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The demographic crisis in Bulgaria: trends, problems and prospects

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Abstract: *For the last thirty years, Bulgaria has been gripped by a demographic crisis, which has led to a rapid decrease in the number of the population. This is due to the demographic transformation and the country entering the fourth stage of the demographic transition. To it we can add the large migration flows, characteristic of the economic crisis during the transition. The aim is to analyze the deteriorating demographic indicators, which are closely related to the socio-economic problems in Bulgaria. The methods used allow population projections to be made, which are also unfavourable. The deepening of the negative demographic processes, which leads to an acute labour shortage, difficult functioning of the social systems, ethnic change of the population and depopulation of significant territories of the country, has been traced. The need for a more effective demographic policy and adequate intervention by the state is shown.*

Keywords: population ageing, depopulation, natural population change, migration, population projections

Introduction

Today's demographic situation of the Bulgarian population is the result of a long-term action of many factors and influences. Some of them are related to the general trends in the demographic development of European countries, others - to the specific features of the historical, economic and cultural development of the Republic of Bulgaria.

The deepening demographic crisis and the associated unfavorable quantitative changes in demographic parameters have been characterized by a very high intensity in the last three decades and have reached such threshold conditions that a permanent destabilization of the natural reproduction regime has been observed. The

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number of the population in Bulgaria since 1990s has been continuously decreasing. The changes are due to the demographic transformation that began at the end of the 20th century. The population of Bulgaria, like most post-socialist countries, is entering the fourth stage of the demographic transition. Added to this are the intensified migration processes and the economic crisis that is sweeping the country.

The relevance of the topic of our research arises for several reasons: the need to analyze and study the factors shaping the demographic processes in Bulgaria and influencing all spheres of socio-economic life, the need for making prognoses and taking adequate measures to solve the main problems of population, changes in people's traditional perceptions, in their value system, in their ideas and expectations about their lives and the lives of their children, which directly reflects on their reproductive and migratory attitudes, which in turn can quickly change the direction of demographic processes.

The subject of research is the analysis of the peculiarities and trends of the demographic processes in Bulgaria, determining the development of the demographic policy. *The object* of the present study is the demographic transition of the Republic of Bulgaria in the conditions of a permanent and deepening crisis.

The main goal is an analysis of the demographic factors and reasons that have led to the current demographic situation of the Republic of Bulgaria, a prognosis regarding its development and the modern socio-demographic transformations imposed by it.

Both basic *scientific methods* such as analysis and synthesis, induction and deduction, historical method, as well as mathematical-statistical, sociological and grapho-analytical methods were used. Last but not least, purely demographic methods were used.

For the methodological basis of the study, fundamental works of a number of specialists in the field of population ageing and sustainable development were used. Data from the National Statistical Institute (NSI), Eurostat, etc. are the basis of labor information provision.

Theory and methodology

1. Previous research

The question arises about the appropriate use of the term "demographic crisis", used only in some countries of Eastern Europe – Bulgaria, Russia, Latvia – in connection with the demographic changes in these countries of Central and Eastern Europe that will be one of the fastest depopulation regions in the world in the next few decades.

The situation is particularly worrying due to the rapid population decline. For example, Bosnia and Herzegovina, as well as Ukraine, have lost 28.9% of their population since 1990, Latvia 28.6%, Bulgaria 25.3%, Lithuania 24.3%, Estonia 18.8%, Romania 18.5%. Only the Czech Republic and Slovakia +1.9% report a slight increase in population. In other words, many countries in the region are experiencing depopulation [1, 2].

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The decrease in population had negative consequences for the development of the region, creating a vicious circle for regions experiencing depopulation [3].

Particularly low birth rates are observed in Lithuania 7.8‰, Poland and Slovenia 8.3‰, Latvia 8.5‰, Estonia 8.6‰, Bulgaria and Croatia 8.8‰ and respectively high mortality rates are observed in Bulgaria - 18.4‰, Romania - 17.5‰, Latvia - 16.4‰, Lithuania - 15.1‰ and Croatia -14.8‰. Most countries in the region report negative natural population change and low average life expectancy. These are Bulgaria, the Czech Republic, Croatia, Hungary, Poland, Romania and Slovakia.

Therefore, it is necessary to find demographic policy instruments that are both effective and socially acceptable. The use of instruments that only reflect the birth rate seems to have limited effect. We can summarize that the size of a country's population is not a "problem in itself" [4], but the direction and dynamics of population change, combined with the transformation of the age structure of the population (increasing the share of non-productive age groups), is a determining factor for socio-economic development [5].

That is why a number of researchers deal with the demographic transition of post-socialist countries, including Bulgaria [6, 7, 8, 9], etc. Among the Bulgarian authors examining the demographic changes in Bulgaria, we can point out [10, 11], author team from Bulgarian Academy of Sciences [12-17] and others.

2. Methodology

Factors that stimulate demographic development include an increase in investment activity and revival of the economy, improvement of the built infrastructure, financial stimulation, adequate state policy, etc.

Among the factors holding back the demographic development, we can point out the ongoing economic crisis, the lack of investments, the growth of some diseases, the increase in emigration mobility, the deterioration of the ecological situation, the deterioration of the standard of living, the increase in unemployment, negative changes in the psychological attitude towards child raising, etc. [18].

