

BIRTH RATE IN RURAL AREAS OF BULGARIA FOR THE PERIOD 2011-2021, ACCORDING TO NUTS 1

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Abstract

In the modern Globalized world, the migration movement is accompanied by a population of childbearing age, which in turn gives rise to a geo-demographic birth rate process. The study examines and analyzes the birth rate process on the territory of Bulgaria within the framework of the last two censuses. The aim is to apply a comparative analysis of the process in rural areas related to the results obtained, the deductions and the conclusion, applying the European classification NUTS 1. The research uses the National Methodology for the study of fertility and the application of the fertility rate. The ratio between rural areas during the study period will present the real geo-demographic picture of the country. The study includes the mechanical movement and the birth rate as geodemographic processes in the rural areas of Bulgaria according to the NUTS classification for a certain period of time. In the conclusion, conclusions are drawn based on the analysis and results, and recommendations for a future period of time are also given.

Key words: fertility rate, mechanical growth and classification NUTS

INTRODUCTION

The regional development methodology has begun to be imposed as a national priority, regardless of the ongoing changes in global geostrategic - a process affecting Europe and the EU countries. On the other hand, the functional nature of regional development implies a territorial approach to the management of the respective communities, departing from the centralized system. In this regard, the focus on Rural areas (RA) challenges us to solve a series of complex tasks related to the socio-economic and ecological development of these territories. The policy for the development of RA in the EU is dictated by the accompanying factors - approximately 60% of the population of the 27 member countries live in rural areas, covering 90% of the territory of the Community. Rural areas in the EU are diverse in terms of a number of factors: physical-geographical, geopolitical, administrative, ethnic, religious, social, economic, environmental, institutional-technological and others. This variety is one of the largest

resources of the above-mentioned within the EU.

In the scientific study the authors accept the national definition, which defines as: "Rural region - the municipalities of (LAU 1), in which there is no settlement (municipality) with a population of more than 30,000 people".

According to this definition, 232 of them are classified as rural, out of a total of 265 municipalities in Bulgaria for 2020. Rural areas cover approximately 82% of the country's territory and 35-38% of its population (Marinov and Mutafov, 2022) [3]. In the last decade, a large part of the RA of the country has been depopulated due to a number of socio-economic, environmental and geopolitical processes. Examining the geo-demographic picture in these areas, the above-mentioned processes must be taken into account, in result of which the dynamics of the population is large and there could be discrepancies with the National Statistics.

The number of the population is a basis on which research, analysis and conclusions can be made about the state of a territory in a

regional or global plan. In the development, the authors consider the number of the population according to the NUTS 1 classification in the RA of the country. Statistical data indicate that for 2011, the population in RA of the country was 2,463,083 people, respectively in Region 1 it was 1,511,400 people or 61.31%. For the same year for Region 2, the population numbered 951,683, or 38.63% of the total. For 2016, the total number of the population in the RA of the country is 2,384,050, which is 33.59% of the same in Bulgaria. At the end of the research period for 2021, there are 2,234,791 people in RA, in Region 1 the population is 1,299,699 people, or 58.15%, for Region 2, there are 935,092 people, or 41.84%.

Geo-demographics considers two types of migration processes: internal and external. The internal processes or Mechanical movement (MM) of the population takes place within the borders of the state between its administrative-territorial units (borders) and populated areas (Slaveikov, 2012) [8]. The process of migration occurs in the directions "village-city", "city-city", "city-village" and "village-village", here can also be counted daily trips for the purpose of work and study, as well as suburbanization as a process (Petrov and Marinov, 2020) [7].

Consequently, with this "displacement" of people of childbearing age in the future, there will be an impact on the birth rate in favor of the large urban centers. Urban areas provide a better standard for the population moving from small administrative centers to large ones. The settlement of a population of childbearing age increases the birth rate in urbanized areas, while proportionally - the process decreases in RA, followed by depopulation of the same territories.

