.9	315.1	316.5
2036	5 387.8	283.7	290.6	311.4	322.2	318.6	319.2
2037	5 400.1	285.5	288.5	308.1	322.8	322.2	321.8
2038	5 412.5	287.8	287.3	304.5	322.6	325.5	324.5
2039	5 425.1	290.5	286.9	300.9	321.4	328.2	326.7
2040	5 438.1	293.3	287.4	297.6	319.4	330.4	328.0
2041	5 451.6	296.3	288.5	294.8	316.6	331.7	331.5
2042	5 465.5	299.3	290.3	292.7	313.4	332.4	335.1
2043	5 479.9	302.2	292.6	291.5	309.8	332.2	338.4
2044	5 494.9	305.0	295.2	291.1	306.3	331.1	341.2
2045	5 510.4	307.6	298.0	291.6	303.0	329.1	343.5
2046	5 526.3	310.1	300.9	292.8	300.2	326.5	344.9
2047	5 542.6	312.3	303.9	294.5	298.2	323.3	345.6
2048	5 559.1	314.2	306.7	296.7	297.0	319.9	345.5
2049	5 575.8	315.9	309.4	299.3	296.7	316.5	344.6
2050	5 592.6	317.3	312.0	302.1	297.2	313.3	342.8
2051	5 609.3	318.3	314.4	305.0	298.3	310.7	340.3
2052	5 625.8	319.0	316.5	307.9	300.1	308.7	337.4
2053	5 642.0	319.4	318.5	310.7	302.3	307.6	334.1
2054	5 657.8	319.4	320.1	313.4	304.9	307.3	330.9
2055	5 673.1	319.0	321.4	316.0	307.7	307.8	327.9
2056	5 688.0	318.4	322.4	318.3	310.6	309.0	325.4
2057	5 702.4	317.5	323.1	320.4	313.5	310.8	323.7
2058	5 716.4	316.5	323.4	322.3	316.3	313.0	322.7
2059	5 730.0	315.5	323.3	323.9	319.0	315.6	322.5
2060	5 743.3	314.4	322.9	325.2	321.5	318.4	323.1

Table T.9B (con't.)

31 Dec. year	of which by age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
Women							
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	267.7
2005	300.0	312.9	311.2	288.1	286.9	313.9	284.9
2006	295.5	310.1	320.9	288.0	287.6	305.6	300.8
2007	290.6	308.0	328.1	289.6	288.5	298.3	310.5
2008	286.6	308.3	330.3	295.0	288.2	291.9	314.7
2009	283.9	312.3	325.1	305.4	289.4	286.4	313.3
2010	284.5	311.9	320.6	315.5	289.1	284.7	308.1
2011	286.1	307.8	318.1	325.2	289.2	285.7	300.0
Projection							
2012	289.7	303.6	316.6	332.7	291.0	286.6	293.0
2013	294.0	299.9	317.1	335.2	296.4	286.5	286.8
2014	297.4	297.1	320.9	330.0	306.7	287.7	281.6
2015	301.2	298.1	321.0	326.0	316.9	287.7	280.1
2016	307.9	300.1	317.3	323.8	326.7	287.9	281.1
2017	315.2	302.8	312.7	322.0	334.0	289.7	282.2
2018	325.1	305.8	308.2	322.0	336.2	294.8	281.9
2019	334.8	307.9	304.6	325.2	330.7	304.8	283.1
2020	345.1	310.4	304.6	324.7	326.4	314.6	283.0
2021	352.7	315.2	305.4	320.2	323.8	324.0	283.1
2022	358.0	321.0	306.9	314.9	321.5	330.9	284.7
2023	358.4	329.4	308.8	309.8	321.1	332.8	289.6
2024	354.8	338.1	310.0	305.6	323.9	327.2	299.3
2025	343.6	347.8	311.9	305.2	323.1	322.8	308.9
2026	329.8	355.4	316.4	305.7	318.5	320.1	318.0
2027	314.8	360.7	322.0	307.1	313.1	317.9	324.8
2028	301.4	361.1	330.3	308.7	308.0	317.3	326.6
2029	290.4	357.6	338.9	309.8	303.8	320.1	321.1

Table T.9B (con't.)

31 Dec. year	of which by age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
Women							
2030	284.5	346.7	348.5	311.6	303.3	319.2	316.8
2031	282.2	333.2	356.1	316.0	303.7	314.6	314.2
2032	284.4	318.5	361.4	321.5	304.9	309.2	312.0
2033	288.6	305.4	362.0	329.7	306.5	304.1	311.4
2034	293.8	294.7	358.6	338.3	307.5	299.9	314.1
2035	298.6	288.9	347.8	347.9	309.2	299.4	313.2
2036	304.8	286.7	334.6	355.5	313.5	299.7	308.6
2037	309.5	288.9	320.2	360.8	318.9	300.9	303.3
2038	313.6	293.1	307.3	361.5	327.1	302.4	298.2
2039	318.2	298.2	296.8	358.2	335.7	303.3	294.2
2040	324.3	302.9	291.1	347.6	345.3	305.1	293.6
2041	327.0	309.1	289.0	334.6	352.8	309.3	294.0
2042	329.8	313.8	291.1	320.3	358.2	314.6	295.1
2043	332.5	317.9	295.3	307.6	358.9	322.7	296.5
2044	334.8	322.6	300.3	297.2	355.7	331.3	297.4
2045	336.1	328.6	305.0	291.6	345.3	340.8	299.1
2046	339.7	331.4	311.1	289.5	332.5	348.3	303.3
2047	343.3	334.2	315.8	291.7	318.4	353.8	308.6
2048	346.7	336.9	319.9	295.8	305.9	354.5	316.6
2049	349.6	339.2	324.5	300.7	295.6	351.4	325.1
2050	351.9	340.6	330.5	305.4	290.1	341.2	334.6
2051	353.4	344.2	333.3	311.5	288.0	328.5	342.1
2052	354.2	347.9	336.1	316.1	290.2	314.7	347.5
2053	354.2	351.3	338.8	320.2	294.2	302.4	348.3
2054	353.3	354.1	341.2	324.8	299.1	292.2	345.3
2055	351.7	356.5	342.6	330.7	303.7	286.8	335.3
2056	349.3	358.0	346.1	333.5	309.8	284.8	323.0
2057	346.5	358.8	349.8	336.3	314.3	287.0	309.4
2058	343.4	358.8	353.2	339.0	318.4	291.0	297.3
2059	340.4	358.0	356.0	341.4	323.0	295.8	287.4
2060	337.5	356.4	358.3	342.8	328.9	300.4	282.2

