

**SUSTAINABLE DEVELOPMENT OF REGIONS AND LOCAL
COMMUNITIES**

**УСТОЙЧИВО РАЗВИТИЕ НА РЕГИОНИТЕ И МЕСТНИТЕ
ОБЩНОСТИ**

**MORTALITY RATE AND LIFE EXPECTANCY IN BULGARIA IN THE
PERIOD 2011 – 2021. DYNAMICS AND TERRITORIAL DIFFERENCES**

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Abstract: The demographic transition is an objective process taking place on a global scale. All regions and countries in the world are taking part in it, while going through its separate phases for each of them takes a different span of time. Characteristic of the last phase of the transition is the phenomenon of demographic crisis. Bulgaria is among the countries in Europe where the negative effects of the demographic crisis are particularly strong. This applies to the greatest extent to the values of the mortality rate and of the average life expectancy (Levkov, 2017).

The purpose of the study is to examine the current trends in the development of two of the main demographic indicators in Bulgaria.

The *object* of research is the population of Bulgaria.

Scope. The study analyzes the indicators of mortality rate and average life expectancy. The intra-territorial differences are revealed. A comparison with EU countries is made.

Sources and methods. Statistical data and analyses of Bulgarian and international official sources, as well as previous research of the author, are used. Quantitative methods and comparative analysis are mainly applied.

Results and discussion.

1. A continuing rise in mortality rates in Bulgaria was determined. It was most pronounced in the last two years of the period under review, coinciding with the COVID-19 pandemic.

2. During the same time, a decrease in the average life expectancy in the country was also found.

Conclusions:

1. The course of the demographic processes, in particular of the mortality rate and life expectancy, has its internal regularities which are determined by the demographic transition. It is also affected by phenomena which are difficult to predict such as the COVID-19 pandemic.

2. There are reasons to believe that the inconsistent decisions and actions of the Bulgarian governments in the management of the pandemic situation have directly contributed to the increase in the mortality rate in the country, and as a result have also contributed to the decrease in the life expectancy.

3. The deepening of the demographic crisis in Bulgaria requires a decisive change in the country's demographic policy. The demographic problem and its solution or at least alleviation requires the adoption of comprehensive measures – social, economic, educational and political. It is necessary to activate the national discussion regarding these measures

and to bring out the demographic problem as a priority in the management of the country in the coming decades.

Keywords: mortality rate, average life expectancy, territorial differences.

Introduction

The concept of the demographic transition was developed in the first half of the 20th century by A. Landry and further developed by Fr. Notestein. Later, it was widely adopted by various scientific schools. Its main points boil down to the following:

➤ The demographic transition is a universal regularity in the development of the population. In individual countries and communities, it starts at different times and proceeds at different speeds, passing through 4 phases.

➤ During the first two phases, the death rate decreases and the birth rate remains relatively high. The natural increase is increasing sharply. A demographic explosion is underway.

➤ During the third and fourth phases, birth rates and natural growth decline. The population is aging; its number is increasing slowly, and in some countries even decreasing. The phenomenon of demographic crisis is emerging.

These projections are still used today in the preparation of UN demographic forecasts, as well as for the purposes of demographic planning and policy in a number of countries, including Bulgaria. (Levkov, 2017)

A characteristic feature of the demographic transition in Bulgaria is its relatively late beginning (the 20s of the last century) and its relatively rapid progress. During this hundred-year period, the total mortality rate registered significant changes. It reached its historical minimum of 7.5‰ in the mid-1960s of the 20th century. In the 1980s, its values rose to 12‰, surpassing the values of the declining birth rate, and the country entered a prolonged period of depopulation. Bulgaria asserts itself among the countries with the highest death rate in Europe (Levkov, 2017).

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Sources and methods

Statistical data and analyses of Bulgarian and international official sources, as well as previous research of the author, are used. Quantitative methods and comparative analysis are mainly applied. The two main working concepts are interpreted in accordance with the NSI⁷ definitions:

➤ total mortality – number of dead persons per 1000 people of the average annual number of the population (<https://www.nsi.bg>);

➤ expected average length of future life – the average length of future life of newborns under the hypothesis of invariance in the intensity of the observed in a given year the elderly mortality rate (<https://www.nsi.bg>).

Results and discussion

Table 1 presents the number of deceased persons and the values of the total mortality in Bulgaria for the period 2011 – 2021.

⁷ NSI – National Statistical Institute of Bulgaria

Table 1. Number of deaths and total mortality rate in Bulgaria, 2011 – 2021

Year	Deceased persons (thousands)	Mortality (‰)
2011	108.3	14.7
2012	109.3	15.0
2013	104.3	14.4
2014	109.0	15.1
2015	110.1	15.3
2016	107.6	15.1
2017	109.8	15.5
2018	108.5	15.4
2019	108.1	15.5
2020	124.7	18.0
2021	149.0	21.7

Source: <https://nsi.bg/bg/content/content/3006/умирания-по-области-общини-и-пол>

It can be seen that in the second decade of the century the picture was relatively stable. Until 2019, the number of deceased persons in our

country fluctuated within narrow limits and the overall mortality rate was around 14-15‰.