Having children is a biological and social phenomenon, defined as a geodemographic event on a global, regional and local scale. It is a continuous process of development. The birth rate, in turn, is a major component of the natural reproduction of the population. Empirical demographic analyzes indicate that in the fertile period for women aged 15-49 years, they can give birth to an average of 10-

12 children. The number of births on the territory of the country, and in particular in RA, according to NUTS 1 classification, is closely related to the number of the population, but provided that the growth is constant, regardless of the minimum and maximum values.

The purpose of the research is to study and analyse the mechanical increase and birth rate in rural areas of Bulgaria based on the NUTS classification for the period 2011-2021, between the two European censuses. Accordingly, after the obtained results, conclusions should be made and recommendations should be made for the geodemographic picture in the rural areas of the country.

MATERIALS AND METHODS

The scientific development uses the birth rate linked to the population censuses in Bulgaria during the years: 2011, 2016 and 2021. The starting year coincides with the first joint census of the EU countries and, accordingly, the last one up to this stage. An interim year from the national annual population census is also indicated for reliability and a basis for comparison.

The purpose of the study is to track the birth rate in the RA of Bulgaria based on the NUTS 1 classification, statistics and the Law on Regional Development in force from 31.08.2008, State Gazette No 50 of May 30, 2008, amended SG., No 21 of March 13, 2020, Chapter Two - Territorial basis of regional development, Art. 4. (2), (suppl. - SG No 21/20, in force from 13.03.2020).

The birth rate is measured in per mile (‰), indicating the total number of live births in the respective year for every 1 000 people of the average annual population of the previous year:

$$BR = (LB / PC) * G \dots\dots\dots(1)$$

where:

BR – Birth rate

LB – Live births during the study period

PC – Number of population of the country (region)

G – Coefficient per thousand (‰).

The research used the European NUTS classification, Bulgaria's Law on Regional Development, statistical information from the National Statistical Institute on the number of the population at the regional and national level, mechanical growth, geodemographic methodology for calculating the number of the population, comparative and mathematical analyzes and the authors' own calculations, based on the collected information (Mutafov and Marinov, 2022) [5]. The scientific research is applicable, through a comparative analysis, between EU member states using the NUTS classification, it is also applicable to smaller administrative-territorial units of the same. Microsoft Word and Excel were used in the development of the scientific material.

RESULTS AND DISCUSSIONS

Internal Mechanical movements (MM) in the RA of Bulgaria include: settlements, emigrations and Mechanical growth (MG) as well as various types of socio-economic, environmental and other processes caused by the need for better education, work and raising the living status (Markov, 2018) [4]. In the scientific development, MM has been analyzed, as part of the geodemographic process from MG within the specified years, as an indirect geodemographic process in the RA of the country and in particular, according to the NUTS 1 classification, having an impact on the birth rate based on a population of childbearing age. The methodology is based on the MM (number of people) of the population in the RA of the country (Marinov, 2022) [2] in the specific case, region 1 - "Northern and South Eastern Bulgaria" for 2011, the MG increase for the entire territory reports a positive balance of 113 persons, and in the following year 2016, the values are negative - minus 6,417 persons, and for 2021, the indicators are again negative - minus 707 persons. For the region 2 - "Southwest and South Central Bulgaria" for 2011, the MG reports negative values - minus 902 persons. In the following year, 2016, the MG reports minus 4,446 persons again and for 2021, a

geodemographic analysis for the MG indicates minus 132 persons.

In Fig. 1 Mechanical growth in RA and NUTS 1, period 2011 – 2021, the population change is visualized during the study period, in number of people for the indicated areas.

Mechanical growth is a geodemographic indicator in which the "main participants" are mostly of childbearing age and their "movement" from one space to another has a direct impact on the birth rate and population size.

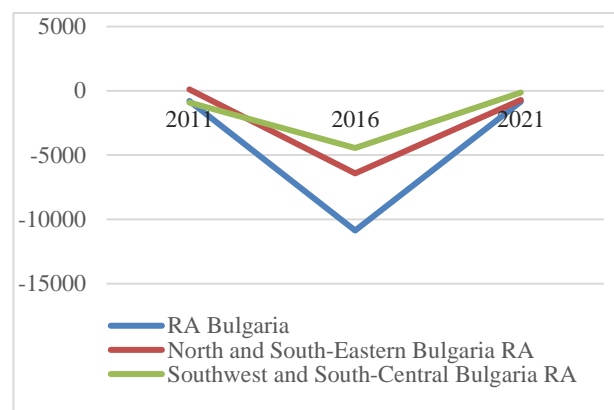


Fig. 1. Mechanical growth (number) in RA and NUTS 1, period 2011 - 2021.