In the literature and accepted methods making population prognoses, the main indicators affecting population change are the following: the population of a given territory (in this case, the population in Bulgaria) during the current period (1990-2022), the expected levels of mortality, birth and natural increase, and level of migration flows for the same period.

When determining the estimated number of the population, the influence is exerted by two main groups of factors, which in turn can stimulate or restrain the demographic development.

Population projections in Bulgaria are most often made by teams of the Demographic Institute of the Bulgarian Academy of Sciences, whose successor today is the Institute for Population and Human Studies. Some

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of them focus mainly on population size, while others also cover its structures. The use of established methodologies allows the preparation of population projections with relatively high accuracy.

For example, Hr. Karakashev foresees a decrease in the total number of the population of Bulgaria from 8.4 million in 1995 to about 7 million in 2020 (in the 4 versions the number varies from 7.3 to 6.9 million). Comparison with current data shows the high accuracy of this prediction [19].

The population change model can be represented by the methods of system dynamics [20]:

$P_{t2} = P_{t1} + B_{t1-t2} – D_{t1-t2} + M_{t1-t2}$

where P_{t1}, P_{t2} is the population in period t1 and t2 respectively

B_{t1-t2} - the number of births in the period t_1 - t_2,

M_{t1-t2} - the net migration in the period t_1 - t_2,

D_{t1-t2} - the number of deaths in the period t_1 - t_2,

In the preparation of the population projection in Bulgaria, the method of age movement (or the method of cohort components) of the population was used. It has a conceptual advantage because it groups the population by age cohorts (age groups in five years) and calculates the characteristics (coefficients) of the main factors for each group separately. Decomposition by age of the population makes it possible to estimate the future demographic potential of the labor force and the reproductive capabilities of the population. These advantages define it as the most suitable when choosing the projection method over other methods (extrapolation method, symptomatic analysis, regression analysis, etc.). The technology of population forecasting by the method of cohort components for each studied period goes through the following stages:

1) Identifying the main elements:

- Number of the population distributed by age groups with an interval of five years;

- Assessment of the level of experience of the different age groups for a past (known) period. This rate is the opposite of the death rate and represents the probability that people in one age group (e.g. 0 to 4 years) will survive to the next age group, and takes into account changes in natural population growth/decline;

- Calculation of the number of women of childbearing age;

- Determination of fertility rates. This step aims to determine during the forecast period the number of persons in the first age group (from 0 to 4 years). The coefficient is calculated as the ratio of the number of births and the number of women of childbearing age per 1000 people;

2) Projecting the number of the population for all age groups except for the first group;

3) Calculation of the number of births in the first age group of 0-4 years based on the fertility rate and the number of women of childbearing age;

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4) Correcting the number of births in the age group of 0-4 years with the corresponding probability of survival;

5) Final summary projections for the population-by-population age groups and by locality based on the results of points 2, 3 and 4.

Data on the age structure of the population by locality from the 2001 and 2011 censuses were used, as well as information from current demographic statistics on natural growth (birth rate, death rate) and mechanical growth (immigrants, emigrants). This allows to follow the movement of the population and the trends that characterize it in recent years.

In the development of the population projections, both the total levels of birth rate, death rate and natural increase, as well as the number of women of childbearing age. The probability of dying, the probability of living to the next year are taken from the mortality tables developed by the NSI.

More interesting, although more uncertain, are the long-term population projections for state of the population, such as the projections of NSI and Eurostat. The NSI forecast covers the period from 2015 to 2070. It presents the changes in the number of the population of Bulgaria in three versions: 1) realistic, 2) relative acceleration and 3) relative slowing down of the reproduction process. In all three variants of the forecast, a continuing permanent decrease in the number of the population is outlined.

The developed versions of the population projections are:

- 1st variant (tendential), in which the preservation of the trends from the previous demographic, socio-economic and infrastructural development of the settlements in Bulgaria is assumed. According to the NSI projections, this option (under the hypothesis of convergence) is defined as realistic;

- Option II (optimistic), in which it is assumed that the demographic development will take place during favorable socio-economic processes in Bulgaria;

- III option (pessimistic), in this option the development of the population is predicted under hypotheses of unfavorable socio-economic processes in the mountainous territories and deterioration of the demographic processes. The different variants of population projections are based on predictions for the expected future development of natural and mechanical population growth. They are of a hypothetical nature, taking into account the current dynamics of births, deaths, the number of women of childbearing age and the fertility rate, immigrants and emigrants. The probability of dying, the probability of living to the next year are taken from the mortality tables developed by the NSI. Average life expectancy is expected to remain at 74.7 years for all three versions of the population projections (including 71.1 for men and 78.28 for women) [21]. The analyzes and forecasts of the United Nations, the World Bank and Eurostat are similar [22].

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Results and Discussion

1. Number of the population

As of December 31, 2022, the population of Bulgaria is 6,447,710 people, which represents 1.5% of the population of the European Union (EU). This ranks the country 15th among member states. Compared to the previous censuses, it is constantly decreasing: 1992 – 8,487,317 people; 2001 - 7,932,984 people, 2011 - 7,364,570 people, 2021 - 6,519,789 people (Fig. 1) [23].

