Central Bureau of Statistics

Population Projections

Results and brief analysis of five projection variants

2015-2050

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Preface

Population growth in Curaçao has followed a rather turbulent path in the past three decades. Between the mid-1980s and 2015 the fertility level has declined, while the life expectancy has increased. However, the largest impact on population growth in Curaçao has come from migration. Two emigration waves during the 1980s and 1990s, which were followed by an extended period of population growth, have severely altered the population size, but also caused changes in the age composition of the population. A rapidly aging, and at the same time dejuvenating, population are some of the results of these developments.

An exploration of the probable future population developments in Curaçao, from 2015 to 2050, is presented in this publication. The population projection variants included examine the expected population growth and expected changes in age composition by implementing different assumptions on future fertility, mortality and migration. A set of tables and figures for each projection variant is complemented by a brief analysis of the projection results. Furthermore an analysis on the individual contribution of each of the components of population growth is included.

This publication has been written by Menno ter Bals, MSc in Population Studies, who is a senior analyst in demographic statistics at the Central Bureau of Statistics (CBS) of Curaçao. Valuable inputs were provided by the scientific staff of the CBS, in particular the methodological advice of MSc Leander Kuijvenhoven.

The director,

Drs. Sean de Boer

Explanatory notes

. = no information available
- = nil
0 or 0.0 = less than half of unit chosen
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Detailed figures and percentages in tables may not necessarily add up to the corresponding totals, because of rounding.

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Summary

For the 2015-2050 Curaçao population projections five variants are composed by making five different combinations from a set of two fertility assumptions, one mortality assumption and four migration assumptions. Migration is the component with the largest impact on population development in Curaçao and therefore plays a dominant role in the population projections. The cohort component method is used for the projections. The standard migration variant, constant fertility variant, high immigration variant and the emigration wave variant represent likely scenarios of future population growth, i.e. forecasts. The zero-migration variant is not a realistic scenario, and can be merely used as a frame of reference.

Future population growth in Curaçao will be largest for the high immigration variant which yields a population size of almost 220,000 persons in 2050. Mass emigration (emigration wave) in the near future will lead to a population decline, which may cause the population size to reduce to about 146,000 persons in 2050. The standard migration and constant fertility scenarios project a population size of around 178,000 and 189,000 persons respectively. Without international migration the population size will slowly start to decrease to reach a little fewer than 155,000 persons in 2050. The population growth rate is expected to decline and eventually become negative in all variants, except the high immigration variant.

All projection variants show that population aging is irreversible and has a big impact on the population. High positive net migration slows the aging process whereas an emigration wave speeds up the aging process. As life expectancy is set to increase further towards 2050, the median age of the population is expected to be between 46 and 52 years in 2050. The population aged 65 years or older is estimated to make up between 24 and 30 percent of the Curaçaoan population in 2050. It is expected that in 2050 every elderly person will be economically dependent on half the number of working-age persons (about 2 persons) compared to 2015 (about 4 persons).

At the same time, due to a declining fertility rate, the proportion of youth in the population is expected to decline from 19 percent in 2015 to somewhere between 14 and 17 percent in 2050. If the fertility rate will remain constant at the 2015 level, the 'dejuvenation' of the population will be less severe than in the case of an emigration wave, which, of all projection variants, will cause the largest decline in the share of youth in the population.

Decomposition of the standard migration variant shows that future population growth is mainly driven by migration, which accounts for about 15 percent growth of the population between 2015 and 2050. The increasing life expectancy adds almost 4 percent to the 2015 population and the age structure of the baseline population accounts for about one percent of the population growth. Fertility decline, on the other hand, reduces the population by six percent between 2015 and 2050. Altogether, a population growth of 13 percent is expected in the standard migration variant.

1. Introduction

Population projections are calculations which estimate the future development of a population by making assumptions on the future development of the different components of population growth, namely fertility, mortality and migration. A projection shows the implications of the assumptions made and implemented on a certain baseline population. Besides generating realistic possible future developments, projections can also be used to assess hypothetical situations. For example, how would the population develop if fertility would remain constant throughout the entire projection period? Or, how would the population develop if there would be no international migration? Population projections, thus, are basically scenarios of the (probable) future development of a population. In this context, a scenario can be regarded as a combination of specific fertility, mortality and migration assumptions and its outcome on population development (Preston, Heuveline, & Guillot, 2001).

For Curaçao, five different scenarios have been implemented in order to project Curaçao's population from 2015 up to 2050, a 35 year projection period. In this publication the results of these five scenarios, referred to as projection variants, are presented and briefly analyzed. The methodology used to obtain the assumptions, as well as the projection methodology, will be concisely discussed in the second chapter. Furthermore, an overview of the assumptions per variant is given. An analysis of the results of the five projection variants is presented in the third chapter, and the share in contribution of each component to the total population growth is examined in chapter four. A comprehensive set of tables and figures, including population by age and sex and an array of population indicators for the five-year projection intervals, can be found in the appendix.

2. Methodology

Populations grow, or decline, because of three basic components: births, deaths and migrations. A person can enter a population either by being born in it, or immigrating into it, and a person can exit a population by either dying, or emigrating out of it. If the numbers of births, deaths, immigrations and emigrations in a certain period are known, one can add or subtract them from the baseline population at the start of this period to obtain the population size at the end of this period. With this simple equation, the population size from a Census and the registered births, deaths and migrations in specific periods, it is possible to estimate the population size at different points in time.

However, when we want to project the population growth in the future it is necessary to estimate the amount of births, deaths and migrations which will take place in the future. Assumptions on fertility, mortality and migration are required. The total fertility rate and life expectancy at birth, indicators used as a measure of a population's level of fertility and mortality respectively, usually follow a relatively stable (compared to migration) and similar path across populations. Projecting fertility and mortality levels in the future is therefore a less complicated exercise than projecting migration levels, which is the least predictable component of population growth. In Curaçao, the growth of the population is mainly dependent on international migration, which in itself is dependent on many variables. These variables may be endogenous (in the country of settlement) as well as exogenous (in the country of departure), and include job opportunities, wages, migration policies, migrant networks and educational opportunities or constraints for example. Changes in any of these variables can have large effects on international migration flows. Because Curaçao's population growth has always been heavily dependent on migration, migration assumptions are a central element in population projections[1].

2.1 Cohort component method

For these population projections the cohort component method has been used. In this approach the population is segmented into different subgroups, in this case birth cohorts[2]. Each subgroup is exposed to age-specific "risks" of fertility, mortality and migration. By applying these risks population changes over time for each subgroup are calculated. This is done separately for males and females. It is a model in which the different components of population change are dynamically linked to one another (Preston, Heuveline, & Guillot, 2001). The Curaçao projections are carried out over discrete time intervals, i.e. 5-year intervals, for 5-year age groups. The cohort component method basically involves three steps:

1. For each cohort the number of survivors at the end of the time interval is calculated by applying age-specific survival probabilities to the cohort population at the beginning of the time interval.
2. The number of births over the time interval is calculated by applying age-specific fertility rates to each cohort of women of reproductive age. The births are added across these cohorts and the number of surviving births at the end of the time interval is calculated.

[1] In 2014 a research project on the link between migration and economic development, in particular labor market development, was initiated. One of the goals of this project is to be able to make better migration projections in an evidence-based manner by linking migration development to economic development. The findings of this research project should be available for the next round of population projections for Curaçao.

[2] A birth cohort refers to a group of people born in the same 5-year period. For example, the group of persons born between 1 January 1980 and 1 January 1985 is the population aged 35-39 years in the 2015-2019 period.

3. For each cohort the net number of migrants and the number of births to these migrants that will survive to the beginning of the next time interval are projected forward and added to the population.

For each 5-year projection interval these steps are repeated, for which the projected population at the end of each interval will be the starting population for the following projection interval. The baseline population for these projections is the CBS estimated population at the 1st of January 2015.

2.2 Projection assumptions

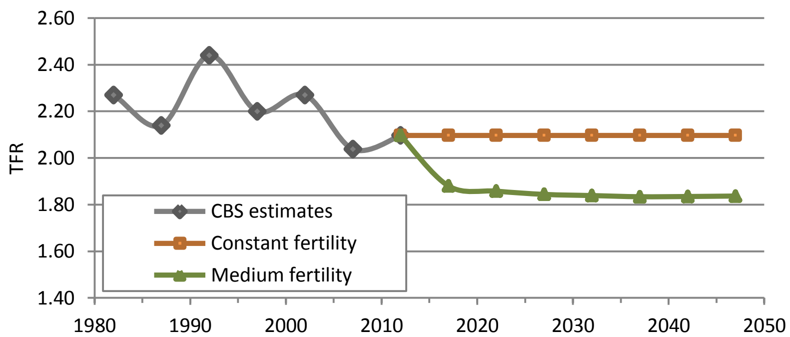
In their 'World Population Prospects, The 2012 Revision' (United Nations, 2014), the United Nations made fertility and mortality assumptions for each country separately, based on historical estimates dating back to 1950. For instance, for Curaçao, historical data obtained from the CBS, i.e. census data and population registry data, was checked, validated for inconsistencies and analyzed by the UN. Then, a probabilistic projection model was used to project fertility and mortality developments for Curaçao in the future, by making use of historical trends within the country and the experiences of similar countries concerning fertility and mortality. This projection model is grounded on demographic theories of fertility transition and mortality transition[3]. The resulting projected fertility and mortality trajectories, made by the UN, have been partly adopted as assumptions in these population projections. From a set of five fertility assumptions and two mortality assumptions, the *medium* fertility assumption and the *normal* mortality assumption have been selected and utilized. Migration assumptions for the Curaçao projections have been created differently, which will be explained in the migration assumptions paragraph.

2.2.1 Fertility assumptions

Two sets of fertility assumptions have been applied:

1. Medium fertility assumption (adopted from the UN WPP 2012 (United Nations, 2014)):
    a. The total fertility rate (TFR) will marginally decline from 1.88 children per woman in the interval 2015-2019 to 1.84 children per woman in the interval 2045-2049. However, a more significant decline is expected from 2.10 children per woman in 2010-2014 (CBS estimate) to 1.88 in 2015-2019 (Figure 1).

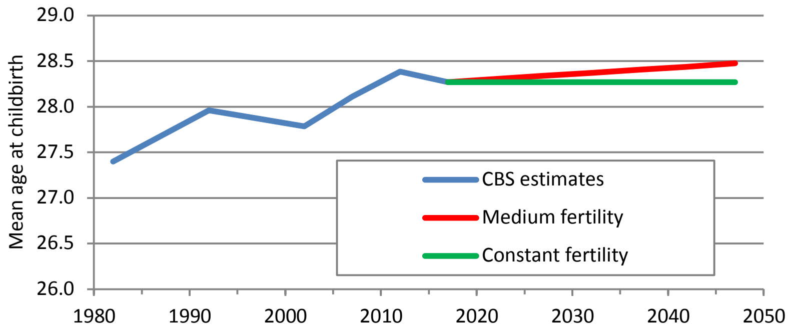
Figure 1. Total fertility rate, estimates and assumptions, 1980-2050



[3] Most countries (populations) worldwide undergo a transition in fertility levels as well as in mortality levels; the fertility transition is characterized by a reduction in fertility to below replacement level (2.1 children per woman) and a delay in the age at initiation in childbearing. The mortality transition is characterized by a rise in life expectancy (declining mortality rates) through processes of improved hygiene and nutrition, social and economic development and mass immunization among others.

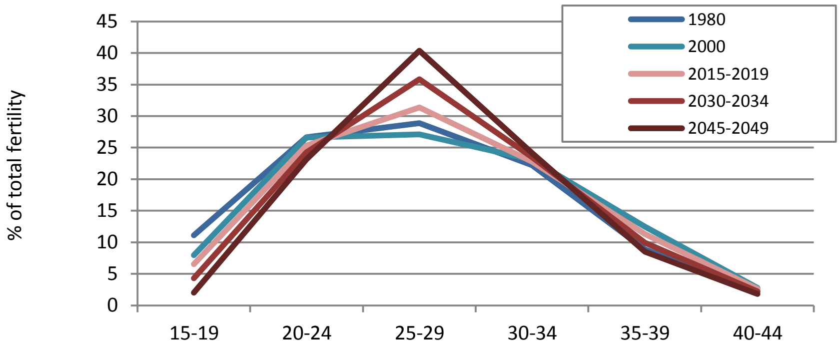
b. The mean age at childbirth (MACB) increases slightly from 28.3 in the 2015-2019 interval to 28.5 in the 2045-2049 interval (Figure 2).

Figure 2. Mean age at childbirth, estimates and assumptions, 1980-2050



c. Age-specific fertility rates (ASFRs) will decrease for the younger ages and the older ages and center more in the 25-29 age group (Figure 3).

Figure 3. Age specific fertility in percentages of total fertility, estimates and assumptions, 1980-2050



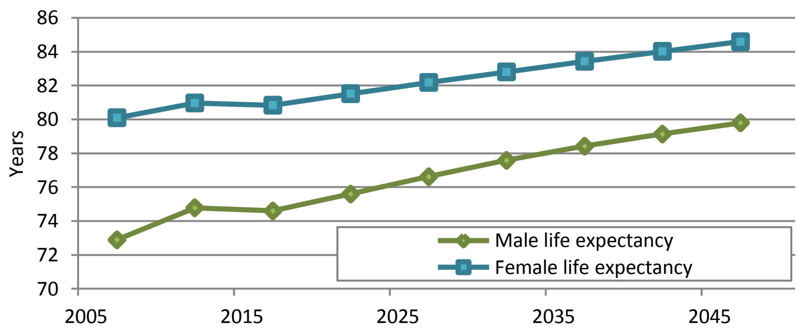
2. Constant fertility assumption: the fertility schedule will remain constant at the 2010-2014 fertility level of 2.1 children per woman (Figure 1). No changes in TFR, MACB and ASFR will occur during the entire projection period (Figure 2).

The medium fertility assumption has been utilized in all projection variants, except the constant fertility variant, for which the constant fertility assumption has been used.

2.2.2 Mortality assumptions

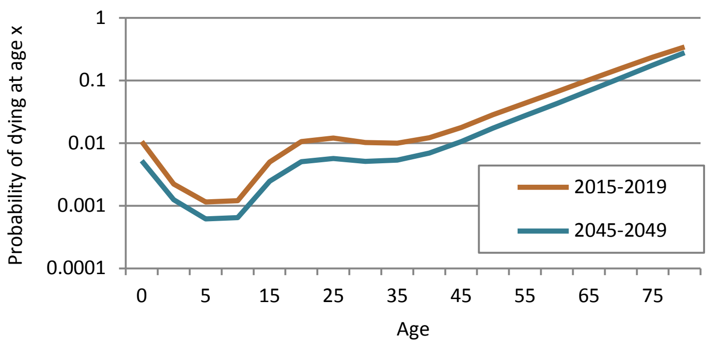
All projection variants utilize the same mortality assumption, which is adopted from the UN WPP

Figure 4. Life expectancy at birth, estimates and assumptions, 2005-2050



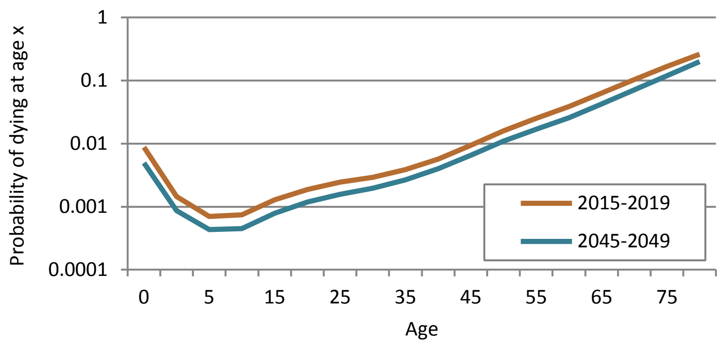
2012 (United Nations, 2014), and referred to as the 'normal' mortality assumption: it is assumed that female life expectancy at birth will increase from 80.8 years in the 2015-2019 interval to 84.6 years in 2045-2049. Male life expectancy at birth is expected to increase from 74.6 years to 79.8 years over the same period. The difference in life expectancy at birth between females and males is thus expected to decline from 6.2 years to 4.8 years (Figure 4).

Figure 5. Probability of dying, males, 2015-2019 – 2045-2049



Improvements in mortality, i.e. declining mortality rates or declining probabilities of dying, are expected in all age groups, male as well as female. Males aged 0 to 40 years are expected to experience the largest improvements in mortality, especially between ages 15 and 35 (Figure 5). For females the largest improvements are expected at the youngest ages, especially for infants, under age 1, and from age 1 up to age 20 years (Figure 6).

Figure 6. Probability of dying, females, 2015-2019 – 2045-2049



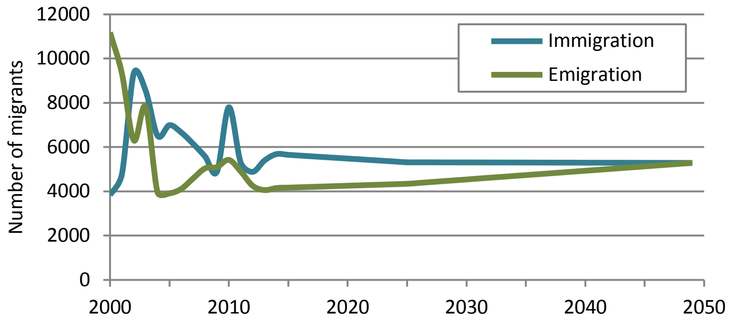
2.2.3 Migration assumptions

For the 2015-2050 projections four different migration variants have been generated. The following migration assumptions were made:

1. Standard migration assumption:
   a. Immigration and emigration levels in 2025 are fixed at the average levels of registered immigration and emigration over the 2011-2014 period. In the long-term, in 2050, both immigration and emigration levels are fixed at the average level of registered immigration over the 2005-2014 period. That means that net migration will be zero in 2050. A linear trend is assumed between 2015 and 2025 and between 2025 and 2050 (Figure 7).

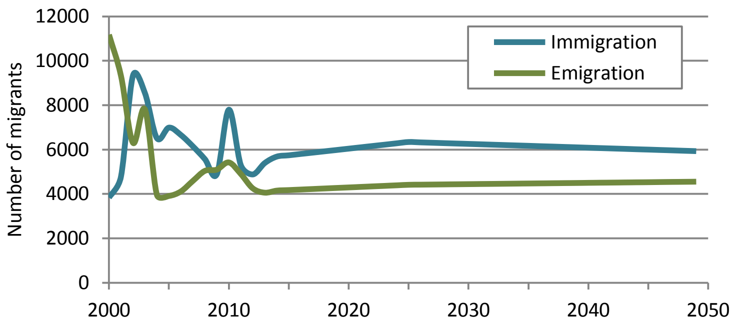
b. The average age distribution of registered immigration as well as emigration of the period 2010-2014, differentiated by sex, has been applied to immigration and emigration levels for each of the 5-year projection periods. The age distribution has been held constant over the entire projection period.

Figure 7. Immigration and emigration, standard migration assumption, 2000-2050



2. High immigration assumption:
    a. Immigration and emigration levels in 2025 are fixed at the average levels of registered immigration and emigration over the 2005-2008 period, which was characterized by the high level of immigration and the resulting high positive net migration. For 2050 immigration and emigration levels are fixed at the average levels of registered immigration and emigration over the 2005-2014 period. Net migration will remain positive towards 2050. Migration levels are assumed to grow or decline in a linear trend (Figure 8).
    b. For the period 2015-2025 the average age distribution of immigration as well as emigration of the period 2005-2008, differentiated by sex, has been applied to the projected immigration and emigration levels. For the remaining projection period, 2025-2050, the age distribution is equal to age distribution as used in the standard migration assumption.

Figure 8. Immigration and emigration, high immigration assumption, 2000-2050

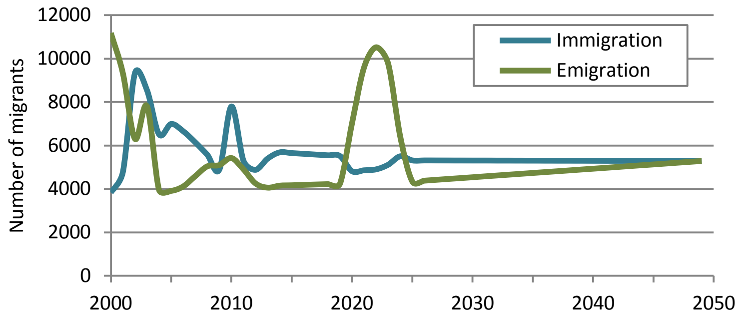


3. Emigration wave assumption:
    a. Immigration and emigration levels will follow the same path as in the standard migration variant, however, between 2020 and 2025 an emigration wave, equal in size and scope as the emigration wave that took place from 1998 to 2001 in Curaçao, will

occur. It is assumed that similar migration rates will occur during the emigration wave as measured during the 1998-2001 emigration wave (Figure 9).

b. The same age distribution applies as in the standard migration variant, with exception of the 2020-2024 emigration wave period, in which the average age distribution of the 1998-2001 period has been applied to the migration levels.

