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NATURAL POPULATION GROWTH IN BULGARIAN RURAL AREAS IN THE PERIOD 2011-2021

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Abstract

An attempt is being made to analyze the geodemographic picture in the rural areas (RA) of Bulgaria within a ten-year period. The authors of the scientific publication are based on the fact that the human population located in the smaller administrative territorial units (neighbourhoods, villages and small towns in terms of area and population) is of key importance for the functioning of social activities, which are basic for economic development in the country. The purpose of the scientific research is to investigate and analyze the natural growth (NG) of the population in the RA of Bulgaria for the period between the two national censuses 2011-2021. The results will present the temporary geodemographic picture of rural municipalities. Methodology in the scientific article is based on the definition of RA in the EU and Bulgaria. It is applied to the NUTS classification for grouping the above-mentioned regions of the country, calculation of the natural increase of the population by years is based on the methodology of the National Statistical Institute (NSI) of the Republic of Bulgaria. The visualization of the process - NG of the population in the RA is presented in tables and figures, in which the dynamics of the numerical values for a certain period in per million (‰) and their change during the study are indicated.

Key words**:** *geodemography, rural areas, natural increase, NUTS, Bulgaria*

INTRODUCTION

The policy for the development of rural areas (RA) in the EU is dictated by the accompanying facts, namely that approximately 45% of the population of the 27 member countries live in the RAs, which covers 91% of the territory. Rural areas cover approximately 82% of the country's territory and 35-38% of its population [5, 9]. The age structure of the population is less favorable than that of the city, due to the relatively low share of people of working age. A problem with the retention of the young population in childbearing age is also emerging [7]. Working conditions are mainly related to agriculture, forestry and non-agricultural activities, which are based on the natural conditions in these areas. All this has a direct impact on geodemographic processes in rural municipalities in Bulgaria [2].

The natural increase (NI) of the population represents the characteristic of the natural movement of the population in a global, regional and local plan for a certain period of time. The general trend of the NI has a downward trend of development, with the values in the country, and in particular the RA, being in negative values. The entire geodemographic picture for the NG decreasing values, and especially for the RA of the country for the entire study period. This can be defined as the geo-demographic state of the population over a period of time. This can be linked to direct socio-economic factors: birth rate, death rate, religion, migrations and others. On the other hand, the indirect processes affecting the NG are: epidemics, wars, environmental and others.

On national level, the coefficient of the NI since 1990 has a negative value of 0.4 ‰, and in 1997, it reached minus 7 ‰ and remained within the limit of the contested indicator [1]. Negative values were characteristic until the end of the twentieth century, and the trend for the country continued in the coming decades. This situation creates problems in the entire geodemographic picture of the country and

directly affects the socio-economic status [8]. The age structure of the population has a strong influence on natural growth. It reflects the alternation of the generations of the ancestors with those of the children, not the generations of the parents with those of the children. The natural increase gives a geodemographic picture of the generations over one.

The development of regional policy in the EU concentrates on a set of spatial priorities, including: economically and socially underdeveloped regions, restructuring of urban and industrial areas, underdeveloped economic areas, construction of ecological industrial zones, socio-economic development of RA, raising the living status of the population in peripheral areas and a number of other activities, for the purpose - The EU Regulatory Commission with decision № 1059/2003 gives NUTS status [12].

Based on the classification presented above and the Law on Regional Development (LRD, 2008), the following administrative-territorial units are distinguished in Bulgaria: NUTS 0 - Republic of Bulgaria, NUTS 1 - two statistical zones, NUTS 2 - six statistical regions, NUTS 3 - 28 regions and LAU 1 - 265 municipalities, with 231 designated as rural areas for the entire country. For 2021, in Bulgaria, rural areas cover 89,910 km² or 81% of the country's territory, with an average population density of 74.6 p/km², for the RA of Bulgaria it is 35 p/km², or below the average indicators for the country and the EU.

In this context, the purpose of this study is to review the natural population growth in Bulgarian rural areas and seek for exact reasons to the depopulation of the RA. More precisely the reviewed areas will be: population, birth of children, mortality and population growth.

MATERIALS AND METHODS

The authors analyze the NG picture of the population in the RA of the country according to the NUTS classification over a period of ten years, with the last national census coinciding with that of the EU. The material provides an overview of the population, birth rate and death rate for the same period indicated above with the aim of a clearer geodemographic picture related to the rural areas of the country and the subsequent research and analysis of natural growth, again for the same period and spaces.

In the study and analysis of the material, the authors are based on the definition of RA adopted in Bulgaria: ***"...rural areas - the municipalities of (LAU 1), in which there is no settlement with a population of more than 30,000 people..."*** [11]. The authors refer to the Law on Regional Development of 31.08.2008, [3].

