

2019 - 2031

**UPDATED POPULATION
PROJECTIONS HYPOTHESIS
2019-2031**

Updated Population Projections Hypothesis 2019-2031

Fertility Hypothesis

Three indicators need to be considered for constructing the fertility hypotheses. These indicators are the Total Fertility Rate (TFR), the average age at childbirth (MAC), and the gender ratio at birth.

The average age at birth in Albania has shown a constant linear increase of about 0.27 each year, over the period from 2014 to 2018. Also this indicator has maintained the same growth rate despite the increase or decrease of the total fertility rate. It is therefore expected that MAC will continue its linear growth at the same rate until 2031, when it is expected to reach 31.5 years. This hypothesis will be the same as for the low, medium and high variants.

The sex ratio at birth in Albania is above its natural level, with about 108 baby boys per 100 baby girls. For this indicator it is assumed that it will gradually decrease and reach the natural level of 105 boys per 100 girls in 2031. The reduction of this indicator will be the same in all three variants.

High fertility (high TFR)

Scandinavian Countries (Denmark, Norway and Sweden) serve as an example of high and stable fertility rates. According to the latest Eurostat data, the total fertility rate in these countries, with rare exceptions, fluctuated between 1.65 and 2.0 children per woman of reproductive age throughout the period 2001 to 2016. Therefore, taking as an example the experience of these countries, the high TFR hypothesis was designed by a logarithmic function to reach from 1.37 births per woman in 2018 to 1.8 births per woman in 2031.

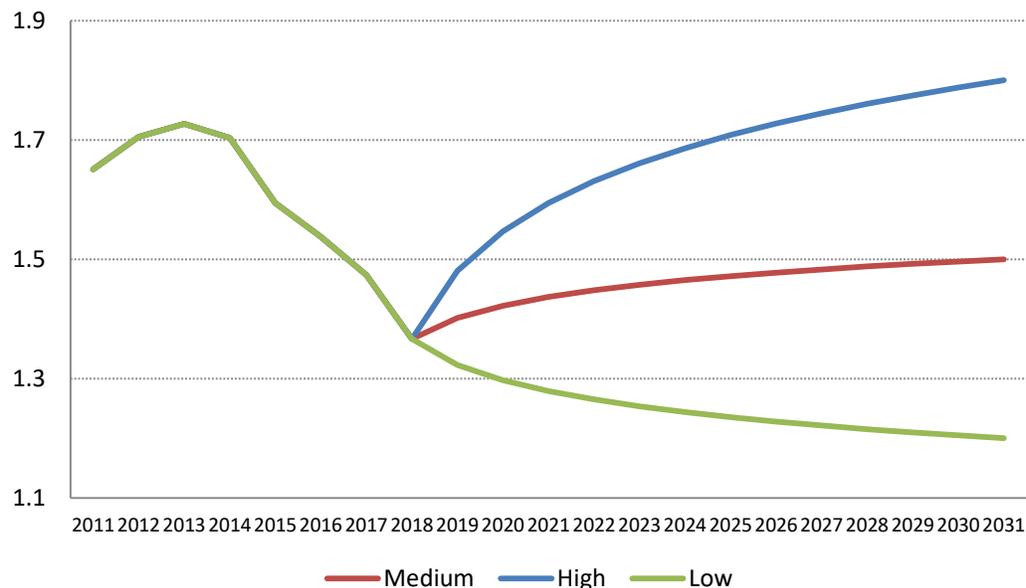
Medium fertility (medium TFR)

In the case of medium fertility, TFR is projected to reach from 1.37 births per woman in 2018 to 1.5 births per woman in 2031, always following a logarithmic function. This level corresponds to the 2015-2018 average, the years during which TFR was below 1.7. This hypothesis implies that women in Albania will recover their births, as it is thought that they have been postponed during the previous five years. This phenomenon of postponement and then the recovery of births is well known and is supported moreover by the constant increase of the average age at childbirth.