Figure 9. Immigration and emigration level, emigration wave assumption, 2000-2050



4. Zero-migration assumption: in this projection variant it is assumed that no international migration takes place in Curaçao during the entire projection period. This variant merely serves as a reference frame to estimate the effects of migration in the other non-zero migration scenarios.

Table 1 gives a schematic overview of the different projection variants and the combination of assumptions used for each variant.

Table 1. Projection variants by fertility, mortality and migration assumptions

Projection variant	Assumptions		
	Fertility	Mortality	Migration
Standard migration	Medium	Normal	Standard
Constant fertility	Constant as of 2015-2020	Normal	Standard
High immigration	Medium	Normal	High immigration
Emigration wave	Medium	Normal	Emigration wave
Zero-migration	Medium	Normal	Zero-migration

2.3 On the use of the projection variants

Using these population projections, or more specifically which projection variant(s) to choose, depends on the goal of the exercise for which they will be used. For instance, for an estimate of future government expenses on old age pensions an examination of multiple variants could be carried out in order to establish a range of future expenses based on the minimum and maximum number of pensioners expected. Policy makers who want to make plans for the educational system for example, would likely need an estimate of the future number of children of school-going age to anticipate for the resources needed. Again, multiple variants may be used to estimate the minimum and maximum number of school-going children expected. The user of these projections should therefore make a balanced decision on which projection variants seem to fit his or her purpose best.

The most 'median' variant is the standard migration variant, which demonstrates the effects of the medium fertility, normal mortality and standard migration assumptions. This variant may be seen as a 'medium' variant.

It should be noted again that these variants are merely scenario's that explore the implications of a set of assumptions on the future course of fertility, mortality and migration, on the future development of the population.

2.4 Definitions

Adult mortality (45q15): adult mortality is expressed as deaths under age 60 per 1,000 alive at age 15 and represents the probability of dying between age 15 and age 60 (45q15).

Child dependency ratio: the ratio of the population aged 0-14 to the population aged 15-64. They are presented as number of dependents per 100 persons of working age (15-64).

Crude birth rate (CBR): the number of births in the population during a given period per 1,000 persons in the population during that period.

Crude death rate (CDR): the number of deaths in the population during a given period per 1,000 persons in the population during that period.

Life expectancy: the average number of additional years that a survivor to age x can expect to live beyond that age.

Median age: the median age marks the age for which half the population is older than that age and half the population is younger than that age.

Mean age at childbearing: the average age at childbearing of all women who gave birth in a given period.

Net migration rate: the net number of migrants during a given period per 1,000 persons in the population during that period.

Net reproduction rate: the net reproduction rate is expressed as number of daughters per woman and represents the average number of daughters a hypothetical cohort of women would have at the end of their reproductive period if they were subject during their whole lives to the fertility rates and the mortality rates of a given period.

Old-age dependency ratio: the ratio of the population aged 65 years or over to the population aged 15-64. They are presented as number of dependents per 100 persons of working age (15-64).

Old-age support rate: the number of persons of working age (20-64) per elderly person (65+). This definition is adopted from the OECD (OECD/IDB/The World Bank, 2014) and differs from old-age dependency ratio by the working age range, which starts at 20 instead of 15 years.

Population doubling time: the population doubling time corresponds to the number of years required for the total population to double in size if the annual rate of population change would remain constant.

Rate of natural increase: the number of persons added by natural growth (births minus deaths) to the population in a given period per 1,000 persons in the population during that period.

Sex ratio at birth: the number of newborn boys per 100 newborn girls in a given period.

Total dependency ratio: the ratio of the population aged 0-14 and that aged 65+ to the population aged 15-64. They are presented as number of dependents per 100 persons of working age (15-64).

Total fertility rate (TFR): the average number of children a woman would bear if she survived through the end of the reproductive age span and experienced, at each age, a particular set of age-specific fertility rates.

Under-five mortality (5q0): under-five mortality is expressed as deaths under the age of 5 per 1,000 livebirths in a given period and represents the probability of dying between birth and age 5 (5q0).

3. Results

In this chapter the results of the five projection variants will be discussed. A comprehensive set of tables and figures, including population by age and sex and an array of population indicators for the five-year projection periods, can be found in the appendix. Some of the figures which can be found in the appendix have also been used in the text.

Figure 10 and Table 2 give an overview of the total population size for each projection variant. The high immigration variant would yield the largest population in 2050 and the emigration wave variant the smallest population. The standard migration variant represents a scenario that sees the population size end up in between the high immigration and the emigration wave variant in 2050.

Figure 10. Total population by variant, 1950-2050

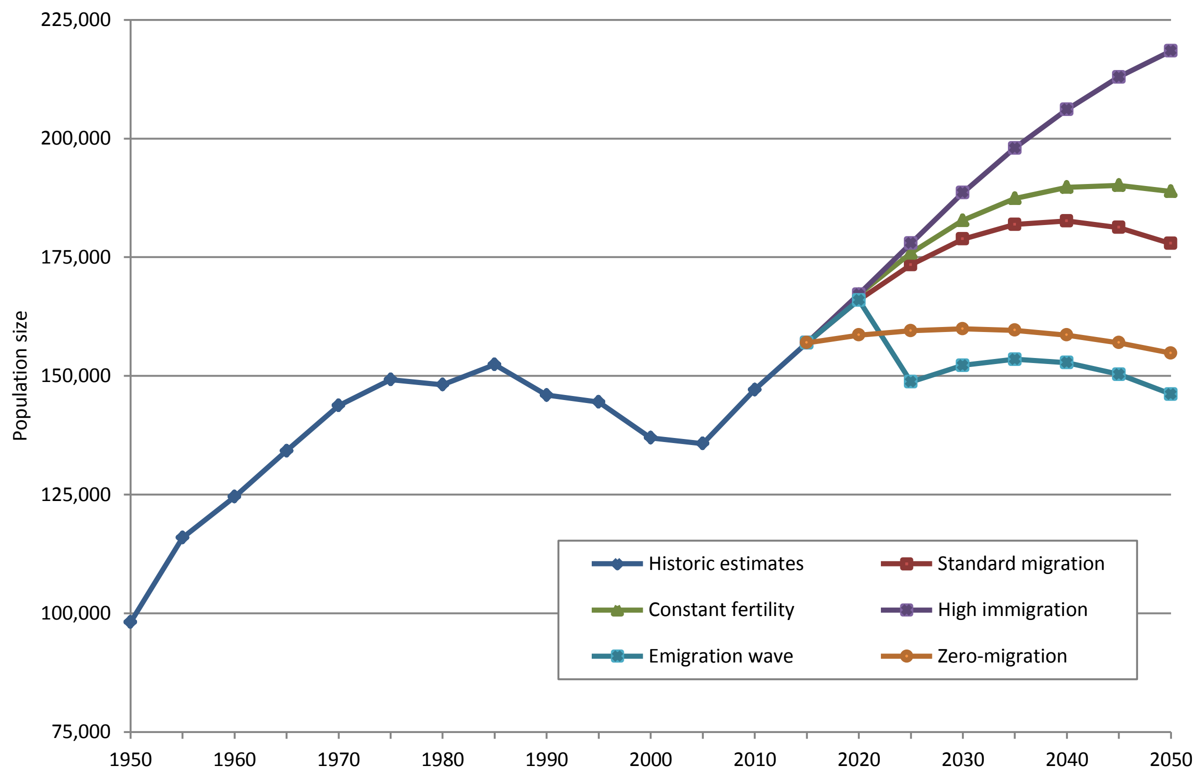


Table 2. Total population by variant, 1950-2050

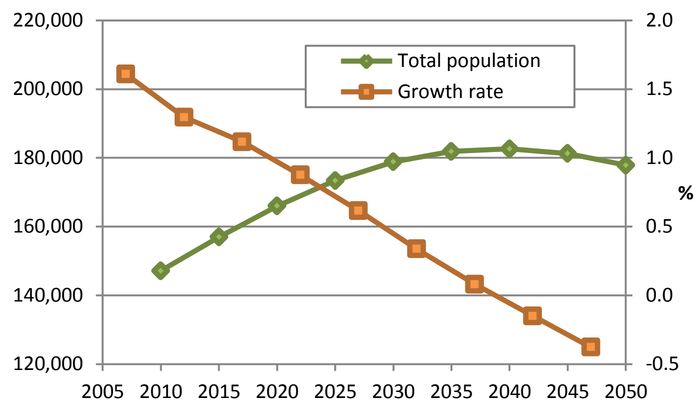
Projection variant	2015	2020	2025	2030	2035	2040	2045	2050
Standard migration	156,971	165,983	173,409	178,834	181,885	182,626	181,261	177,878
Constant fertility	156,971	167,151	175,907	182,780	187,375	189,740	190,150	188,877
High immigration	156,971	167,184	177,948	188,588	198,000	206,134	212,967	218,468
Emigration wave	156,971	165,983	148,755	152,242	153,504	152,801	150,346	146,170
Zero-migration	156,971	158,589	159,507	159,926	159,623	158,607	156,974	154,793

3.1 Standard migration variant

Diminishing population growth will turn into population decline

The positive, but slowly fading, net migration in combination with a positive natural growth (births minus deaths) will cause the population of Curaçao to keep growing to a maximum size of almost 183,000 persons in 2040. However, from 2030 onwards there will be more deaths than births annually. Combined with the dwindling net migration this causes the population to decrease from 2040 onwards to a level of close to 178,000 in 2050 (Figure 11). The population growth rate will gradually decline from an estimated annual average growth of 1.3 percent per year in 2010-2014 to a projected negative growth of -0.4 percent per year in 2045-2049.

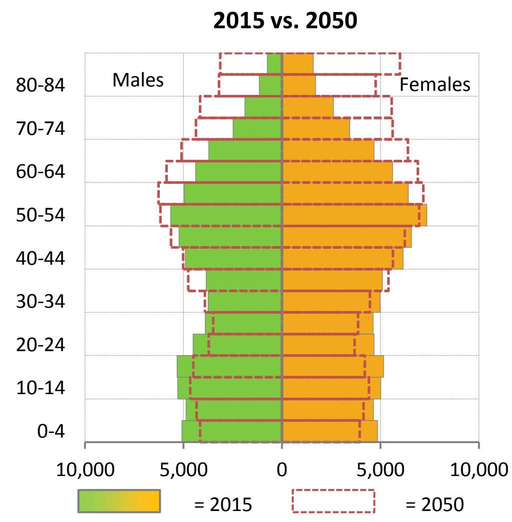
Figure 11. Total population and population growth



Rapid aging of the female dominated population

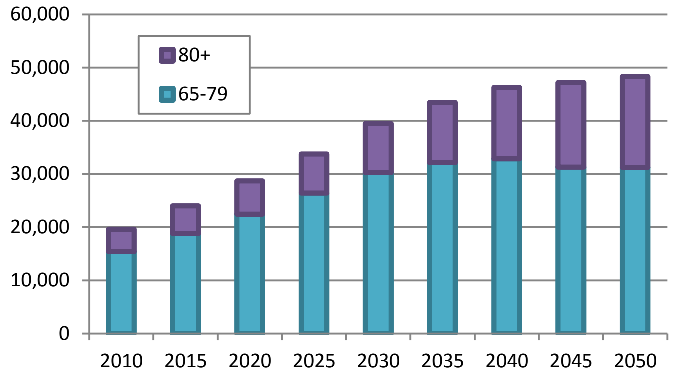
Because more women than men continue to migrate to Curaçao, but the sex difference in migration is assumed to slowly fade out towards the end of the projection period, the sex ratio of the population will slightly increase from 84 men per 100 women in 2015 to a little over 86 men per 100 women in 2050.

Figure 12. Population pyramids Curaçao, 2015 vs 2050



The age structure of the population will change significantly. A comparison between the population pyramids of 2015 and 2050 (Figure 12) shows the youngest population (0-14 years) to lose share to the older population (65+). On one end, fertility decline will cause the number of births to drop sharply after 2030 and stall the growth at the base of the pyramid. The share of the youngest population will decline from 19 percent in 2015 to 14.4 percent in 2050. On the other end, an increasing amount of persons will reach pension age (65 years) during the projection period and add to the share of the elderly population by 2050. Their share will increase from 15.3 percent in 2015 to 27.2 percent in 2050 (Figure 14). In 35 years time the population 65+ will double in absolute numbers (Figure 13). In effect, the median age of the male population will increase from 39.0 years in 2015 to 47.4 years in 2050, while their female counterparts are expected to gain more than eight years going up from 42.9 in 2015 to 51.2 years in 2050.

Figure 13. Total population 65+ by age groups 65-79 and 80+



The oldest old population will triple in size

At the same time life expectancy will increase, causing the older population to live longer. The *oldest old* population, persons aged 80 years or older, make up 3.3 percent of the total population in 2015, but will almost triple in share to 9.6 percent in 2050. In absolute numbers the oldest old population is expected to be 3.3 times bigger in 2050 compared to 2015 (Figure 13).

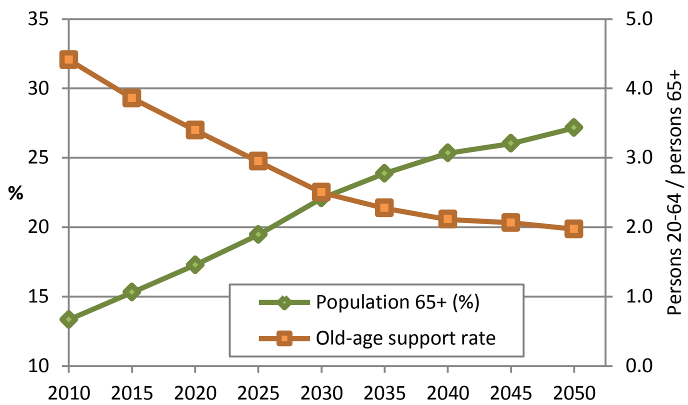
The old-age support rate will halve

A practical measure of the pressure that the elderly population poses on the working age population is the old-age support rate. It is expressed as the number of working age persons (20-64 years) per older person (65+), and gives an indication of the number of persons who are potentially working to provide economic support to an elderly person who is likely economically dependent (OECD/IDB/The World Bank, 2014). The old-age support rate will decrease from 3.9 persons of working age for every older person in 2015 to 2.0 persons of working age for every older person in 2050 (Figure 14).

A declining share of working age population

The working age population, sometimes defined as the population aged 20-64 years (OECD for example) and sometimes as the population aged 15-64 years (United Nations for example), is also expected to lose share in Curaçao. The proportion of the population aged 15-64 is expected to decrease from almost 66 percent in 2015 to 58 percent in 2050.

Figure 14. Population 65+ and old-age support rate



3.2 Constant fertility variant

The constant fertility variant assumes the same migration scenario and mortality scenario as the standard migration variant. However, fertility is assumed to remain constant throughout the entire projection period. The estimated total fertility rate for the period 2010-2014, i.e. 2.1 children per woman, and the underlying age specific fertility rates have been held constant at the 2010-2014 levels. The resulting projection therefore indicates what the effect of an unchanged fertility schedule versus a decline in fertility is when comparing the results to those of the standard migration variant.

Delayed onset of population decline

The effect on the population size of the total fertility rate being between 0.2 and 0.3 children per woman higher in this variant, compared to the standard migration variant, is a larger maximum population size of about 190,000 persons and somewhat higher population growth rates. Population decline will start after 2045 instead of 2040 (Figure 15).

Figure 15. Total population and population growth

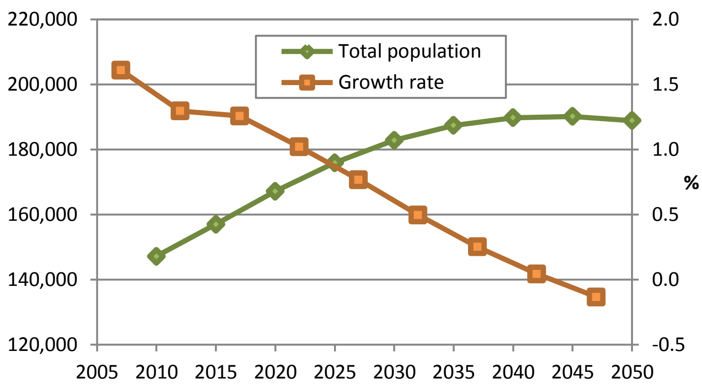
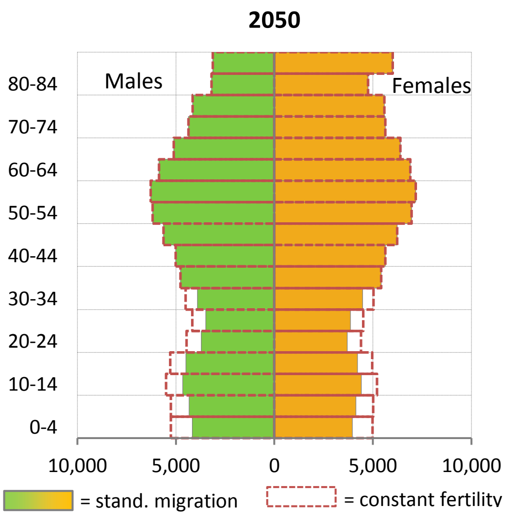


Figure 16. Population pyramids 2050, constant fertility variant and standard migration variant



More youth

Because more children will be born at a higher fertility level, the population 0-14 years old will be bigger in this variant. Yet the proportion of youth in the total population will decrease from 19 percent in 2015 to an expected 16.5 percent in 2050. After 2030 the increased number of youth will start entering the working age population, adding absolute numbers to this group. Nevertheless, the proportion of the population 15-64 in 2050 will be slightly smaller than in the standard migration variant.

Even though the elderly population in this variant is unaffected by the different fertility assumptions, i.e. in absolute numbers the population 65+ resembles the population 65+ in the standard migration variant, the elderly population is relatively slightly smaller in 2050, 25.6 percent instead of 27.2 percent. The aging process is expected to progress at a slower rate in this variant. Nonetheless, the differences in age distribution between the constant fertility and the standard migration variants have little effect on the old-age support rate: it still decreases from 4.0 persons of working age for every older person to 2.1 persons of working age for every older person.

As a result, the 2050 population pyramid of the constant fertility variant will be wider in the bottom between ages 0 and 35 compared to the 2050 standard migration variant pyramid (Figure 16).

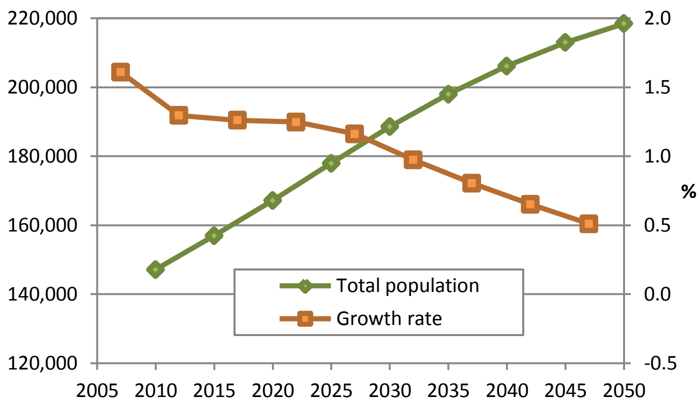
3.3 High immigration variant

The high immigration variant explores the future development of the population by assuming a high positive net migration scenario, combined with the same fertility assumptions and mortality assumptions as used in the standard migration variant. It is therefore comparable to the standard migration variant and indicates what the possible effects of a high influx of immigrants will be on the population.

Large population growth

If Curaçao will experience high immigration rates in the near future, like during the second half of the 2000s, the population is expected to increase to almost 220,000 persons in 2050 (Figure 17). The population growth rate will remain positive over the entire projection period and only start to decrease considerably after 2025.

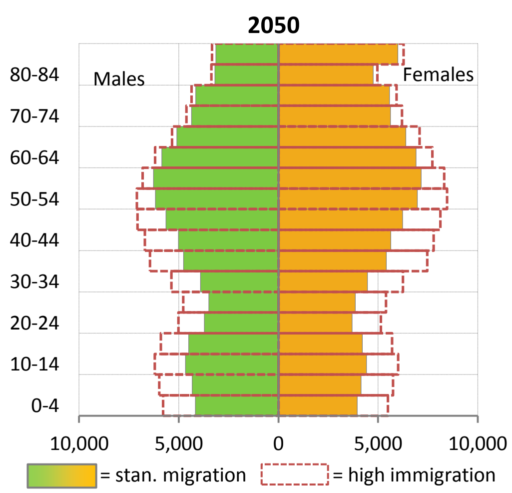
Figure 17. Total population and population growth



Population growth at all ages, but a slower pace of aging

The youth population, the working age population as well as the elderly population are all expected to keep increasing up to 2050. The growth of the first two groups however, will cause the elderly population to remain relatively smaller (23.6%) than in the standard migration variant (27.2%). This means that the pace of aging is slower in this variant. The population pyramids in Figure 18 illustrate this.