Table T.9B (con't.)

31 Dec. year	of which by age							
	65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Women								
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	160.3	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
2006	220.1	185.4	174.5	152.0	104.8	43.6	10.7	1.2
2007	230.0	187.0	173.1	149.6	105.9	44.0	11.1	1.2
2008	243.1	192.0	170.0	148.2	107.2	44.1	11.3	1.3
2009	258.4	197.9	168.6	146.2	108.2	44.9	11.6	1.4
2010	275.1	202.8	166.7	145.2	105.9	48.4	11.9	1.4
2011	290.8	207.7	167.6	144.1	104.0	50.9	12.0	1.5
Projection								
2012	300.4	217.4	169.4	143.5	103.2	51.7	12.4	1.6
2013	304.6	230.2	174.3	141.3	102.9	52.6	12.5	1.7
2014	303.2	244.9	179.8	140.6	101.8	53.2	12.8	1.8
2015	298.4	261.0	184.6	139.4	101.8	52.6	14.2	1.8
2016	290.7	275.9	189.4	140.7	101.4	52.2	15.0	1.9
2017	284.1	285.1	198.6	142.6	101.5	52.0	15.2	2.0
2018	278.2	289.2	210.6	147.1	100.3	52.2	15.4	2.0
2019	273.2	288.0	224.4	152.2	100.1	51.9	15.6	2.0
2020	271.8	283.5	239.4	156.5	99.8	52.3	15.6	2.3
2021	272.8	276.3	253.1	160.9	101.2	52.4	15.5	2.4
2022	273.8	270.2	261.7	169.2	103.2	52.7	15.5	2.4
2023	273.6	264.7	265.6	180.0	106.9	52.3	15.7	2.5
2024	274.7	260.1	264.7	192.4	111.1	52.5	15.7	2.5
2025	274.6	258.9	260.7	205.6	114.6	52.7	15.9	2.5
2026	274.8	260.0	254.4	217.6	118.3	53.9	16.1	2.5
2027	276.4	261.1	248.9	225.2	125.0	55.4	16.2	2.5
2028	281.2	261.0	244.2	228.8	133.8	57.8	16.2	2.6
2029	290.6	262.2	240.3	228.4	143.8	60.4	16.3	2.6

Table T.9B (con't.)

31 Dec. year	of which by age							
	65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Women								
2030	300.0	262.3	239.5	225.3	154.0	62.4	16.5	2.6
2031	308.9	262.5	240.7	220.1	163.2	64.8	17.0	2.6
2032	315.5	264.2	241.9	215.9	169.1	69.0	17.7	2.7
2033	317.3	268.9	242.1	212.3	172.2	74.6	18.6	2.7
2034	312.0	278.1	243.4	209.3	172.3	80.8	19.5	2.7
2035	307.9	287.2	243.6	209.0	170.3	86.8	20.2	2.7
2036	305.4	295.8	244.0	210.5	166.8	92.0	21.1	2.9
2037	303.3	302.2	245.8	211.9	164.2	95.4	22.7	3.0
2038	302.8	304.0	250.4	212.4	162.1	97.3	24.9	3.1
2039	305.4	299.0	259.3	213.9	160.4	97.6	27.1	3.3
2040	304.5	295.2	268.1	214.4	160.8	96.7	29.2	3.4
2041	300.1	292.9	276.3	215.2	162.5	95.0	30.8	3.6
2042	294.9	291.0	282.5	217.1	164.1	94.0	31.9	3.9
2043	290.0	290.6	284.2	221.6	165.0	93.4	32.6	4.2
2044	286.1	293.2	279.7	230.0	166.5	93.0	32.8	4.6
2045	285.6	292.4	276.3	238.2	167.4	93.8	32.5	5.0
2046	286.0	288.2	274.3	245.8	168.5	95.1	32.0	5.2
2047	287.0	283.3	272.8	251.5	170.6	96.6	31.8	5.4
2048	288.5	278.7	272.6	253.2	174.8	97.5	31.9	5.6
2049	289.3	275.0	275.2	249.4	182.1	98.7	32.0	5.6
2050	291.1	274.6	274.6	246.7	189.2	99.6	32.5	5.6
2051	295.2	275.0	270.7	245.3	195.6	100.7	33.1	5.5
2052	300.4	276.1	266.3	244.3	200.4	102.6	33.8	5.5
2053	308.4	277.6	262.0	244.5	202.0	105.7	34.3	5.6
2054	316.8	278.5	258.7	247.1	199.2	111.0	34.8	5.6
2055	326.2	280.3	258.5	246.8	197.5	115.7	35.2	5.7
2056	333.6	284.4	259.1	243.6	197.0	119.9	35.8	5.8
2057	339.0	289.5	260.3	239.8	196.9	123.1	36.8	5.9
2058	339.9	297.4	261.7	236.2	197.6	124.0	38.2	6.0
2059	337.1	305.6	262.7	233.6	200.1	122.5	40.5	6.1
2060	327.4	314.9	264.7	233.7	200.1	121.9	42.4	6.2