Low fertility (low TFR)

In the case of low fertility, the TFR is designed by a logarithmic function to reach from 1.37 births per woman in 2018 to 1.2 births per woman in 2031. The level of 1.2 births per woman was taken from the previous experience of Eastern European countries. In these countries during the 1990s and 2000, the total fertility rate reached very low levels. The most extreme cases are those of Bulgaria (1.09 children per woman) and the Czech Republic (1.13 children per woman), for the rest of the Eastern European countries ISF reached the minimum at about 1.2 births per woman. In the low fertility hypothesis, it is thought that Albania's TFR will reach 1.2 level in 2031 and probably begin to recover only after.

Fig.1 TFR from Empirical Data, 2011 - 2018, and Updated Population Projections for TFR, 2019-2031



Mortality Hypothesis

Although mortality changes did not have the same impact on population numbers and its structure as other demographic components, these hypotheses were also updated as part of updating of the population projections.

The indicator on which the hypothesis of population projections update is designed is life expectancy at birth. Life expectancy at birth depends on gender, because in normal circumstances women have longer life expectancy at birth than men. Hence the hypotheses for this indicator are built separately for each gender.

All three hypotheses project the growth of life expectancy at birth, but at different rates according to variants. Men's life expectancy is already high (77.4 in 2018) so its growth rate is projected to be lower than that of women.

Low mortality

In the low mortality hypothesis, life expectancy at birth is projected to reach in 2031, both for women and men, approximately levels of recent years of countries with the highest life expectancy in Europe such as Italy, Greece, Spain, Switzerland, etc. In the hypothesis of low mortality, life expectancy at birth of men is thought to reach 81.5 years, while that of women 85 years.

Medium mortality

In the medium mortality hypothesis it is assumed that women's life expectancy will reach 83.5 years in 2031, roughly the average of the European Union. The growth rate of this indicator for men will be slightly lower than that of women. Consequently, in 2031, life expectancy at birth for men is expected to be 80 years. This level is higher than the actual European Union average, since men in Albania have a high life expectancy compared to the East Europe, and especially high if compared to the region.

High Mortality

In the hypothesis of high mortality, it is assumed that life expectancy at birth will grow at very slow rates for both men and women over the next period. Life expectancy at birth for men is projected to increase from 77.4 years in 2018 to 78.5 years in 2031. Thus, 1.1 years over the 13-year period 2018-2031. Women's life expectancy is predicted to grow at a similar pace, from 80.5 years in 2018 to 82 years in 2031. So with 1.5 years over the 13 year period, 2018-2031.

The table below gives the projected life expectancy values at birth for each of the hypotheses, for the years 2018, 2021, 2026 and 2031.

Tab.1 Life expectancy and birth (e0) for men

	2018	2021	2026	2031
High e0	77.4	78.3	79.9	81.5
Meium e0	77.4	78.0	79.0	80.0
Low e0	77.4	77.6	78.1	78.5

Tab.2 Life expectancy and birth (e0) for women

	2018	2021	2026	2031
High e0	80.5	81.6	83.3	85
Meium e0	80.5	81.2	82.4	83.5
Low e0	80.5	80.9	81.4	82

Emigration hypotheses

The indicator used to construct emigration hypotheses is the gross migration rate, which represents the sum of specific migration rates and is calculated by gender. Between 2011 and 2018 this index, contrary to forecasts, continued to increase for men, from 1.45 in 2011 to 1.6 in 2018. At the same time, the gross migration rate for women experienced a significant decrease, from 1.47 in 2011, to 0.35 in 2018. These changes in migratory behavior of men and women, although producing a total number of emigrants, which is consistent with what population projections for 2011-2031 suggested, have significantly changed their gender composition. In the updated projections, the same age distribution used in the previous projections for emigrants has been maintained, as no significant changes have been noticed in this respect.

Emigration hypotheses for men

For the construction of migration hypothesis for men, it was decided that in the medium scenario the gross migration rate would reach the levels predicted by the high emigration hypothesis in the population projections of 2011 - 2031. This means that in the medium scenario GMR for men will reach by a linear function from 1.6 in 2018 to 1.1 in 2031. By the same type of function, the GMR value in the low variant is expected to reach 0.7 in 2031, while in the high variant it is assumed to reach 1.5. These hypotheses are summarized in the table below.