The COVID pandemic in Bulgaria manifested itself in 4 big waves: November – December 2020, March – April 2021, November – December 2021 and January – February 2022. In all four periods, the average daily number of infected, calculated on a weekly basis, was over 4,000. The highest values – over 10,000 per day – were recorded during the last wave at the beginning of 2022 (fig. 1).

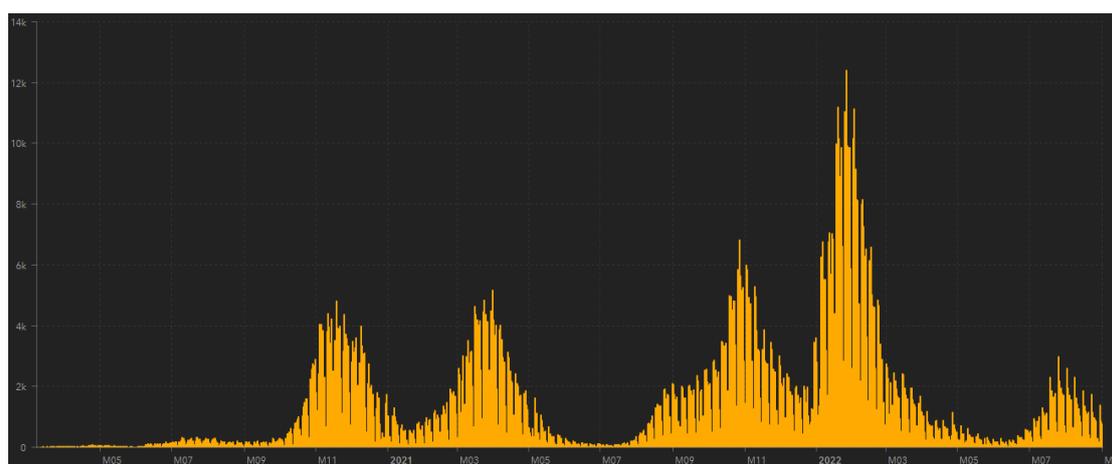


Figure 1. Daily number of people infected with COVID-19 in Bulgaria,
April 2020 – August 2022

Source:

<https://coronavirus.bg/arcgis/apps/opsdashboard/index.html#/cda0386944af4b81a5161aacec190f33>

As a result of the COVID pandemic in Bulgaria, an extremely high growth in both the number of dead persons and the total mortality has been reported. The values of both indicators increased in two years by nearly 40%. The number of dead persons in 2020 was 125 thousand, and the total mortality rate – 18.0‰. In 2021, the number of deaths was 149 thousand, and the total mortality rate reached 21.7‰. A negative record has been set for the time since demographic statistics have been kept in the country

(https://nsi.bg/sites/default/files/files/pressreleases/Population2021_6IY8TD4.pdf.)

The phenomenon of “excess mortality” appears, which is usually associated with the consequences of epidemics, natural disasters and wars (for example, Bulgaria’s participation in the First World War led to a sharp increase in the number of deaths – both military and civilian).

The comparison with the data for the world as a whole shows that the Bulgarian population is much more affected by the COVID pandemic.

According to data from the Johns Hopkins University in Chicago (JHU) as of 15/08/2022, there were about 590 million registered people infected with COVID in the world. (<https://coronavirus.jhu.edu/map.html>) Rough calculations show that this was about 7.5% of the world population, which at the same time is approximately 8 billion. 6.44 million deaths or

1.1% of infected persons were registered.

(<https://coronavirus.jhu.edu/map.html>)

At the same time, the number of registered infected people in Bulgaria was 1.23 million – almost 19% of the country's 6.5 million population. The registered deaths were 37.5 thousand or 3.5% of the infected. (<https://coronavirus.bg/bg/statistika/dead>) In addition to deaths directly caused by COVID, there is also an increase in deaths caused by other diseases. This is due both to the commitment of a huge medical resource for the country, and to other reasons such as the postponement of a large number of planned operations.

The comparison of the number of deaths in the country by week in 2020 and 2021 with their number for the period 2017 – 2019 shows the clear impact of the pandemic on the increase in mortality in Bulgaria (fig. 2).

During each of the four waves, the weekly death rate rose sharply and from the usual 2-2.5 thousand it reached values of 3-3.5 thousand, and in some weeks of November and December 2021 it exceeded 4000.