The coefficient of natural growth (CNG), the number of live births (LB), the number of deaths (D) and the average annual number of the population (AP) within a year are part of the following formula:

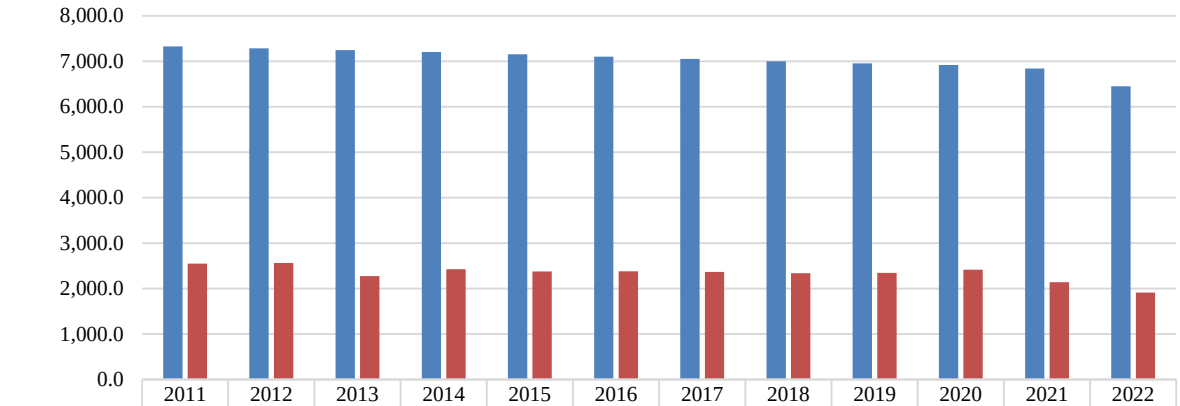
$$CNG = (LB - D) / AP * 1,000 \quad .....(1)$$

For the study and analysis, the authors refer to the NUTS classification, applicable in the country, statistical information from National Statistical Institute, NSI, geodemographic methodology, comparative and mathematical analyses, as well as their own calculations. Microsoft Word and Excel were used in the analyses and conclusion.

RESULTS AND DISCUSSIONS

During the different time periods including the geographical-historical processes related to the change of the territory of Bulgaria, the NG of the population has changed based on the above-mentioned processes. State border changes or wars directly affect the NG [6]. The processes of birth and death have a specific influence on the NG of a certain territory. [13]. In a period of eighty-five years 1900 - 1985, from 3,744,283 people, the population grew to 8,948,649 people or by 41.84%, (the largest number for the last 145 years) for Bulgaria. The population of the country increased until 1985 of the XX century. After this stage there is a decline that continues to the present day. In 1990, for the first time NSI reported a population decline with a negative sign of 0.4‰. For 2001, the

national population was 7,932,984, down 1,015,665 from its peak in the 1980s. In 2011, the first national census was carried out (over 85% of the population was counted electronically), which was synchronized with the rest of the EU member states, NSI statistics reported 7,364,570 people. The last national census of 2021 reported 6,838,937 people on the territory of the country.



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bulgaria	7,327.2	7,284.6	7,245.7	7,202.2	7,153.8	7,101.9	7,050.0	7,000.0	6,951.5	6,916.5	6,838.9	6,447.7
RA Bulgaria	2,548.7	2,561.9	2,271.8	2,425.4	2,376.9	2,378.5	2,364.9	2,338.2	2,342.1	2,413.8	2,140.5	1,909.7

