

NATALITY EFFECTS ON THE ELEMENTARY SCHOOL POPULATION IN TUZLA CANTON

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Abstract

Nativity effects on the elementary school population in Tuzla Canton

The end of the 20th and the beginning of the 21st century in the area of Tuzla Canton is characterized by negative demographic trends such as decreasing birth rates, increasing mortality rates, decreasing natural change rates, aging population, decreasing total population, while adverse economic, social, political and other conditions after 1995 intensified economic emigration, mainly in the population between 20 and 40 years of age. As a result of such demographic trends, the aging process of the population has intensified in the post-war period, and this demographic process reverses the decline in potential biodynamics and population vitality. Due to the negative demographic trends in this area there has been a decrease in the population of elementary school age. The aim of this paper is to identify the main factors influencing this reduction, as well as the degree of their impact on this process, with particular emphasis on the natural dynamics of the population and the intensive population emigration. If no appropriate population policy activities are taken in the future, negative demographic trends may become even more expressed, which could adversely affect primary education in the municipalities of Tuzla Canton.

Keywords

Tuzla Canton, elementary school population, natality, aging process, emigration

1. Introduction

The Federation of Bosnia and Herzegovina, as one of the two Entities of Bosnia and Herzegovina, has all the power, jurisdiction and responsibilities that Bosnia and Herzegovina Constitution does not give to the exclusive jurisdiction of the institutions of Bosnia and Herzegovina, including education. In this Bosnian entity, ten government institutions are responsible for the education sector, namely: Federal Ministry of Education and Science, and nine cantonal ministries, including the Ministry of Education and Science of Tuzla Canton. The Tuzla Canton is located in the north-eastern part of Bosnia and Herzegovina. It has an area of 2649 km², i.e. 10.1% of the territory of the Federation of Bosnia and Herzegovina and 5.2% of the territory of Bosnia and Herzegovina. It encompasses thirteen municipalities where in 2016 there were 443053 inhabitants or 20.1% of the population of the Federation of Bosnia and Herzegovina (Tuzla Canton in numbers 2017, FZS) (Fig. 1).

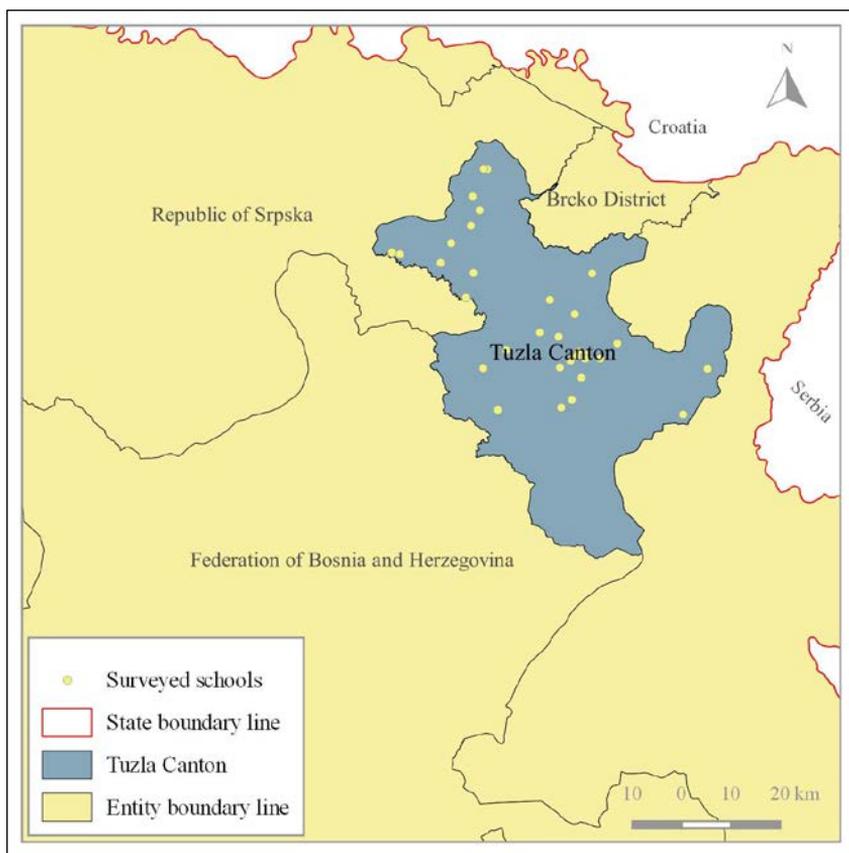


Fig. 1: Geographical location of Tuzla Canton and spatial distribution of surveyed elementary schools

Source: Federal Administration for Geodetic and Property Affairs. Sarajevo, 2018. Author's own elaboration.