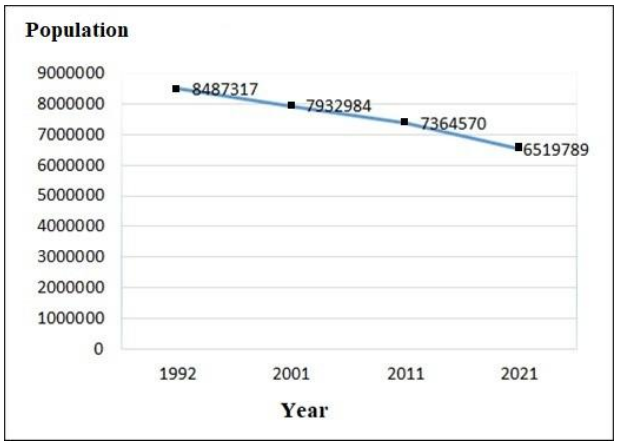

Figure 1. Population of Bulgaria by census years, 1992 – 2021 (Source: NSI)

Between the last two censuses alone, the population decreased by 844 thousand people (-11.5%), and since the beginning of the century, the population of Bulgaria decreased by almost 20%. A similar decrease was recorded by countries such as Bosnia and Herzegovina, Ukraine, Lithuania, Latvia, Estonia and Romania.

The main factors that influence changes in the number and structures of the population are the demographic processes - birth rate, death rate and migration.

2. Birth rate

The unfavorable trend of a continuous decrease in the number of live births has continued. For the last few years, fewer and fewer babies have been reported, and negative records in this direction are observed every year. In 1990, 105,180 children were born in Bulgaria, then their number dropped sharply below 80,000, and after 2020 their number dropped below 60,000. In 2022, 56,917 births were registered in the country, of which 56,596 (99.4%) were live births (Fig. 2) [24]. The number of live births decreased by 2,082 children, or 3.5% compared to the previous year. This will be the trend for the coming years as well.

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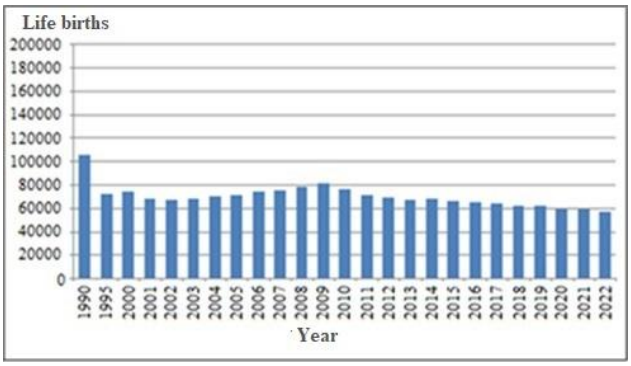

Figure 2. Live births in Bulgaria, 1990 – 2022 (Source: NSI)

The total birth rate[1] in 2022 is 8.8‰, down from 12.1‰ in 1990. The number of live births for boys (28,923) is 1,250 more than for live births for girls (27,673), or 957 girls for every 1,000 live births. There were 41,986 and 14,610 live births in the cities and villages, respectively, and the birth rate was 8.8‰ in the cities and 8.5‰ in the villages. The total birth rate for the EU-27 in 2021 is 9.1‰ according to Eurostat data.

In a regional aspect, the highest birth rate is in the regions of Sliven - 12.2‰, Sofia (capital) - 10.0‰, and Plovdiv - 9.7‰. In twenty districts, the birth rate is lower than the national average, with the lowest values observed in the districts of Smolyan - 5.1‰, Vidin - 6.8‰, and Pernik - 6.9‰.

The number of women of childbearing age (15 - 49 years of age) in the country, or the size of the birth contingents and their fertility, has a significant impact on the birth rate and determines the nature of population reproduction.

The total fertility rate[2] is one of the main indicators characterizing the fertility of women. In 2022, the average number of live births per woman was 1.78, it increases with 0.20 compared to 2021, and the average age of women at birth was 27.6 years. In 2022, the number of illegitimate births was 34,141, or 60.0% of all births [25].

Among the factors influencing the low birth rate, we can point to career development, alienation in modern urbanized societies, the many opportunities for entertainment and spending free time, and last but not least, the severe stress caused by these factors, which lead to many diseases, among of which one of the scariest is sterility in people of active age. In Bulgaria alone, there are 150,000 married couples who are of an active age, wish to

[1] Number of live births per 1,000 people of the average annual number of the population during the year.

[2] Average number of live births that a woman would give birth to during her entire fertile period according to the age fertility rate in the reporting year.

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have children, but cannot due to purely physical problems. There are millions in Europe, and it is no coincidence that for ten years, sterility in Europe among people of active age has been defined as a pandemic [26].

3. Mortality

The level of the total mortality of the population in Bulgaria is the highest among the member states. In 2020, the number of deaths exceeded 120,000, and in 2021 it reached 148,995 (21.7‰), an increase also due to the COVID pandemic. The number of people who died in Bulgaria in 2022 was 118,814, and the total mortality rate - 18.4‰ (Fig 3). In total, for the EU-27, the mortality rate in 2021 was 11.9‰ [27].