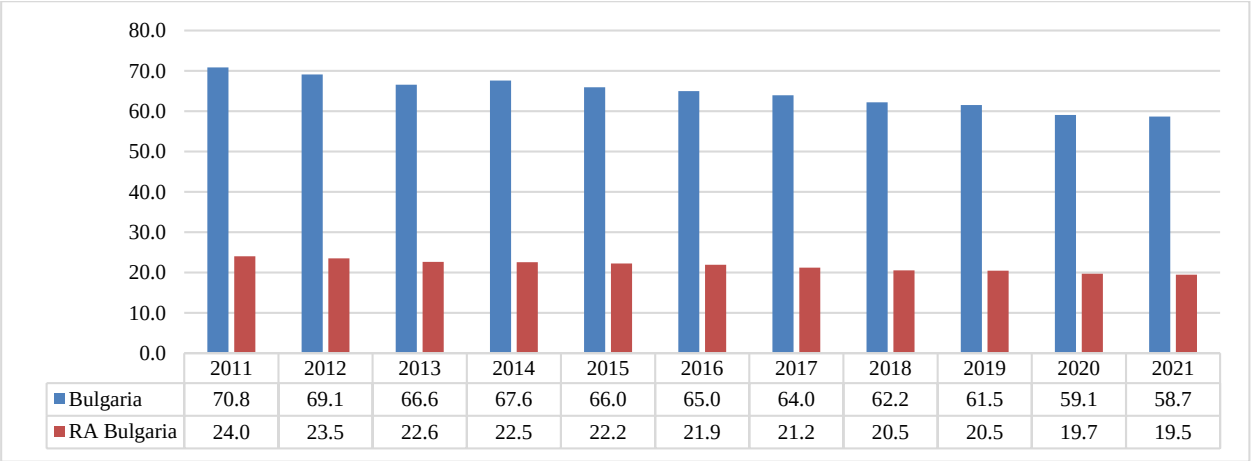
Fig. 1. Population in Bulgaria and the SR in the period 2011-2022, in (thousands)
Source: [10].

The analysis visualized in Fig. 1, the number of the population in the country for the period 2011-2022 decreased to 879.5 thousand, with the trend following downward numerical values. With the biggest drop in population reported in the last three years of the study with 503.8 people, this is the period of the global Covid epidemic where there is a higher mortality rate among the population. Population decline continues, the trend is negative in the RA of the country and smaller settlements. At the beginning of the study, the population in the RA of the country was over two million, but at the end it was significantly less, approximately 25% decreased in the above-mentioned areas. In the last years of the research in RA, a high population decline is reported. The main reason for the reduced number of the population not only in the country, but also in the RA, is the lack of a protectionist policy on the part of the state, aimed at preserving the geodemographic background.

The natural reproduction of the population is a biological process, which subsequently turns into a social phenomenon. Fertility in women begins on average from the age of 15 and can last up to 50 years. During this time, each woman can give birth to 10 to 12 children (in theory). In men, the biological ability to create generations can last beyond 75 years. Birth rate refers to the purity of the birth of children, as measured by various geodemographic indicators: total birth rate, female fertility rate, etc. Reproduction of the population can be: simple, narrowed or expanded, it depends on the various indicators of the coefficients. It is generally accepted that the intensity of the birth process is the number of live births per thousand people.

Birth is a geodemographic indicator that is largely related to the ethnoculture of a particular ethnic group. The socio-economic status of a woman in the last 30-40 years largely determines the number of children. During the study period, between the two national censuses, births in the country decreased every year, the change in the mentality of the Bulgarian people during the transition period (which has not ended), leads to a downward movement of the trend. In ten years, births for the whole country have decreased by 12,168 people or 17.17% (Fig. 2). For the RA of Bulgaria, births follow the national downward trend. Again for the same period, the decrease is 4,542 people or 18.01%. The reasons are identical, also

characteristic of smaller administrative-territorial units.



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bulgaria	70.8	69.1	66.6	67.6	66.0	65.0	64.0	62.2	61.5	59.1	58.7
RA Bulgaria	24.0	23.5	22.6	22.5	22.2	21.9	21.2	20.5	20.5	19.7	19.5

Fig. 2. Births in Bulgaria and in rural areas for 2011-2021, in (thousands)
Source: [10].

Mortality is the other major component in geodemographic, which is used to characterize the population (deceased) globally and locally over a period of time. This is primarily a physiological process of the human organism, during which the life cycle is interrupted. It is an inevitable factor, both for the individual and for society. On the other hand, mortality helps to change generations in a certain period of time. During the different socio-economic stages that the country went through from the end of the 19-th century to the present day, the death rate has moved within different limits. Relatively low values of mortality, which remained within the limits of 14.5 ‰, were reported from the mid-1930s to 1945. After the mentioned period until 1964, the death rate decreased at a smooth pace, reaching 7.9‰. Values were relatively stable until 1974, when an average of 10 ‰ was reported. After this stage in 1997, the highest mortality rate in the recent history of the country was recorded at 14.7 ‰ as a result of the changes [16].

After 2000, the death rate for the country was 14.1‰ for men 15.5‰ and women 12.6‰. The high mortality after the mid-70s of the 20th century until today is due to geopolitical factors dictated abroad. [1].

During the study period of mortality in Bulgaria, the values for every single year increased, and in ten years the trend increased by 40 thousand people.

For 2016, the analysis indicates a decrease in mortality compared to the previous research periods. In the following stages for 2018/2019 years, the trend is downward, this coincides with the World Pandemic.