Primary education, according to the Framework Law on Primary and Secondary Education in Bosnia and Herzegovina is obligatory for all children. It begins in the calendar year in which the child reaches six years of age until April 1, and lasts without interruption during a period that cannot be shorter than eight years. The process of

introducing nine years of elementary education in the Federation of Bosnia and Herzegovina started in 2004/05, when it was introduced in Una-Sana, Tuzla, Zenica-Doboj, Bosnian-Podrinje Canton and Canton Sarajevo. Nine-year primary education in all cantons of the Federation of Bosnia and Herzegovina is implemented from 2009/10 school year. However, the transition to nine years of elementary education is still not consistently implemented in all cantons (FMON 2017).

In recent years there has been a noticeable decrease in the number of pupils in regular primary schools in Bosnia and Herzegovina. In this country, in 2006/07 school year 367176 pupils were enrolled in elementary schools and in 2016/17 school year 287729 pupils, which means that number of pupils decreased by -21.6% (Agency for statistics of BiH, 2008 and 2018). Similar trends are noticeable in the neighbouring countries, such as in Croatia, where in the same period, the number of pupils in primary schools decreased from 380777 to 318173 or by -16.4% (Croatian Bureau of Statistics 2008 and 2018), and in Serbia from 622562 to 545234 or by -12.4% (Statistical Office of the RS 2007 and 2017).

In the Tuzla Canton, from 2006/07 to 2016/17 school year, the total number of children in elementary schools decreased from 52354 to 38836 students or by -25.8% (Statistical Yearbook 2007 and 2017, FZS), while the number of students enrolled in the first grade, from 2005/06 to 2016/17 school year, decreased from 6033 to 4268 or by -29.3% (MONKSTK, 2005; FMON, 2017). This reduction is contributed by several factors, the most important of which is the decrease in the birth rate in this canton. According to the Institute for statistics of Federation of Bosnia and Herzegovina (2017) in the Tuzla Canton, for the period 2006-2016, the birth rate was reduced from 9.4‰ to 8.8‰. The consequence of decreasing birth rate is the decline of the share of young people aged 0-19 years and the increase of the population aged 65 and over in the total population of Tuzla Canton (from 12.7% to 13.6%). The aging process of the population reverses the decline in potential biodynamics and vitality of the population, that is, a decrease in birth rates, an increase in mortality rates and a decrease in the rate of population natural change, which in the period 2006 to 2016 declined from 2.7 ‰ to -0.3 ‰. In addition, the emigration of the population to foreign countries is taking place in the Tuzla Canton due to unfavourable economic, political and social circumstances. The net migration rate in this area in 2016 was -3.4‰, and emigration rate 8.5‰ (Statistical bulletin 246 FZS 2017). Mostly emigrates a productive population of 20-40 years old, which ultimately reflects on natality. If no appropriate population policy activities are taken, the long-term negative demographic processes in the area of Tuzla Canton will affect the further reduction of the total number of inhabitants, decrease of birth rate, decrease of natural population change rate, and consequent reduction in the number of pupils in elementary schools and the excess of teaching staff in elementary school education system.

2. Methodology

In order to determine the degree of natality effect and other factors on the decreasing trend of the population of elementary school age in the Tuzla Canton, data of the Institute for statistics of Federation of Bosnia and Herzegovina and the Agency for Statistics of Bosnia and Herzegovina were used. All the parameters were monitored for the period from 2006 to 2016, because immediately after the war, i.e. from 1995, the so-called "Baby boom" occurred or the "compensatory" birth process, which compensates for the "lost" natality of the war years (Gelo 2004), and in addition, the

more intensive process of return of refugees and displaced persons to Bosnia and Herzegovina lasted until 2006. A database was created for various variables in Excel and Quantum GIS (total population, birth rate, mortality and natural change rates, age structure, immigration and emigration, number of primary schools, pupils and teachers, unemployment, employment by economic activity, average income, etc.).