Tab.3 Emigration Hypothesis (GMR) for Men

	2018	2021	2026	2031
High emigration	1.6	1.58	1.54	1.5
Medium emigration	1.6	1.52	1.31	1.1
Low emigration	1.6	1.45	1.1	0.7

Emigration hypotheses for women

For the construction of emigration hypothesis for women, it was decided that in their medium scenario the gross migration rate would reach the levels predicted by the low emigration hypothesis in the population projections of 2011 - 2031. This means that in the medium variant, GMR for women will reach by a linear function from 0.35 in 2018 to 0.5 in 2031. By the same type of function, the GMR value in the low variant is expected to reach 0.2 in 2031, while in the higher variant it is assumed to reach 0.8. These hypotheses are summarized in the table below.

Tab.4 Emigration Hypothesis (GMR) for Women

	2018	2021	2026	2031
High emigration	0.35	0.43	0.61	0.8
Medium emigration	0.35	0.38	0.44	0.5
Low emigration	0.35	0.33	0.26	0.2

Immigration Hypothesis

During the last years, 2016 - 2018, a yearly average of about 16.7 thousand men and 7.2 thousand women have immigrated to Albania. Although their age and gender distribution has not changed significantly, the total number of immigrants of both sexes is higher than that projected in the medium scenario of the population projections 2011-2031. In the population projections 2011-2031 it was assumed that around 2021 the number of immigrants of both sexes would be stabilized at different levels according to the variants. To reflect the new trends in the number of immigrants, in the projections update, it was assumed that their number would stabilize five years later, i.e. by 2026, at the same levels as before for both sexes. Immigration hypotheses are summarized in the following tables.

Tab.5 Immigration hypotheses (number of immigrants) for men (in thousand)

	2018	2021	2026	2031
High immigration	16,7*	14,2	8	8
Medium immigration	16,7*	13,6	6	6
Low immigration	16,7*	13,4	5	5

* Average number of men immigrated during 2016 – 2018

Tab.6 Immigration hypotheses (number of immigrants) for women (in thousand)

	2018	2021	2026	2031
High immigration	7.2*	6.9	6	6
Medium immigration	7.2*	6.3	4	4
Low immigration	7.2*	6	3	3

