

2019 population projection until 2080. Methodology

The population projection is based on the sex-age distribution of the population as at 1 January 2019. The total population of Estonia is projected until 2080 and the population of the counties until 2045. Four scenarios for fertility, two scenarios for mortality, and three scenarios for external migration were used for the projections. The scenarios illustrate what happens when trends in events are extended into the future by combining them in various ways. The further into the future we look, the more reality and projections may diverge. This needs to be taken into account when using projection results.

In the calculation of fertility rates and life tables, the statistics for births and deaths in 2018 have been used and earlier time series have been analysed. Materials from Eurostat and UN population projections have also been drawn on, and leading Estonian population experts have been consulted.

The total fertility rate stood at 1.67 in 2018, while it was 1.59 just a year earlier. As it is not known at this stage whether this sharp jump marks a permanent change, the figure of 1.64 was taken as the starting point for the projection. Four scenarios have been developed for the change in fertility rates. In the first scenario, the total fertility rate rises to 1.86 by 2080. This is the current average number of children for women over 40 years of age. According to the projection, the average age of the mother at the birth of a child will rise to 31.6 years, a one-year increase from the current age. The increase will be faster for the next 20 years, and slower thereafter. In addition to the baseline scenario, two more scenarios were prepared, one in which the total fertility rate increases by 5% to 1.95 and the other in which it decreases by 5% to 1.77. The fourth scenario shows what would happen if the total fertility rate were to return to the replacement level of 2.08 by 2080.

Life expectancy was 73.7 years for men and 82.3 years for women in 2017. Two death rates have been produced. In the case of the first, life expectancy increases to 83.5 years for men and 89.0 years for women by 2080. The difference in life expectancy between men and women decreases from the current 8.6 years to 5.5 years. In the case of the other death rate, life expectancy is unchanged – the same deaths rates for age groups and life expectancy for the whole period.

Estonia's net external migration has turned positive in recent years. After a long period as a country of emigration, Estonia has become a country of immigration. This is also reflected in the population projection. For migration, the baseline scenario is that approximately 1,500 more people will arrive in Estonia than leave over the whole reference period. In the second positive scenario, about twice as many more people will arrive – net migration 3,000, and 2,500 by the end of the period. In the third scenario, migration is balanced.

Only one scenario – the baseline – has been prepared for counties. In the case of the county projections, it should be noted that, as this is a mathematical calculation, the sum of the population figures of the counties do not quite equal the projected total population of Estonia due to rounding, but the differences are very small.

The above scenarios are combined in the population projections as follows:

Scenario 1 (baseline):

- total fertility rate increases, reaching 1.81 children per woman by 2045 and 1.86 children per woman by 2080;
- mortality in age groups drops and life expectancy at birth rises to 86.5 years for women and 79.6 years for men by 2045 and to 89.0 years for women and 83.5 years for men by 2080;
- net migration rate is positive by an average of 1,500 persons over the whole period.

This scenario was used for projections for the counties and Tallinn. Population register data on changes of residence from 2015 to 2018 have been used to identify inter-county migration trends. External migration was mainly split between four counties, with more than 3/4 of migrants arriving in Harju county, 1/7 in Tartu county, and 3–4% in both Ida-Viru and Pärnu counties.

Scenario 2 (higher fertility, higher net migration):

- total fertility rate increases, reaching 1.90 children per woman by 2045 and 1.95 children per woman by 2080;
- mortality in age groups drops and life expectancy at birth rises to 86.5 years for women and 79.6 years for men by 2045 and to 89.0 years for women and 83.5 years for men by 2080;
- net migration rate is positive by an average of 3,000 persons at the beginning and by 2,500 persons at the end of the period.

Scenario 3 (lower fertility, lower mortality, no migration):

- total fertility rate increases, reaching 1.72 children per woman by 2045 and 1.77 children per woman by 2080;
- age-specific death rates and life expectancy at birth remain unchanged at current levels: 82.4 years for women and 73.7 years for men;
- immigration and emigration are balanced.

Scenario 4 (replacement level fertility):

- total fertility rate increases, reaching 2.03 children per woman by 2045 and 2.08 children per woman by 2080;
- mortality in age groups drops and life expectancy at birth rises to 86.5 years for women and 79.6 years for men by 2045 and to 89.0 years for women and 83.5 years for men by 2080;
- net migration rate is positive by an average of 1,500 persons over the whole period.

Name of scenario	Summary of projection trends		
	Total fertility rate per woman 2024/2080	Life expectancy 2045/2080	Net external migration 2045/2080
Scenario 1 (baseline)	1.81/1.86	M 80, F 87 / M 83, F 89	1,500/1,500
Scenario 2 (higher fertility, higher net migration)	1.90/1.95	M 80, F 87 / M 83, F 89	3,000/2,500
Scenario 3 (lower fertility, lower mortality, no migration)	1.72/1.77	M 74, F 82	0/0
Scenario 4 (replacement level fertility)	2.03/2.08	M 80, F 87 / M 83, F 89	1,500/1,500