In addition, in order to determine the level of natality impacts on the reduction of the number of children in elementary schools in Tuzla Canton, given the intensity of migration, a questionnaire was developed to determine the admission of pupils in the first grade of elementary school in the last five school years, the number of pupils who left the school, and the main causes of the pupils' leave (early school leave, leave for continuing education in the other elementary school of the same municipality, leave because of relocation to another municipality of Bosnia and Herzegovina, leave school to emigrate abroad), average size of school class, etc. Using Google forms, at the end of 2017, an online survey was conducted. Elementary schools were provided with an e-mail url link through which they could access the online questionnaire. The survey responded to 32 or 15.2% of the total of 211 elementary schools in the eleven municipalities of Tuzla Canton (Fig. 1). Since the survey showed that emigration has a certain impact on the size of primary school population in Tuzla Canton, the intensity of migration has been monitored over the past decade, and based on the share of immigrants and emigrants in the total number of inhabitants, net migration rate was determined in this area, while based on the share of emigrants in the total population the emigration rate was determined (Nejašmić 2005). Using statistical techniques, the interdependence of factors affecting birth rates and emigration rates in the Tuzla Canton has been established. Particularly, the age coefficient, which is defined as the proportion of the population over the age of 65 in the total population, the percentage of the unemployed in the total number of available working age population, average net salary, employment in economic sectors, etc. In order to establish the strength of the relation between the decrease of the number of pupils and the mentioned variables in the Tuzla Canton in the period 2006 to 2016 correlative analysis was performed. Correlation is a statistical method used to determine the correlation between variables, i.e. it describes the strength and direction of the relation between two or more variables (Rogerson 2001). Preliminary correlation analysis was performed to confirm the assumptions about the normal distribution of data and the linearity of the statistical series. Descriptive measurements were made, scatter diagrams developed etc. (McCarroll 2016; Pallant 2011). The results of the preliminary tests have shown that the correlation between the variables is approximately linear and that there is no asymmetry as well as outliers. Therefore, the Person correlation coefficient was used to determine the strength and direction of the relation between the observed variables. However, the only correlation between the unemployment rate and the emigration was statistically significant, while the correlation among other variables were statistically non-significant. Therefore, in order to determine spatial differences in the number of pupils in primary schools and variables affecting that movement in Tuzla Canton, based on the created database in Quantum GIS, spatial queries were made. Spatial queries represent analytical operations in GIS that are used to get answers to questions posed by users (Logley et al. 2005).

Also, in order to map the sample of conducted survey, as well as the geographical distribution of other demographic and socio-economic indicators affecting the decrease of the number of elementary school population of Tuzla Canton, statistical maps were created in Quantum GIS. To determine the direction and intensity of

changes in the number of pupils, in elementary schools in Tuzla Canton, index numbers were used, arithmetic mean was used to determine the average size of the class, while the trend method was used to determine the average state of the observed process in a given period and tendencies of future development of the population of elementary school age in the area of Tuzla Canton. As the measure of trend representativeness, the coefficient of determination was used, which can be explained as the ratio of variance of the dependent variables explained by the independent variables (Papić 2008) or how well a model explains and predicts future outcomes.

3. The elementary school population trends in Tuzla Canton

Analysis of the total number of pupils in elementary schools of Tuzla Canton in the period from 2006/07 to 2016/17 school year indicates a continuous decrease of the population of elementary school age. The total number of pupils in that period in Tuzla Canton decreased from 52354 to 38836 or by -25.8%, while in the Federation of Bosnia and Herzegovina the number of pupils dropped from 243708 to 188430 or by -22.7%. Data on the elementary school population trends by individual municipalities of Tuzla Canton are presented in Table 1.

Tab. 1: Number of pupils in elementary schools of Tuzla Canton during the school period 2005/06 to 2016/17.

