
**CHARACTERISTICS OF THE NATURAL MOVEMENT OF THE POPULATION IN
MACEDONIA**

Fauzi Skenderi

University of Tetovo, Tetovo, Macedonia, fauzi.skenderi@unite.edu.mk

Resul Hamiti

University of Tetovo, Tetovo, Macedonia, resul.hamiti@unite.edu.mk

Mireme Rushiti

University of Tetovo, Tetovo, Macedonia, mireme.rushiti@unite.edu.mk

Abstract: The end of the second millennium and the beginning of the third one in the territory of the Republic of Macedonia changes have intensively marked both the social and economic demographic of its population. Within this demographic, special emphasis should be placed on the natural movement of the Macedonian population. In this paper, the following will be about the natural increase of the overall population of Macedonia and the natural increase by ethnicity. Of particular importance in this paper are the spatial and national differences of natural population movement in Macedonia, and mainly to present more clearly these differences, we analyzed the most recent data of 2017 by the Statistical Office of the Republic of Macedonia for the natural increase of the population of the municipalities, which we presented in tabular, graphical and cartographic form. Indices of births in general, births by maternal age, maternal, maternal, mortality, cause of death, etc. are very important not only for the development of the demographic process but also for the development of the country in general. The main purpose of this paper is to identify the aging population phenomenon at national and national level. This paper attaches particular importance to the aforementioned demographic features during the period 1994 to 2017 at the state level.

Keywords: Population, birth, death, natural increase, ethnicity, age, municipality, R. Macedonia

INTRODUCTION

Population as a social category anywhere in the world including here, in the territory of Macedonia, represents a complex population system, which is closely and uninterruptedly linked to the two basic demographic components of the population, such as the natural movement of the population (consequently of fertility and mortality of the population) and the mechanical movement of the population (migrations). These two above-mentioned demographic segments are continuously interdependent, resulting from the populous trends of a space or country as a whole. In the second half of the twentieth century and the beginning of the XXI, there is a tendency to decline of the natural movement of the population, but with spatial differences, fertility rates and mortality due to the heterogeneous national economic and other population composition. For this reason in the continuation of the work will be concerned the natural movement of the population, according to the nationality of the Republic of Macedonia, precisely for the period from 1994 to 2017. Also a special treatment is dedicated to births according to the age of mothers, deaths by cause and natural increase by municipalities for 2017, based on the 2004 territorial division. Methodologically, the natural movement of the population according to national origin obtained from official statistical data for infants born to living and dead people is always in relation to the first component, so we have made such a comparison because of the security and analysis of this demographic segment by geographic areas and nationalities across the country.

GENERAL CHARACTERISTICS OF THE NATURAL MOVEMENT OF THE POPULATION

After the Second World War in Macedonia, new social, economic and political conditions and relations were created, which have also influenced the dynamics of the numerical population development and its reproduction. After 1990, intensive political and socio-economic developments have affected the restructuring of the population in all respects, in its geographical redistribution, both directly and indirectly, at the rate of natural increase. In Macedonia, as a country with a multi-ethnic population, the dynamics of demographic development and structural changes also varies depending on national affiliation, it is rapid in the Albanian, Turkish and Roma population, and slower (up to stagnation) in the Macedonian, Serb population etc. After 1945, the pace of natural increase of the population has changed much, both in space and in time.

In space, since the level of fertility in the territories inhabited by the Albanian, Turkish and Roma population has been high (in some cases up to the level of physiological fertility) and stable, while in the territories inhabited by the Macedonian population it was low and in a continuous decline. Meanwhile, as a result of improved economic, sanitary and sanitary conditions, the mortality rate has declined sharply across the territory (of course, at slower pace

in Albanian territory). So the different rhythms of socio-economic development have also determined the spatial changes of the population growth rates. In the majority of cases these two processes have developed in opposite directions: in the less developed spaces (where Albanians, Roma and Turks are concentrated) the population grew faster and vice versa, in the areas with the highest level of development (inhabited by the Macedonian population) the natural increase of the population has been slower. The creation of regional differences in the indicators of the natural increase of the population has been influenced by the tradition, the level of urbanization and industrialization, the level of education and emancipation of society in general and of women in particular. Even in time, the changes in the population's natural increase indicators are great. This seems to be referring only to the indicators of intensity, which have been significantly reduced: from 17.2 to 10.5 ‰ during the period 1994-2017, to about 6.7 ‰ nationally.