Figure 18. Population pyramids 2050, high immigration variant and standard migration variant



Young and old together will form less of an economic burden on the working age population than in the standard migration variant. The *total dependency ratio* indicates the combined number of dependents (the population 0-14 plus the population 65+) per 100 persons of working age (15-64). High immigration rates will ultimately keep the number of dependents at a lower level, 66 instead of 71 dependents per 100 persons of working age in 2050 (Figure 19). The total dependency ratio is even expected to decrease after 2040, because the working age population will grow in relative size by an increased inflow of youth reaching their 15th birthday, while the elderly population will remain relatively unchanged at a level of approximately 23.5 percent between 2040 and 2050.

Slower rise in median age

The high inflow of immigrants causes a growth in the group of women in their reproductive years (15-49). Therefore the number of children under age 15 is also expected to grow. As mentioned before, the share of children under age 15 and the share of working age population are larger in the high immigration variant compared to the standard migration variant, which results in a lower projected median age of the population in this variant. The median age for males is expected to be 43.5 years and for females 47.5 years in 2050 (Figure 20). This is respectively 47.4 and 51.2 years in the standard migration variant.

Figure 19. Total dependency ratio, high immigration variant and standard migration variant, 2010-2050

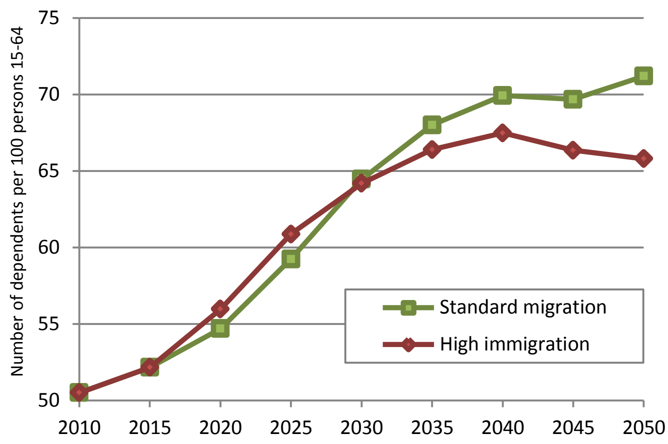
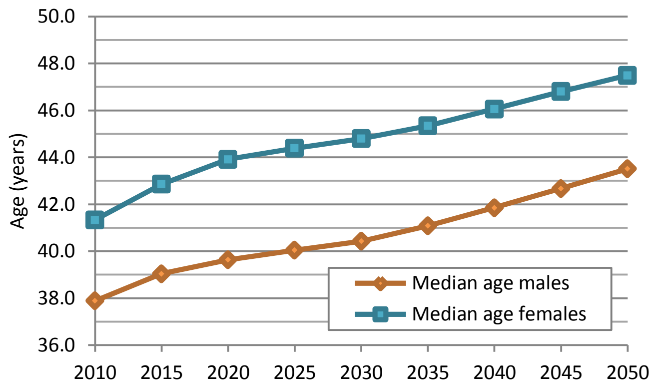


Figure 20. Median age by sex, high immigration variant, 2010-2050

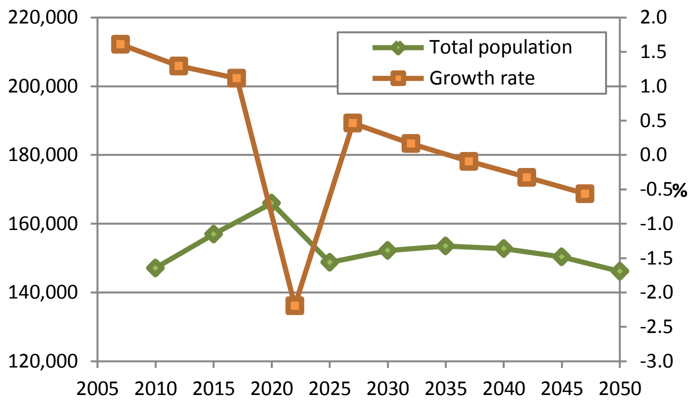


3.4 Emigration wave variant

Over the last three decades Curaçao has seen two major emigration waves. The last one, from 1998 to 2001, resulting in a population decline of about 20,000 persons in only four years time. Since 2002 the tides have turned and the population has been growing constantly up to 2015. However, this does not guarantee population growth in the future. What if Curaçao will face an economic recession somewhere in the coming decades? Will many people leave the country and try their luck elsewhere? To give an indication of the possible effects of such a situation in the near future the emigration wave variant is included in these projections. It assumes a similar net migration scenario, in magnitude as well as in age composition, as the 1998-2001 emigration wave, taking place in the 2020-2024 period. The migration assumptions in this variant are equal to the standard migration assumptions, with exception of the 2020-2024 period in which the emigration wave takes place. Fertility and mortality assumptions are equal to the assumptions used in the standard migration variant.

From growth to decline

Figure 21. Total population and population growth

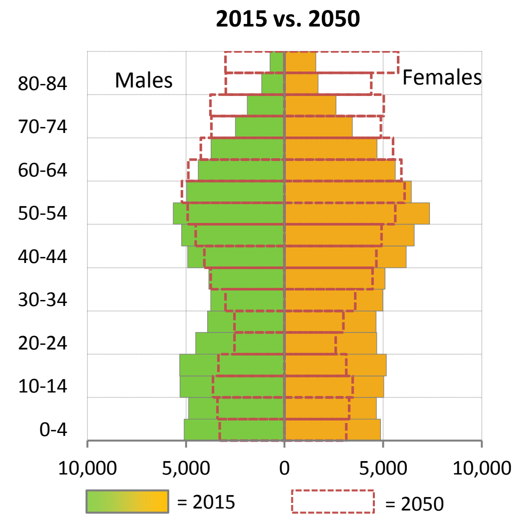


An emigration wave between 2020 and 2025, similar to the emigration wave of 1998-2001, would cause an expected population decline of more than 17,000 persons in five years time, resulting in a population size of a little under 149,000 in 2025. If net migration would restore to positive levels after the emigration wave, and stay positive until 2050, the population is expected to grow by about 5,000 persons to reach approximately 153,500 persons in 2035. After 2035, the surplus of deaths over births, from 2025-2029 onwards more deaths than births occur in each projection interval, will outweigh the positive net migration and result in population decline. The expected population size will be around 146,000 in 2050 under these projection assumptions (Figure 21).

Only the elderly population will grow

A huge outflow of emigrants will have an enormous impact on the working age population, which is estimated to decrease by over 20,000 persons, or almost 20 percent, between 2015 and 2050. Likewise, the population aged 0-14 will lose one third of its size and reach a level of about 20,000 persons in 2050. The only age group which will grow, even during the emigration wave period, is the elderly population, which is expected to increase by about 9,000 persons (Figure 22).

Figure 22. Population pyramids Curaçao, 2015 vs 2050



Negative natural growth

The group of women of reproductive age will decrease significantly due to the mass emigration, leading to a large decline in number of births. On the other hand, the elderly population will keep growing, although at a slightly slower pace than in the standard migration variant. This causes the number of deaths to be almost as high in this variant compared to the standard migration variant. As a result the natural growth will be negative from 2025 onwards. In the 2045-2049 period the population will decline by more than 4,500 persons because of the surplus of deaths over births.

Half of the population will be 50 years or older in 2050

The elderly population is expected to make up almost 30 percent of the population in 2050. Within the elderly population the oldest old (80+) will have a share of 37 percent. Of all the projection variants the aging process is going to have the largest impact on the population in the emigration wave variant. This is reflected in the median age of the population, which will be 49.2 years for males and 53.1 years for females in 2050. In other words, half of the Curaçaoan population will be 50 years or older in 2050.

3.5 Zero-migration variant

Finally, the zero-migration variant will give an indication of the growth potential within the Curaçaoan population under the standard fertility and mortality assumptions used throughout these projections. It is not a realistic scenario, because it assumes there is no international migration, but it shows just how the population would develop in the absence of international migration. Furthermore, the use of the same fertility and mortality assumptions as in all the other projection variants, except the constant fertility variant, enables an assessment of the effect of non-zero net migration on population growth for every age and sex cohort.

Slow growth before decline

Population growth in Curaçao, in the absence of international migration, would be rather small. Assuming a decline in fertility and an improvement in life expectancy in the 35-year projection period, the population would slowly increase to a maximum size of almost 160,000 persons in 2030 and afterwards decline to a level of about 155,000 in 2050 (Figure 23).

Figure 23. Total population and population growth

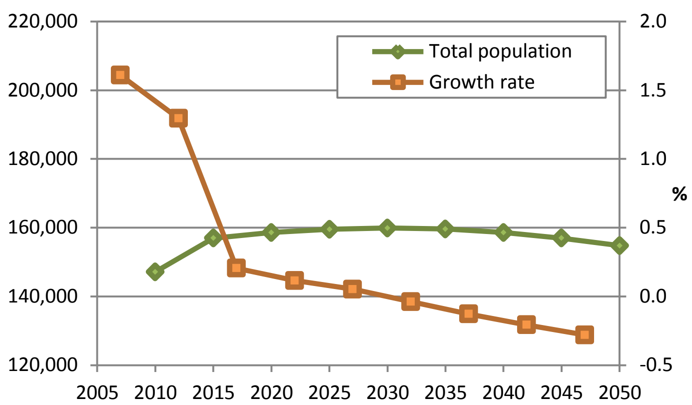
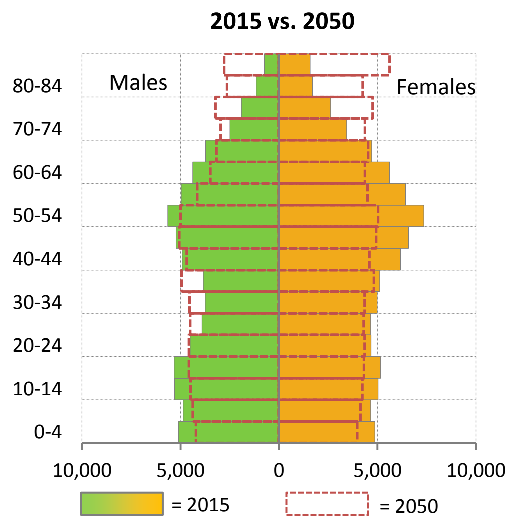


Figure 24. Population pyramids Curaçao, 2015 vs 2050



Smoother population pyramid

Without international migration there would be no 'brain drain', meaning the vast amount of population aged 15-24 years, which normally emigrates for educational or economic reasons, will stay. It is interesting to note what kind of effect this has on the population pyramid: the dent between ages 20 and 40 in 2015, caused by the 'brain drain' effect, will eventually fade out. The pyramid will have a much more regular shape, without large peaks and dents (Figure 24). The effect of relatively larger population groups aged 20-40 years in this variant is a lower median age of the population compared to the other projection variants. The median age will be 40.5 for males and 46.6 for females in 2050. The absence of the generally female-dominant positive net migration will also cause the sex ratio of the population to start to increase: the gender imbalance in the Curaçao population will slowly recover to a more balanced state. The sex ratio will increase from a 84 males per 100 females low in 2015 to 90 males per 100 females in 2050.

Aging is imminent

Despite the fact that changes in age composition of the population are very much dependent on migration, this variant also shows that the process of aging is imminent, even in the absence of international migration. Without migration the population aged 65+ would still grow to almost 25 percent of the total population in 2050, and the old-age support rate would drop to 2.1 at the same time. These values do not differ much from the values in the standard migration scenario. In other words, this variant shows that aging is mostly dependent on the age structure of the baseline population (the 2015 population). Migration can speed up (emigration wave) or slow down (high immigration) the aging process.

4. Decomposition of future population growth

What the five different projection variants have shown is that, besides fertility, mortality and migration, there is actually a fourth component which influences population growth: the current age structure of the population. The age structure of the population directly affects the amounts of births, deaths and migrations taking place in the population.

One question that often rises when analyzing population projection results is how much each component contributes to future population growth. A method to measure the contribution of each of the components separately was proposed by Bongaarts and Bulatao (1999), and has been described and put to utilization in the technical paper 'Demographic components of future population growth' (Andreev, Kantorová, & Bongaarts, 2013). The same method has been applied to Curaçao population projections 2015-2050. This chapter provides an analysis of the results of this decomposition procedure applied to the standard migration variant, and shows how much each of the components contributes to the projected future population growth. More detailed information on this decomposition method can be found in in the previously mentioned publications (Bongaarts & Bulatao, 1999; Andreev, Kantorová, & Bongaarts, 2013).

The decomposition method applied to the Curaçao 2015-2050 population projections

Basically, this method compares four projection variants with each other, and based on the outcomes of these comparisons the contribution of each individual component is measured.

The first projection is the *Standard* population projection. This projection is equal to the *standard migration* projection in this report. All four components are incorporated in this projection: the medium fertility assumption, the normal mortality assumption, the standard migration assumption and the population age structure of 2015 are used in the projection up to 2050.

The effect of migration is then measured by comparing the population size projected by the *Standard* variant to the population size projected by the *Natural* variant. The *Natural* variant is derived from the *Standard* variant by adopting the fertility and mortality assumptions, but at the same time setting the net migration to zero. Population growth in the *Natural* variant therefore, only relies on natural growth, i.e. changes in fertility and mortality, and on the initial age structure of the population. Hence, the comparison of the projected population size of these variants indicates the effects of migration on the population growth.

By taking the *Natural* variant's assumptions, and adjusting only the fertility assumption by setting the total fertility at replacement level[4] for the entire projection period, the *Replacement* projection variant is constructed next. Because mortality and migration assumptions (zero-migration) are equal to the *Natural* variant, and only fertility changes, the effect of fertility on the future population growth can be estimated. In short, the consequences of total fertility above or below replacement level are measured by comparing the projected population size of the *Natural* variant to the projected population size of the *Replacement* variant.

Then, measuring the effect of mortality on the future population growth is done by comparing the *Replacement* variant to the *Momentum* variant. The *Momentum* variant assumes constant fertility, at the

[4] A TFR of about 2.1 children per woman is considered replacement level fertility. At this level of fertility the female population 'reproduces' itself, meaning that the female population exactly replaces itself (under condition of continuation of current fertility and mortality rates) providing for sustenance of current population levels.

replacement level, and constant mortality rates throughout the entire projection period. Again, zero-migration is assumed. By changing only the mortality assumption, compared to the *Replacement* variant, the effect of improvements in mortality conditions is measured when comparing population sizes of both projection variants.

Finally, the effect of the initial age structure is measured by comparing the population size of the *Momentum* variant to the population size in 2015, i.e. the baseline population. Because in the Momentum variant fertility and mortality remain constant and no migration takes place, the future population growth is only dependent on the initial age structure of the population. The effect of the age structure is called the population *momentum*: younger populations, i.e. populations with a relatively large share of youth and a growing share of women in their reproductive years, generally tend to increase in size by the positive population momentum; births (by far) exceed deaths. On the other hand, older populations, i.e. populations with a relatively large share of elderly persons, a low fertility and an advanced aging process, tend to have a negative momentum; deaths exceed births.

Figure 25. Population projection variants and the contribution of demographic components to future population growth, Curaçao 2015-2050

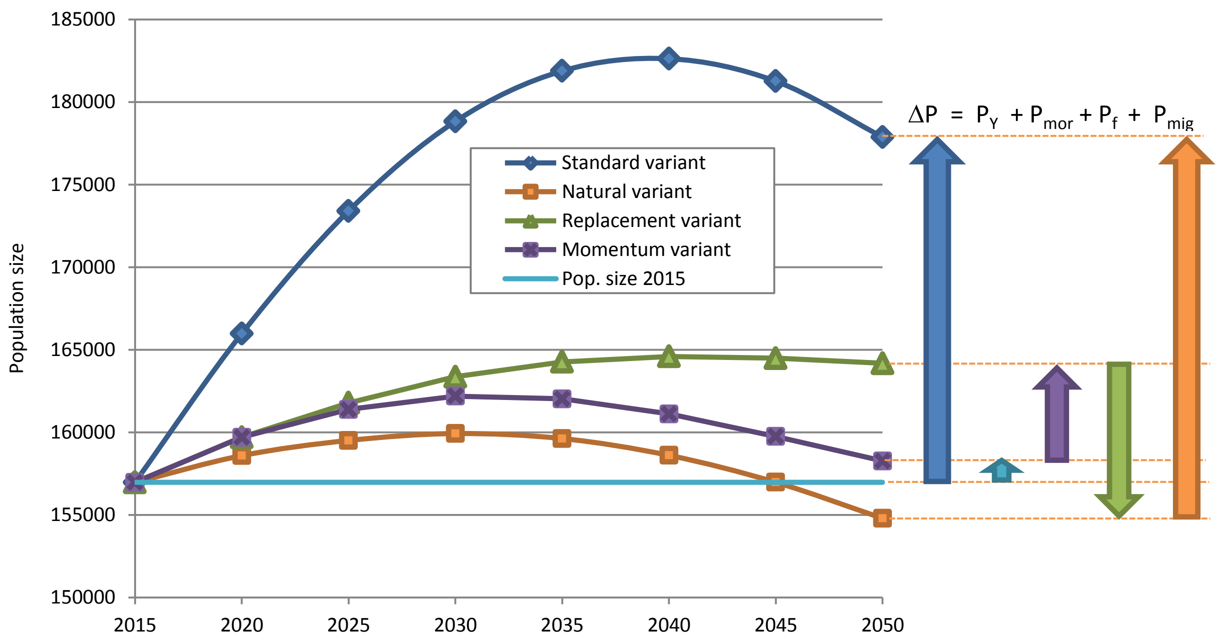


Figure 25 shows a graph of the total population for each of the four projection variants for Curaçao for the period 2015-2050. The total population growth (ΔP in Figure 25) in the standard variant is calculated at almost 21,000 persons from 2015 to 2050. On the right-hand side this is depicted with the dark blue arrow.

Population momentum (P_Y), the difference between the momentum variant and the population in 2015 (the light blue arrow in Figure 25), accounts for a share of 1,300 persons in the total population growth. In other words, the population momentum due to its age composition is rather small and contributes only a small bit to the total projected population growth.

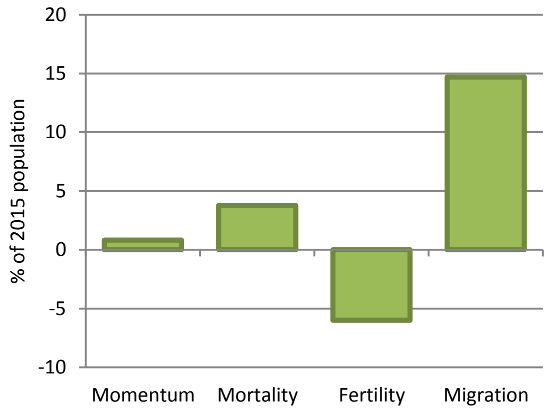
Declining mortality rates (P_{mor}), the difference between the momentum variant and the replacement variant (the purple arrow in Figure 25), contribute a larger share to the total population growth. Future improvements in life expectancy will account for 5,900 persons of the total population growth.

Fertility however, has a negative impact on the future population growth. The *below-replacement fertility* level (P_f) will cause the population to decline by almost 9,400 persons (the difference between the replacement variant and the natural variant, indicated by the green arrow in Figure 25).

The negative result of momentum, mortality and fertility effects combined (1,300 + 5,900 - 9,400 = -2,200) is compensated by the big impact that migration has on the future population growth. An estimated *positive net migration* (P_{mig}) of 23,000 persons is expected between 2015 and 2050. This is by far the largest contributor to future population growth in the standard migration scenario for Curaçao.

The absolute values of componential contribution are expressed as percentages of the total 2015 population in Figure 26. Population momentum adds slightly less than one percent to the 2015 population, almost 4 percent is added because of improvements in life expectancy, and positive net migration adds about 15 percent to the 2015 population. The decreasing fertility level however, results in a 6 percent decline of the 2015 population. In sum, 13 percent population growth is expected between 2015 and 2050 (21,000 persons).