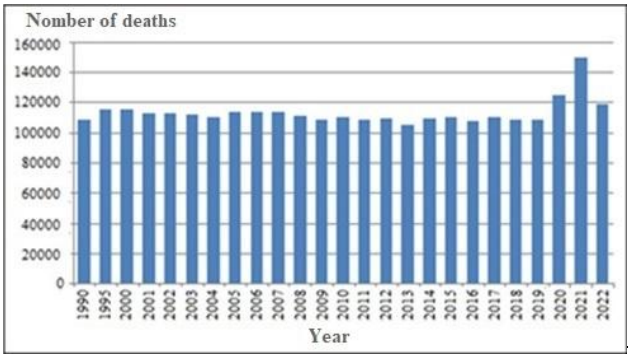

Figure 3. Deaths in Bulgaria, 1990 – 2022 (Source: NSI)

Mortality among males (19.8‰) is higher than mortality among females (17.0‰). The mortality rate is higher in villages (24.9‰) than in cities (16.0‰) [28]. Vidin - 27.9‰, Gabrovo - 24.9‰ and Montana - 24.6‰ districts have the highest mortality rates in the country.

In Bulgaria, there are municipalities where the total mortality exceeds 30‰, values characteristic of African and Asian underdeveloped countries, or those that are in a military conflict. A main factor that determines the increase in mortality in recent years is related to demographic aging or an increase in the share of the population in the upper age groups and a decrease in the young population. An additional negative impact is the decline in living standards, unemployment, low incomes, access to quality healthcare, etc. [29].

In 2022, 274 children under one year of age died in the country, and the infant mortality rate was 4.8‰. For comparison, in 2001 the infant mortality rate was 14.4‰, and in 2021 - 5.6‰.

4. Marriages and divorces

In 2022, 26,013 legal marriages were registered - 607 less than the previous year, and the marriage rate[3] was 4.0‰ (a value that varied from 6.8% in 1990 to 2.9% in 2011).

[3] Mid-year population.

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In 2022, the average age at first marriage for men and women was 33.0 and 30.1 years, respectively. For 84.7% of women and 84.3% of men, the civil marriage concluded in 2022 was the first. The number of divorces in 2022 was 9,525, or 496 fewer than those registered in 2021. Of all terminated marriages, 77.1% refer to the urban population. The average length of marriage until its dissolution is 15.3 years.

5. Internal migration

In 2022, 102,920 persons took part in resettlement between settlements in the country. Of all those who changed their usual place of residence within the country, 44.5% were men and 55.5% were women. The largest territorial movement is in the direction "city – city" (41.1%), followed by the direction "village – city" (25.1%) and "city – village" (23.6%). Significantly smaller in number and relative share is the migration flow in the "village – village" direction - 10.1% of the migrated persons. The largest number of those moving to the country chose the Sofia region (capital) as their new place of residence (17,196). The regions with the largest relative shares in the migration flow to the Sofia region (the capital) are Sofia - 13.0% and Blagoevgrad - 7.2% [30].

6. External migration

In 2022, 13,175 people changed their current address from the country to abroad, and 64.3% of them were men. The destinations most preferred by emigrants are Germany (24.1%), Turkey (20.0%) and the United Kingdom (9.3%). Persons who have changed their place of residence from abroad to Bulgaria, or the flow of immigrants, includes Bulgarian citizens who have returned to the country, as well as citizens of other countries who have received permission or status to reside in the country. In 2022, 40,619 persons changed their habitual residence from abroad to Bulgaria. The relative share of men is 55.5%, and of women - 44.5%. The share of immigrants from Turkey (23.1%), Germany (12.1%) and Syria (9.0%) is the highest.

7. Natural and mechanical population change

The number and structures of the population are determined by the size and intensity of its natural and mechanical (migratory) movement.

The difference between live births and deaths represents the natural population change. After 1990, the country's demographic development was characterized by negative natural population growth. It has changed over the years, in 1990 it was -0.4‰, in 1997 it reached -7.0‰, in the period 208-2010 it was between -3.5 and -4.6‰, in 2021 it recorded its highest values -13.2‰.

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In 2022, as a result of the negative natural increase, the population of the country decreased by 62,218 people. The population decline, measured by the natural growth rate, is minus 9.6‰[4] (-13.2‰ in 2021).

The natural growth rate for the EU-27 in 2022 is -2.9‰. Only six of the member countries have a positive natural increase, with Ireland leading the way with 3.8‰. Bulgaria has the highest negative natural increase, followed by Latvia -7.9‰ and Lithuania -7.4‰.

The rate of natural growth in cities is minus 7.2‰, and in villages - minus 16.4‰. In 2022, all regions in the country have negative natural growth (Fig. 4) [31].

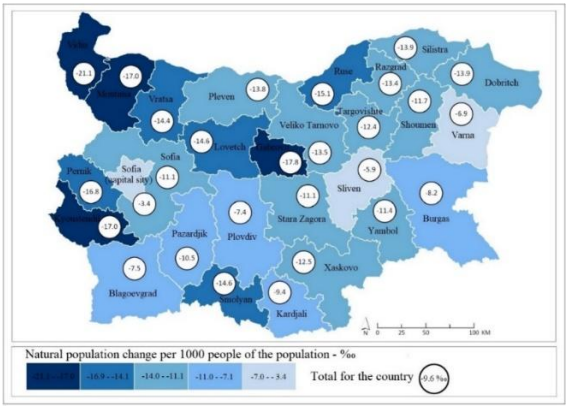

Figure 4. Natural growth by districts in 2022 (per 1 000 population) (Source: NSI)

Mechanical growth (the net balance from external migration), which in 2022 is positive - plus 27,444 people, has a significant impact on the number and structures of the population in the country. It is formed as a difference between the number of people who settled and emigrated from the country. The population change as a result of external migration, measured by the net migration rate is +4.2‰[5]. Twenty-two districts have positive mechanical growth. The largest mechanical increase is in the districts of Kardzhali (21.5‰), Sofia (capital) (7.9‰) and Burgas (7.1‰). The regions with the largest decrease in population as a result of negative mechanical growth are Smolyan (-4.5‰), Haskovo (-1.5‰) and Lovech (-1.1‰).