FERTILITY

General fertility

Data on the fertility rate in Macedonia date back to the late thirties, with an interruption caused by WWII. They show that overall the birth rate of the Macedonian population has declined. The demographic transition process in this population started shortly afterwards in some other Balkan countries, respectively in the eighties of the twentieth century. After the post-World War II supplementary growth period, fertility has declined steadily.

Table 1. Natality of population of RM, 1994-2017

N.r.	Period	Population in mid-		Newborns	
		year		Averagely/year	‰
1.	1994 - 1999	1986		30 512	15,4
2.	2000 -2005	2029		26 155	12,9
3.	2006 -2011	2049		23 161	11,3
4.	2012 - 2017	2068		23 022	11,1

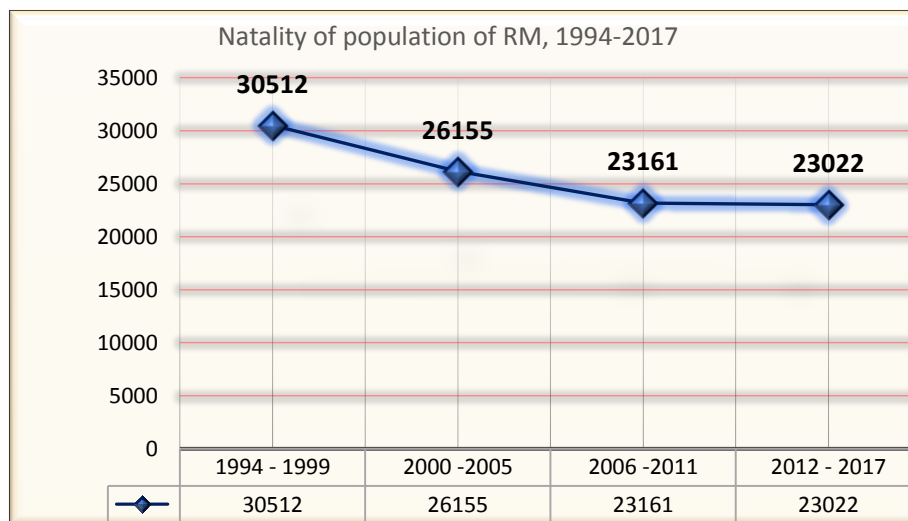


Fig.1. Natality of population of RM, 1994-2017

From the data emerges that the highest fertility indicators were in the period 1994-1999, with 15,4 ‰ (maximum value: 17,2 ‰ in 1994), while the lowest in the period 2012-2017, respectively in the year 2017, with 10.5 ‰. Then fertility indicators are constantly declining.

Ethnicity according to nationality

The fertility of the Macedonian population has declined throughout the period 1994-2017 in all ethnicities. Reduction is almost gradual, with small fluctuations over the years, determined by biological and socio-economic factors. Fertility indicators have risen faster in the urban population, due to older marriages (24-27 years) than the rural population (19-25 years).