Figure 26. Contribution to population growth by component, as percentage of the 2015 population



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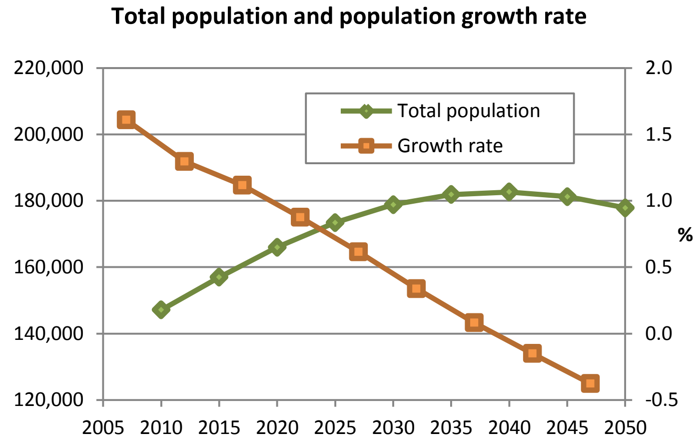
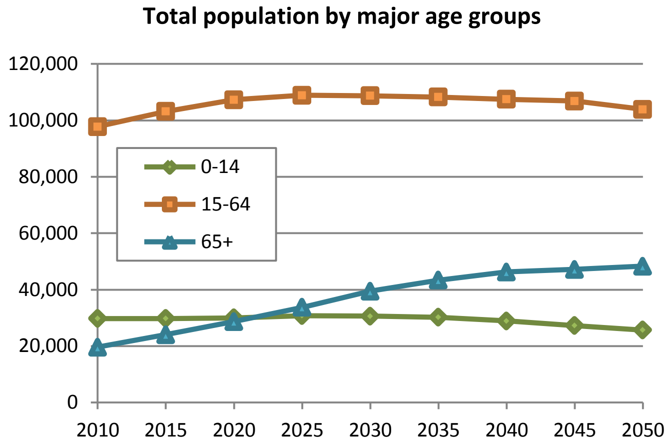
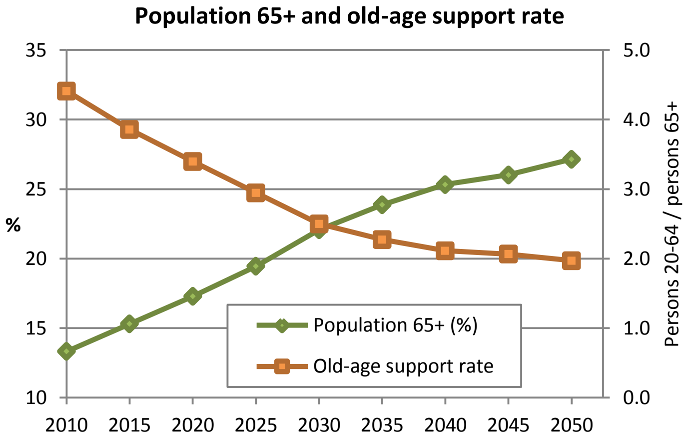
Appendix

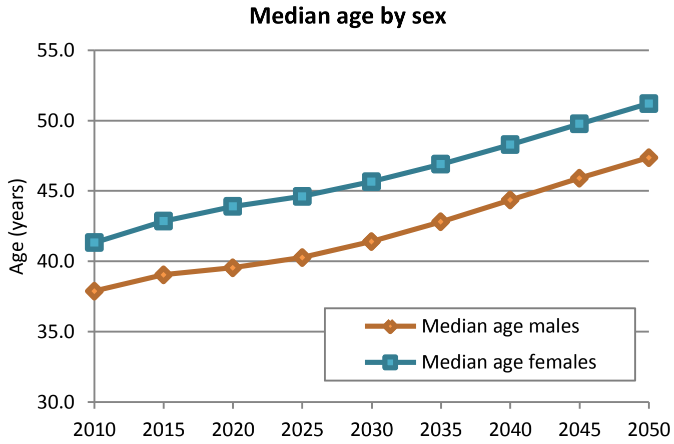
A.1 Standard migration variant: figures and tables

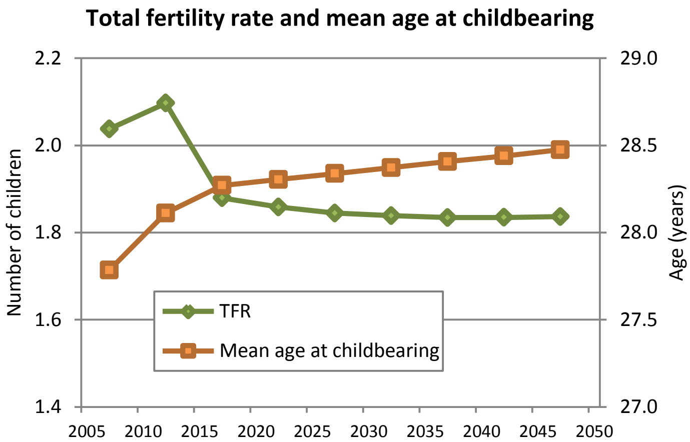
Figures A 1 Standard migration variant











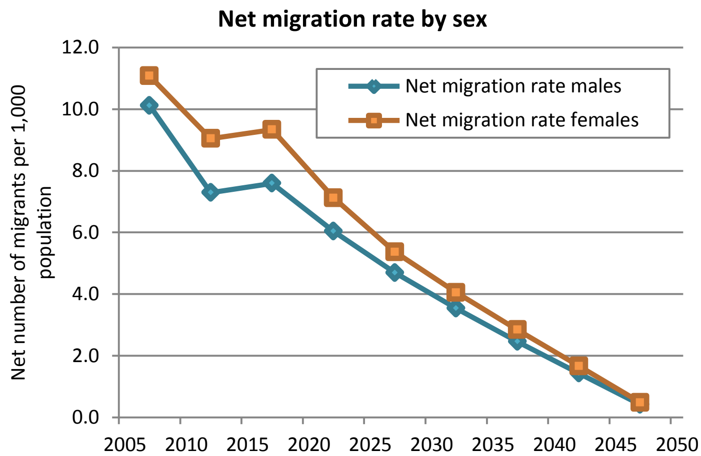


Table A 1 Population indicators standard migration variant, 2010-2050

	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total Population									
Total population	147,122	156,971	165,983	173,409	178,834	181,885	182,626	181,261	177,878
Population density (persons per square km)	331	354	374	391	403	410	411	408	401
Median age (years)	39.9	41.3	42.0	42.7	43.7	45.0	46.5	48.0	49.5
Sex ratio (males per 100 females)	84.6	84.1	83.8	83.9	84.2	84.5	85.0	85.6	86.4
Dependency ratios (per 100)									
Total dependency ratio	51	52	55	59	64	68	70	70	71
Child dependency ratio	30	29	28	28	28	28	27	26	25
Old-age dependency ratio	20	23	27	31	36	40	43	44	46
Aging									
Population 65+ (%)	13.3	15.3	17.3	19.5	22.1	23.9	25.3	26.0	27.2
Population 80+ (as % of population 65+)	21.5	21.6	21.8	21.7	23.4	25.9	29.0	33.7	35.4
Old-age support rate	4.4	3.9	3.4	2.9	2.5	2.3	2.1	2.1	2.0

	2005-2009	2010-2014	2015-2019	2020-2024	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049
Rates of population change									
Annual rate of population change (percentage)	1.6	1.3	1.1	0.9	0.6	0.3	0.1	-0.2	-0.4
Rate of natural increase (per 1,000 population)	5.5	4.7	2.6	2.1	1.1	-0.4	-1.9	-3.1	-4.2
Population doubling time (years)	43	53	62	79	112	205	852	-	-
Mortality									
Crude death rate per 1,000 population	8.0	8.4	9.4	9.8	10.3	11.1	11.9	12.7	13.5
Under-five mortality (5q0) per 1,000 live births	13.1	10.9	11.5	10.2	9.1	8.1	7.3	6.7	6.1
Adult mortality (45q15) per 1,000	106	100	100	92	85	78	73	68	63
Life expectancy at birth (years)	76.7	78.1	77.9	78.8	79.6	80.4	81.1	81.8	82.4
Male life expectancy at birth (years)	72.9	74.8	74.6	75.6	76.6	77.6	78.4	79.1	79.8
Female life expectancy at birth (years)	80.1	81.0	80.8	81.5	82.2	82.8	83.4	84.0	84.6
Life expectancy at age 15 (years)	63.3	64.0	64.0	64.7	65.4	66.2	66.8	67.4	68.0
Life expectancy at age 65 (years)	18.2	18.7	18.7	19.1	19.6	20.0	20.4	20.8	21.2
Fertility									
Crude birth rate per 1,000 population	13.4	13.1	12.0	12.0	11.4	10.7	10.0	9.6	9.3
Total fertility (children per woman)	2.04	2.10	1.88	1.86	1.84	1.84	1.83	1.83	1.84
Sex ratio at birth (males per 100 females)	107	104	106	106	106	106	106	106	106
Net reproduction rate	0.97	1.01	0.92	0.93	0.94	0.94	0.93	0.94	0.94
Mean age childbearing (years)	27.8	28.1	28.3	28.3	28.3	28.4	28.4	28.4	28.5
Births and deaths									
Number of births	9,491	9,970	9,709	10,160	10,083	9,611	9,122	8,738	8,307
Number of deaths	5,623	6,388	7,594	8,356	9,113	10,002	10,811	11,520	12,095
Births minus deaths	3,868	3,582	2,115	1,803	970	-392	-1,689	-2,782	-3,788
International migration									
Net number of migrants	7,507	6,267	6,897	5,623	4,455	3,443	2,430	1,417	405
Net migration rate (per 1,000)	10.6	8.2	8.5	6.6	5.1	3.8	2.7	1.6	0.5

Table A 2 Population by age and sex, standard migration variant, 2010-2050

Total

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	9,135	9,951	9,700	10,115	10,008	9,510	8,993	8,578	8,116
5-9	9,988	9,514	10,287	9,953	10,290	10,114	9,547	8,960	8,476
10-14	10,644	10,324	10,020	10,714	10,310	10,587	10,351	9,724	9,078
15-19	11,247	10,489	9,882	9,488	10,088	9,586	9,765	9,432	8,707
20-24	7,758	9,193	9,372	8,632	8,096	8,536	7,877	7,896	7,403
25-29	7,205	8,540	9,521	9,541	8,654	7,980	8,276	7,477	7,353
30-34	7,687	8,738	10,069	10,903	10,804	9,832	9,071	9,275	8,387
35-39	10,104	8,945	10,130	11,339	12,075	11,910	10,875	10,049	10,183
40-44	11,164	11,071	9,954	11,040	12,163	12,839	12,618	11,531	10,650
45-49	12,633	11,799	11,749	10,570	11,581	12,645	13,266	12,996	11,866
50-54	11,255	13,006	12,211	12,107	10,899	11,861	12,874	13,450	13,146
55-59	10,046	11,385	13,123	12,321	12,198	11,003	11,927	12,902	13,448
60-64	8,648	9,996	11,285	12,954	12,184	12,074	10,922	11,818	12,763
65-69	6,473	8,406	9,654	10,884	12,487	11,787	11,706	10,628	11,500
70-74	5,203	5,925	7,722	8,893	10,062	11,585	10,988	10,955	9,991
75-79	3,725	4,500	5,054	6,621	7,691	8,772	10,171	9,707	9,733
80-84	2,284	2,863	3,456	3,933	5,204	6,118	7,055	8,259	7,947
85+	1,923	2,326	2,793	3,399	4,039	5,146	6,343	7,626	9,133
Total	147,122	156,971	165,983	173,409	178,834	181,885	182,626	181,261	177,878
0-14	29,767	29,789	30,007	30,782	30,608	30,210	28,890	27,262	25,670
15-64	97,747	103,162	107,297	108,896	108,743	108,266	107,471	106,825	103,905
65+	19,608	24,020	28,679	33,731	39,483	43,408	46,264	47,174	48,303
% 0-14	20.2	19.0	18.1	17.8	17.1	16.6	15.8	15.0	14.4
% 15-64	66.4	65.7	64.6	62.8	60.8	59.5	58.8	58.9	58.4
% 65+	13.3	15.3	17.3	19.5	22.1	23.9	25.3	26.0	27.2
% 80+	2.9	3.3	3.8	4.2	5.2	6.2	7.3	8.8	9.6

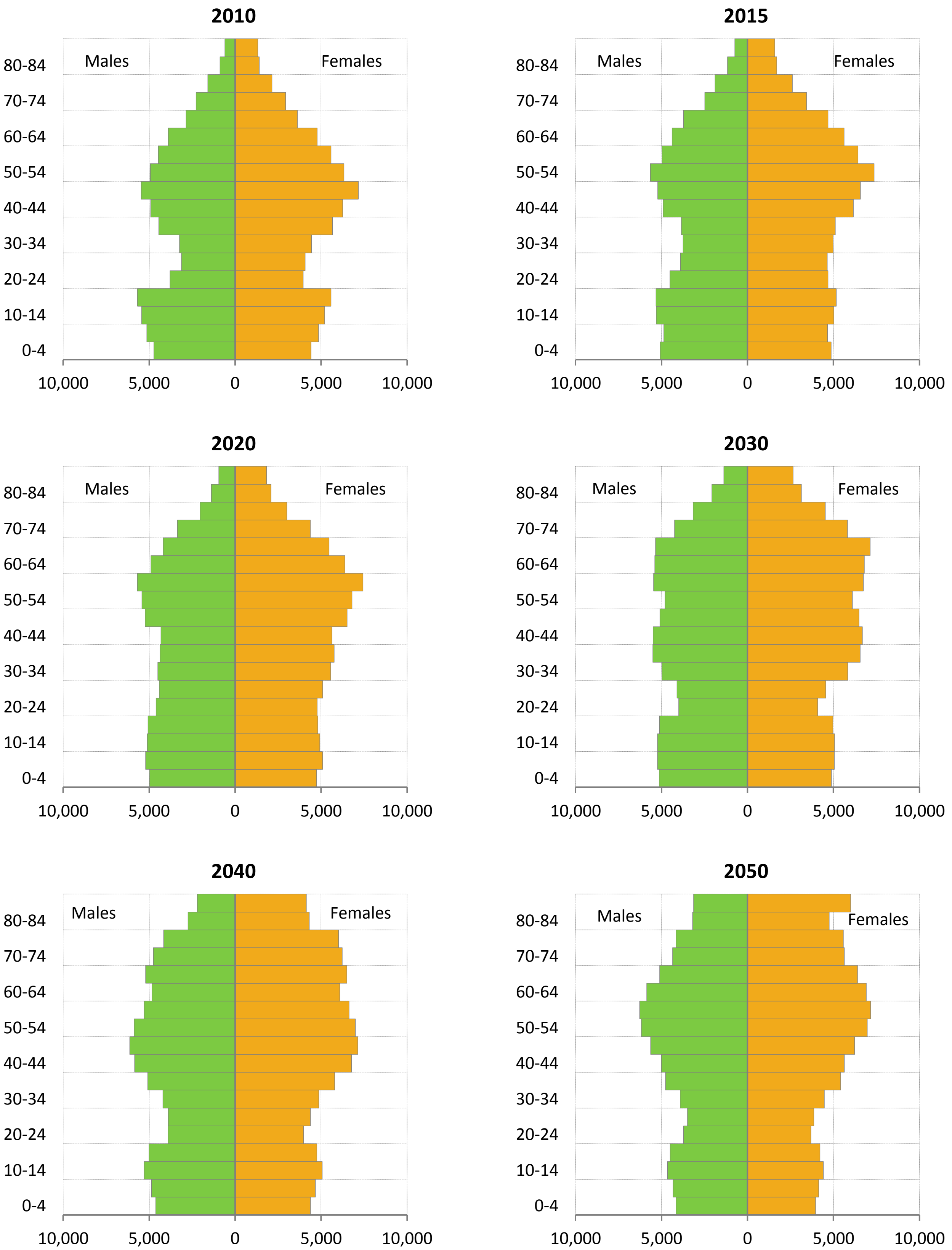
Male

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,726	5,087	4,962	5,181	5,130	4,876	4,611	4,399	4,162
5-9	5,139	4,864	5,212	5,056	5,242	5,160	4,873	4,577	4,333
10-14	5,442	5,301	5,102	5,421	5,237	5,399	5,291	4,980	4,658
15-19	5,676	5,328	5,070	4,838	5,118	4,890	5,006	4,853	4,496
20-24	3,794	4,515	4,599	4,296	4,007	4,209	3,904	3,942	3,711
25-29	3,129	3,902	4,420	4,452	4,096	3,747	3,885	3,519	3,492
30-34	3,240	3,751	4,504	4,973	4,966	4,583	4,206	4,310	3,914
35-39	4,444	3,843	4,369	5,078	5,513	5,485	5,083	4,684	4,765
40-44	4,907	4,909	4,320	4,809	5,485	5,898	5,851	5,431	5,015
45-49	5,469	5,224	5,234	4,628	5,089	5,741	6,133	6,069	5,634
50-54	4,925	5,646	5,415	5,409	4,802	5,245	5,876	6,250	6,175
55-59	4,466	4,963	5,691	5,465	5,458	4,869	5,299	5,912	6,275
60-64	3,883	4,381	4,893	5,592	5,389	5,395	4,839	5,258	5,855
65-69	2,848	3,724	4,186	4,674	5,344	5,179	5,204	4,695	5,102
70-74	2,268	2,488	3,350	3,781	4,245	4,877	4,758	4,806	4,363
75-79	1,589	1,889	2,042	2,770	3,160	3,583	4,152	4,084	4,154
80-84	884	1,158	1,372	1,504	2,066	2,390	2,744	3,213	3,191
85+	600	740	956	1,183	1,383	1,796	2,203	2,629	3,131
Total	67,429	71,713	75,697	79,109	81,730	83,322	83,917	83,610	82,428
0-14	15,307	15,252	15,277	15,658	15,610	15,434	14,776	13,956	13,153
15-64	43,933	46,462	48,515	49,539	49,923	50,063	50,080	50,228	49,334
65+	8,189	9,999	11,905	13,912	16,197	17,825	19,061	19,426	19,941
% 0-14	22.7	21.3	20.2	19.8	19.1	18.5	17.6	16.7	16.0
% 15-64	65.2	64.8	64.1	62.6	61.1	60.1	59.7	60.1	59.9
% 65+	12.1	13.9	15.7	17.6	19.8	21.4	22.7	23.2	24.2
% 80+	2.2	2.6	3.1	3.4	4.2	5.0	5.9	7.0	7.7

Female

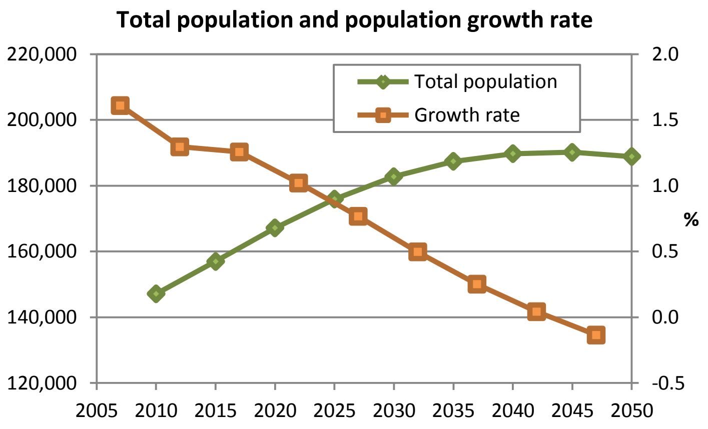
Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,409	4,864	4,737	4,933	4,877	4,634	4,381	4,179	3,954
5-9	4,849	4,650	5,075	4,897	5,048	4,954	4,673	4,383	4,143
10-14	5,202	5,023	4,918	5,293	5,073	5,188	5,060	4,744	4,420
15-19	5,571	5,161	4,812	4,650	4,969	4,697	4,760	4,579	4,211
20-24	3,964	4,678	4,773	4,336	4,089	4,327	3,973	3,954	3,692
25-29	4,076	4,638	5,101	5,089	4,558	4,232	4,391	3,958	3,860
30-34	4,447	4,987	5,565	5,930	5,838	5,249	4,865	4,964	4,473
35-39	5,660	5,102	5,762	6,261	6,563	6,425	5,793	5,364	5,417
40-44	6,257	6,162	5,634	6,231	6,678	6,941	6,767	6,099	5,635
45-49	7,164	6,575	6,516	5,942	6,492	6,904	7,133	6,928	6,231
50-54	6,330	7,360	6,796	6,698	6,098	6,616	6,999	7,200	6,971
55-59	5,580	6,422	7,433	6,856	6,740	6,134	6,628	6,990	7,173
60-64	4,765	5,615	6,392	7,362	6,795	6,678	6,083	6,561	6,908
65-69	3,625	4,682	5,469	6,210	7,143	6,608	6,503	5,933	6,398
70-74	2,935	3,437	4,372	5,112	5,818	6,708	6,230	6,149	5,627
75-79	2,136	2,611	3,012	3,851	4,531	5,189	6,019	5,622	5,579
80-84	1,400	1,705	2,084	2,429	3,138	3,728	4,311	5,046	4,756
85+	1,323	1,586	1,837	2,216	2,656	3,350	4,140	4,997	6,002
Total	79,693	85,258	90,286	94,300	97,104	98,563	98,709	97,651	95,450
0-14	14,460	14,537	14,730	15,124	14,998	14,776	14,115	13,307	12,517
15-64	53,814	56,700	58,782	59,357	58,820	58,203	57,391	56,597	54,572
65+	11,419	14,021	16,774	19,819	23,286	25,584	27,203	27,747	28,362
% 0-14	18.1	17.1	16.3	16.0	15.4	15.0	14.3	13.6	13.1
% 15-64	67.5	66.5	65.1	62.9	60.6	59.1	58.1	58.0	57.2
% 65+	14.3	16.4	18.6	21.0	24.0	26.0	27.6	28.4	29.7
% 80+	3.4	3.9	4.3	4.9	6.0	7.2	8.6	10.3	11.3