Table T.9c
Population by age 1960–2011 and projection 2012–2060 men. Thousands

31 Dec. resp. år	Total	of which by age					
		0–4	5–9	10–14	15–19	20–24	25–29
Men							
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
2006	4 523.5	262.9	240.5	291.3	318.2	277.5	279.3
2007	4 563.9	269.6	244.5	276.5	327.7	285.4	283.5
2008	4 603.7	276.0	250.7	265.0	329.7	296.8	288.3
2009	4 649.0	281.8	258.6	255.2	328.0	309.5	293.3
2010	4 690.2	288.9	264.4	250.3	318.2	323.0	299.2
2011	4 726.8	291.6	272.2	249.9	304.8	332.9	305.9
Projection							
2012	4 770.7	295.2	279.4	254.1	290.2	342.4	312.9
2013	4 816.9	298.7	285.8	260.2	278.5	345.2	324.1
2014	4 862.2	302.0	291.9	268.1	268.3	344.0	334.9
2015	4 906.7	304.4	299.6	274.3	263.5	334.7	347.0
2016	4 951.4	309.8	302.6	282.6	263.2	321.2	357.9
2017	4 994.2	314.6	305.8	289.3	266.9	306.4	366.9
2018	5 035.1	318.9	308.8	295.1	272.3	294.2	368.6
2019	5 073.4	322.3	311.4	300.5	279.4	283.4	366.2
2020	5 107.8	324.9	312.9	307.3	284.5	277.6	355.4
2021	5 139.3	326.4	317.3	309.3	291.4	276.2	340.2
2022	5 168.8	327.0	321.1	311.7	297.0	278.6	324.0
2023	5 197.3	326.8	324.6	313.9	301.8	283.1	310.8
2024	5 224.2	325.5	327.5	316.0	306.6	289.2	299.2
2025	5 249.3	323.3	329.8	317.1	313.0	293.9	293.1
2026	5 272.9	320.3	331.2	321.4	314.9	300.5	291.4
2027	5 294.9	316.8	331.8	325.2	317.2	305.9	293.6
2028	5 315.2	312.9	331.5	328.7	319.4	310.7	297.8
2029	5 334.1	309.1	330.2	331.6	321.4	315.4	303.7

Table T.9c (con't.)

31 Dec. resp. år	Total	of which by age					
		0–4	5–9	10–14	15–19	20–24	25–29
Men							
2030	5 351.6	305.5	328.0	333.9	322.6	321.8	308.2
2031	5 368.2	302.4	325.0	335.3	326.9	323.7	314.7
2032	5 383.9	300.2	321.5	335.9	330.7	326.1	320.0
2033	5 399.1	298.9	317.7	335.6	334.2	328.3	324.7
2034	5 414.0	298.5	313.8	334.3	337.1	330.4	329.4
2035	5 428.8	299.0	310.2	332.1	339.4	331.7	335.8
2036	5 443.7	300.2	307.2	329.2	340.8	336.0	337.8
2037	5 458.9	302.2	305.0	325.7	341.5	339.7	340.3
2038	5 474.5	304.6	303.7	321.8	341.2	343.2	342.6
2039	5 490.6	307.4	303.3	318.0	339.9	346.2	344.7
2040	5 507.2	310.4	303.8	314.5	337.7	348.5	346.0
2041	5 524.4	313.6	305.0	311.5	334.8	350.0	350.2
2042	5 542.2	316.8	306.9	309.3	331.3	350.6	354.0
2043	5 560.5	319.9	309.3	308.0	327.5	350.4	357.4
2044	5 579.2	322.8	312.0	307.6	323.7	349.2	360.4
2045	5 598.3	325.6	315.0	308.1	320.2	347.1	362.7
2046	5 617.6	328.2	318.1	309.3	317.2	344.2	364.1
2047	5 637.0	330.5	321.2	311.1	315.1	340.8	364.8
2048	5 656.5	332.6	324.3	313.5	313.8	337.2	364.6
2049	5 675.9	334.4	327.2	316.2	313.4	333.5	363.4
2050	5 695.1	335.9	329.9	319.1	313.8	330.1	361.4
2051	5 714.0	337.0	332.4	322.2	315.0	327.2	358.6
2052	5 732.6	337.7	334.7	325.2	316.9	325.1	355.3
2053	5 750.8	338.1	336.7	328.2	319.2	323.9	351.7
2054	5 768.5	338.1	338.4	331.1	321.9	323.5	348.1
2055	5 785.7	337.7	339.8	333.7	324.8	324.0	344.8
2056	5 802.5	337.1	340.8	336.2	327.8	325.3	342.0
2057	5 818.8	336.2	341.5	338.4	330.8	327.1	340.0
2058	5 834.7	335.1	341.8	340.4	333.8	329.4	338.8
2059	5 850.3	333.9	341.8	342.0	336.6	332.1	338.5
2060	5 865.6	332.8	341.4	343.4	339.2	335.0	339.0

Table T.9c (con't.)