Municipality	School year				Change in %
	2005/06	2013/14	2014/15	2016/17	
Banovići	2 796	1 984	2 005	2 006	-28.3
Čelić	1 248	956	894	922	-26.1
Doboj-Istok	1 225	1 002	994	1 018	-16.9
Gračanica	5 829	4 529	4 483	4 472	-23.3
Gradačac	4 924	4 065	3 914	3 838	-22.1
Kalesija	4 618	3 286	3 164	3 038	-34.2
Kladanj	1 726	1 080	1 030	1 019	-41.0
Lukavac	5 029	3 282	3 391	3 289	-34.6
Sapna	1 667	888	825	811	-51.3
Srebrenik	5 003	3 889	3 918	3 858	-22.9
Teočak	927	640	575	560	-39.6
Tuzla	11 762	8 563	8 554	8 470	-28.0
Živinice	7 757	5 636	5 584	5 535	-28.6
Tuzla Can.	54 511	39 800	39 331	38 836	-28.8

Source: Statistical yearbooks 2007 to 2017. First Release No. 12.1, Year VIII, 2016. Institute for statistics of Federation of BiH. Sarajevo.

The decrease in the number of pupils was noticeable in all municipalities of Tuzla Canton, with the largest decline being in the municipality of Sapna (-51.3%), Kladanj (-41.0%) and Teočak (-39.6%), while the lowest decrease recorded is in municipalities Doboj-Istok (-16.9%), Gradačac (-22.1%), Srebrenik (-22.9%) and Gračanica (-23.3%) (Tab. 1, Fig. 2). In twelve out of thirteen municipalities in Tuzla Canton the decrease in the number of pupils was higher than -20.0%. Analysis of trends in the number of students enrolled in the first grade of elementary schools in the Tuzla Canton from school year 2005/06 until 2016/17 also indicates a decrease in the number of pupils. The number of students enrolled in the first grade of elementary school in Tuzla Canton decreased from 6033 to 4268 or by -29.3% (MONKSTK, 2005; FMON, 2012 and 2017).

An online survey, conducted in 32 primary schools in 11 Tuzla Canton municipalities (eleven elementary schools in Tuzla, five in Gračanica, four in Gradačac, three in

Živinice, two in Lukavac, two in Doboj-Istok, and one elementary school in municipalities Banovići, Čelić, Kalesija, Sapna and Srebrenik), showed that in 2017/18 school year the average number of enrolled students in the first grade of primary school was 48.6, and the average number of enrolled students in all grades was 437.8. In the same school year, the average number of pupils per class was 21.6 (in some surveyed elementary schools the average number of pupils per class was 12, while the largest average size of the class recorded was 52).