Table 2. Births by ethnic affiliation of mother in RM, 1994-2017

No.	Period	Total	Nativity indices							
			Ethnic affiliation of mother							
			Macedonian	Albanian	Turkish	Rom	Vlach	Serbian	Bosnian	Other
1.	1994-1999	183081	89476	65996	8731	9560	153	1728	/	7437
	%	100	48,9	36,0	4,7	5,2	0,08	0,9	/	4,0
2.	2000-2005	156942	78884	54858	7035	10023	100	885	140	5017
	%	100	50,2	34,9	4,4	6,3	0,06	0,5	0,09	3,1
3.	2006-2011	138968	72460	45166	6219	9930	109	723	1138	3 223
	%	100	52,4	32,5	4,4	7,1	0,07	0,8	0,6	2,0
4.	2012-2017	138133	71259	46862	6400	8532	166	726	1454	2734
	%	100	51,5	33,9	4,6	6,1	0,1	0,5	1,0	1,9

In the period 1994-2017, the total number of births decreased by 0.6%, according to the nationalities as follows: Macedonians by 2.6%, the Turks by 0.1%, the Roma by 0.9% to Bosniaks 0.1% to Vlachs 0.02%, while Albanians decrease to 2.1%, to Serbs 0.4%, and to other ethnic communities 2.1%.

During the period 1994-2017, the highest fertility rate was in 1994 and the birth rate of mothers of ethnic Macedonian origin reached 16 706 births, Albanian ones 12 010, Turkish ones 1 616, Serbs 401 and other populations 1 351 births, while in Roma, the highest fertility during this period was recorded in 2000 with 1848 births, in Bosniaks in 2014 with 261 births and in Vlachs in 2017 with 40 births.

Analyzing the number of births by ethnicity during this period we will notice that in all ethnicities there is fluctuations and decreases in the number of births. We have fewest births in 2003 in the Vlachs in 10 births, in 2005 we have in Albanian with 7230 births and Bosniaks with 140 births, then Serbs in 2010 and 2014 in 109 births and other ethnic affiliations there is a decrease in 2013 with 408 births and also in Roma ethnicity in 2015 we have decreased in 1271 births, whereas in 2017 we have fallen to the births of Macedonian mothers 16 706 births and Turkish ones with 970 births.

It is expected that future fertility indicators will continue to decline. Relative fertility indicators have increased in Macedonians from 49.8% to 51.5%, Roma from 4.1% to 5.8%, Vlachs values from 0.07% to 0.1% and Bosniaks at 0,9% of the total number of births, while Albanians have declined from 35.8% to 34.0%, Turks from 4.8% to 4.3%, Serbs to 1.2% to 0.9% and other populations from 4.0% to 2.6% of the total number of births.

Table 3. Live births by age of mother in RM, 1994-2017

No.	Age of mother	1994 - 1999	%	2000 - 2005	%	2006 - 2011	%	2012 - 2017	%
1.	under 15 years	27	0,08	28	0,10	27	0,1	23	0,09
2.	15-19	3062	10,0	2064	7,9	1532	6,6	1101	4,7
3.	20-24	11306	37,0	8582	32,8	6250	26,9	4903	21,3
4.	25-29	9970	32,6	9237	35,3	8381	36,2	8033	34,8
5.	30-34	4468	14,6	4561	17,4	5072	21,9	6210	26,9
6.	35-39	1315	4,3	1403	5,3	1699	7,3	2334	10,1
7.	40-44	256	0,8	247	0,9	257	1,1	378	1,6
8.	45-49	16	0,05	13	0,04	14	0,06	21	0,09
9.	over 50 and unknown	97	0,3	20	0,07	7	0,03	18	0,07
10.	Total	30512	100	26155	100	23161	100	23022	100

From the table above we see that in the movement of the total number of births all mothers participate, which according to the potential of reproduction belong to the fertile age of 15-50 years. From this data we can observe that throughout the period 1994-2017 there is a change in the total number of births, that of all mothers of fertile age, the largest number of births are between 20 and 29 years, which in 1994 -1999 participates with 31.0% age group of 20-25 years and 32.6% is 25-29 years, while in the period 2000-2005 they participate with 32.8% age group 20-24 years and with 35.3 that of 25-29 years, this is also the period in which these age groups have even greater decline in absolute birth indicators. In the period from 2006 to 2011 these age groups have absolute indicators ranging from 8132 to 8027 births, while the relative traders of these age groups for this period are as follows, 26.9% age group 20-25 and 36.2% 25-29 years. Also, the period 2012-2017 is declining in the births of the concerned age groups, with 21.3% being 20-24 years old and 34.8% with 25-29 years old.