* Average number of women immigrated during 2016 – 2018

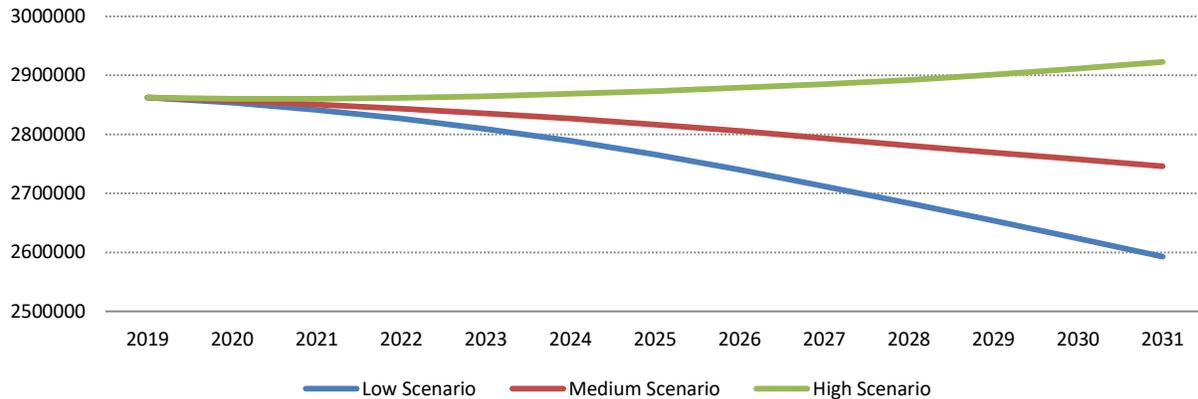
Regional projections hypotheses

The demographic changes observed during the period 2011 - 2018 across the country have occurred proportionally equally for all prefectures. This means that the significant decline in fertility rates has affected almost all the districts of the country. The same can be said of the gender differences in emigration, which is the other main reason for updating the projections. During 2011 - 2018, internal movements and the tendency of internal migrants to focus mainly on the highly urbanized prefectures have been in line with those foreseen by the population projections of 2011 - 2031. It was therefore assumed to be reasonable not to change the hypotheses on internal movements from those of the population projections 2011-2031. However, the changes resulting from the population update at the country level are also reflected in the population of prefectures. For this purpose, we maintained the weights that each district occupies in the disaggregated population by sex and age group, and at the same time the total number of population for each gender and age group is preserved. As in the 2011-2031 projections, the regionalized population projection scenario was produced on the basis of the medium growth scenario. Also in the same way as the projections of the population of prefectures have been produced by gender and age groups of 5 years and for the same five year periods as in the previous projections. So this time the results for all prefectures by gender and age groups for the years 2021, 2026 and 2031 have been updated.

Results of population projections update 2019-2031

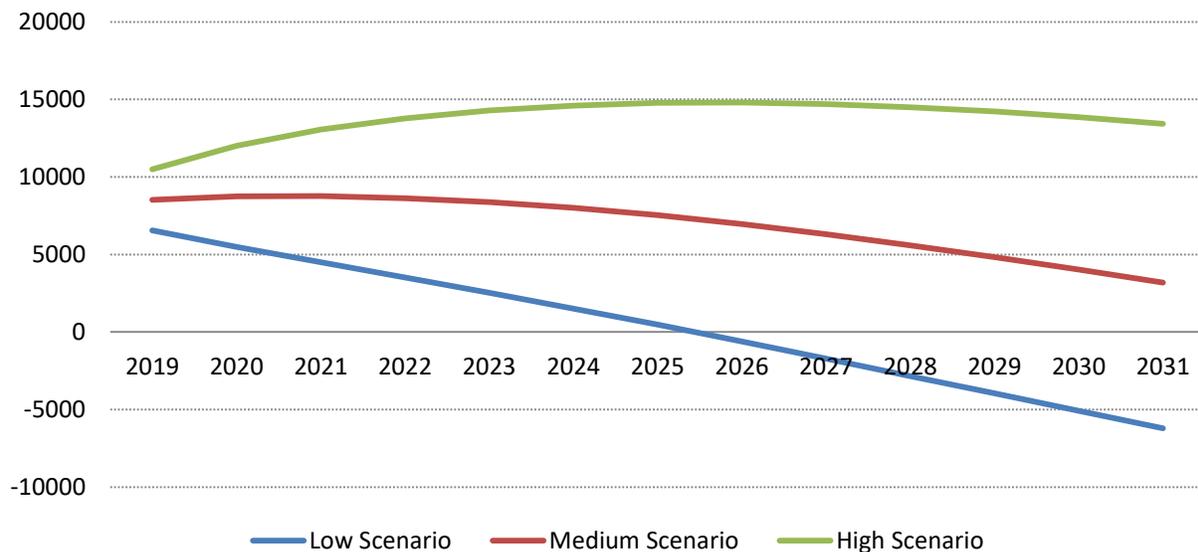
The medium growth scenario of the updated population projections suggests that the population of Albania will shrink from 2.862.427 in 2019 to about 2.745.996 in 2031. This scenario is based on the medium hypotheses of fertility, mortality and migration. If fertility begins to recover quickly from the current level and emigration goes through a high rate decrease, then the population of Albania is expected to reach 2,922,749 inhabitants by 2031, according the high growth scenario. While according to the low growth scenario, where further decline in fertility and an increase in the number of emigrants are supposed, the population of Albania is expected to reach 2,592,975 in 2031.

Fig. 3 Updated population projections according to low, medium and high scenario, 2019-2031



According to the medium growth scenario, natural growth, or the difference between the number of births and deaths, is expected to decrease from 8.5 thousand in 2019 to about 3.2 thousand in 2031. During the first five years of the projected period natural growth stands at levels above 8,000 but then decreases at a faster pace from 8,000 to 3,200 over the period 2024-2031. According to the high growth scenario, it is suggested that natural growth will reach about 13.4 thousand in the year 2031. On the other hand, according to the low growth scenario, natural growth is projected to turn negative in 2026 and reach a minimum level of about -6.2 thousand.