31 Dec. year	of which by age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
Men							
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
2006	306.5	321.3	335.4	296.4	293.7	307.3	304.1
2007	302.6	318.5	343.6	299.1	294.3	299.9	312.2
2008	298.6	318.4	344.0	305.2	293.9	294.1	315.1
2009	296.1	322.2	337.9	315.8	295.7	289.0	312.1
2010	297.4	322.0	331.6	327.0	295.6	286.7	306.1
2011	299.0	318.1	327.6	337.2	295.3	288.8	297.4
Projection							
2012	303.2	314.3	325.0	345.2	297.9	289.6	290.6
2013	308.3	310.8	325.3	346.2	304.5	289.5	285.4
2014	312.5	308.2	329.2	340.5	314.8	291.5	280.7
2015	317.2	309.6	329.5	335.0	326.2	291.8	278.9
2016	324.2	311.4	326.0	331.5	336.6	291.7	281.2
2017	330.6	314.4	321.7	328.7	344.3	294.3	282.1
2018	340.6	318.1	317.2	328.5	345.0	300.5	282.2
2019	350.3	320.9	313.6	331.5	339.2	310.4	284.1
2020	361.1	324.2	313.7	331.2	333.5	321.4	284.3
2021	370.2	329.6	314.3	326.8	329.6	331.3	284.2
2022	377.6	334.7	315.9	321.7	326.4	338.7	286.7
2023	378.0	343.7	318.5	316.6	325.8	339.2	292.7
2024	374.5	352.7	320.4	312.4	328.4	333.4	302.3
2025	363.5	363.0	323.2	312.1	327.8	327.7	313.1
2026	348.4	372.1	328.3	312.3	323.3	324.0	322.7
2027	332.6	379.4	333.4	313.7	318.2	320.9	330.0
2028	319.6	379.9	342.3	316.0	313.0	320.3	330.6
2029	308.4	376.5	351.3	317.8	308.8	322.8	325.0

Table T.9c (con't.)

31 Dec. year	of which by age						
	30–34	35–39	40–44	45–49	50–54	55–59	60–64
Men							
2030	302.3	365.7	361.6	320.5	308.4	322.1	319.6
2031	300.7	351.0	370.7	325.6	308.5	317.7	316.1
2032	302.8	335.5	378.1	330.6	309.7	312.6	313.1
2033	306.8	322.8	378.7	339.5	312.0	307.5	312.6
2034	312.5	311.8	375.4	348.5	313.7	303.3	315.1
2035	316.9	305.8	364.9	358.8	316.3	302.9	314.5
2036	323.2	304.3	350.4	368.0	321.3	302.9	310.1
2037	328.5	306.3	335.2	375.4	326.4	304.1	305.2
2038	333.1	310.3	322.7	376.0	335.2	306.3	300.2
2039	337.9	315.9	312.0	372.9	344.2	308.0	296.2
2040	344.2	320.3	306.2	362.6	354.6	310.6	295.8
2041	346.4	326.5	304.7	348.4	363.7	315.6	295.9
2042	348.9	331.7	306.7	333.5	371.1	320.6	297.0
2043	351.2	336.4	310.6	321.2	371.9	329.4	299.2
2044	353.4	341.2	316.2	310.6	368.9	338.4	300.8
2045	354.8	347.5	320.6	304.9	358.7	348.7	303.5
2046	359.0	349.8	326.8	303.5	344.8	357.9	308.4
2047	362.7	352.4	332.0	305.6	330.1	365.3	313.4
2048	366.1	354.8	336.7	309.5	318.1	366.1	322.1
2049	369.0	357.0	341.6	315.0	307.7	363.2	331.1
2050	371.3	358.4	347.9	319.4	302.1	353.3	341.3
2051	372.8	362.6	350.2	325.6	300.7	339.6	350.4
2052	373.4	366.3	352.9	330.8	302.8	325.2	357.8
2053	373.2	369.8	355.3	335.6	306.7	313.4	358.7
2054	372.0	372.7	357.5	340.4	312.2	303.2	355.9
2055	370.0	375.0	359.0	346.7	316.6	297.8	346.2
2056	367.3	376.4	363.2	349.1	322.8	296.5	332.9
2057	364.1	377.1	367.0	351.8	328.0	298.6	318.8
2058	360.6	376.9	370.4	354.3	332.7	302.5	307.3
2059	357.2	375.8	373.4	356.6	337.6	308.0	297.4
2060	353.9	373.9	375.7	358.1	343.9	312.4	292.2

Table T.9c (con't.)