During the period 1994-2017, fertility indicators have fluctuated enormously over the years. From the data we can see that the highest fertility indicator was in 1994 with 33,497 births in general, with the highest number of births from mothers aged 20-24 years with 12 387 births, followed by 25- 29 with 10 811 births, which make up the largest percentage of births. Since we are also the most influential age group in the total number of births, we will analyze the movement of the number of births from mothers of this age group, throughout the period 1994-2017, from which we notice that each year in these age groups we have a decrease in number of births, especially in the period 2000-2005, the age group of 20-24 years each year marks a decline of 500 to 1000 births. This can be more clearly shown by the absolute indicators of the respective years, in 1994 with 12 387 births, whereas in 2017 this number is 4 218 births. A similar decrease trend, but with a slightly slower growth rate, is followed by the age group of 25-29 years, of which 10,811 births in 1994 amounted to 7549 births in 2017. And with the reduction of births from these the age group also has a decrease in the total number of births over the period 1994-2017, from 33487 in 1994 to 21754 in 2017. From this analysis we conclude that this age group has a decline in the number of births, where as factors influencing these trends in water are: late entry into marriages, education and emancipation of women, migration, which has recently taken a huge burden etc.

In addition, mothers aged 30-49 change the number of births over the years, but these age groups show an increase in births, where we see that mothers aged 30-34 in 1994 had 4743 births, and in 2017 they reach up to 6031 births. Even mothers aged 35-39 from 1356 births in 1994 increase the number of births in 2017 to 2520 births. Growth in the number of births is also observed in the age group of 40-44 years from 283 births in 1994 to 433 births in 2017. Relative indicators testify to this increase, where we see that in the period 1994-1999 the age group of 30-34 years participates with 14.6% and this number significantly increases in 2012-2017 to 26.9%. The increase in the number of births in these age groups in recent years besides the aforementioned factors is also influenced by state policies and payments made for the birth of the second, third, fourth child.

MORTALITY

General mortality

In the change of the total population and its composition, besides births, immigration and migration, mortality, aging, various illnesses, accidents, natural disasters, wars, etc. have a great impact.

Table 4. Mortality of population of RM, 1994-2017

No.	Period	Death in total per period	%
1.	1994-1999	98 427	8,2
2.	2000-2005	106 490	8,7
3.	2006-2011	114 844	9,3
4.	2012-2017	120 260	9,7