[4] Difference between the number of live births and the number of deaths per 1,000 people of the average annual population.

[5] Ratio of net migration to average annual population during the year (per 1,000 people).

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8. Structures of the population

There are 3,099,503 (48.1%) men and 3,348,207 (51.9%) women, or 1,080 women for every 1,000 men. The number of men predominates in the age group up to 53 years. With increasing age, the number and relative share of women in the total population of the country increases (Fig. 5).

In 2001, the population aged 65 and over was 16.8% of the total population. During the period between the 2001 and 2021 censuses, all 28 districts of the country showed an increase in the relative share of the population aged 65 and over.

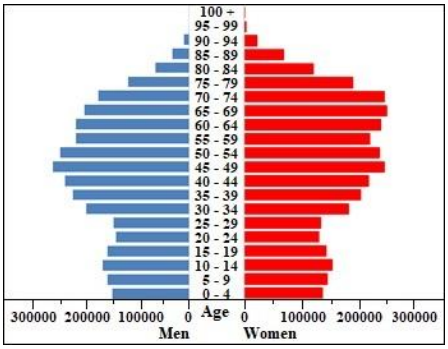

Figure 5. Age structure of the population of Bulgaria, 2022 (Source: NSI)

The largest increase (over 10 percentage points) was observed in 3 districts (Smolyan, Kardzhali and Dobrich). The widespread nature of the population aging process in our country is illustrated by the large number of districts (23) in which the share of the population aged 65 and over increased by between 5.0-10.0 percentage points. The situation in Sofia-city, where there is a minimal increase in the population aged 65 and over (0.4%), can be considered the most favorable for our conditions.

At the end of 2022, there were 1,515,383 persons aged 65 and over, or 23.5% of the country's population. The relative share of women over the age of 65 is 27.4%, and of men - 19.3%. This difference is due to the higher mortality among men and, as a consequence, to their lower average life expectancy.

Regionally, the share of persons aged 65 and over is highest in Vidin (31.1%), Gabrovo (30.0%) and Kyustendil (28.0%) regions. In total, in twenty-two districts, this share is above the national average. The share of the elderly population is the lowest in the districts of Sofia (the capital) - 19.2%, Varna - 21.4%, and Blagoevgrad - 21.6% (Fig. 6).

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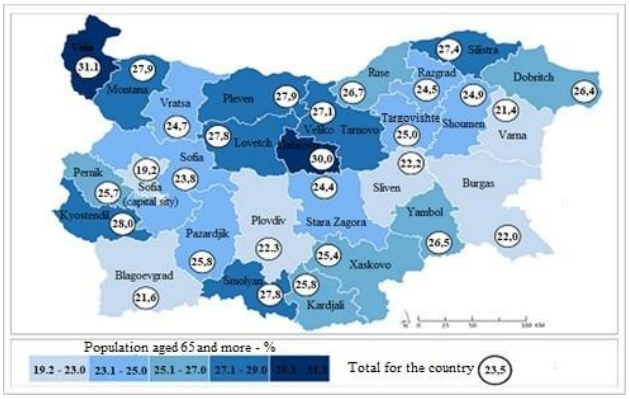

Figure 6. Share of population aged 65 and over by district, 2022 (Source: NSI)

There are 913,419 children under the age of 15 in the country, or 14.2% of the total population. The relative share of the population under 15 years of age is highest in the districts of Sliven - 18.9%, Yambol - 15.2%, and Burgas - 15.1% of the district's population. In total, in eighteen districts this share is below the national average, the lowest being in the districts of Smolyan - 10.8%, Vidin - 11.5% and Gabrovo - 11.8%.

The total age dependency ratio[6] in Bulgaria is 60.4, or for each person in the dependent age (under 15 and over 65 years) there are less than two persons in active age. The coefficient in cities is 56.8, and in villages - 71.6. In all districts of the country, this indicator is over 50.0. The lowest value of the coefficient is in Sofia (the capital) - 51.4, and the highest in the districts of Vidin - 74.5, Gabrovo - 71.8, and Yambol - 71.4.

The aging of the population is one of the most acute demographic problems in the EU member states, and Bulgaria is no exception to the rest of the European countries. This structure is very important for current and especially future demographic trends, because it predetermines the future reproductive and labor potential.

The aging of the population over the years leads to an increase in its median age, which increased from 40.4 years in 2001 to 45.2 years at the end of 2022. The average age of the population in cities is 44.3 years, and in villages - 47.5 years.

The number and relative share of the population below, within and above working age is changing. Both the aging of the population and legislative changes in determining[7] the age limits for retirement have an impact on

[6] The age dependency ratio shows the number of persons of the population in the "dependent" ages (the population under 15 and aged 65 and over) per 100 persons of the population in the "independent" ages (from 15 to 64 years). It is calculated in percentages.

[7] The age limits for the distribution of the population by the categories below, within and above working age are determined according to the Ordinance on pensions and insurance service, adopted by Resolution No. 30 of the Ministry of the Interior (SG, No. 21/17.03.2000).