31 Dec. year	of which by age							
	65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Men								
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
2006	212.5	163.4	135.3	101.8	56.1	17.0	2.9	0.2
2007	224.5	166.9	136.0	101.0	57.5	17.4	3.0	0.2
2008	238.7	173.1	135.1	100.4	59.3	17.9	3.2	0.2
2009	255.3	180.7	135.4	100.0	60.0	18.6	3.3	0.3
2010	272.6	186.8	136.3	100.4	59.6	20.5	3.3	0.2
2011	287.7	193.7	138.9	100.8	59.3	21.9	3.4	0.3
Projection								
2012	295.6	205.1	142.4	101.9	59.2	22.5	3.6	0.3
2013	298.8	218.7	148.3	101.6	59.5	23.3	3.8	0.3
2014	296.2	234.2	155.4	102.3	59.6	23.7	4.0	0.3
2015	291.1	250.3	161.1	103.6	60.3	23.8	4.4	0.3
2016	283.2	264.6	167.4	106.3	60.9	23.8	4.8	0.4
2017	277.2	272.4	177.9	109.6	62.0	23.9	4.9	0.4
2018	272.5	275.7	190.3	114.7	62.2	24.2	5.1	0.4
2019	268.3	273.7	204.5	120.7	63.0	24.4	5.1	0.4
2020	266.8	269.4	219.1	125.6	64.3	25.0	5.2	0.5
2021	269.2	262.5	232.0	131.0	66.4	25.4	5.2	0.5
2022	270.2	257.3	239.2	140.0	69 1	26.0	5.3	0.5
2023	270.4	253.4	242.7	150.6	72.7	26.2	5.4	0.5
2024	272.4	249.9	241.5	162.7	77.0	26.7	5.5	0.5
2025	272.7	248.9	238.2	174.8	80.5	27.5	5.7	0.5
2026	272.9	251.4	232.6	185.6	84.4	28.7	5.8	0.6
2027	275.4	252.7	228.6	191.8	90.9	30.2	5.9	0.6
2028	281.3	253.2	225.8	195.1	98.6	32.0	6.0	0.6
2029	290.7	255.4	223.2	194.7	107.3	34.1	6.2	0.6

Table T.9c (con't.)

31 Dec. year	of which by age							
	65–69	70–74	75–79	80–84	85–89	90–94	95–99	100+
Men								
2030	301.3	256.0	222.8	192.7	115.7	35.8	6.4	0.6
2031	310.7	256.5	225.6	188.8	123.0	37.8	6.8	0.6
2032	317.8	259.2	227.3	186.2	127.5	41.1	7.2	0.6
2033	318.6	265.1	228.2	184.7	130.0	45.1	7.7	0.7
2034	313.4	274.3	230.6	183.2	130.3	49.4	8.2	0.7
2035	308.4	284.6	231.6	183.7	129.4	53.5	8.6	0.7
2036	305.2	293.8	232.5	186.6	127.4	56.9	9.2	0.7
2037	302.5	300.8	235.4	188.6	126.3	59.0	10.1	0.8
2038	302.1	301.7	241.3	189.9	126.1	60.3	11.2	0.8
2039	304.7	297.1	250.2	192.5	125.7	60.6	12.4	0.9
2040	304.1	292.6	260.0	193.8	126.8	60.5	13.4	1.0
2041	300.0	289.9	268.8	195.2	129.4	59.8	14.2	1.0
2042	295.3	287.7	275.6	198.3	131.4	59.6	14.7	1.1
2043	290.5	287.5	276.8	203.9	132.9	60.1	15.0	1.3
2044	286.7	290.1	272.8	212.2	135.2	60.3	15.1	1.4
2045	286.4	289.7	269.0	221.1	136.7	61.3	15.2	1.5
2046	286.5	285.9	266.9	229.0	138.3	63.0	15.0	1.6
2047	287.7	281.6	265.2	235.1	141.2	64.3	15.1	1.6
2048	289.8	277.1	265.4	236.4	146.0	65.5	15.4	1.7
2049	291.4	273.6	268.0	233.3	152.8	66.9	15.6	1.7
2050	294.1	273.3	267.8	230.6	159.9	67.9	15.9	1.7
2051	298.9	273.6	264.4	229.3	166.1	69.2	16.5	1.7
2052	303.9	274.8	260.6	228.5	170.9	71.2	17.0	1.7
2053	312.5	276.9	256.6	229.1	172.0	74.2	17.4	1.8
2054	321.3	278.6	253.6	231.7	170.2	78.4	17.8	1.8
2055	331.4	281.2	253.6	231.9	168.7	82.5	18.2	1.8
2056	340.4	286.0	254.1	229.3	168.7	86.0	18.7	1.9
2057	347.7	290.9	255.4	226.3	168.9	88.7	19.4	2.0
2058	348.7	299.4	257.5	223.2	170.1	89.3	20.4	2.0
2059	346.0	308.1	259.3	221.1	172.6	88.5	21.8	2.1
2060	336.7	318.0	262.0	221.6	173.0	88.3	23.1	2.1

Table T.10
Population by age and demographic dependency ratio 1960–2010 and forecast 2012–2060. Thousands

Year	Age			Total	Demographic dependency ratio[41]
	0–19	20–64	65+		
1960	2 258	4 352	888	7 498	0.72
1970	2 233	4 734	1 113	8 081	0.71
1980	2 194	4 761	1 362	8 318	0.75
1990	2 111	4 953	1 526	8 591	0.73
2000	2 139	5 213	1 531	8 883	0.70
2010	2 184	5 495	1 737	9 416	0.71
Projection					
2012	2 177	5 558	1 830	9 566	0.72
2020	2 392	5 711	2 097	10 200	0.79
2030	2 511	5 756	2 394	10 660	0.85
2040	2 464	5 857	2 625	10 945	0.87
2050	2 527	6 035	2 725	11 288	0.87
2060	2 641	6 032	2 936	11 609	0.92

[41]The demographic dependency ratio is calculated as the total number of persons age 0–19 and the number of persons aged 65 and older divided by the number of persons aged 20–64.