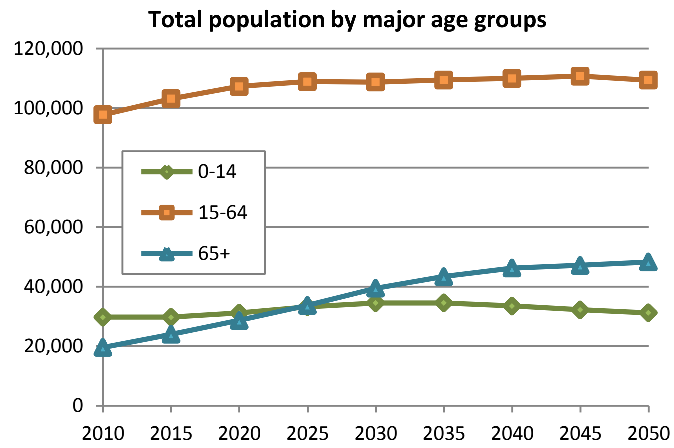
Population pyramids A 1 Standard migration variant, 2010-2050

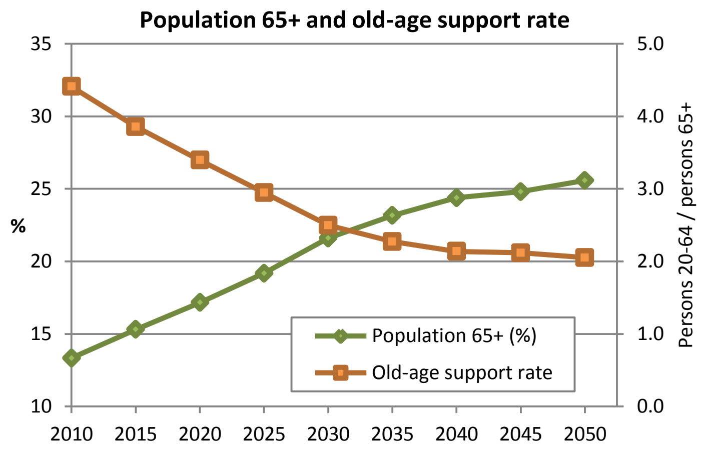


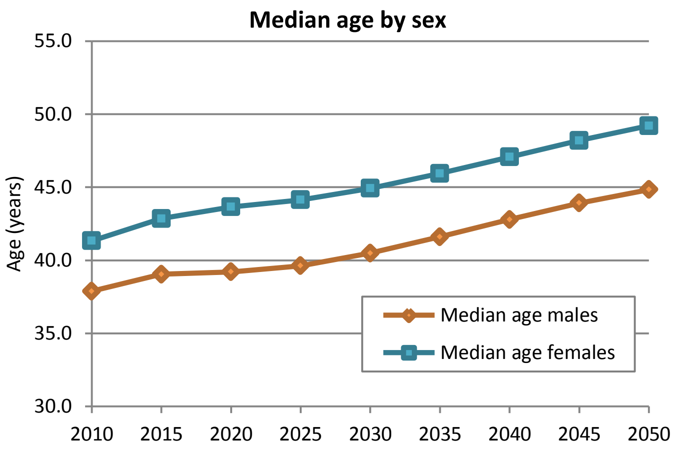
A.2 Constant fertility variant: figures and tables

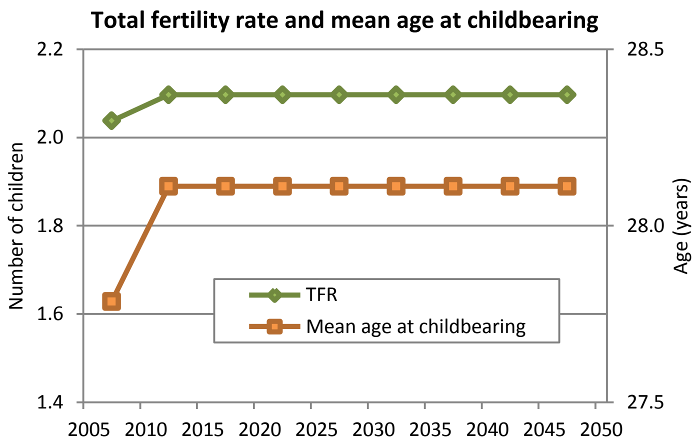
Figures A 2 Constant fertility variant











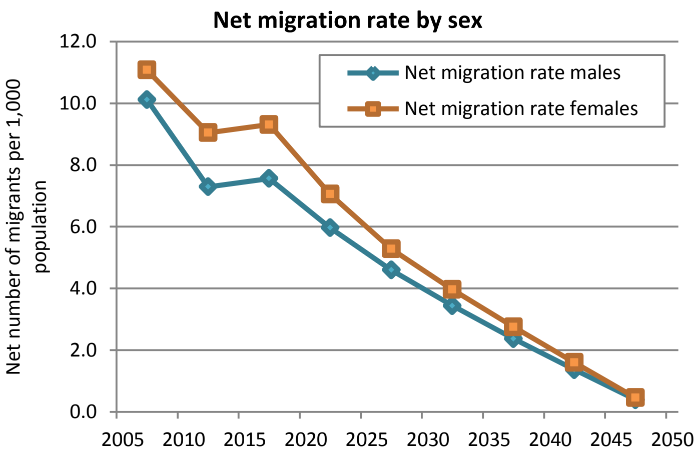


Table A 3 Population indicators constant fertility variant, 2010-2050

	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total Population									
Total population	147,122	156,971	167,151	175,907	182,780	187,375	189,740	190,150	188,877
Population density (persons per square km)	331	354	376	396	412	422	427	428	425
Median age (years)	39.9	41.3	41.7	42.2	42.9	43.9	45.1	46.3	47.1
Sex ratio (males per 100 females)	84.6	84.1	84.0	84.2	84.6	85.1	85.7	86.5	87.4
Dependency ratios (per 100)									
Total dependency ratio	51	52	56	62	68	71	73	72	73
Child dependency ratio	30	29	29	31	32	32	30	29	29
Old-age dependency ratio	20	23	27	31	36	40	42	43	44
Aging									
Population 65+ (%)	13.3	15.3	17.2	19.2	21.6	23.2	24.4	24.8	25.6
Population 80+ (as % of population 65+)	21.5	21.6	21.8	21.7	23.4	25.9	29.0	33.7	35.4
Old-age support rate	4.4	3.9	3.4	2.9	2.5	2.3	2.1	2.1	2.1

	2005-2009	2010-2014	2015-2019	2020-2024	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049
Rates of population change									
Annual rate of population change (percentage)	1.6	1.3	1.3	1.0	0.8	0.5	0.3	0.0	-0.1
Rate of natural increase (per 1,000 population)	5.5	4.7	4.1	3.7	2.7	1.2	-0.1	-1.1	-1.8
Population doubling time (years)	43	53	55	68	90	140	276	1602	-
Mortality									
Crude death rate per 1,000 population	8.0	8.4	9.4	9.8	10.2	10.8	11.5	12.2	12.8
Under-five mortality (5q0) per 1,000 live births	13.1	10.9	11.5	10.2	9.1	8.1	7.3	6.7	6.1
Adult mortality (45q15) per 1,000	106	100	100	92	85	78	73	68	63
Life expectancy at birth (years)	76.7	78.1	77.9	78.8	79.6	80.4	81.1	81.8	82.4
Male life expectancy at birth (years)	72.9	74.8	74.6	75.6	76.6	77.6	78.4	79.1	79.8
Female life expectancy at birth (years)	80.1	81.0	80.8	81.5	82.2	82.8	83.4	84.0	84.6
Life expectancy at age 15 (years)	63.3	64.0	64.0	64.7	65.4	66.2	66.8	67.4	68.0
Life expectancy at age 65 (years)	18.2	18.7	18.7	19.1	19.6	20.0	20.4	20.8	21.2
Fertility									
Crude birth rate per 1,000 population	13.4	13.1	13.4	13.4	12.9	12.1	11.4	11.1	11.0
Total fertility (children per woman)	2.04	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Sex ratio at birth (males per 100 females)	107	104	106	106	106	106	106	106	106
Net reproduction rate	0.97	1.01	1.03	1.05	1.06	1.06	1.05	1.04	1.04
Mean age childbearing (years)	27.8	28.1	28.1	28.1	28.1	28.1	28.1	28.1	28.1
Births and deaths									
Number of births	9,491	9,970	10,890	11,503	11,546	11,170	10,764	10,536	10,444
Number of deaths	5,623	6,388	7,607	8,371	9,128	10,018	10,829	11,543	12,123
Births minus deaths	3,868	3,582	3,283	3,133	2,419	1,152	-65	-1,006	-1,679
International migration									
Net number of migrants	7,507	6,267	6,897	5,623	4,455	3,443	2,430	1,417	405
Net migration rate (per 1,000)	10.6	8.2	8.5	6.6	5.0	3.7	2.6	1.5	0.4

Table A 4 Population by age and sex, constant fertility variant, 2010-2050

Total

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	9,135	9,951	10,868	11,446	11,459	11,058	10,624	10,366	10,241
5-9	9,988	9,514	10,287	11,120	11,619	11,564	11,093	10,590	10,262
10-14	10,644	10,324	10,020	10,714	11,476	11,915	11,800	11,269	10,706
15-19	11,247	10,489	9,882	9,488	10,088	10,751	11,092	10,879	10,251
20-24	7,758	9,193	9,372	8,632	8,096	8,536	9,038	9,219	8,847
25-29	7,205	8,540	9,521	9,541	8,654	7,980	8,276	8,633	8,671
30-34	7,687	8,738	10,069	10,903	10,804	9,832	9,071	9,275	9,539
35-39	10,104	8,945	10,130	11,339	12,075	11,910	10,875	10,049	10,183
40-44	11,164	11,071	9,954	11,040	12,163	12,839	12,618	11,531	10,650
45-49	12,633	11,799	11,749	10,570	11,581	12,645	13,266	12,996	11,866
50-54	11,255	13,006	12,211	12,107	10,899	11,861	12,874	13,450	13,146
55-59	10,046	11,385	13,123	12,321	12,198	11,003	11,927	12,902	13,448
60-64	8,648	9,996	11,285	12,954	12,184	12,074	10,922	11,818	12,763
65-69	6,473	8,406	9,654	10,884	12,487	11,787	11,706	10,628	11,500
70-74	5,203	5,925	7,722	8,893	10,062	11,585	10,988	10,955	9,991
75-79	3,725	4,500	5,054	6,621	7,691	8,772	10,171	9,707	9,733
80-84	2,284	2,863	3,456	3,933	5,204	6,118	7,055	8,259	7,947
85+	1,923	2,326	2,793	3,399	4,039	5,146	6,343	7,626	9,133
Total	147,122	156,971	167,151	175,907	182,780	187,375	189,740	190,150	188,877
0-14	29,767	29,789	31,175	33,280	34,554	34,537	33,516	32,225	31,210
15-64	97,747	103,162	107,297	108,896	108,743	109,430	109,959	110,752	109,364
65+	19,608	24,020	28,679	33,731	39,483	43,408	46,264	47,174	48,303
% 0-14	20.2	19.0	18.7	18.9	18.9	18.4	17.7	16.9	16.5
% 15-64	66.4	65.7	64.2	61.9	59.5	58.4	58.0	58.2	57.9
% 65+	13.3	15.3	17.2	19.2	21.6	23.2	24.4	24.8	25.6
% 80+	2.9	3.3	3.7	4.2	5.1	6.0	7.1	8.4	9.0

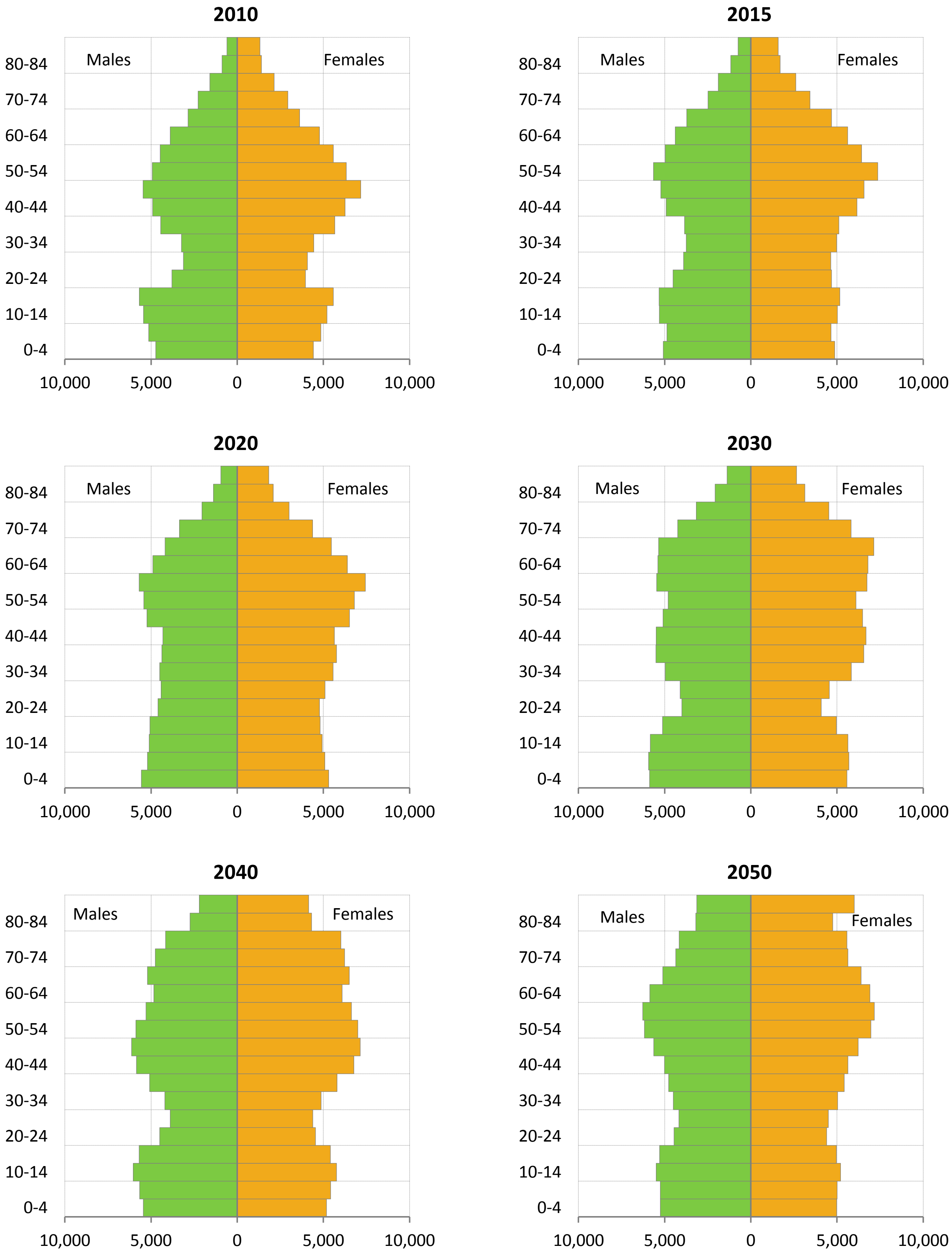
Male

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,726	5,087	5,563	5,866	5,877	5,672	5,450	5,319	5,255
5-9	5,139	4,864	5,212	5,655	5,926	5,905	5,669	5,415	5,251
10-14	5,442	5,301	5,102	5,421	5,836	6,081	6,036	5,774	5,496
15-19	5,676	5,328	5,070	4,838	5,118	5,488	5,687	5,596	5,290
20-24	3,794	4,515	4,599	4,296	4,007	4,209	4,499	4,620	4,452
25-29	3,129	3,902	4,420	4,452	4,096	3,747	3,885	4,110	4,167
30-34	3,240	3,751	4,504	4,973	4,966	4,583	4,206	4,310	4,502
35-39	4,444	3,843	4,369	5,078	5,513	5,485	5,083	4,684	4,765
40-44	4,907	4,909	4,320	4,809	5,485	5,898	5,851	5,431	5,015
45-49	5,469	5,224	5,234	4,628	5,089	5,741	6,133	6,069	5,634
50-54	4,925	5,646	5,415	5,409	4,802	5,245	5,876	6,250	6,175
55-59	4,466	4,963	5,691	5,465	5,458	4,869	5,299	5,912	6,275
60-64	3,883	4,381	4,893	5,592	5,389	5,395	4,839	5,258	5,855
65-69	2,848	3,724	4,186	4,674	5,344	5,179	5,204	4,695	5,102
70-74	2,268	2,488	3,350	3,781	4,245	4,877	4,758	4,806	4,363
75-79	1,589	1,889	2,042	2,770	3,160	3,583	4,152	4,084	4,154
80-84	884	1,158	1,372	1,504	2,066	2,390	2,744	3,213	3,191
85+	600	740	956	1,183	1,383	1,796	2,203	2,629	3,131
Total	67,429	71,713	76,297	80,393	83,759	86,144	87,573	88,176	88,075
0-14	15,307	15,252	15,877	16,942	17,639	17,659	17,155	16,508	16,002
15-64	43,933	46,462	48,515	49,539	49,923	50,661	51,357	52,242	52,131
65+	8,189	9,999	11,905	13,912	16,197	17,825	19,061	19,426	19,941
% 0-14	22.7	21.3	20.8	21.1	21.1	20.5	19.6	18.7	18.2
% 15-64	65.2	64.8	63.6	61.6	59.6	58.8	58.6	59.2	59.2
% 65+	12.1	13.9	15.6	17.3	19.3	20.7	21.8	22.0	22.6
% 80+	2.2	2.6	3.1	3.3	4.1	4.9	5.6	6.6	7.2

Female

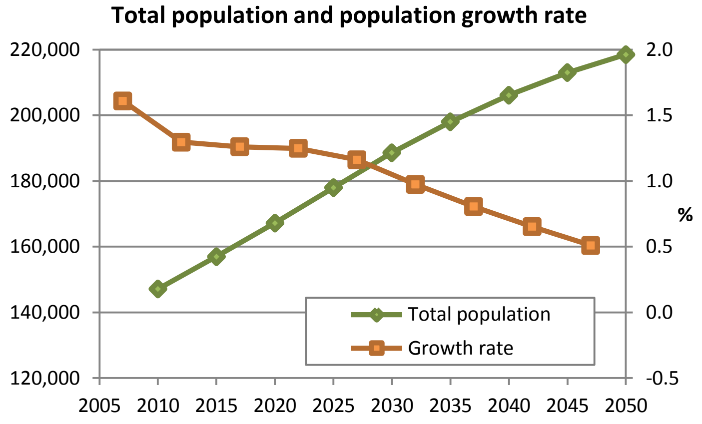
Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,409	4,864	5,305	5,580	5,582	5,386	5,174	5,047	4,986
5-9	4,849	4,650	5,075	5,464	5,694	5,659	5,424	5,175	5,011
10-14	5,202	5,023	4,918	5,293	5,640	5,834	5,764	5,495	5,211
15-19	5,571	5,161	4,812	4,650	4,969	5,263	5,405	5,283	4,961
20-24	3,964	4,678	4,773	4,336	4,089	4,327	4,538	4,599	4,395
25-29	4,076	4,638	5,101	5,089	4,558	4,232	4,391	4,523	4,504
30-34	4,447	4,987	5,565	5,930	5,838	5,249	4,865	4,964	5,037
35-39	5,660	5,102	5,762	6,261	6,563	6,425	5,793	5,364	5,417
40-44	6,257	6,162	5,634	6,231	6,678	6,941	6,767	6,099	5,635
45-49	7,164	6,575	6,516	5,942	6,492	6,904	7,133	6,928	6,231
50-54	6,330	7,360	6,796	6,698	6,098	6,616	6,999	7,200	6,971
55-59	5,580	6,422	7,433	6,856	6,740	6,134	6,628	6,990	7,173
60-64	4,765	5,615	6,392	7,362	6,795	6,678	6,083	6,561	6,908
65-69	3,625	4,682	5,469	6,210	7,143	6,608	6,503	5,933	6,398
70-74	2,935	3,437	4,372	5,112	5,818	6,708	6,230	6,149	5,627
75-79	2,136	2,611	3,012	3,851	4,531	5,189	6,019	5,622	5,579
80-84	1,400	1,705	2,084	2,429	3,138	3,728	4,311	5,046	4,756
85+	1,323	1,586	1,837	2,216	2,656	3,350	4,140	4,997	6,002
Total	79,693	85,258	90,853	95,513	99,022	101,231	102,167	101,974	100,802
0-14	14,460	14,537	15,298	16,338	16,916	16,878	16,362	15,717	15,207
15-64	53,814	56,700	58,782	59,357	58,820	58,769	58,602	58,510	57,232
65+	11,419	14,021	16,774	19,819	23,286	25,584	27,203	27,747	28,362
% 0-14	18.1	17.1	16.8	17.1	17.1	16.7	16.0	15.4	15.1
% 15-64	67.5	66.5	64.7	62.1	59.4	58.1	57.4	57.4	56.8
% 65+	14.3	16.4	18.5	20.7	23.5	25.3	26.6	27.2	28.1
% 80+	3.4	3.9	4.3	4.9	5.9	7.0	8.3	9.8	10.7