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the aggregates of the population at and above working age. The population of working age as of 31.12.2022 is 3,775,000 people, or 58.5% of the country's population, with 1,975,000 men and 1,800,000 women.

By the end of 2022, there were 1,695 thousand people above working age, or 26.3%, and 978 thousand people, or 15.2% of the country's population, below working age (Fig. 7) [32].

The negative demographic processes in the coming years will condition the further deterioration of the age structure of the population and all the resulting negative consequences. The forecast of the number of the population by age groups was made from the point of view of the labor potential (under-working age, working age and over-working age) also in three variants. In all three hypotheses, there is a decrease in the number of the population both in the working age and in the over-working age, and this decrease has a different degree of intensity.

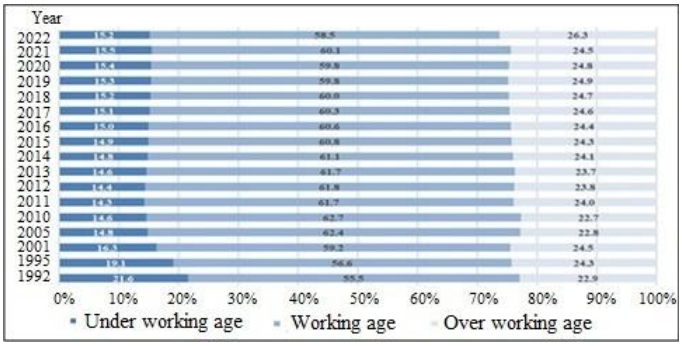

Figure 7. Population in Bulgaria under, at and over working age 1992 – 2022 (Source: NSI)

9. Projections for the population

In the low-variant (tendential), a decrease in the number of the population under working age by 23.4% is observed. At the end of the studied period in 2040, it will constitute 12.4% of the population of Bulgaria. The working population is expected to decrease by 1/5 and reach 66.7% of the population. The working-age population in Bulgaria will decrease by 8%.

In the middle-variant (optimistic), there is an increase in the number of the population under working age by 9.1%, and its relative share will increase by three points and reach 16.7%. The number of the working population will decrease by 18%, and its relative share will reach 62%. The share of the over-working population during the considered forecast period remains unchanged within 19-20% and will decrease by 12 points.

In the high-variant (pessimistic), there is a decrease in both the absolute (by 36%) and the relative share of the underemployed population by three points and will reach 10.8%. The share of the working-age population remains unchanged, but its number will decrease by 12.5%. In this version of the forecast, an increase in the

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relative share of the over-working-age population is observed, at the expense of the under-working-age population, reaching 22.7% of the population of the country [33].

The reproduction of the working-age population is characterized by the demographic replacement rate. It shows the ratio between persons entering working age (those aged 15-19) and persons leaving it (60-64). It is measured in percentages and is obtained by dividing the number of 15–19-year-olds by the number of 60–64-year-olds and multiplying the result by a hundred. A ratio above 100% indicates that every 100 people leaving working age are replaced by more than 100 young people. As of 31.12.2022, the demographic replacement rate is 66. For comparison, in 2001, 100 people leaving working age were replaced by 124 young people.

The projections related to the number of the population in Bulgaria during the considered period are also negative.

In all three versions of the projections, a decrease in the population in 2030, 2035, 2040 (in 2030, respectively, 6,527,464 thousand, 6,606,827 thousand and 6,489,409 thousand, in 2035 - 6,325,238 thousand, 6 448359 thousand, 6 265677 thousand, and in 2040 - 6 135500 thousand, 6 301817, 6 054377). If we take into consideration the last year of the forecast period - 2040 and compare it with the beginning of the 21st century, the percentage decrease of the population is expected to be between 19.1% and 23.1% (Fig. 8).

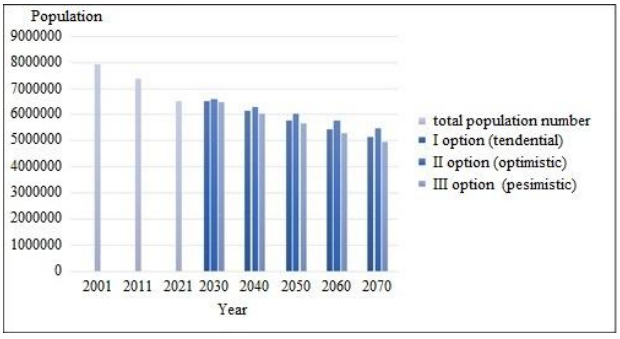

Figure 8. Total population number 2001-2021 and population projection for Bulgaria 2030-2070 (Source: NSI)

According to the UN forecast for the first option, it will be as follows: by 2030 – 6.6 million, by 2050 – 5.8 million, by 2070 – 5.1 million. The deviation from these values in the remaining variants is within ± 2% (about 100 thousand people). Eurostat's population projections cover almost the same time period (until 2080). The estimated values for Bulgaria are slightly lower than those in the NSI projections: 6.4 million for 2030, 5.6 million for 2050 and 4.9 million for 2070. This will lead to a reduction of the Bulgarian population by over 30% [34].

Of all the post-socialist countries, only Moldova's population will decline at a faster rate [35].