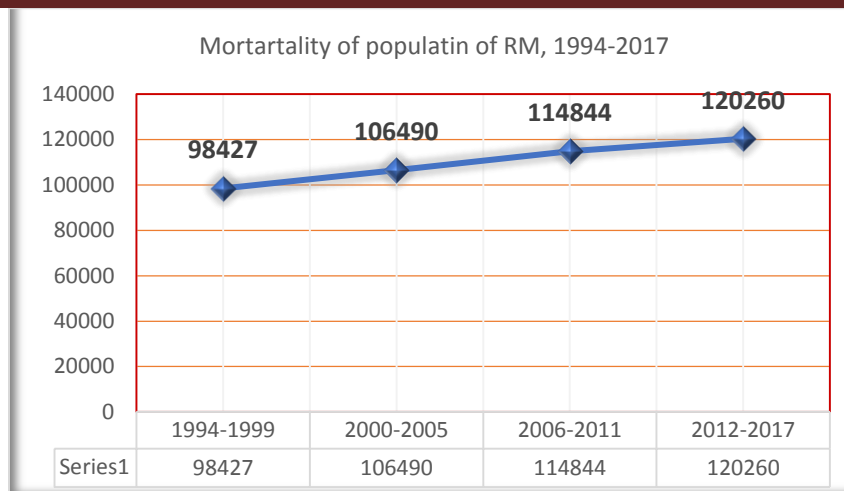


Fig 2. Mortality of population of RM, 1994-2017

In the population of Macedonia mortality indicators have changed constantly. Until World War II, due to the socio-economic and political situation in the country, the mortality rates of the population were very high, masterly 20,000 per year. After the war, the number of dead fell to about 18,042, between 1947 and 1951. Whereas in the period 1994-2017 the data are presented in the table above, from which we can observe that the lowest mortality indicator (8,2-8,7, %) is reached in the period 1994-2005. Then these indicators mark a growth, reaching 9.3 % in the period 2006-2011, which continues to grow by 9.7 over 2012-2017. In addition, this increase indicates the growing weight of the elderly in the population of the country.

Mortality by Causes of Death

The causes of deaths are biological, socio-economic, accidental, illnesses, poor nutrition, poor living and living conditions, poverty, natural disasters, as well as factors that affect the intensification of the recent death process in the Republic of Macedonia, there is also the problem with the air pollution, which has taken large proportions and at the same time affects the growth of the number of different lethal diseases.

Table 5. Deaths by causes of death in period 2007-2017

No.	Death cause	Period					
		2007-2010	%	2011-2014	%	2015-2017	%
1.	Infectious and parasitic diseases	288	0,37	231	0,29	230	0,37
2.	neoplasms	14423	18,79	14 652	18,62	11 338	18,52
3.	Heart and brain diseases	39702	51,72	40 305	51,32	29 132	47,60
4.	Respirable respiratory diseases	2824	3,67	2 918	3,71	2 459	4,01
5.	Injuries during maternity (of mothers and infants)	3	0,003	6	0,007	0	0
6.	Unidentified illnesses correctly	4816	6,27	4 628	5,89	3 893	6,36
7.	External causes	2542	3,31	2 156	2,74	1 431	2,33
8.	Total	76749	100%	78 525	100%	61 200	100%

In 2007-2014, about 52% of deaths occurred in 51.72% of heart and cerebral disease from 2007-2010 and 51.32% in 2011-2014 and 19% in neoplasms. The deaths from respiratory diseases were also of great importance, which from about 3.7% in the period 2007-2014 increased to 4.01 in the period 2015-2017. This is due to air pollution, etc. Due to the diverse stresses, air pollution, noise, poor quality food, psychological shock, etc., heart and cerebral illnesses have a very high percentage compared to other diseases and relative indicators show that for the period 2007-2014 51, 72% of deaths, while for the period 2015-2017 it falls to 47.60%. Throughout the 2007-2017 period, neoplasms have involved around 18.7%. Meanwhile, the advances that have been noted in the medical sciences, the improvement of living standards and hygienic-sanitary conditions in households, workplaces, etc., birth injuries have significantly diminished. But from external causes we have a decrease in the number of deaths from 3.31% in 2007-2010 to 2.33% in 2015-2017. Concerning the causes of deaths according to national and regional affiliation, it is evident that there are no significant differences.

Natural increase of the population

The natural increase of the population shows the numerical changes of the population, caused by biological processes. The process of natural population growth has undergone major changes in time and space.

Table 6. Natural Growth of population of RM,1994-2017

No.	Period	Average of Natural Growth in year	%
1.	1994-1999	14 108	7.11
2.	2000-2005	8 407	4.15
3.	2006-2011	4 021	1.95
4.	2012-2017	2 979	1.45
5.	1994-2017	7.379	3.66

Starting from the period 1994-1999, when the largest increase in the population, both in absolute terms and in relative terms, has been steadily declining. Thus, the natural increase of the population in the period 1994-1999 was 84648 inhabitants (on average 14 108 inhabitants per year) or 7.11 %, in the period 2000-2005 it had fallen to 50 443 inhabitants (on average 8 407 inhabitants per year) or 4, 15 %, in the period 2006-2011 it falls to 24 124 inhabitants (averaging 4 021 inhabitants per year) or 1.95 % and in 2012-2017 reaches the lowest level of natural growth for the period after World War II: 17 873 residents (on average 2 979 inhabitants per year) or 1.45 %. The main reasons for reducing the natural increase of the population should be sought in the decline of births, the relative increase of the general mortality indicator due to population aging and migration of the active population (in reproduction age) to the outside world.