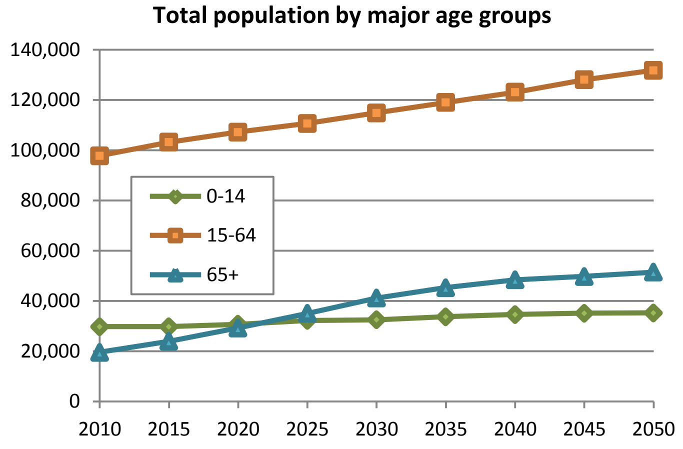
Population pyramids A 2 Constant fertility variant, 2010-2050

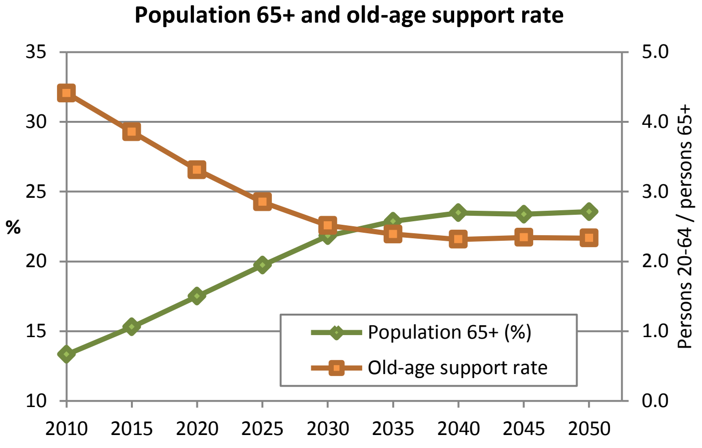


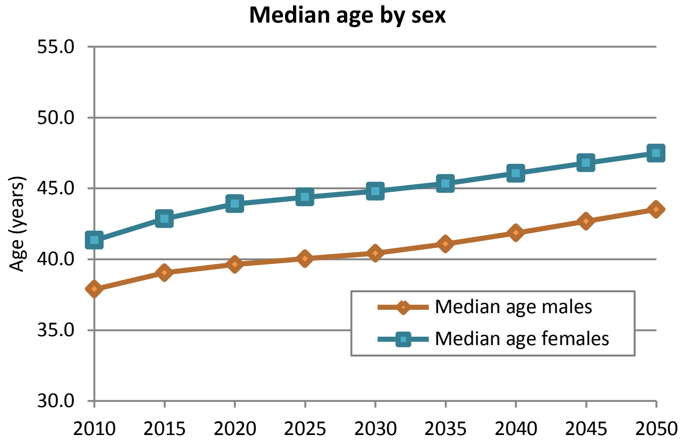
A.3 High immigration variant: figures and tables

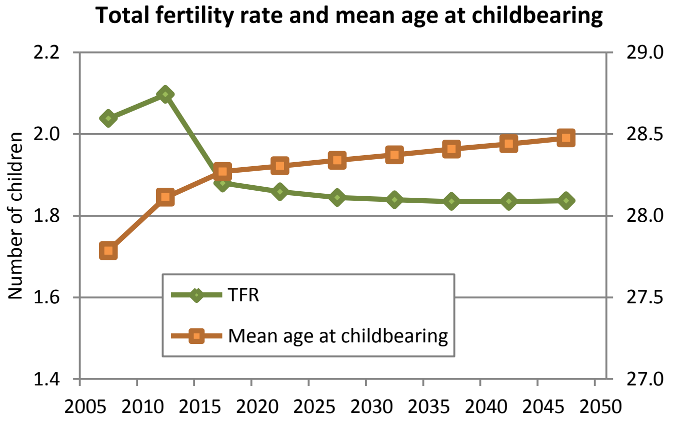
Figures A 3 High immigration variant











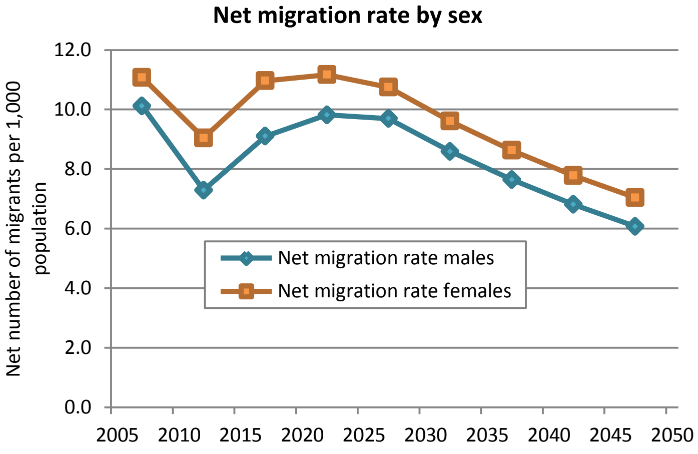


Table A 5 Population indicators high immigration variant, 2010-2050

	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total Population									
Total population	147,122	156,971	167,184	177,948	188,588	198,000	206,134	212,967	218,468
Population density (persons per square km)	331	354	377	401	425	446	464	480	492
Median age (years)	39.9	41.3	42.1	42.6	42.9	43.4	44.2	45.0	45.7
Sex ratio (males per 100 females)	84.6	84.1	83.8	83.6	83.7	83.9	84.1	84.5	84.9
Dependency ratios (per 100)									
Total dependency ratio	51	52	56	61	64	66	67	66	66
Child dependency ratio	30	29	29	29	28	28	28	27	27
Old-age dependency ratio	20	23	27	32	36	38	39	39	39
Aging									
Population 65+ (%)	13.3	15.3	17.5	19.7	21.8	22.9	23.5	23.4	23.6
Population 80+ (as % of population 65+)	21.5	21.6	21.6	21.4	23.3	26.1	29.1	33.5	34.8
Old-age support rate	4.4	3.9	3.3	2.9	2.5	2.4	2.3	2.3	2.3

	2005-2009	2010-2014	2015-2019	2020-2024	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049
Rates of population change									
Annual rate of population change (percentage)	1.6	1.3	1.3	1.2	1.2	1.0	0.8	0.7	0.5
Rate of natural increase (per 1,000 population)	5.5	4.7	2.5	1.9	1.3	0.6	-0.1	-0.8	-1.5
Population doubling time (years)	43	53	55	56	60	71	86	106	136
Mortality									
Crude death rate per 1,000 population	8.0	8.4	9.4	9.9	10.3	10.8	11.3	11.6	11.9
Under-five mortality (5q0) per 1,000 live births	13.1	10.9	11.5	10.2	9.1	8.1	7.3	6.7	6.1
Adult mortality (45q15) per 1,000	106	100	100	92	85	78	73	68	63
Life expectancy at birth (years)	76.7	78.1	77.9	78.8	79.6	80.4	81.1	81.8	82.4
Male life expectancy at birth (years)	72.9	74.8	74.6	75.6	76.6	77.6	78.4	79.1	79.8
Female life expectancy at birth (years)	80.1	81.0	80.8	81.5	82.2	82.8	83.4	84.0	84.6
Life expectancy at age 15 (years)	63.3	64.0	64.0	64.7	65.4	66.2	66.8	67.4	68.0
Life expectancy at age 65 (years)	18.2	18.7	18.7	19.1	19.6	20.0	20.4	20.8	21.2
Fertility									
Crude birth rate per 1,000 population	13.4	13.1	11.9	11.8	11.6	11.4	11.1	10.8	10.4
Total fertility (children per woman)	2.04	2.10	1.88	1.86	1.84	1.84	1.83	1.83	1.84
Sex ratio at birth (males per 100 females)	107	104	106	106	106	106	106	106	106
Net reproduction rate	0.97	1.01	0.92	0.93	0.93	0.93	0.93	0.94	0.94
Mean age childbearing (years)	27.8	28.1	28.3	28.3	28.3	28.4	28.4	28.4	28.5
Births and deaths									
Number of births	9,491	9,970	9,668	10,209	10,675	11,029	11,252	11,342	11,251
Number of deaths	5,623	6,388	7,651	8,549	9,444	10,456	11,382	12,196	12,866
Births minus deaths	3,868	3,582	2,017	1,660	1,231	573	-130	-854	-1,615
International migration									
Net number of migrants	7,507	6,267	8,196	9,104	9,410	8,838	8,264	7,687	7,116
Net migration rate (per 1,000)	10.6	8.2	10.1	10.6	10.3	9.1	8.2	7.3	6.6

Table A 6 Population by age and sex, high immigration variant, 2010-2050

Total

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	9,135	9,951	9,686	10,256	10,753	11,095	11,306	11,382	11,278
5-9	9,988	9,514	10,562	10,363	10,755	11,215	11,519	11,692	11,731
10-14	10,644	10,324	10,493	11,621	11,035	11,392	11,815	12,084	12,221
15-19	11,247	10,489	10,322	10,541	11,286	10,663	10,981	11,365	11,595
20-24	7,758	9,193	9,448	9,311	9,557	10,245	9,568	9,828	10,156
25-29	7,205	8,540	9,304	9,637	9,933	10,110	10,727	9,984	10,174
30-34	7,687	8,738	9,816	10,692	11,525	11,758	11,873	12,424	11,620
35-39	10,104	8,945	9,828	11,002	12,386	13,165	13,346	13,410	13,909
40-44	11,164	11,071	9,866	10,834	12,249	13,585	14,321	14,461	14,485
45-49	12,633	11,799	11,735	10,622	11,728	13,100	14,395	15,094	15,201
50-54	11,255	13,006	12,175	12,181	11,238	12,310	13,643	14,902	15,573
55-59	10,046	11,385	13,214	12,472	12,480	11,557	12,602	13,903	15,133
60-64	8,648	9,996	11,485	13,317	12,481	12,504	11,626	12,648	13,919
65-69	6,473	8,406	9,882	11,361	12,943	12,186	12,240	11,430	12,431
70-74	5,203	5,925	7,906	9,323	10,563	12,072	11,431	11,528	10,822
75-79	3,725	4,500	5,146	6,890	8,092	9,240	10,633	10,136	10,286
80-84	2,284	2,863	3,494	4,051	5,429	6,454	7,450	8,653	8,321
85+	1,923	2,326	2,822	3,472	4,156	5,348	6,659	8,042	9,612
Total	147,122	156,971	167,184	177,948	188,588	198,000	206,134	212,967	218,468
0-14	29,767	29,789	30,741	32,241	32,543	33,701	34,640	35,158	35,230
15-64	97,747	103,162	107,192	110,611	114,862	118,997	123,081	128,020	131,765
65+	19,608	24,020	29,250	35,096	41,183	45,301	48,412	49,790	51,472
% 0-14	20.2	19.0	18.4	18.1	17.3	17.0	16.8	16.5	16.1
% 15-64	66.4	65.7	64.1	62.2	60.9	60.1	59.7	60.1	60.3
% 65+	13.3	15.3	17.5	19.7	21.8	22.9	23.5	23.4	23.6
% 80+	2.9	3.3	3.8	4.2	5.1	6.0	6.8	7.8	8.2

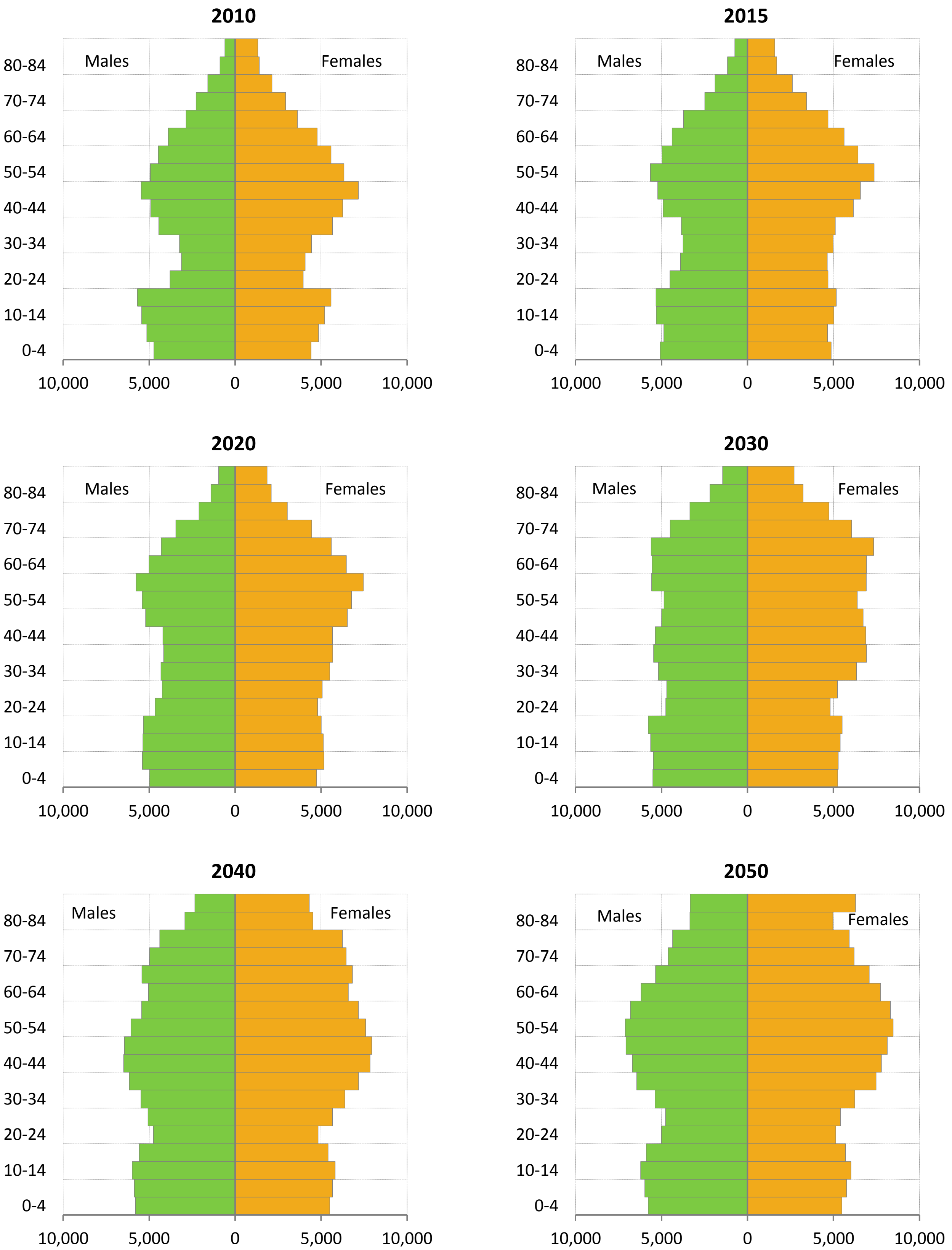
Male

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,726	5,087	4,968	5,264	5,509	5,686	5,795	5,835	5,781
5-9	5,139	4,864	5,396	5,316	5,475	5,702	5,861	5,952	5,974
10-14	5,442	5,301	5,364	5,942	5,640	5,783	5,993	6,135	6,210
15-19	5,676	5,328	5,315	5,411	5,774	5,455	5,580	5,771	5,895
20-24	3,794	4,515	4,653	4,661	4,751	5,089	4,747	4,847	5,013
25-29	3,129	3,902	4,241	4,416	4,701	4,764	5,072	4,704	4,774
30-34	3,240	3,751	4,312	4,705	5,185	5,445	5,483	5,763	5,372
35-39	4,444	3,843	4,158	4,767	5,467	5,924	6,163	6,180	6,438
40-44	4,907	4,909	4,199	4,558	5,365	6,043	6,480	6,700	6,700
45-49	5,469	5,224	5,203	4,547	5,000	5,786	6,444	6,864	7,069
50-54	4,925	5,646	5,408	5,429	4,851	5,290	6,055	6,697	7,104
55-59	4,466	4,963	5,758	5,570	5,570	5,011	5,439	6,186	6,813
60-64	3,883	4,381	5,014	5,812	5,555	5,569	5,042	5,461	6,187
65-69	2,848	3,724	4,296	4,925	5,599	5,385	5,417	4,937	5,344
70-74	2,268	2,488	3,448	3,995	4,498	5,136	4,975	5,030	4,614
75-79	1,589	1,889	2,106	2,925	3,351	3,809	4,386	4,284	4,362
80-84	884	1,158	1,398	1,582	2,188	2,541	2,924	3,401	3,355
85+	600	740	969	1,219	1,446	1,896	2,340	2,802	3,330
Total	67,429	71,713	76,206	81,044	85,925	90,313	94,196	97,548	100,334
0-14	15,307	15,252	15,728	16,522	16,624	17,170	17,648	17,921	17,965
15-64	43,933	46,462	48,261	49,877	52,220	54,375	56,505	59,173	61,365
65+	8,189	9,999	12,217	14,645	17,081	18,767	20,042	20,454	21,005
% 0-14	22.7	21.3	20.6	20.4	19.3	19.0	18.7	18.4	17.9
% 15-64	65.2	64.8	63.3	61.5	60.8	60.2	60.0	60.7	61.2
% 65+	12.1	13.9	16.0	18.1	19.9	20.8	21.3	21.0	20.9
% 80+	2.2	2.6	3.1	3.5	4.2	4.9	5.6	6.4	6.7

Female

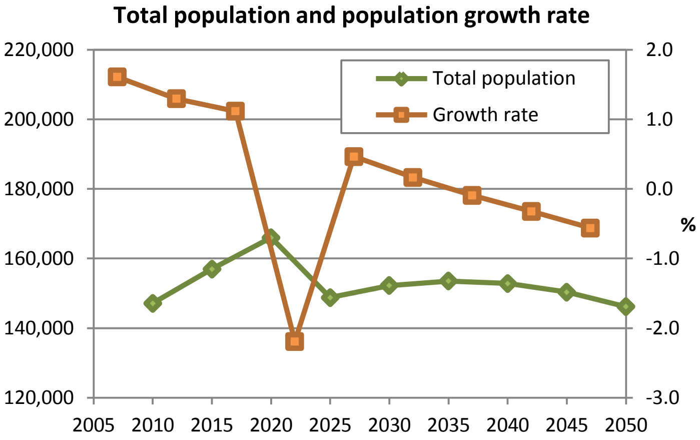
Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,409	4,864	4,718	4,992	5,245	5,409	5,511	5,547	5,497
5-9	4,849	4,650	5,166	5,048	5,280	5,513	5,658	5,740	5,758
10-14	5,202	5,023	5,129	5,679	5,395	5,609	5,823	5,949	6,012
15-19	5,571	5,161	5,008	5,130	5,513	5,208	5,401	5,594	5,700
20-24	3,964	4,678	4,795	4,650	4,805	5,156	4,820	4,982	5,143
25-29	4,076	4,638	5,063	5,221	5,231	5,346	5,656	5,280	5,401
30-34	4,447	4,987	5,503	5,987	6,341	6,313	6,390	6,661	6,248
35-39	5,660	5,102	5,670	6,235	6,918	7,241	7,184	7,231	7,471
40-44	6,257	6,162	5,667	6,276	6,884	7,542	7,841	7,761	7,785
45-49	7,164	6,575	6,533	6,075	6,728	7,314	7,950	8,229	8,132
50-54	6,330	7,360	6,767	6,752	6,387	7,020	7,588	8,205	8,470
55-59	5,580	6,422	7,456	6,902	6,910	6,546	7,163	7,717	8,320
60-64	4,765	5,615	6,470	7,505	6,926	6,936	6,583	7,188	7,732
65-69	3,625	4,682	5,586	6,436	7,343	6,802	6,823	6,494	7,087
70-74	2,935	3,437	4,458	5,328	6,066	6,936	6,456	6,498	6,208
75-79	2,136	2,611	3,040	3,965	4,741	5,431	6,247	5,852	5,924
80-84	1,400	1,705	2,096	2,470	3,241	3,913	4,526	5,252	4,966
85+	1,323	1,586	1,853	2,252	2,710	3,452	4,319	5,241	6,283
Total	79,693	85,258	90,978	96,904	102,664	107,687	111,938	115,419	118,134
0-14	14,460	14,537	15,013	15,719	15,920	16,531	16,992	17,236	17,266
15-64	53,814	56,700	58,931	60,734	62,642	64,622	66,576	68,847	70,401
65+	11,419	14,021	17,033	20,451	24,101	26,534	28,371	29,336	30,467
% 0-14	18.1	17.1	16.5	16.2	15.5	15.4	15.2	14.9	14.6
% 15-64	67.5	66.5	64.8	62.7	61.0	60.0	59.5	59.6	59.6
% 65+	14.3	16.4	18.7	21.1	23.5	24.6	25.3	25.4	25.8
% 80+	3.4	3.9	4.3	4.9	5.8	6.8	7.9	9.1	9.5