Source: Own research and National Statistical Institute [6].

In this case, during the study in the RA, according to the NUTS 1 classification, during the entire research period 2011-2021, the MG has negative values, for the country, the analysis reports an average value of minus 1,418 persons, for the RA during the same period it is minus 12,491 persons. With average values of the MG during the research period 2011-2021 for "Region 1", the analysis indicates that the MG compared to that of RA per country constitutes 56.12%, while for "Region 2", in the same period the values are 43.78%.

Birth as a process is largely associated with the age structure of the population. According to the age structure scale created by the Swedish demographer Gustav Sundberg (1857-1914) [9], the authors determine that the type of age structure for RA in NUTS 1 is a Regressive type - the proportion of ancestors exceeds that of children. This is related to the slow generational change due to the longer

life duration and the accumulation of many generations. The regressive type is accompanied by zero or negative natural growth. The age structure predetermines narrowed natural reproduction, where the number of children in the family is less than 2 - the population decreases in number, each subsequent generation is smaller. From the empirical study, the authors adopt - Modern type of reproduction for RA according to the NUTS 1 classification (applied to both regions). It is characterized by the slow change of generations of parents and children. This is due to relatively low birth and death rates and longer life expectancy, as well as the large proportion of a migrating population of childbearing age.

In Table 1, live births are visualized by year in the RA of the country and by NUTS 1, in thousands, the numerical values of the studied areas are presented [6].

Table 1 presents live births in the period 2011-2021, for the country and the two regions indicated in the study. For 2011, the population number of the country was 7,364,570 for the RA it was 2,798,536, live births in Bulgaria were 70,846 of which 23,957 lived in the RA or in a percentage ratio to the total figure they were 33.82%.

Table 1. Live births by years in the RA of the country and by NUTS 1 (number)

District	Years		
	2011	2016	2021
Bulgaria RA	23,957	21,882	19,540
North and South-Eastern Bulgaria RA	14,697	13,113	11,444
Southwest and South-Central Bulgaria RA	9,260	8,769	8,096

Source: [6].

In 2016, as a pure statistic, the number of the population from the previous year of research in the country decreased to 7,101,859 or by 3.70%. Accordingly, there is a decrease in the same amount in RA - 2,378,512 or by 17.66% from the previous period. Live births in the indicated year for the country were 64,984, while in the RA for the same year there were

21,882 (9.48% decrease from the previous period) or 33.67% of them.

The last stage of the study includes the year 2021, as the population for the country is 6,519,789, compared to the initial period, it has decreased by 12.96% within ten years, correspondingly, there is also a decrease in the population in RA of 2,477,519 people, by 321,017, 12.95%. There were 58,678 live births in the country this year, 19,540 of them in the RA, or 33.30% of the same. From the initial to the final stage of the study, the live births in the RA of the country decreased by 4 417, or by 18.44% over a ten-year period.

For the RA of North and Southeast Bulgaria during the study period, the birth rate moved in a downward direction. In 2011, the total number of births was 14,697 or 61.35% of the process in the RA of the country. For the interim year 2016, the statistics report 13,113 people's births, a decrease of 1,584 peoples or 10.77% from the previous period. The births in "Region 1" referred to the general statistics for RA of the same year constitute 59.93%. At the end of the study for 2021, within ten years, the decline in births was 22.13%.

For the RA of Southwest and South-Central Bulgaria, the number of births is less according the classification. In 2011, the statistics reported 9,260 people's births or 38.65% of the total number of births in the RA of the country. For the interim year 2016, a decrease from the previous year by 491 peoples or 5.30%, is also reported. For the same year in "Region 2", when analyzing the numerical values, there is a minimal growth of 1.42% when comparing the births with those of the total number for RA with the previous year. At the end of the study, for the ten-year period, the drop in births was 12.57%, constituting 41.43% of the total process in RA (Yankov, 2014) [10].