Natural increase of population by nationality

By the end of the 1980s, the Macedonian population has increased numerically, but, since 1990, the largest absolute natural increase has been and continues to be the Albanian population, which in 2002 provided 72, 2% of the natural increase of the Macedonian population.

Table7. The structure of the natural increase of the population of R.M. according to nationality 1994-2002

No.	Year	Natural Growth	Pjesëmarrja në shtimin e përgjith. të pop. në RM				
			Ethnic affiliation				
			Macedonian	Albanian	Turkish	Rom	Other
1.	1994	17 716	5 186	9 540	1 171	1 051	768
	%	100	29,2	53,8	6,6	5,9	4,3
2.	1995	15 816	3 912	8 997	1 116	1 257	534
	%	100	24,7	56,8	7,0	7,9	3,3
3.	1996	15 340	3 391	8 890	983	1 257	819
	%	100	22,1	57,9	6,4	8,1	5,3
4.	1997	12 982	2 019	7 864	1 098	1 265	736
	%	100	15,5	60,5	8,4	9,7	5,6
5.	1998	12 374	1 549	7 979	968	1 240	638
	%	100	12,5	64,4	7,8	10,0	5,1

6.	1999	10 520	949	7 161	994	1 142	274
	%	100	9,0	68,0	9,4	10,8	2,6
7.	2000	12 055	1 323	8 115	813	1 438	366
	%	100	10,9	67,3	6,7	11,9	3,0
8.	2001	10 091	849	6 994	833	1 130	187
	%	100	8,4	69,3	8,2	11,1	1,8
9.	2002	9 799	384	7 081	807	1 238	290
	%	100	3,9	72,2	8,2	12,6	2,9
10.	1994-2002	116693	19562	72621	8783	11018	4 621

Referring to the relative indicators, the natural increase of the Albanian population of Macedonia has been consistently higher than that of the Macedonian population, and the differences have increased over the period 1994-2002. Thus in 1994 the natural increase in the Albanian population was 1.8 times higher than that in Macedonian, in 1996 by 2.6 times, in 1998 by 5.1 times in 1999, by 7.5 times in 1999 2001 for 8.2 times, while the most critical year marks the year 2002 with an increase of the Albanian population to that of Macedonia for 18.4 times. The difference in the natural increase between the Albanian and Macedonian populations is created by the differences that exist in the birth and death indicators: Albanian births are numerous and relatively few deaths, while in the Macedonian population there are few births and relatively numerous deaths. In addition to the general factors mentioned when analyzing fertility and mortality, the high natural growth of the Albanian population also affects these specific factors: early marriage, which enables productive consumption of almost the entire fertile period of females; high fertility of Albanian women; the rural way of life and the traditional relationships in the Albanian families, where the woman, especially in the rural environment, is not employed, but has as its main mission the birth and growth of children; Traditionally, Albanians have given birth to more children, perhaps even though their lives have not been very much guaranteed.

Natural growth in the Macedonian population falls drastically, as compared to the Turkish population there are big differences over the 1994-2002 period. Thus, if in 1994 the natural increase in the Macedonian population was 4.2 times higher than that in Turkish, in 1999-2001 this ratio equals and in 2002 it changes, where the Turks mark a natural increase by 2.1 times more higher than the Macedonians. With regard to the natural increase in other nationalities, the data show a steady decline. Despite the tendency towards diminishing, only the natural increase of Roma remains higher than the Albanians.