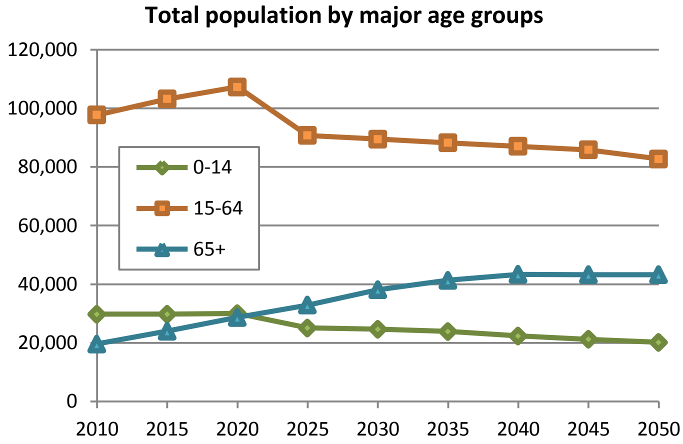
Population pyramids A 3 High immigration variant, 2010-2050

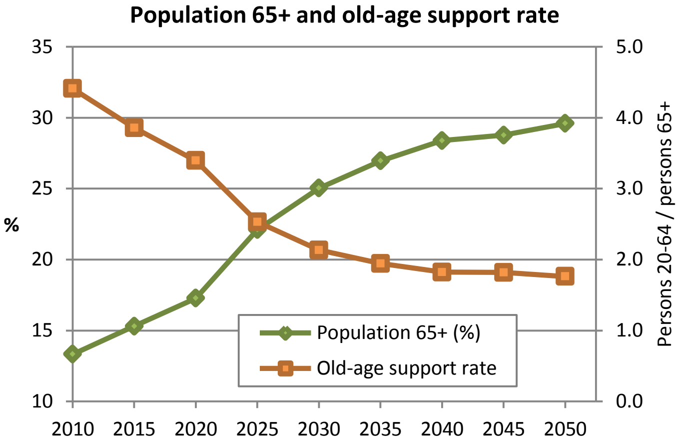


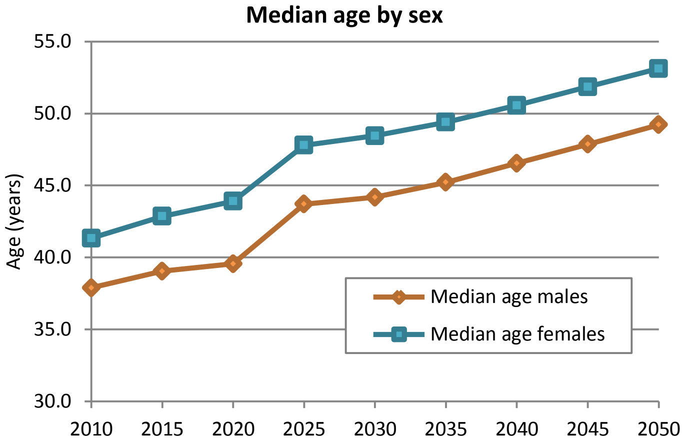
A.4 Emigration wave variant: figures and tables

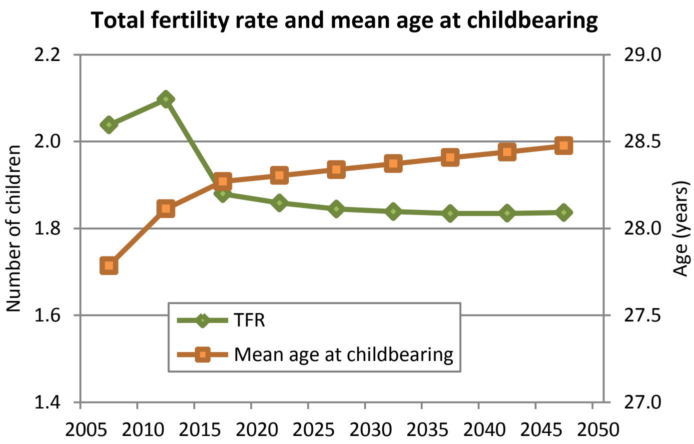
Figures A 4 Emigration wave variant











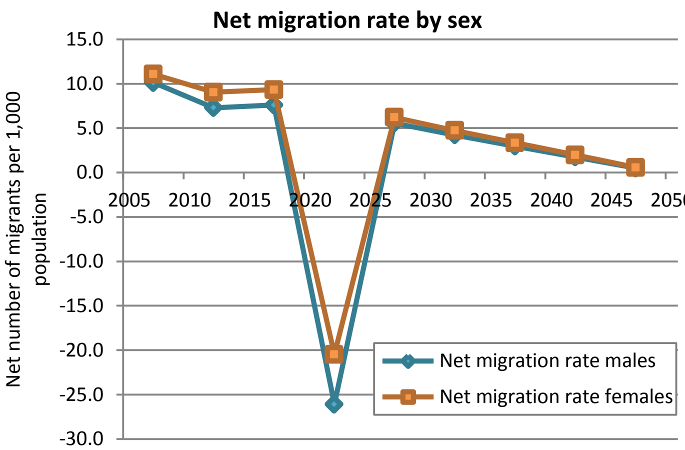


Table A 7 Population indicators emigration wave variant, 2010-2050

	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total Population									
Total population	147,122	156,971	165,983	148,755	152,242	153,504	152,801	150,346	146,170
Population density (persons per square km)	331	354	374	335	343	346	344	339	329
Median age (years)	39.9	41.3	42.0	46.0	46.5	47.5	48.7	50.1	51.5
Sex ratio (males per 100 females)	84.6	84.1	83.8	82.0	82.2	82.4	82.9	83.4	84.2
Dependency ratios (per 100)									
Total dependency ratio	51	52	55	64	70	74	76	75	77
Child dependency ratio	30	29	28	28	28	27	26	25	24
Old-age dependency ratio	20	23	27	36	43	47	50	50	52
Aging									
Population 65+ (%)	13.3	15.3	17.3	22.1	25.0	27.0	28.4	28.8	29.6
Population 80+ (as % of population 65+)	21.5	21.6	21.8	22.1	23.9	26.7	30.0	35.2	37.3
Old-age support rate	4.4	3.9	3.4	2.5	2.1	1.9	1.8	1.8	1.8

	2005-2009	2010-2014	2015-2019	2020-2024	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049
Rates of population change									
Annual rate of population change (percentage)	1.6	1.3	1.1	-2.2	0.5	0.2	-0.1	-0.3	-0.6
Rate of natural increase (per 1,000 population)	5.5	4.7	2.6	1.1	-1.3	-2.9	-4.1	-5.1	-6.2
Population doubling time (years)	43	53	62	-	150	420	-	-	-
Mortality									
Crude death rate per 1,000 population	8.0	8.4	9.4	10.4	11.6	12.5	13.4	14.2	15.1
Under-five mortality (5q0) per 1,000 live births	13.1	10.9	11.5	10.2	9.1	8.1	7.3	6.7	6.1
Adult mortality (45q15) per 1,000	106	100	100	92	85	78	73	68	63
Life expectancy at birth (years)	76.7	78.1	77.9	78.8	79.6	80.4	81.1	81.8	82.4
Male life expectancy at birth (years)	72.9	74.8	74.6	75.6	76.6	77.6	78.4	79.1	79.8
Female life expectancy at birth (years)	80.1	81.0	80.8	81.5	82.2	82.8	83.4	84.0	84.6
Life expectancy at age 15 (years)	63.3	64.0	64.0	64.7	65.4	66.2	66.8	67.4	68.0
Life expectancy at age 65 (years)	18.2	18.7	18.7	19.1	19.6	20.0	20.4	20.8	21.2
Fertility									
Crude birth rate per 1,000 population	13.4	13.1	12.0	11.5	10.3	9.6	9.3	9.1	8.9
Total fertility (children per woman)	2.04	2.10	1.88	1.86	1.84	1.84	1.83	1.83	1.84
Sex ratio at birth (males per 100 females)	107	104	106	106	106	106	106	106	106
Net reproduction rate	0.97	1.01	0.92	0.95	0.96	0.94	0.93	0.94	0.96
Mean age childbearing (years)	27.8	28.1	28.3	28.3	28.3	28.4	28.4	28.4	28.5
Births and deaths									
Number of births	9,491	9,970	9,709	9,081	7,783	7,371	7,106	6,926	6,614
Number of deaths	5,623	6,388	7,594	8,188	8,751	9,552	10,239	10,798	11,195
Births minus deaths	3,868	3,582	2,115	893	-967	-2,181	-3,133	-3,872	-4,581
International migration									
Net number of migrants	7,507	6,267	6,897	-18,121	4,455	3,443	2,430	1,417	405
Net migration rate (per 1,000)	10.6	8.2	8.5	-23.0	5.9	4.5	3.2	1.9	0.5

Table A 8 Population by age and sex, emigration wave variant, 2010-2050

Total

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	9,135	9,951	9,700	8,278	7,727	7,287	6,990	6,777	6,432
5-9	9,988	9,514	10,287	8,125	8,456	7,836	7,326	6,960	6,676
10-14	10,644	10,324	10,020	8,711	8,483	8,754	8,075	7,504	7,078
15-19	11,247	10,489	9,882	7,522	8,087	7,762	7,934	7,158	6,490
20-24	7,758	9,193	9,372	6,115	6,138	6,542	6,058	6,070	5,135
25-29	7,205	8,540	9,521	6,841	6,150	6,031	6,291	5,665	5,533
30-34	7,687	8,738	10,069	8,635	8,119	7,340	7,131	7,298	6,582
35-39	10,104	8,945	10,130	9,220	9,819	9,238	8,394	8,116	8,213
40-44	11,164	11,071	9,954	9,075	10,058	10,596	9,960	9,061	8,726
45-49	12,633	11,799	11,749	8,889	9,634	10,558	11,041	10,358	9,413
50-54	11,255	13,006	12,211	10,818	9,244	9,941	10,814	11,251	10,537
55-59	10,046	11,385	13,123	11,373	10,938	9,384	10,047	10,881	11,289
60-64	8,648	9,996	11,285	12,275	11,270	10,856	9,354	9,994	10,798
65-69	6,473	8,406	9,654	10,452	11,845	10,920	10,548	9,132	9,755
70-74	5,203	5,925	7,722	8,648	9,669	10,996	10,188	9,881	8,600
75-79	3,725	4,500	5,054	6,521	7,481	8,431	9,656	9,000	8,781
80-84	2,284	2,863	3,456	3,889	5,125	5,952	6,782	7,841	7,368
85+	1,923	2,326	2,793	3,365	3,997	5,080	6,214	7,398	8,764
Total	147,122	156,971	165,983	148,755	152,242	153,504	152,801	150,346	146,170
0-14	29,767	29,789	30,007	25,114	24,666	23,877	22,391	21,241	20,187
15-64	97,747	103,162	107,297	90,765	89,459	88,249	87,023	85,852	82,715
65+	19,608	24,020	28,679	32,876	38,117	41,379	43,387	43,253	43,268
% 0-14	20.2	19.0	18.1	16.9	16.2	15.6	14.7	14.1	13.8
% 15-64	66.4	65.7	64.6	61.0	58.8	57.5	57.0	57.1	56.6
% 65+	13.3	15.3	17.3	22.1	25.0	27.0	28.4	28.8	29.6
% 80+	2.9	3.3	3.8	4.9	6.0	7.2	8.5	10.1	11.0

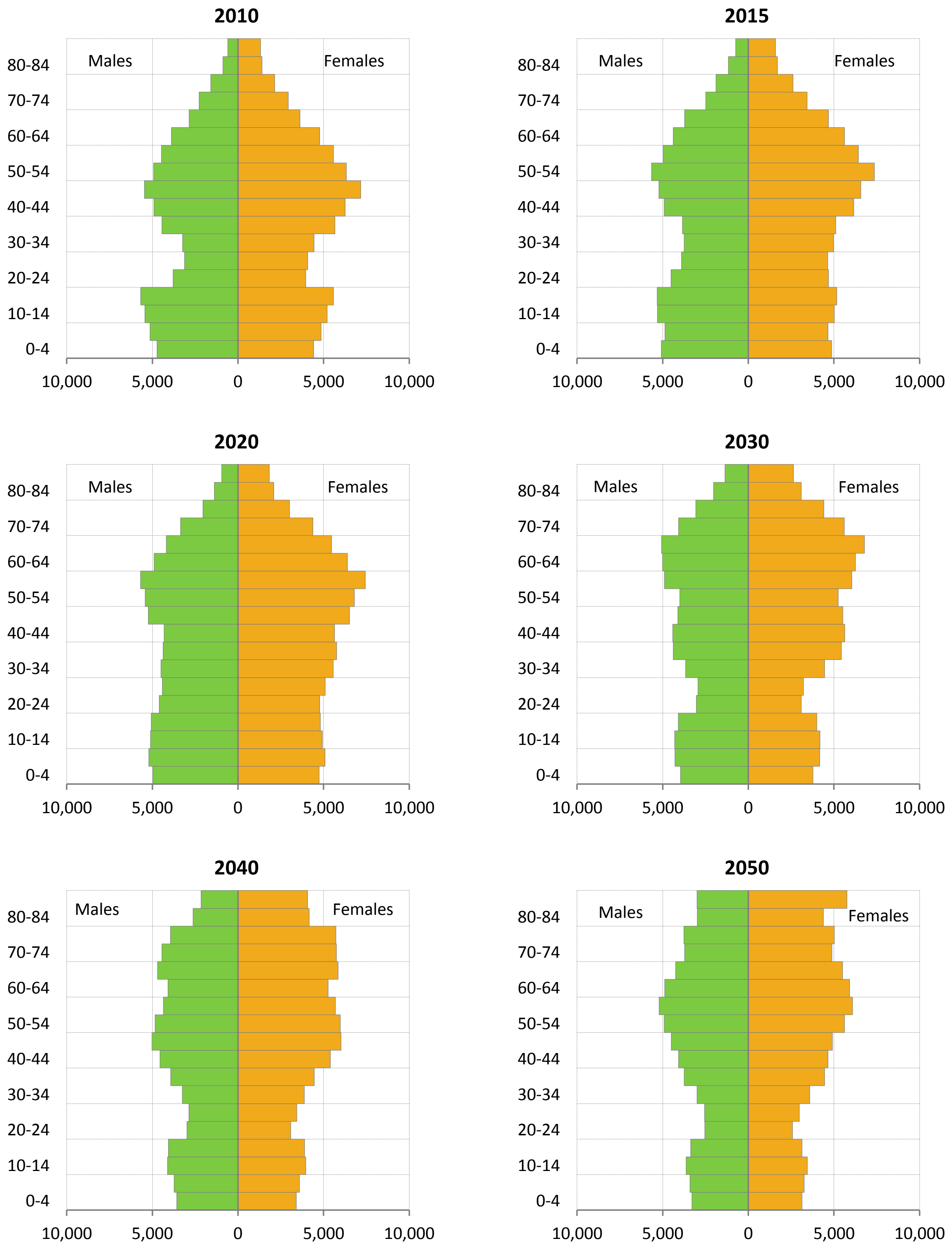
Male

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,726	5,087	4,962	4,224	3,958	3,733	3,581	3,472	3,296
5-9	5,139	4,864	5,212	4,118	4,287	3,989	3,732	3,548	3,407
10-14	5,442	5,301	5,102	4,382	4,300	4,444	4,121	3,838	3,630
15-19	5,676	5,328	5,070	3,864	4,081	3,954	4,052	3,684	3,356
20-24	3,794	4,515	4,599	3,121	3,039	3,177	2,973	2,992	2,547
25-29	3,129	3,902	4,420	3,133	2,931	2,787	2,861	2,594	2,548
30-34	3,240	3,751	4,504	3,835	3,658	3,427	3,252	3,292	2,994
35-39	4,444	3,843	4,369	4,003	4,383	4,186	3,934	3,736	3,752
40-44	4,907	4,909	4,320	3,817	4,420	4,778	4,562	4,290	4,072
45-49	5,469	5,224	5,234	3,809	4,109	4,687	5,023	4,791	4,503
50-54	4,925	5,646	5,415	4,825	3,999	4,282	4,838	5,157	4,915
55-59	4,466	4,963	5,691	5,067	4,892	4,089	4,360	4,899	5,206
60-64	3,883	4,381	4,893	5,293	5,010	4,853	4,089	4,354	4,877
65-69	2,848	3,724	4,186	4,474	5,067	4,825	4,695	3,988	4,247
70-74	2,268	2,488	3,350	3,672	4,066	4,628	4,439	4,344	3,718
75-79	1,589	1,889	2,042	2,728	3,069	3,434	3,942	3,811	3,756
80-84	884	1,158	1,372	1,478	2,035	2,322	2,630	3,050	2,979
85+	600	740	956	1,167	1,362	1,769	2,153	2,542	2,998
Total	67,429	71,713	75,697	67,010	68,665	69,363	69,236	68,384	66,802
0-14	15,307	15,252	15,277	12,724	12,544	12,165	11,433	10,859	10,333
15-64	43,933	46,462	48,515	40,767	40,522	40,221	39,945	39,790	38,771
65+	8,189	9,999	11,905	13,519	15,599	16,977	17,858	17,735	17,698
% 0-14	22.7	21.3	20.2	19.0	18.3	17.5	16.5	15.9	15.5
% 15-64	65.2	64.8	64.1	60.8	59.0	58.0	57.7	58.2	58.0
% 65+	12.1	13.9	15.7	20.2	22.7	24.5	25.8	25.9	26.5
% 80+	2.2	2.6	3.1	3.9	4.9	5.9	6.9	8.2	8.9

Female

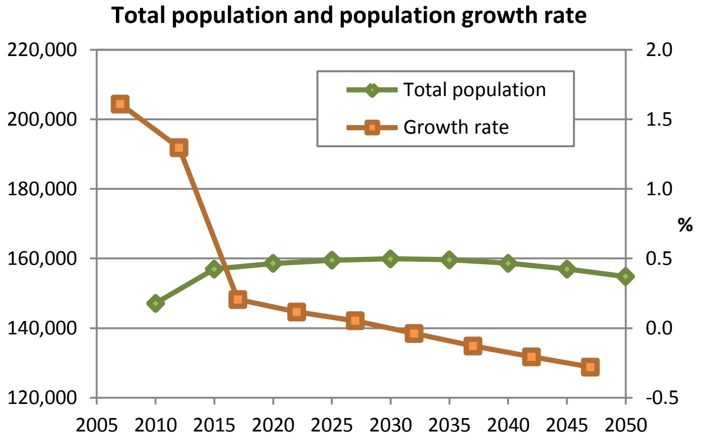
Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,409	4,864	4,737	4,054	3,770	3,554	3,409	3,305	3,136
5-9	4,849	4,650	5,075	4,007	4,169	3,848	3,594	3,412	3,269
10-14	5,202	5,023	4,918	4,329	4,183	4,310	3,954	3,666	3,448
15-19	5,571	5,161	4,812	3,658	4,006	3,807	3,882	3,474	3,134
20-24	3,964	4,678	4,773	2,995	3,099	3,365	3,085	3,078	2,588
25-29	4,076	4,638	5,101	3,709	3,219	3,244	3,430	3,071	2,985
30-34	4,447	4,987	5,565	4,800	4,461	3,913	3,879	4,005	3,588
35-39	5,660	5,102	5,762	5,218	5,436	5,052	4,460	4,380	4,461
40-44	6,257	6,162	5,634	5,258	5,639	5,819	5,398	4,771	4,654
45-49	7,164	6,575	6,516	5,080	5,525	5,871	6,017	5,567	4,910
50-54	6,330	7,360	6,796	5,993	5,245	5,659	5,976	6,095	5,621
55-59	5,580	6,422	7,433	6,306	6,046	5,296	5,687	5,982	6,082
60-64	4,765	5,615	6,392	6,981	6,261	6,003	5,265	5,640	5,921
65-69	3,625	4,682	5,469	5,978	6,779	6,095	5,853	5,144	5,507
70-74	2,935	3,437	4,372	4,977	5,603	6,368	5,749	5,537	4,882
75-79	2,136	2,611	3,012	3,793	4,412	4,997	5,714	5,189	5,025
80-84	1,400	1,705	2,084	2,411	3,090	3,630	4,152	4,791	4,390
85+	1,323	1,586	1,837	2,198	2,636	3,311	4,060	4,856	5,766
Total	79,693	85,258	90,286	81,745	83,577	84,142	83,565	81,962	79,368
0-14	14,460	14,537	14,730	12,390	12,122	11,712	10,957	10,382	9,854
15-64	53,814	56,700	58,782	49,998	48,937	48,028	47,078	46,062	43,944
65+	11,419	14,021	16,774	19,357	22,519	24,402	25,529	25,518	25,570
% 0-14	18.1	17.1	16.3	15.2	14.5	13.9	13.1	12.7	12.4
% 15-64	67.5	66.5	65.1	61.2	58.6	57.1	56.3	56.2	55.4
% 65+	14.3	16.4	18.6	23.7	26.9	29.0	30.6	31.1	32.2
% 80+	3.4	3.9	4.3	5.6	6.9	8.2	9.8	11.8	12.8