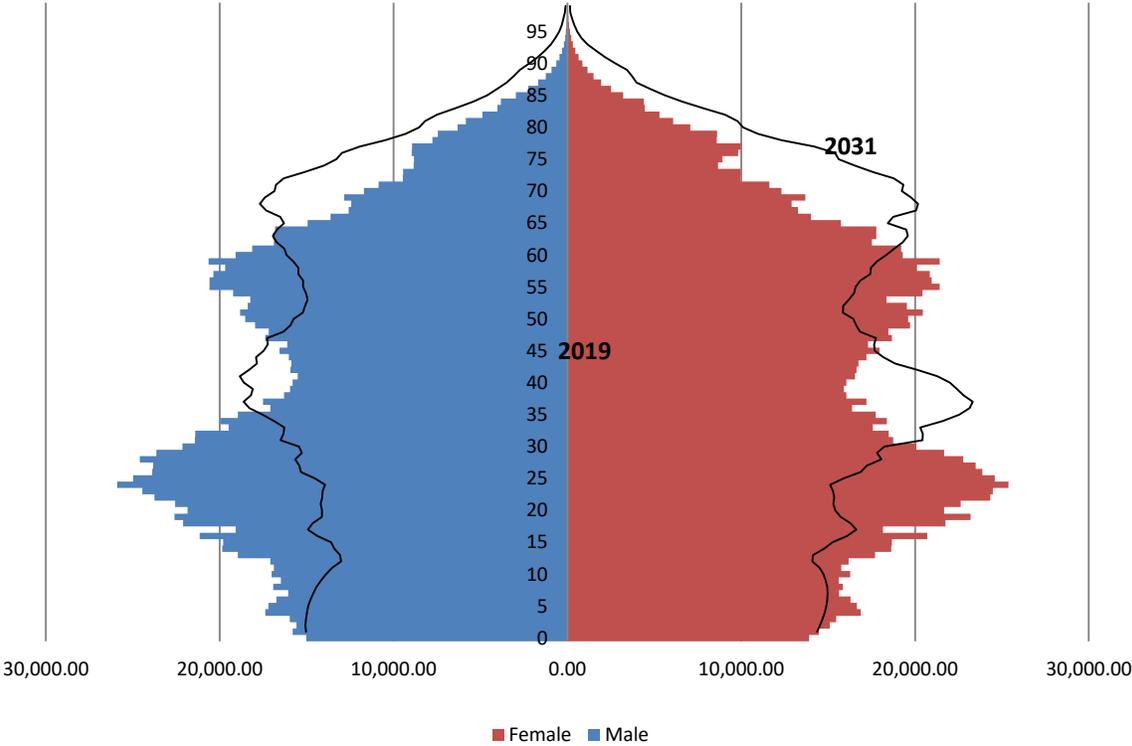
Fig. 4 Natural growth according to low, medium and high scenario of the updated population projections, 2019-2031



The comparison of the population pyramids for 2019 and the projected population of 2031 shows that the population of Albania, apart from changing its number, it will significantly change its age and gender composition. The figure below shows clearly the increase in the number of people over 65 years of age, while the ages under 65 generally suffer decrease

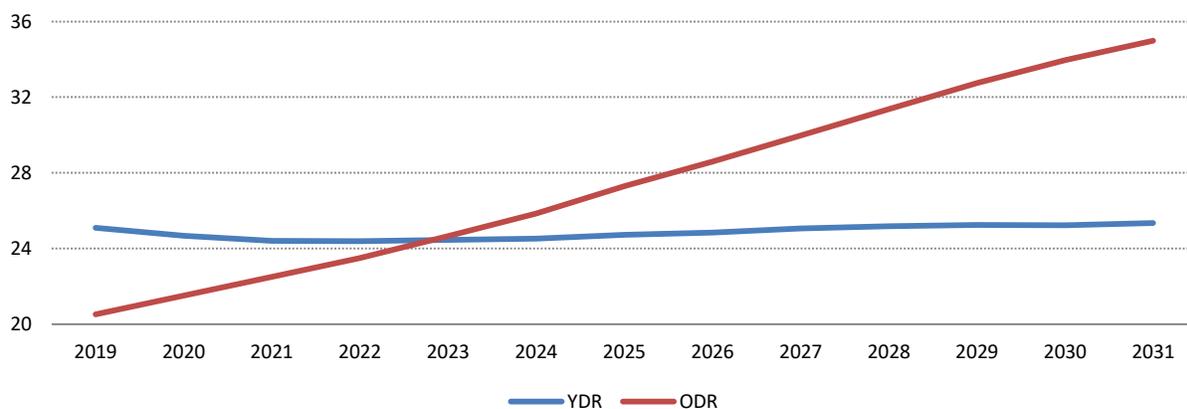
in numbers. This happens for both sexes. At the same time, by comparing these pyramids, there is a shift from a population where men and women are almost equal, to a population where women are significantly more than men. The gender ratio in the population of January 1st 2019 is 99.8 males per 100 females and according to the medium growth scenario it is expected to reach 89.1 males per 100 females in 2031.