In the following years, the authors' research shows a high trend of mortality in the country. For the RA of Bulgaria, the mortality rate is high and this geodemographic indicator is preserved throughout the study period. A downward trend, again reported in 2018 and 2019, when compared to the parallel one (there is a coincidence with the World Pandemic)

A rise in negative mortality rates is reported at the end of 2021, the trend reports a growth of 16%. (Fig. 3).

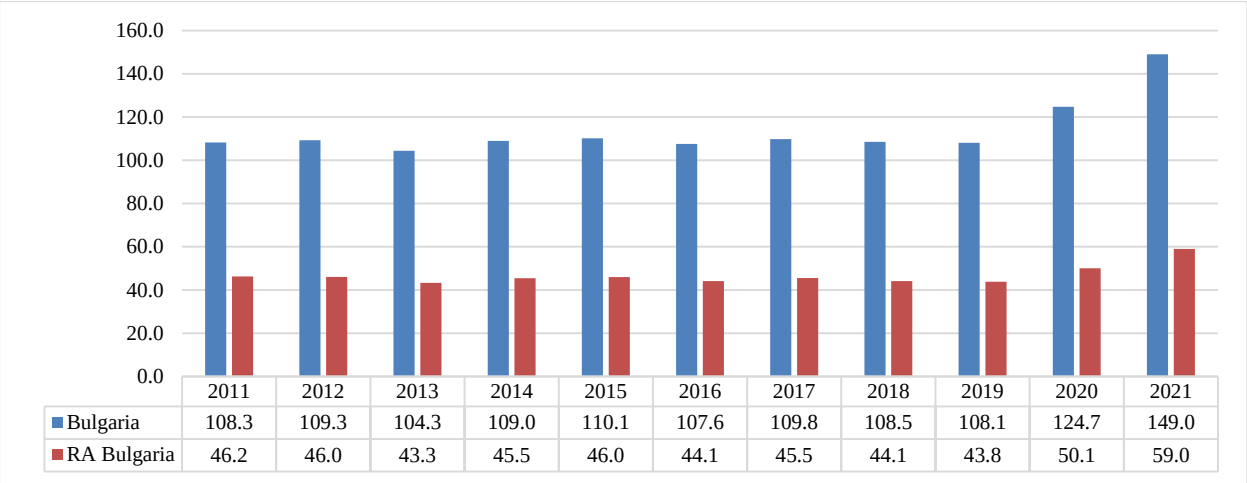
The high death rate for the country is due to a protectionist policy on the part of the state.

The growth of human population in general is a key point for the prosperity of a nation in its socio-economic growth.

Natural growth is part of geodemography as an element and its change depends on a number of socio-economic indicators and factors at the local or global level. This geodemographic process represents the difference in birth and death rates and is part of the physiological human cycle, from conception to biological end.

The coefficient of NI is the characteristic of natural reproduction, but it is influenced by the sex-age structure. It can be measured in

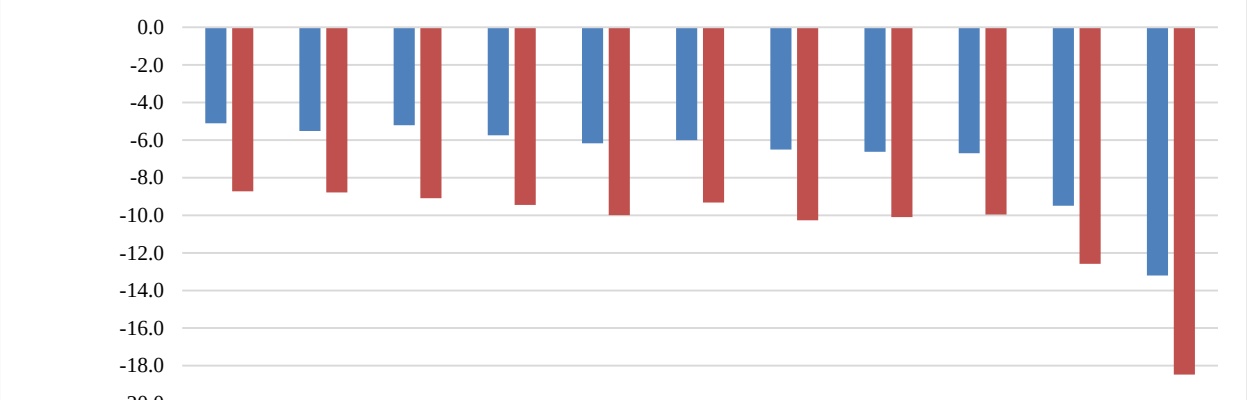
absolute difference between the number of births and deaths.