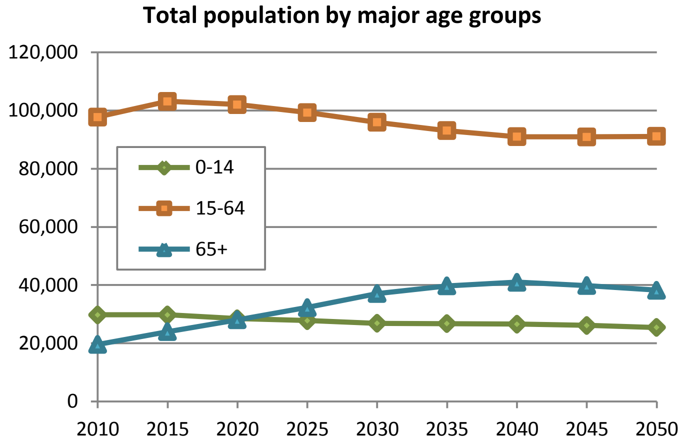
Population pyramids A 4 Emigration wave variant, 2010-2050

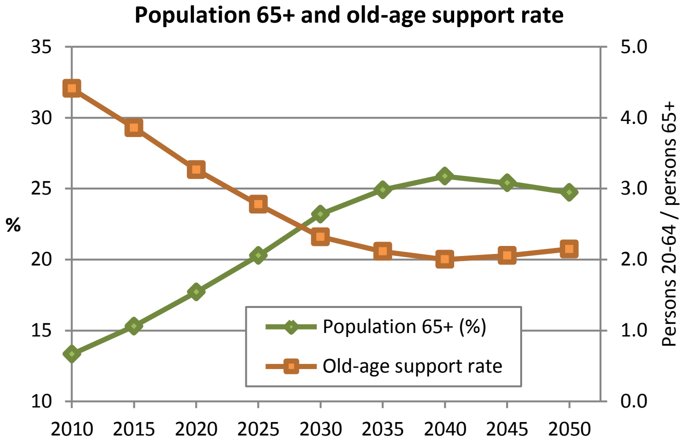


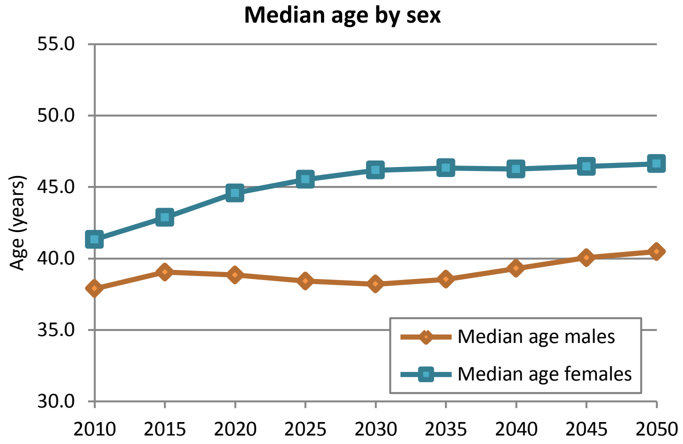
A.5 Zero-migration variant: figures and tables

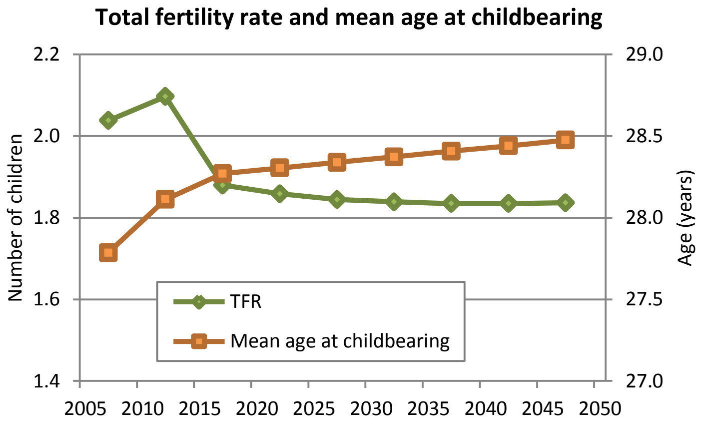
Figures A 5 Zero-migration variant











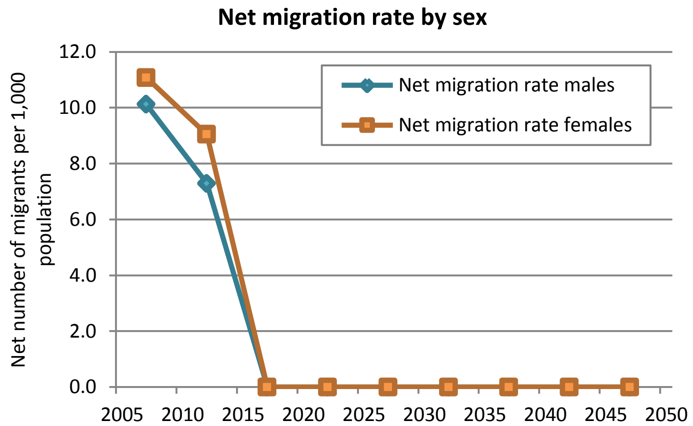


Table A 9 Population indicators zero-migration variant, 2010-2050

	2010	2015	2020	2025	2030	2035	2040	2045	2050
Total Population									
Total population	147,122	156,971	158,589	159,507	159,926	159,623	158,607	156,974	154,793
Population density (persons per square km)	331	354	357	359	360	360	357	354	349
Median age (years)	39.9	41.3	42.1	42.5	42.5	42.2	42.4	43.2	43.7
Sex ratio (males per 100 females)	84.6	84.1	84.5	85.0	85.7	86.5	87.5	88.7	90.2
Dependency ratios (per 100)									
Total dependency ratio	51	52	55	61	67	71	74	73	70
Child dependency ratio	30	29	28	28	28	29	29	29	28
Old-age dependency ratio	20	23	28	33	39	43	45	44	42
Aging									
Population 65+ (%)	13.3	15.3	17.7	20.3	23.2	24.9	25.9	25.4	24.7
Population 80+ (as % of population 65+)	21.5	21.6	22.0	22.2	24.1	27.0	30.6	36.7	39.9
Old-age support rate	4.4	3.9	3.3	2.8	2.3	2.1	2.0	2.1	2.1

	2005-2009	2010-2014	2015-2019	2020-2024	2025-2029	2030-2034	2035-2039	2040-2044	2045-2049
Rates of population change									
Annual rate of population change (percentage)	1.6	1.3	0.2	0.1	0.1	0.0	-0.1	-0.2	-0.3
Rate of natural increase (per 1,000 population)	5.5	4.7	2.1	1.2	0.5	-0.4	-1.3	-2.1	-2.8
Population doubling time (years)	43	53	338	600	1323	-	-	-	-
Mortality									
Crude death rate per 1,000 population	8.0	8.4	9.5	10.1	10.8	11.6	12.3	12.9	13.4
Under-five mortality (5q0) per 1,000 live births	13.1	10.9	11.5	10.2	9.1	8.1	7.3	6.7	6.1
Adult mortality (45q15) per 1,000	106	100	100	92	85	78	73	68	63
Life expectancy at birth (years)	76.7	78.1	77.9	78.8	79.6	80.4	81.1	81.8	82.4
Male life expectancy at birth (years)	72.9	74.8	74.6	75.6	76.6	77.6	78.4	79.1	79.8
Female life expectancy at birth (years)	80.1	81.0	80.8	81.5	82.2	82.8	83.4	84.0	84.6
Life expectancy at age 15 (years)	63.3	64.0	64.0	64.7	65.4	66.2	66.8	67.4	68.0
Life expectancy at age 65 (years)	18.2	18.7	18.7	19.1	19.6	20.0	20.4	20.8	21.2
Fertility									
Crude birth rate per 1,000 population	13.4	13.1	11.6	11.3	11.3	11.2	11.1	10.9	10.6
Total fertility (children per woman)	2.04	2.10	1.88	1.86	1.84	1.84	1.83	1.83	1.84
Sex ratio at birth (males per 100 females)	107	104	106	106	106	106	106	106	106
Net reproduction rate	0.97	1.01	0.90	0.88	0.88	0.89	0.89	0.90	0.89
Mean age childbearing (years)	27.8	28.1	28.3	28.3	28.3	28.4	28.4	28.4	28.5
Births and deaths									
Number of births	9,491	9,970	9,114	8,989	9,049	8,984	8,800	8,573	8,246
Number of deaths	5,623	6,388	7,496	8,071	8,630	9,287	9,816	10,206	10,426
Births minus deaths	3,868	3,582	1,618	919	418	-303	-1,016	-1,633	-2,181
International migration									
Net number of migrants	7,507	6,267	0	0	0	0	0	0	0
Net migration rate (per 1,000)	10.6	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table A 10 Population by age and sex, zero-migration variant, 2010-2050

Total

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	9,135	9,951	9,019	8,906	8,974	8,918	8,741	8,521	8,200
5-9	9,988	9,514	9,935	9,007	8,895	8,964	8,909	8,733	8,514
10-14	10,644	10,324	9,505	9,927	9,000	8,889	8,958	8,903	8,728
15-19	11,247	10,489	10,305	9,489	9,913	8,988	8,878	8,949	8,895
20-24	7,758	9,193	10,439	10,261	9,454	9,880	8,961	8,855	8,927
25-29	7,205	8,540	9,130	10,375	10,205	9,408	9,837	8,927	8,824
30-34	7,687	8,738	8,484	9,074	10,317	10,155	9,367	9,798	8,894
35-39	10,104	8,945	8,684	8,435	9,026	10,267	10,109	9,328	9,761
40-44	11,164	11,071	8,880	8,626	8,382	8,973	10,211	10,058	9,285
45-49	12,633	11,799	10,954	8,794	8,549	8,312	8,902	10,136	9,989
50-54	11,255	13,006	11,600	10,782	8,667	8,435	8,209	8,797	10,023
55-59	10,046	11,385	12,658	11,310	10,533	8,483	8,269	8,056	8,642
60-64	8,648	9,996	10,917	12,175	10,909	10,186	8,225	8,034	7,839
65-69	6,473	8,406	9,356	10,268	11,503	10,346	9,696	7,857	7,696
70-74	5,203	5,925	7,553	8,471	9,363	10,556	9,544	8,987	7,318
75-79	3,725	4,500	4,994	6,427	7,286	8,130	9,244	8,414	7,976
80-84	2,284	2,863	3,419	3,855	5,025	5,776	6,524	7,497	6,885
85+	1,923	2,326	2,756	3,325	3,925	4,956	6,022	7,124	8,396
Total	147,122	156,971	158,589	159,507	159,926	159,623	158,607	156,974	154,793
0-14	29,767	29,789	28,460	27,840	26,869	26,771	26,608	26,158	25,442
15-64	97,747	103,162	102,051	99,322	95,955	93,087	90,969	90,937	91,079
65+	19,608	24,020	28,078	32,346	37,102	39,765	41,030	39,879	38,272
% 0-14	20.2	19.0	17.9	17.5	16.8	16.8	16.8	16.7	16.4
% 15-64	66.4	65.7	64.3	62.3	60.0	58.3	57.4	57.9	58.8
% 65+	13.3	15.3	17.7	20.3	23.2	24.9	25.9	25.4	24.7
% 80+	2.9	3.3	3.9	4.5	5.6	6.7	7.9	9.3	9.9

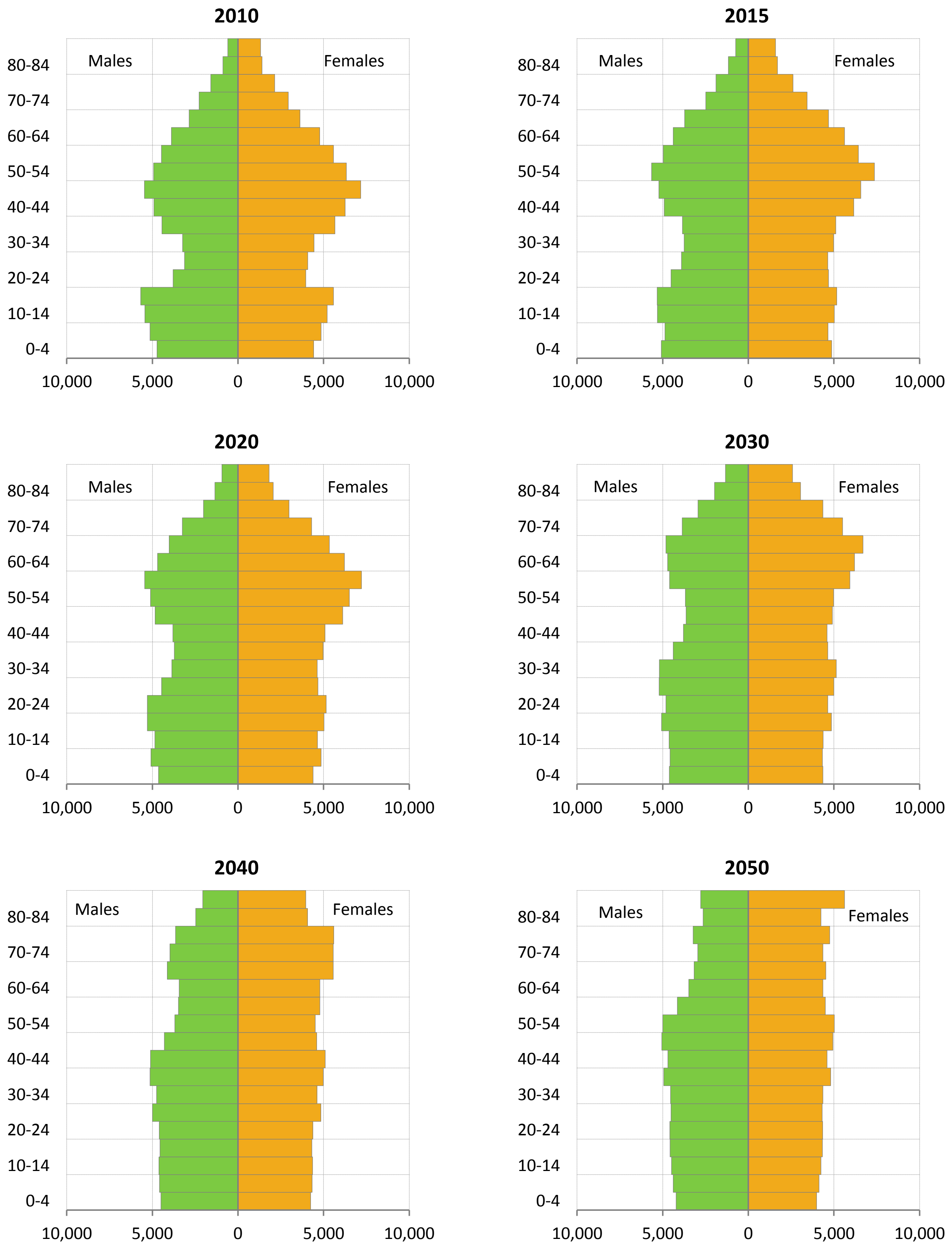
Male

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,726	5,087	4,636	4,579	4,615	4,587	4,497	4,383	4,218
5-9	5,139	4,864	5,077	4,628	4,572	4,609	4,581	4,492	4,379
10-14	5,442	5,301	4,858	5,072	4,624	4,568	4,605	4,578	4,489
15-19	5,676	5,328	5,287	4,847	5,062	4,616	4,561	4,599	4,572
20-24	3,794	4,515	5,286	5,251	4,818	5,035	4,594	4,542	4,581
25-29	3,129	3,902	4,462	5,232	5,204	4,780	5,000	4,566	4,517
30-34	3,240	3,751	3,858	4,418	5,187	5,164	4,748	4,970	4,541
35-39	4,444	3,843	3,714	3,824	4,383	5,150	5,131	4,721	4,944
40-44	4,907	4,909	3,801	3,677	3,791	4,349	5,113	5,098	4,693
45-49	5,469	5,224	4,837	3,751	3,633	3,749	4,305	5,066	5,054
50-54	4,925	5,646	5,106	4,737	3,680	3,570	3,689	4,242	4,997
55-59	4,466	4,963	5,447	4,940	4,595	3,579	3,480	3,603	4,149
60-64	3,883	4,381	4,696	5,175	4,713	4,401	3,438	3,352	3,479
65-69	2,848	3,724	4,020	4,336	4,807	4,403	4,131	3,240	3,170
70-74	2,268	2,488	3,252	3,542	3,855	4,309	3,974	3,751	2,958
75-79	1,589	1,889	2,011	2,661	2,935	3,232	3,649	3,393	3,227
80-84	884	1,158	1,355	1,466	1,971	2,208	2,463	2,813	2,643
85+	600	740	944	1,158	1,340	1,715	2,056	2,393	2,783
Total	67,429	71,713	72,650	73,294	73,784	74,022	74,016	73,802	73,394
0-14	15,307	15,252	14,572	14,280	13,811	13,764	13,683	13,453	13,086
15-64	43,933	46,462	46,496	45,852	45,064	44,392	44,060	44,758	45,527
65+	8,189	9,999	11,582	13,163	14,909	15,866	16,273	15,591	14,781
% 0-14	22.7	21.3	20.1	19.5	18.7	18.6	18.5	18.2	17.8
% 15-64	65.2	64.8	64.0	62.6	61.1	60.0	59.5	60.6	62.0
% 65+	12.1	13.9	15.9	18.0	20.2	21.4	22.0	21.1	20.1
% 80+	2.2	2.6	3.2	3.6	4.5	5.3	6.1	7.1	7.4

Female

Age	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	4,409	4,864	4,383	4,327	4,359	4,331	4,245	4,138	3,982
5-9	4,849	4,650	4,858	4,378	4,323	4,355	4,327	4,241	4,135
10-14	5,202	5,023	4,647	4,855	4,376	4,320	4,353	4,325	4,240
15-19	5,571	5,161	5,018	4,643	4,851	4,372	4,317	4,350	4,323
20-24	3,964	4,678	5,153	5,011	4,636	4,845	4,367	4,313	4,346
25-29	4,076	4,638	4,668	5,142	5,002	4,628	4,837	4,361	4,307
30-34	4,447	4,987	4,626	4,656	5,131	4,991	4,619	4,828	4,353
35-39	5,660	5,102	4,970	4,611	4,643	5,116	4,978	4,608	4,817
40-44	6,257	6,162	5,078	4,948	4,592	4,624	5,097	4,960	4,593
45-49	7,164	6,575	6,117	5,043	4,916	4,564	4,597	5,070	4,935
50-54	6,330	7,360	6,493	6,045	4,987	4,865	4,519	4,555	5,026
55-59	5,580	6,422	7,211	6,370	5,938	4,904	4,789	4,453	4,493
60-64	4,765	5,615	6,221	7,000	6,196	5,786	4,787	4,682	4,360
65-69	3,625	4,682	5,336	5,932	6,696	5,944	5,566	4,616	4,526
70-74	2,935	3,437	4,301	4,929	5,508	6,246	5,570	5,236	4,360
75-79	2,136	2,611	2,983	3,765	4,351	4,899	5,595	5,021	4,750
80-84	1,400	1,705	2,064	2,389	3,054	3,568	4,061	4,684	4,242
85+	1,323	1,586	1,812	2,167	2,585	3,242	3,966	4,731	5,613
Total	79,693	85,258	85,939	86,213	86,142	85,600	84,591	83,172	81,400
0-14	14,460	14,537	13,888	13,560	13,058	13,007	12,925	12,704	12,356
15-64	53,814	56,700	55,556	53,470	50,890	48,695	46,908	46,180	45,552
65+	11,419	14,021	16,495	19,183	22,193	23,899	24,757	24,288	23,491
% 0-14	18.1	17.1	16.2	15.7	15.2	15.2	15.3	15.3	15.2
% 15-64	67.5	66.5	64.6	62.0	59.1	56.9	55.5	55.5	56.0
% 65+	14.3	16.4	19.2	22.3	25.8	27.9	29.3	29.2	28.9
% 80+	3.4	3.9	4.5	5.3	6.5	8.0	9.5	11.3	12.1

Population pyramids A 5 Zero-migration variant, 2010-2050



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