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10. Territorial distribution of the population

At the end of the 20th century and the first quarter of the 21st century, migration had a significant impact on the development of the settlement network and led to an exacerbation of regional disproportions in the territorial distribution of the population. Migration processes lead to an even greater strengthening of polarization in the demographic space, which is expressed in an increase in the concentration of population in large cities, on the one hand, and an increase in depopulated territories, on the other [36].

As of 31.12.2022, 4,746,710 people, or 73.6%, live in cities, and 1,701,000 people, or 26.4% of the country's population, live in villages.

By the end of 2022, there were 5,256 populated places in Bulgaria, of which 257 were cities and 4,999 are villages. The settlements without population were 205 (5%). Their number was highest in the regions of Veliko Tarnovo - 69, Gabrovo - 68, and Kardzhali, Kyustendil and Smolyan - 9 each. In 1,249, or in 23.8% of the settlements, there lived from 1 to 49 people inclusive. There were six cities in the country with a population of over 100,000 people, in which 35.0% of the country's population live: Sofia - 1,190,256, Plovdiv - 321,824, Varna - 311,093, Burgas - 188,242, Ruse - 123,134, St. Zagora – 121,582 [37].

In the coming decades, the alarming trend of the significant increase in depopulated settlements will continue, which according to the various versions of the forecast will number between 880 and 977 settlements, and their share in the settlement structure will exceed almost ¼ in 2040.

The trends in the development of depopulation processes and the structure of population changes in Bulgaria are considered at the level of a settlement. Mladenov classifies depopulation according to different signs: according to the causes; according to the degree and strength of manifestation; according to the frequency of occurrence (once, repeatedly, continuously); according to the duration of the period of manifestation (short-term, medium-term and long-term); by trends (decreasing, stable and increasing) and by policies. Throughout the considered period, the following features were observed regarding the intensity of the depopulation processes:

- ✓ With a weak (below 10%) and moderate (from 10 to 20%) reduction of the population for the period, it will cover 8.5% of the settlements in Bulgaria. This includes rural settlements inhabited by Bulgarian-Muslim populations along the Mesta River and Western Rhodope Mountains, settlements with a predominantly Turkish population in Ludogorieto, Gerlovo, Slannik, villages falling within the functional zone of influence of large cities - Sofia, Plovdiv, Varna, Burgas and in the villages located in the eastern and central Trans-Balkan valleys;
- ✓ 40.5% of the settlements are distinguished by a strong intensity of depopulation (decrease in the number of the population from 20 to 60%). This is the most widespread group and comes closest to the average values in Bulgaria;

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✓ Nearly 25% of the settlements are characterized by a critical degree of population reduction intensity (from 60 to 80%). They are located in the areas along the western border with Serbia and the Republic of North Macedonia, Sakar-Strandjan Region, Central Stara Planina, Southern Dobruja, as well as in settlements with a high relative share of Turkish (Eastern Rhodopes) and Bulgarian-Muslim population (Western Rhodopes), the border territories along the Mesta River;

✓ With an irretrievably high intensity of the depopulation processes (with a decrease in the number of the population by over 80%), there will be 1,400 settlements. They are located in the areas covered first by the depopulation processes - Kraishteto, Central Stara Planina, Western Stara Planina, the Osogovo-Belasishka mountain range and Sakar-Strandja, as well as the settlements located in the Eastern Rhodopes and the Gerlovo, Slannik and Tuzluka regions, covered much later by depopulation processes [38].

Population density is directly dependent on the number and dynamics of the population during a given period. An alarming trend is not so much the reduction of the population density as a whole for the country, but its change in a regional aspect [39].

Since the beginning of the 21st century, the UN has introduced the concept of "demographic deserts", and this concept refers to territories where the population density is below 10 p/km² [40]. For thirty years, these sparsely populated territories in Bulgaria grew from 20% to 40%.

By the end of 2022, the country was divided into 6 statistical regions, 28 districts and 265 municipalities [41]. Half of the country's population (51.5%) lived in the South-West and South-Central statistical regions, and the North-West region had the smallest population - 672 thousand people, or 10.4% of the country's population. Two of the regions - North-West and North-Central did not meet Eurostat's requirements for the number of people in the statistical regions (between 800,000 and 3,000,000 people) [42].

The smallest in terms of population was the Vidin region, where 72,754 people lived, or 1.1% of the country's population, and the largest was the Sofia region (the capital) - 1,280,334 people (19.9%). There were four regions with a population of over 300,000 people, and in the first three of them - Sofia (the capital), Plovdiv and Varna - more than a third of the country's population lived (36.3%). In 15 of the regions, the population was below the required minimum of 150,000 inhabitants.

According to Art. 8 of the Law on the Administrative and Territorial Organization of the Republic of Bulgaria, each municipality must meet several conditions, the first of which is the presence of a population of more than 6,000 people in total in the settlements that are included in it [43].

In 83 of the municipalities, the population was less than 6,000 people, only 4.7% of the country's population lived there, and they did not meet the legal requirements for the existence of a municipality. The majority of them were located in the border areas, with a particularly clear concentration observed in Northwestern

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Bulgaria. In addition, there were 15 municipalities in which the population was over 6,000 but under 7,000. At the same time, 40.7% of the country's population lived in the eight municipalities with a population of over 100,000 people. That is, Bulgaria had a small number of densely populated islands of economic activity and good incomes and the vast wasteland of everything else. Bulgaria included several municipalities with a significant population, high average density and economic activity. The other territories were the exact opposite. The largest in terms of population was the municipality of Stolichna (1,280,334), followed by the municipalities of Plovdiv (321,824) and Varna (319,900). The smallest municipality was Treklyano - 470 people [44], and the number of children born in 2022 was only two.