Fig. 5 Population pyramids according to updated population projections, 2019, 2031.



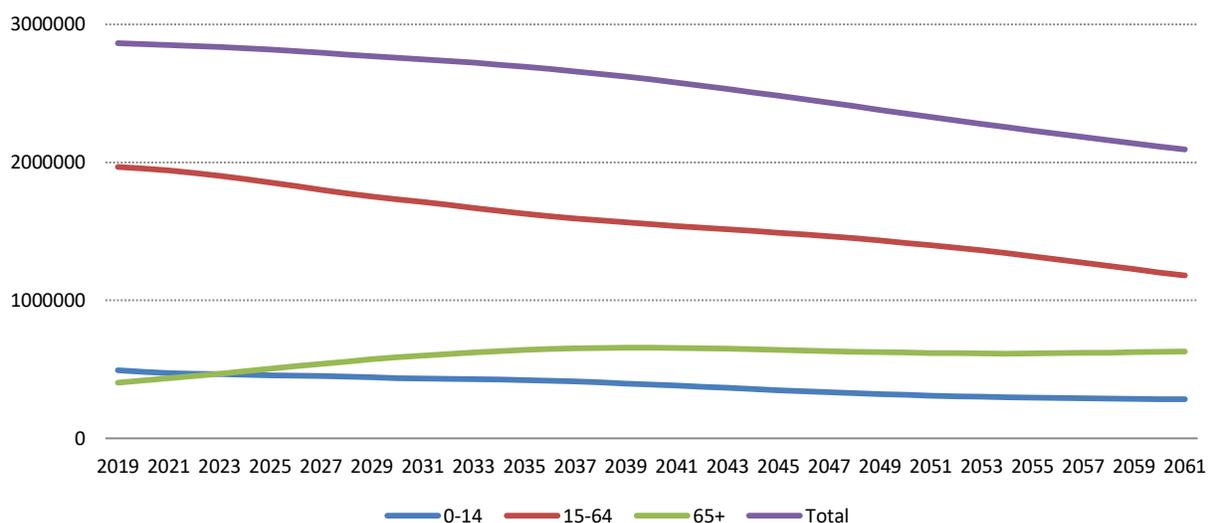
The medium scenario of the updated projections suggests that the population of Albania will continue the aging process. The median age of the population will increase from 36.7 in 2019 to 42.1 in 2031, bringing it close to the current level of the European Union countries of 42.8 in 2017. Also, as can be seen in the chart below, according to the medium scenario the Old Dependency Ratio (ODR) is expected to increase from 20.5 elderly to every 100 working-age inhabitants in 2019, to 35 elderly per 100 working-age inhabitants in 2031. At the same time, the Young Dependency Ratio is expected to stay at constant levels of about 25 young people per 100 working-age residents throughout the period 2019-2031.