The study presents in Figure the births during the specified period, by years, on the territory of the country; RA in the same, as well as the statistical sample for the regions, according to NUTS 1.

Births are defined as a geodemographic process on a regional and global scale and affect the majority of the population of childbearing age. On the other hand, the birth

rate is a major component in the natural increase of the population and the change of generations.

Figure visualizes the birth rate process on the territory of the country, RA and regions according to NUTS 1 classification (Yankov, 2016) [11].

For Bulgaria, in 2011, live births were 9.61‰, in the following ten years, the process reports a drop within 1.51‰, which corresponds to a reduced total number of the population in the country. In the RA in the period 2011-2021, births also decreased with a minimum rate of 0.26‰.

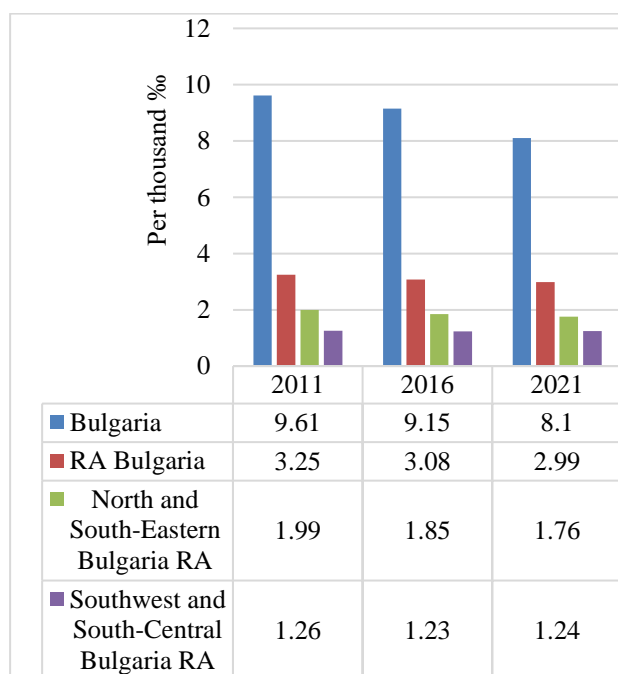


Fig. 2. Live births in the RA of the country and according to NUTS 1, at (‰)

Source: Own research and National Statistical Institute [6].

The same trend is maintained at the "Region 1" level within ten years - of 0.23‰, or the numerical values of decrease are approaching those at the national level. For "Region 2" again, for the same period of ten years, there is a minimal drop of 0.02‰, births maintain a constant position.

The main reason is that in this Region located the two largest urban areas and smaller administratively gravitating to them territories, with a well-developed socio-economic infrastructure.

CONCLUSIONS

The research and analysis of the RA in the EU and in particular in Bulgaria, based on the NUTS classification from Geodemographic and Geopolitical point of view of, has a strategic importance - the migration of the population is tracked, the ethnic and religious affiliations have been studied. The number of the population in the RA by region is decreasing, within ten years there is a decrease of 14%, the main reasons are the high migration, the low average life expectancy in these regions and, last but not least, the inadequate policy on the part of the rulers (Yankov, 2019) [12]. In the research study, the authors dwell on the MG, which, according to them, is basic for the development of a certain territory, increasing the number of births, increasing the number of the workforce, increasing the GVA. The mechanical growth during the study period in both regions has negative values, which leads to the depopulation of territories in which there are no "visible" reasons for this phenomenon. Analyzing the territory of the country according to NUTS 1 classification, the authors "conditionally" divide the space and compare the process of Birth rate, which is the basis of the socio-economic development process. The decline of this geodemographic process is obvious, smooth with negative values in the study period. In "Region 2", a slight decrease of 0.02‰ is reported within the study. The process is reversible, through the implementation of protectionist policies by those in power in the following decades.

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