Table T.11
Population born in Sweden and foreign born 1960–2010 and forecast 2012–2060. Thousands

Year	Women			Men			Total		
	0–19	20–64	65+	0–19	20–64	65+	0–19	20–64	65+
Total									
1960	1 093	2 176	487	1 150	2 178	410	2 243	4 355	897
1970	1 088	2 340	618	1 146	2 394	496	2 233	4 734	1 113
1980	1 070	2 356	771	1 124	2 405	591	2 194	4 761	1 362
1990	1 029	2 441	877	1 083	2 512	650	2 111	4 953	1 526
2000	1 041	2 567	881	1 098	2 645	650	2 139	5 213	1 531
2010	1 062	2 706	957	1 122	2 789	780	2 184	5 495	1 737
Projection									
2012	1 059	2 737	1 000	1 119	2 821	831	2 178	5 558	1 830
2020	1 165	2 809	1	1 232	2 902	976	2 397	5 711	2 097
2030	1 225	2 826	1 263	1 295	2 930	1 131	2 521	5 756	2 394
2040	1 203	2 871	1 372	1 272	2 992	1 252	2 475	5 862	2 625
2050	1 236	2 956	1 414	1 306	3 091	1 311	2 542	6 047	2 725
2060	1 294	2 957	1 512	1 368	3 094	1 425	2 662	6 051	2 937
Swedish born persons									
1960	1 072	2 045	474	1 129	2 072	404	2 200	4 117	878
1970	1 042	2 135	596	1 101	2 185	484	2 143	4 320	1 080
1980	1 024	2 110	738	1 081	2 105	572	2 105	4 274	1 310
1990	975	2 144	821	1 029	2 214	617	2 004	4 359	1 438
2000	978	2 195	793	1 032	2 285	595	2 010	4 480	1 388
2010	987	2 184	843	1 043	2 281	693	2 030	4 465	1 539
Projection									
2012	979	2 179	877	1 034	2 279	735	2 013	4 459	1 612
2020	1 075	2 131	962	1 138	2 235	845	2 214	4 366	1 807
2030	1 157	2 115	1 049	1 226	2 227	946	2 383	4 343	1 994
2040	1 143	2 174	1 095	1 211	2 294	1 013	2 353	4 468	2 108
2050	1 176	2 306	1 069	1 245	2 433	1 010	2 421	4 740	2 079
2060	1 233	2 345	1 127	1 306	2 472	1 084	2 539	4 817	2 211

Information for 1960 comes from the 1960 Population and Housing Census and refers to 1 November.

Table T.11 (con't.)

Year	Women			Men			Total		
	0–19	20–64	65+	0–19	20–64	65+	0–19	20–64	65+
Foreign born persons									
1960	22	131	12	21	107	7	43	238	19
1970	46	205	22	45	210	15	91	415	33
1980	46	246	34	43	241	19	89	488	52
1990	54	297	56	54	297	33	108	594	89
2000	63	373	88	66	360	55	129	732	143
2010	75	522	114	79	507	87	154	1 030	201
Projection									
2012	80	557	123	85	542	95	165	1099	219
2020	90	678	160	94	668	130	183	1346	290
2030	68	711	214	69	703	186	137	1414	400
2040	60	697	278	62	698	239	122	1395	517
2050	60	650	345	62	658	301	122	1308	646
2060	61	613	385	62	621	341	123	1234	726

Information for 1960 comes from the 1960 Population and Housing Census and refers to 1 November.

Alternative forecasts

Table T.12a
Population 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative, women. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
All ages both sexes								
1960	7 498							
1970	8 081							
1980	8 318							
1990	8 591							
2000	8 883							
2010	9 416							
Projection								
2012		9 566	9 558	9 572	9 566	9 566	9 541	9 573
2020		10 200	10 064	10 311	10 228	10 161	9 911	10 284
2030		10 660	10 372	10 915	10 769	10 497	10 159	11 002
2040		10 945	10 502	11 362	11 146	10 626	10 248	11 560
2050		11 288	10 629	11 930	11 568	10 814	10 362	12 181
2060		11 609	10 711	12 511	11 957	10 997	10 382	12 795
Deviations from the main alternative								
2012			-7	6	0	0	-25	7
2020			-136	111	28	-39	-290	84
2030			-288	254	108	-164	-501	341
2040			-444	416	200	-319	-698	615
2050			-659	642	280	-473	-926	893
2060			-898	902	348	-612	-1 227	1 186

Table T.12b
Population 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative, women. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
All ages women								
1960	3 758							
1970	4 045							
1980	4 198							
1990	4 347							
2000	4 490							
2010	4 725							
Projection								
2012		4 795	4 791	4 798	4 795	4 795	4 782	4 798
2020		5 093	5 027	5 146	5 105	5 077	4 953	5 134
2030		5 309	5 169	5 432	5 358	5 244	5 071	5 481
2040		5 438	5 223	5 640	5 532	5 309	5 104	5 750
2050		5 593	5 273	5 904	5 724	5 400	5 143	6 045
2060		5 743	5 308	6 181	5 908	5 487	5 142	6 341
Deviations from the main alternative								
2012			-4	3	0	0	-13	3
2020			-66	54	13	-16	-139	41
2030			-140	124	50	-65	-238	173
2040			-215	202	94	-129	-334	312
2050			-320	311	132	-193	-449	452
2060			-436	438	165	-256	-602	598