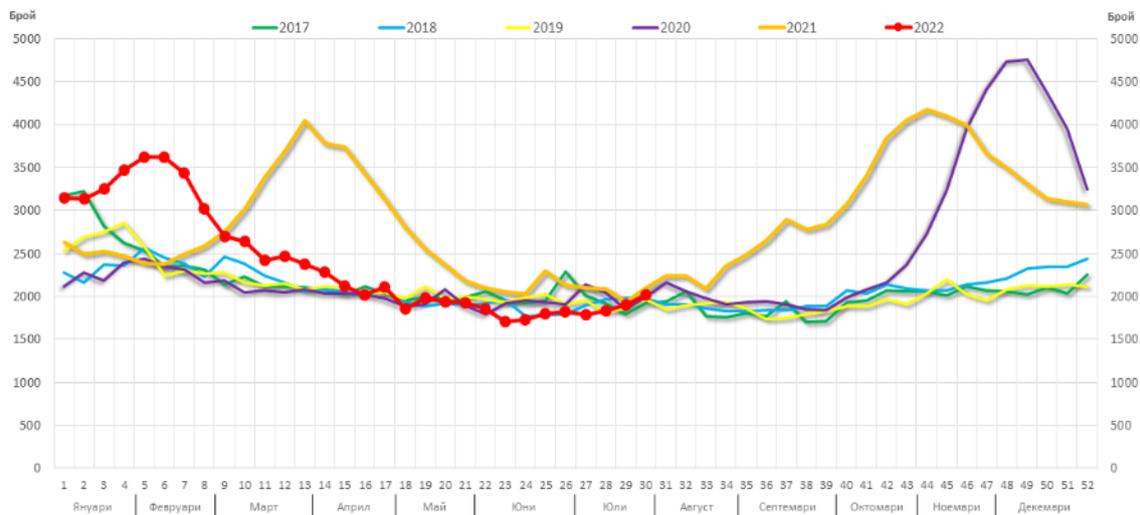


Figure 2. Number of deaths in Bulgaria by week, 2017 – 2022

Source: <https://nsi.bg/bg/content/18121/basic-page/умирания-в-българия-по-седмици>

There is a positive trend for the weekly mortality in the spring and summer of this year to approach the values from before the pandemic.

Territorial differences. Differences in the level of total mortality between regions in the country continue to widen. In 2021, they varied from 16.8‰ in the city of Sofia to 30.8‰ in the Montana region and 32.3‰ in the Vidin region (fig. 3).

Only in 7 districts the values of total mortality were below the national average. Critically high (over 28‰) was the death rate in two more areas along the western border of Bulgaria – Pernik and Kyustendil. This

territorial feature also corresponds with the results of our previous research on the demographic situation in Bulgaria. (Levkov, Lakov and Velikov, 2020)

T. Wieland (Wieland, 2022) makes a detailed spatial analysis of excess mortality in Germany in 2020, taking into account demographic changes in the country. The territorial breakdown is at the NUTS 3 level (400 counties). The author establishes the existence of a spatial dependence between the total mortality and that caused by COVID-19. This dependence is proven only in the higher age groups of the population. Similar analyzes are lacking in Bulgaria, and the tasks of the present study are more modest.