Fig. 6 Evolution of dependency ratios according to the medium scenario of the updated population projections, 2019-2031



As in the past projections, the medium-growth version has been extended until 2061, keeping the indicators of each of the hypotheses constant at the levels that are expected to be reached in 2031. Given the dynamic demographic context of Albania, the extension of any projections over a period of 20 years is a dangerous exercise. The medium growth scenario extended to 2061 should be treated with caution and interpreted as an approximate indicator of a possible tendency. Forecasts show an intensification of population decline after 2031 to reach 2.1 million in 2061 (Figure 7). The working age population will suffer a decline to reach less than 1.2 million. The youth population (0-14 years old) is expected to continue declining to about 283,000 in 2061, while the number of elderly people is expected to stabilize at over 630,000 at the end of the design period. As can be seen, such changes in the population would result in a very old population, where the median age is expected to be 49.7 years old, and the old dependency ratio is expected to be 53 elderly per 100 working age inhabitants.

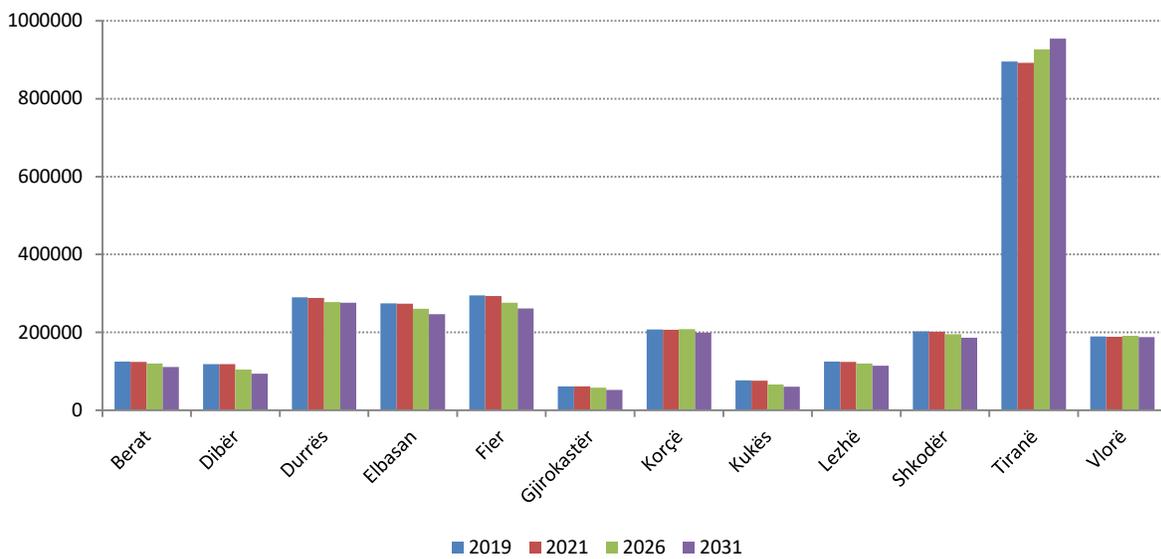
Fig. 7 Trend of the total number of population, working age population, youth and elderly, 2019 – 2061



According to the updated population projections 2019-2031 it is expected that the only district, whose population will increase during 2019-2031, will be Tirana. This growth is expected to be as much as 6.6 % of Tirana's population in 2019. In 2031, the population of Tirana district is expected to account for about 35 % of Albania's population with about 954,000 inhabitants.

The population of all other regions of Albania is expected to decrease. The population of Kukës and also Dibër are expected to decline until 2031, by over 20% of their 2019 population. By 2031 the population in Berat, Elbasan, Fier and Gjirokastrër is expected to decrease by 10% - 14% of the respective population in 2019. The region with the smallest number of population will continue to be Gjirokastrër with about 52 thousand inhabitants in 2031, followed by Kukës and Dibër, respectively with about 60 thousand and 94 thousand inhabitants.

Fig. 8 Change of population of prefectures according to the updated population projections, 2019-2031.



Methodology

Demographic change occurs when couples give birth to children and when individuals arrive from other countries by adding new members to the population, while others are dying or leaving in other countries, reducing the population. Because these demographic events affect the population by sex and age groups, they determine the number and structure of the population. The main objective of demographic projections is to determine how births, deaths and migrations will occur in the following years. The methodology used for this cycle of population projections by INSTAT, the cohort component model, calculates these events for each year, sex or age according to the assumptions of reliable trends in mortality, fertility and future migration. These events are subtracted and added to the population at the beginning of the year, giving the population by age and sex at the beginning of the following year, and so on.