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bulgaria	108.3	109.3	104.3	109.0	110.1	107.6	109.8	108.5	108.1	124.7	149.0
RA Bulgaria	46.2	46.0	43.3	45.5	46.0	44.1	45.5	44.1	43.8	50.1	59.0

Fig. 3. Mortality in Bulgaria and in rural areas for 2011-2021, in (thousands)
Source: [10].

Natural increase reflects the replacement of generations of ancestors with those of children, not generations of parents with those of children. Again, according to Uranis [15], the coefficient of NI is formed in seven groups: 1) no increase - below 0 ‰ 2) very low to 2.9 ‰ 3) low from 3 to 5.9 ‰ 4) medium from 6 to 9.9 ‰ 5) high from 10 to 19.9 ‰ 6) extremely high from 20 to 29.9 ‰ 7) maximum over 30 ‰ (Fig. 4).



	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bulgaria	-5.1	-5.5	-5.2	-5.7	-6.2	-6.0	-6.5	-6.6	-6.7	-9.5	-13.2
RA Bulgaria	-8.7	-8.8	-9.1	-9.4	-10.0	-9.3	-10.3	-10.1	-10.0	-12.6	-18.5

Fig. 4. Natural increase in Bulgaria and in rural areas for 2011-2021, in (‰)
Source: [10].

The natural increase is shown by the ratio of the population of a territory, as in this case, the statistical analysis for Bulgaria reports negative values for the entire study period. Within ten years, the trend grew in a negative direction as visualized in Fig. 4, the country's population decreased by -8.1 ‰. For 2016, there was a minimal drop in population from the previous year. Negative values are also reported in the period 2018/2019, compared to the previous years of the study for Bulgaria, we note that the last year coincides with the Covid 19 epidemic. At the end of 2021, NG has the highest negative values, over – 3.7‰. According to the Urbanism scale, the country falls into the lowest group ***"no growth - below 0 ‰"*** for the entire period of study in Bulgaria of the NI. For the RA of Bulgaria, NG follows the national trend, negative growth for the entire study period. Within ten years from 2011 to 2021, NG in a negative trend has increased by – 9.8‰. The trend is

noticed in the RA of the country in 2016, there is a minimal decrease in the population from the previous years, this order is also reported in 2018 and 2019, compared to previous years of research, again including the last year of the Covid pandemic in Europe. For 2021, NG has the highest negative values, over 11.1 ‰ compared to the previous analyzed periods. According to the urbanism scale, the RA of Bulgaria falls into the lowest group ***"no growth - below 0 ‰"*** for the entire NG study period.

CONCLUSIONS

The natural increase gives an accurate idea of a momentary geodemographic picture in this case of the RA of Bulgaria for the period indicated above. The basic element is the number of the population, for the country during the period of the study there was a decline, as well as in RA. The main reason can be pointed to the lack of a protectionist policy the possibilities of the country as protection, includes all social, economic and geostrategic possibilities for preserving and increasing the population of the country, as well as controlling the migration flow [4] of the population group of fertile age. The population in the RA of the country is decreasing, which leads to the depopulation of large areas [14]. In the coming decades, the problem of overpopulation in peripheral areas and urbanized areas will deepen due to geopolitical reasons. Imposing a new "paradigm" to get out of the geodemographic crisis is urgent and necessary for the country.

Births have decreased, the trend is noticeable both at the national level and in rural areas. The reasons for the negative values are social, economic and the missing protectionist policy, but it can also be explained in the mentality of women in recent decades. An increase in births is a vital process that can compensate for high mortality, but not migration processes. Retention of the childbearing population in the SR of the country can be achieved by strengthening socio-economic processes and infrastructural activities. The natural features in rural municipality (RM) are not used as intended, this is a potential that is subject to study and application in practice.

High prudence appears as a geodemographic indicator (there are negative indicators throughout the period), which is part of the national strategy for the country and rural areas. Before the research period, the mortality rate for Bulgaria and the adjacent RAs was high - the reason is the lack of protective security, but here one can also add the low socio-economic status of the population and its aging in the peripheral areas. Lack of protectionist policy on the part of the state, ethno-cultural features in the region's RM and other related to the lifestyle of the population. Natural increase is the key moment that determines the geodemographic picture of the studied territory for a fixed time. In this case, for a ten-year period, the NI in the country and the RA of the same is negative. According to the scale of the Swedish demographer Urbanism, the studies fall into the lowest group ***"no increase - below 0 ‰".*** The basic reason for reaching this situation is the absolute abdication of state and lack of protectionist policy on the part of state institutions. The change should occur only when the management model is changed. formatting.

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