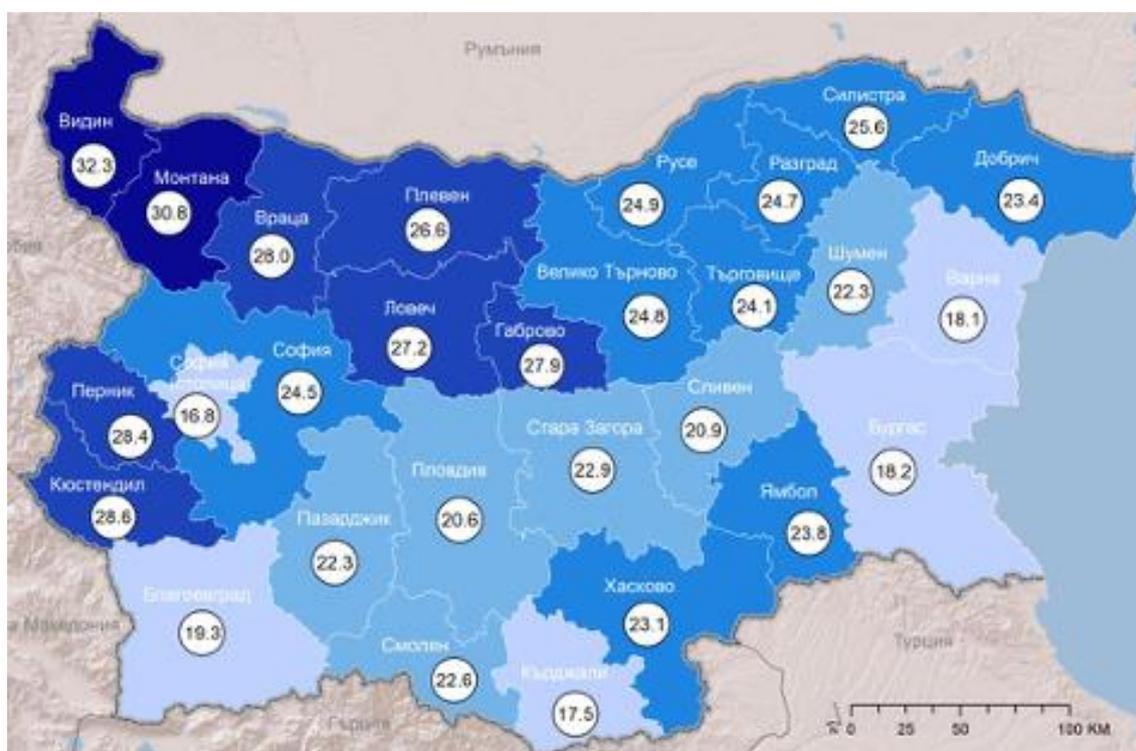


Figure 3. Total mortality rate in Bulgaria by region, 2021

Source:

https://nsi.bg/sites/default/files/files/pressreleases/Population2021_6IY8T D4.pdf. Visited on 6.07.2022

Life expectancy

The expected average life expectancy for the entire population of the country, calculated for the period 2019 – 2021, was 73.6 years, and compared to the previous period (2018 – 2020), it decreased by 1 year. The average life expectancy for men was 70.1 years, while for women it

was 7.3 years higher – 77.4 years (fig. 4). Compared to 2011, in 2021 the average length of life for men decreased by 0.3 years, while for women it remained unchanged.

(https://www.nsi.bg/sites/default/files/files/pressreleases/LifeExpectancy_2019-2021_L5X5HWJ.pdf)

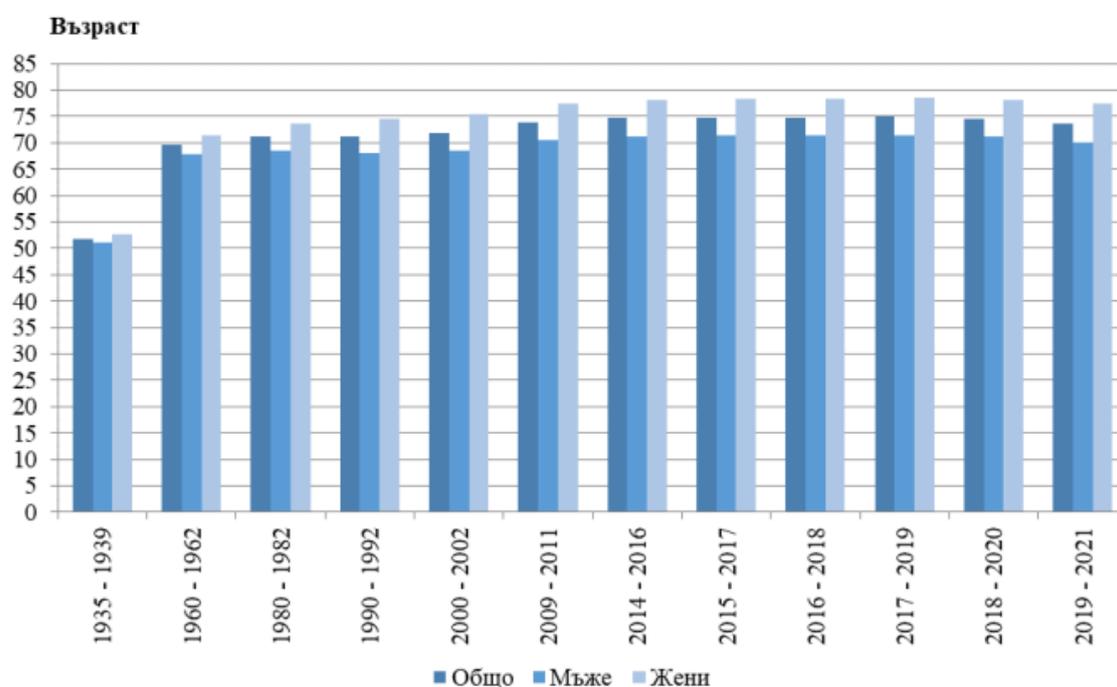


Figure 4. Expected average life expectancy by sex and periods.

Source:

https://www.nsi.bg/sites/default/files/files/pressreleases/LifeExpectancy_2019-2021_L5X5HWJ.pdf

Conclusions

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It is necessary to activate the national discussion regarding these measures and to bring out the demographic problem as a priority in the management of the country in the coming decades.

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