Among the social consequences of this demographic crisis, we can point out the increasingly limited access to health care and education.

For example, the overview shows that pharmacies were concentrated in large and densely populated municipalities, while some municipalities with many small and sparsely populated places practically remained without easy access to medicines. The total number of pharmacies in the country was decreasing. According to the latest data from the Medicines Executive Agency (EMA). (Institute for Market Economy (IPI) the number of pharmacies in the country was 3,252, and approximately one third of them were concentrated in the three largest cities - in Sofia there were a total of 725, in Plovdiv - 219, and in Varna. The smallest municipalities were also those without a single pharmacy. A total of 22 municipalities remained without pharmacies in 2023, and another 42 municipalities hed only one.

There are 189 state and municipal hospitals operating in the country - a total of 341. Of these, 68 are state and 121 are municipal. There are the most hospitals in the capital - 37. Seven are in Varna, 6 - in Plovdiv, five each - in Vratsa, Veliko Tarnovo and Burgas. In Haskovo, Stara Zagora, Ruse and Blagoevgrad there are four hospitals each, in Pernik – 3. In another 12 cities there are two hospitals, and in the remaining 81 – one hospital each. Of greater interest, however, are the “grey spots” - the municipalities in which there are no public hospitals - we observe such around Plovdiv and Pazardzhik, in Dobruja around Dobrich and Varna, in North-West Bulgaria, whose residents travel to Vratsa and possibly to the capital if they required hospital treatment. These are mostly municipalities with a small population and those located very close to larger municipalities or regional centers [45]. A total of 161 of the municipalities in Bulgaria do not have hospital facilities.

To maintain their vitality, municipalities need a higher birth rate and maintain a school network offering adequate education for children. Unfortunately, in a number of municipalities only a few children are born each year, which will lead to the closing of schools and further depopulation. The demographic collapse led to the closure of 1,435 schools in Bulgaria for the period 1992-2022, and in 2024 their number was only 1,942. The number of municipalities with only one school is increasing. In the last academic year, there were already 44, or

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17% of the Bulgarian municipalities. The largest number of municipalities with one school each are in the Sofia region and Northwestern Bulgaria. This is explained by the proximity to the capital of the municipalities from the Sofia region, on the one hand, and the demographic crisis, which most seriously affects the Northwest [46].

In order not to completely depopulate such municipalities, the state introduced the status of protected schools, which receive additional funding, regardless of their small number of students, to enable them to continue to exist.

Conclusion

In recent decades, the world is going through a demographic transition unprecedented in its entire history, in which the continent of Europe is leading. Thanks to the ever-changing technologies and means of communication, access to education and information, and practically unlimited opportunities for travel, the demographic and reproductive patterns of people have greatly changed. In addition, with the development of medicine, education and technology, the well-being of societies, the standard of living, and people's care for their health are sharply increasing, which leads to a drastic and unprecedented increase in the average life expectancy, especially in Europe.

Bulgaria largely fits into the demographic processes of the developed world, both in terms of birth rates and the aging process of its population. The main difference between us and developed countries is emigration. While developed countries not only do not generate emigrants, but even attract them, a significant percentage of the most viable, educated and qualified part of our population leaves Bulgaria every year. The negative demographic processes are deepening, as well as the most serious threats from the demographic crisis for the country - the acute labor shortage, the difficult functioning of the social systems, and the depopulation of vast areas of our territory.

The still negative values confirm that in developed societies in the modern world only financial stimulation of the birth rate cannot solve a demographic crisis, and a number of other measures related to keeping young people in their countries where they can create families and have children are also needed. This allows the following conclusions to be drawn:

- Despite the worsening demographic indicators for the countries of the Balkan Peninsula and the EU as a whole, the most unfavorable demographic situation is observed in Bulgaria;
- The dynamics of the birth rate and the death rate determine the presence of a permanent trend of narrowing the natural reproduction of the population in Bulgaria. As a final result, the population of Bulgaria is now below 7 million people, values characteristic of the country before the Second World War;

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- In Bulgaria, negative natural growth is permanently maintained and the country continues to lose population. The low birth rate will not be able to compensate for the death rate in the coming decades;
- Expectations of a sharp rise in the birth rate and reaching a two-child family model through financial incentives do not work and will not solve our problems. It is necessary to develop and implement policies to retain the youth in the country, and stimulating the birth rate will lead to stopping the demographic collapse and gradually reducing the imbalances;
- Over 40% of the country's territory has been turned into a demographic desert. A balance must be sought between demographic policies and policies focused on regional development;
- The considered versions of the population projections are based on the projections for the expected future development of the natural and mechanical growth of the population. They are hypothetical in nature taking into account the current dynamics of births, deaths, the number of women of childbearing age, the birth rate, settlements and emigrations;
- In Bulgaria, more active policies aimed at young people and the birth rate, which are widely applied in the countries of Northern, Central and Eastern Europe, should be implemented. It is necessary to raise the standard of living, improve the living, working and ecological environment in order to stimulate the birth rate. This will contribute to the sustainable and balanced demographic development and prosperity of a country.

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