Natural increase by municipalities

In the spatial aspect, the natural increase of the population of Macedonia is presented with significant changes, which are a consequence of factors: ethnic, socio-economic, political, etc. The highest indicators of the natural increase of the population in Macedonia are the municipalities with Albanian majority population.

Table 8. Natural Growth of population of R.M. by municipalities, 2017

Year	Number of municipality	Natural movement of population		
		High Natural Growth	Medium Natural Growth	Low Natural Growth
2017	80	10	27	43

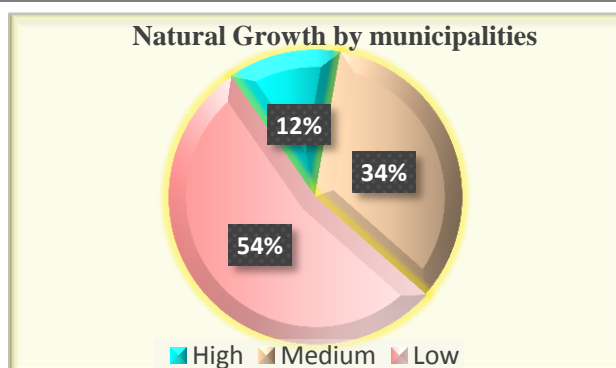


Fig. 3. Natural Growth of population of R.M. by municipality 2017

According to the data of 2017, the situation in the Macedonian municipalities is as follows: in 20 municipalities the natural increase of the population was up to 5 ‰, in 6 municipalities it was 5-10 ‰ and 2 municipalities had a natural increase of 10-17 ‰, while other municipalities have a negative natural increase, and 28 communes have a natural increase of zero to (-5 ‰) and the other 14 municipalities (-5 ‰) to (-10 ‰) and only one municipality has a negative natural increase much more high up to (-18 ‰).

In these municipalities, according to the data of 2017, there were 2 075 301 inhabitants, who provided a natural increase of the total population of 0.7 ‰. Out of a total of 80 municipalities, 43 of them have a low increase, which make up 53.7% of the country's territory and are: Debartsa (-18.0 ‰); Demir Hisar (-9.7 ‰); Pehchevo (-9.5 ‰); Staro Nagorichane (-9.4 ‰); Novo Selo (-9.0 ‰); Mogila (-8.0 ‰); Krivogashtani (-7.4 ‰); Novatsi (-7.4 ‰); Makedonski Brod (-7.3 ‰); Dojran (-6.6 ‰); Zrnovte (-6.6 ‰); Kratovo (-6.5 ‰); Chesinovo (-5.5 ‰); Resen and Probishtip (-5.3 ‰); Bogdantsi (-5.0 ‰); Berovo (-4.4 ‰); Delchevo (-4.3 ‰); Bitola (-4.1 ‰); Rankovtse and Prilep (-3.8 ‰); St. Nicholas (-3.7 ‰); Lozovo (-3.5 ‰); Makedonska Kamenitsa (-3.3 ‰); Demir Kapia (-3.0 ‰); Bosilovo (-2.8 ‰); Ohrid (-2.6 ‰); Rosoman, KochanandKonche (-2.5 ‰); Krushevo (-2,4 ‰); Kriva Palanka (-2.3 ‰); Jegunovtsadhe Vevchan (-2.1 ‰); Negotino (-1.8 ‰); Vinita (-1.7 ‰); Plasnitsa (-1.2 ‰); GevgelijaandKichevo (-1.1 ‰); Stip (-1,0 ‰) and also with negative Natural Growth and near zero are the municipalities: Vallandovo (-0,8 ‰); Veles (-0.7 ‰); Mavrovo and Rostusha (-0.6 ‰).