Table T.12c
Population 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative, men. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
All ages men								
1960	3 740							
1970	4 036							
1980	4 120							
1990	4 244							
2000	4 393							
2010	4 690							
Projection								
2012		4 771	4 767	4 774	4 771	4 771	4 759	4 775
2020		5 108	5 038	5 165	5 123	5 084	4 957	5 150
2030		5 352	5 203	5 483	5 410	5 253	5 088	5 520
2040		5 507	5 279	5 722	5 613	5 317	5 144	5 810
2050		5 695	5 356	6 026	5 843	5 414	5 219	6 136
2060		5 866	5 403	6 330	6 049	5 509	5 240	6 453
Deviations from the main alternative								
2012			-4	3	0	0	-12	4
2020			-70	57	15	-24	-150	43
2030			-148	131	59	-99	-264	168
2040			-228	214	106	-190	-363	303
2050			-339	331	148	-281	-476	440
2060			-462	464	184	-356	-626	588

Table T.13a
Population aged 0–19, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Year								
1960	2 258							
1970	2 233							
1980	2 194							
1990	2 111							
2000	2 139							
2010	2 184							
Projection								
2012		2 177	2 170	2 184	2 177	2 177	2 170	2 179
2020		2 392	2 256	2 503	2 392	2 392	2 305	2 416
2030		2 511	2 222	2 765	2 511	2 509	2 354	2 627
2040		2 464	2 148	2 777	2 465	2 460	2 262	2 675
2050		2 527	2 132	2 936	2 529	2 521	2 282	2 813
2060		2 641	2 147	3 163	2 643	2 631	2 306	2 997
Deviations from the main alternative								
2012			-7	6	0	0	-8	1
2020			-136	111	0	0	-88	24
2030			-288	254	0	-2	-157	116
2040			-316	313	1	-4	-202	211
2050			-395	409	1	-6	-246	285
2060			-494	523	2	-9	-334	356

Table T.13b
Population aged 0–19, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative, women. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
0–19 yrs women								
1960	1 100							
1970	1 088							
1980	1 070							
1990	1 029							
2000	1 041							
2010	1 062							
Projection								
2012		1 058	1 055	1 061	1 058	1 058	1 055	1 059
2020		1 163	1 097	1 216	1 163	1 162	1 120	1 174
2030		1 221	1 081	1 344	1 221	1 220	1 144	1 277
2040		1 198	1 044	1 349	1 198	1 196	1 099	1 300
2050		1 229	1 037	1 427	1 229	1 226	1 109	1 368
2060		1 284	1 044	1 538	1 285	1 280	1	1 458
Deviations from the main alternative								
2012			-4	3	0	0	-4	0
2020			-66	54	0	0	-42	12
2030			-140	124	0	-1	-77	56
2040			-154	152	0	-2	-99	103
2050			-192	199	1	-3	-120	139
2060			-240	254	1	-4	-163	174

Table T.13c
Population aged 0–19, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative men. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
0–19 yrs men								
1960	1 157							
1970	1 146							
1980	1 124							
1990	1 083							
2000	1 098							
2010	1 122							
Projection								
2012		1 119	1 115	1 122	1 119	1 119	1 115	1 120
2020		1 230	1 160	1 287	1 230	1 229	1 185	1 242
2030		1 290	1 142	1 421	1 290	1 289	1 210	1 350
2040		1 266	1 104	1 427	1 267	1 264	1 163	1 375
2050		1 299	1 095	1 509	1 299	1 295	1 173	1 445
2060		1 357	1 103	1 626	1 358	1 352	1 185	1 539
Deviations from the main alternative								
2012			-4	3	0	0	-4	1
2020			-70	57	0	0	-45	13
2030			-148	131	0	-1	-80	60
2040			-163	161	0	-2	-104	108
2050			-203	210	1	-3	-126	146
2060			-254	269	1	-5	-171	182

Table T.14a
Population aged 20–64, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative. Thousands

Year	Observed	Main alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
20–64 years								
1960	4 352							
1970	4 734							
1980	4 761							
1990	4 953							
2000	5 213							
2010	5 495							
Projection								
2012		5 558	5 558	5 558	5 558	5 558	5 541	5 564
2020		5 711	5 711	5 711	5 714	5 705	5 513	5 770
2030		5 756	5 756	5 756	5 765	5 735	5 424	5 974
2040		5 857	5 729	5 961	5 869	5 820	5 397	6 240
2050		6 035	5 772	6 269	6 052	5 981	5 441	6 590
2060		6 032	5 628	6 411	6 050	5 967	5 297	6 747
Deviations from the main alternative								
2012			0	0	0	0	-17	6
2020			0	0	3	-6	-198	59
2030			0	0	9	-21	-332	218
2040			-127	104	13	-37	-460	384
2050			-264	233	17	-55	-594	555
2060			-404	379	18	-65	-735	715