The number of demographic events depends on the population structure and on demographic behavior (i.e. the number of births depends on the number of women in reproductive age and the age specific fertility rates). Since the population structure and demographic behaviors are known for the base year, future trends in demographic behavior were predicted based on hypotheses based on our knowledge of the demographic situation, past tendencies, political context and social economics, and international comparisons.

Population by age group and sex at the beginning of the projections, January 1, 2019, is estimated by INSTAT based on the empirical data of previous years.

Population at the national level, by sex and age, is projected repeatedly year after year, starting with the population on January 1, as follows:

- The number of deaths is estimated for the first six months from the application of mortality rates by age and sex for the population on 1 January; deaths are subtracted from the population to get survivors in the middle of the year (June 30);
- The annual number of emigrants by age group and sex is estimated from the mid-year population using the emigration rates and these events are subsequently deducted; meanwhile, the supposed number of immigrants by sex is redistributed by age and is added to the population.
- The number of deaths for the second semester is then estimated and subtracted from this revised population number in the middle of the year, giving the number of survivors at 31 December;
- The number of births is estimated by multiplying fertility rates by age group with the average number of women of reproductive age; infant deaths and those who migrate by the end of the year are estimated and subtracted from the number of births;
- To get the population on 1 January of the following year, each group is moved forward by one year of age to reflect ageing of the population and the number of surviving births within the country is the first age (age 0).

The population of the prefectures by sex and age groups of 5 years is projected repeatedly and at the same time at five-year intervals using a multi-regional model of the cohort component migration reserve, adapted from the multi-regional model proposed by the United Nations. The procedure contains the following steps for each cycle:

- Population by sex and age at the beginning of the interval is projected to survive by 5 years.

- Surviving emigrants (from abroad) and domestic migrants (from other prefectures) are assessed one by one using transition rates for migrants (considering the mortality and international migration in the case of domestic migration) that apply to the population in end of the interval. The number of emigrants is subtracted to the number of the total population and domestic immigrants are distributed by age group and sex, which gives the number of internal immigrants for redistribution among prefectures.
- The number of internal immigrants, as well as an assumed number of immigrants from abroad (taken from the national level projections) are added to the population at the end.
- Births are estimated by applying the specific rates of fertility to the average population at the beginning and end of the 5 year interval and the survivors are projected to the end of the interval.
- In order to obtain the population on 1 January at the beginning of the next 5-year interval, each generation is aged by five years to reflect population ageing; the number of live births within Albania is the first age group.
- Population by sex and age and demographic events at the regional level should coincide with the total determined by national projections.

Definitions

Resident population: is based on the concept of usual residence. According to this definition in the resident population of one year are included all those persons who lived or have the intention to live for at least 12 months in the country, regardless of nationality.

Median age: age in which the half of population is older and the other half is younger.

Sex ratio: Ratio of the number of males to the number of females, in a given period of time, usually expressed as number of males for every 100 females.

Sex ratio at birth: Ratio of the number of baby boys to the number of baby girls, born in a given period of time, usually expressed as number of males for every 100 females.

Natural increase in population: The difference between the number of live births and the number of deaths during in a given period of time.

Net migration: is the difference between the number of immigrants and the number of emigrants of a population, in a specific territory, in a given period of time (I-E).

Youth dependency ratio: Ratio of the number of persons under working age (0-14 years of age) with the number of persons of working age (from 15 to 64 years of age).

Old dependency ratio: Ratio of the number of persons above the working age (65+ years of age) with the number of persons of working age (from 15 to 64 years of age).

Gross Migration Rate (GMR): The average number of migrations that a hypothetical generation of individuals would experience by the end of their life, if they were subject through their lifetime to migration rates observed in specific period of time (and if not subjected to mortality). Shown as number of migrations for each individual.

Life expectancy at birth (e_0): The average number of expected years of life for a hypothetical group of individuals who will be subject throughout their lifetime to the specific mortality rates of a given period.

Total Fertility Rates (TFR): The average number of children that a hypothetical group of women will have at the end of their reproductive period, if they would be subjected throughout their lifetime to age specific fertility rates of a given period.