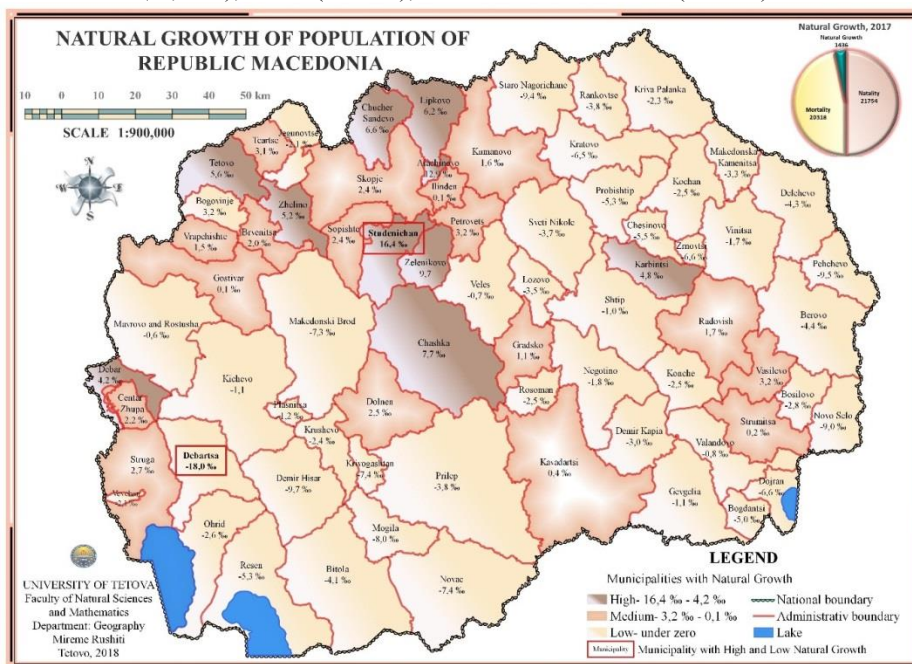


Fig. 4. Map of Natural Growth of population of Macedonia by municipalities in 2017

Whereas municipalities with positive natural growth are: Gostivar and Ilinden (0.1 ‰); Strumitsa (0.2 ‰); Kavadaritsi (0.4 ‰); Gradsko (1,1 ‰); Vrapchisht (1.5 ‰); Kumanovo (1.6 ‰); Radovish (1.7 ‰); Brvenitsa (2.0 ‰); Zhupa Center (2.2 ‰); Sopsishte and Skopje (2.4 ‰); Dolnen (2.5 ‰); Struga (2.7 ‰); Teartse (3.1 ‰); Petrovets, Bogovinje and Vasilevo (3.2 ‰); Debar (4.2 ‰); Carbinth (4.8 ‰); Zhelino (5.2 ‰); Tetovo (5.6 ‰); Lipkovo (6.2 ‰); Chucher Sandevo (6.6 ‰); Chashka (7,7 ‰); Zelenikovo (9.7 ‰); Arachinovo (12.9 ‰); Studenichane (16.4 ‰).

SUMMARY

This paper deals with the population as a social category here and in the world, which represents a complex population system that is closely and uninterruptedly linked to the two basic demographic components of the population, such as natural population movement (as a consequence of fertility and mortality of the population) and the mechanical movement of the population (migrations). These two high-mentioned demographic segments are uninterruptedly interdependent, which also results from the populous trends of a space or country as a whole. In the second half of the twentieth century and the beginning of the XXI, there was a tendency to decline in the natural movement of the population, but with spatial differences, fertility rates and mortality due to the heterogeneous national, economic and other population composition. Also more specifically, the above mentioned work relates to:

General characteristics of the natural movement of the population; fertility, general fertility, fertility by national maternity affiliation; readiness according to the age of mothers; mortality, general mortality, mortality by causes of death; the natural increase of the population, the natural increase of the population, the natural increase of the population according to national affiliation, the natural increase of the population according to municipalities, and the facts that can be best seen can be seen from the tabular statements contained in the paper.

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