Table T.14b
Population aged 20–64, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative, women. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
20–64 years women								
1960	2 175							
1970	2 340							
1980	2 356							
1990	2 441							
2000	2 567							
2010	2 706							
Projection								
2012		2 737	2 737	2 737	2 737	2 737	2 728	2 739
2020		2 809	2 809	2 809	2 810	2 807	2 714	2 838
2030		2 826	2 826	2 826	2 830	2 819	2 671	2 938
2040		2 868	2 806	2 918	2 874	2 856	2 650	3 066
2050		2 950	2 822	3 063	2 958	2 931	2 664	3 234
2060		2 948	2 752	3 132	2 956	2 925	2 589	3 310
Deviations from the main alternative								
2012			0	0	0	0	-9	2
2020			0	0	1	-2	-95	29
2030			0	0	4	-7	-155	113
2040			-62	50	6	-12	-218	198
2050			-128	113	7	-19	-286	284
2060			-196	184	8	-23	-359	362

Table T.14c
Population aged 20–64, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative, men. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
20–64 years men								
1960	2 177							
1970	2 394							
1980	2 405							
1990	2 512							
2000	2 645							
2010	2 789							
Projection								
2012		2 821	2 821	2 821	2 821	2 821	2 813	2 825
2020		2 902	2 902	2 902	2 904	2 898	2 799	2 932
2030		2 930	2 930	2 930	2 935	2 916	2 753	3 036
2040		2 989	2 923	3 042	2 996	2 964	2 746	3 174
2050		3 085	2 949	3 205	3 095	3 050	2 778	3 356
2060		3 084	2 876	3 279	3 094	3 042	2 708	3 438
Deviations from the main alternative								
2012			0	0	0	0	-8	4
2020			0	0	2	-4	-103	30
2030			0	0	5	-14	-177	106
2040			-66	54	7	-24	-242	186
2050			-136	120	9	-36	-308	271
2060			-208	195	10	-42	-376	354

Table T.15a
Population aged 65–, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
Year								
1960	888							
1970	1 113							
1980	1 362							
1990	1 526							
2000	1 531							
2010	1 737							
Projection								
2012		1 830	1 830	1 830	1 830	1 830	1 830	1 830
2020		2 097	2 097	2 097	2 121	2 064	2 093	2 098
2030		2 394	2 394	2 394	2 493	2 253	2 382	2 400
2040		2 625	2 625	2 625	2 811	2 346	2 589	2 645
2050		2 725	2 725	2 725	2 987	2 313	2 639	2 778
2060		2 936	2 936	2 936	3 264	2 398	2 778	3 050
Deviations from the main alternative								
2012			0	0	0	0	0	0
2020			0	0	24	-33	-4	1
2030			0	0	99	-141	-12	6
2040			0	0	187	-279	-35	20
2050			0	0	262	-412	-86	53
2060			0	0	328	-538	-158	114

Table T.15b
Population aged 65–, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative, women. Thousands

Year	Ob-served	Main-alterna-tive	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
65– years women								
1960	482							
1970	618							
1980	771							
1990	877							
2000	881							
2010	957							
Projection								
2012		1 000	1 000	1 000	1 000	1 000	999	1 000
2020		1	1	1	1 132	1 107	1 119	1 122
2030		1 263	1 263	1 263	1 308	1 205	1 256	1 266
2040		1 372	1 372	1 372	1 460	1 258	1 355	1 384
2050		1 414	1 414	1 414	1 537	1 243	1 371	1 443
2060		1 511	1 511	1 511	1 667	1 283	1 432	1 574
Deviations from the main alternative								
2012			0	0	0	0	0	0
2020			0	0	11	-14	-2	1
2030			0	0	45	-57	-6	4
2040			0	0	88	-115	-18	11
2050			0	0	124	-171	-43	29
2060			0	0	156	-228	-79	62

Table T.15c
Population aged 65–, 1960–2010 and forecast 2012–2060 according to alternative assumptions and discrepancy to the main alternative, men. Thousands

Year	Observed	Main-alternative	Alternative assumptions					
			Fertility		Mortality		Migration	
			Low	High	Low	High	Low	High
65–years men								
1960	406							
1970	496							
1980	591							
1990	650							
2000	650							
2010	780							
Projection								
2012		831	831	831	831	831	831	831
2020		976	976	976	989	957	974	976
2030		1 131	1 131	1 131	1 185	1 048	1 125	1 134
2040		1 252	1 252	1 252	1 351	1 088	1 235	1 261
2050		1 311	1 311	1 311	1 450	1 070	1 268	1 335
2060		1 425	1 425	1 425	1 597	1 115	1 346	1 476
Deviations from the main alternative								
2012			0	0	0	0	0	0
2020			0	0	13	-19	-2	0
2030			0	0	54	-84	-6	3
2040			0	0	99	-164	-18	9
2050			0	0	138	-242	-43	23
2060			0	0	172	-310	-79	52

The future population of Sweden 2012–2060

This report presents a forecast of population changes over a period of nearly 50 years, 2012-2060. During this time the population is assumed to increase by roughly 2.1 million, or 22 percent, amounting to 11.6 million. The population is expected to increase because it is assumed that more births than deaths will occur, and immigration is assumed to exceed emigration.

A somewhat changed population structure is expected in the future. The population will increase in all three age groups: 0¬19, 20¬64 and 65 years and older. The largest increase is in ages 65 years and older. In 2060 this age group is expected to have grown by more than 1 million. The number of children and young people and the number in working ages will increase by approximaly a half million each.

As a result the proportion of elderly is expected to increase and the proportion in working ages are expected to decrease while the share of children and young people will be the same as today.

ISSN 1654-1510 (Online)

All official statistics can be found at: **www.scb.se**
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