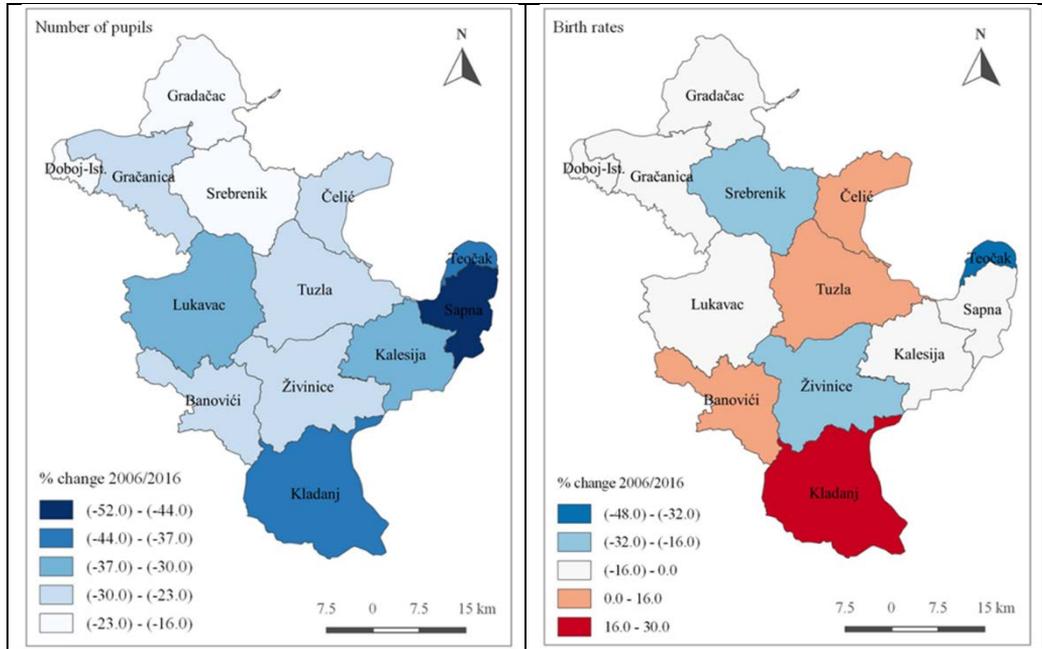


Fig 2. and Fig. 3.: Change in the number of pupils and birth rate in the Tuzla Canton in the period from 2006 to 2016.

Source: Statistical Yearbook 2007 to 2017. Institute for statistics of Federation of BiH. Sarajevo. Author's own elaboration.

4. Causes of the decrease of the elementary school population in Tuzla Canton

Demographic change is a global phenomenon that results in two almost universal trends: declining fertility and increasing life expectancy and most countries face decreasing or stagnating fertility, while in most developed countries fertility is below replacement level. For this reason, the world is faced with demographic aging, i.e., or by increasing the share of population older than 65 in the total population (Muenz 2007).

Natural depopulation, caused by low fertility, is present in many European countries (Hospers, Reverda 2015), including Bosnia and Herzegovina (Kadušić et al. 2017). One of the consequences of the negative demographic trends in Bosnia and Herzegovina and Tuzla Canton is the decrease of the number of pupils in elementary schools. The research has shown that two groups of factors affect the reduction of the population of elementary school age in the Tuzla Canton: direct and indirect factors. In the group of direct factors, affecting the decrease in the number of pupils in

elementary schools in the research area, the birth rate and emigration of the population are included, while in the group of indirect factors there are factors influencing the birth rate and emigration of the population in Tuzla Canton (age coefficient, unemployment, activity by economy sectors, average salary, withdrawal of pupils from school due to resettlement or leave of schooling, etc.).

Of the components of the natural movement of the population, the birth rate mostly affects the decrease of the number of pupils because the decrease in the birth rate directly affects the enrolment of students in the first grade of elementary school, and thus the reduction of the population of elementary school age in the Tuzla Canton. Table 2 presents the data on the changes of birth rate, mortality and natural increase/decrease rates in the municipalities of Tuzla Canton in the period 2006 to 2016. In this period birth rate in the area of Tuzla Canton had a tendency to decline and ranged from 9.4‰ to 8.8‰. In nine out of thirteen municipalities in Tuzla Canton the decrease of natality was recorded in the period from 2006 to 2016, while five municipalities had decrease greater than -10.0%. In the 2016 the lowest birth rate of 5.2‰ was recorded in the Teočak municipality, and the highest at 10.9‰ in the Banovići municipality (Fig. 3 and Fig. 4).

Mortality rates in the area of Tuzla Canton in the period 2006 to 2016 ranged from 6.7‰ to 9.1‰ and are the result of complex biological, economic and social factors. Of these factors, special mention should be made on biological factors, including the aging process of the population of Tuzla Canton.

Tab. 2: Natality, mortality and natural increase/decrease rates in Tuzla Canton in the period from 2006 to 2016 (in ‰).

Municipality	2006			2016		
	Natality	Mortality	Natural increase/decrease	Natality	Mortality	Natural increase/decrease
Banovići	10.7	5.7	5.0	10.9	7.3	3.6
Čelić	6.2	6.3	-0.1	6.3	10.2	-3.9
Doboj-Istok	10.1	4.2	5.9	9.9	13.5	-3.6
Gračanica	11.0	7.3	3.7	9.8	8.1	1.7
Gradačac	9.9	7.6	2.3	9.4	9.6	-0.2
Kalesija	11.4	7.0	4.4	9.6	7.6	2.0
Kladanj	6.5	7.4	-0.9	8.5	9.1	-0.6
Lukavac	7.7	6.0	1.7	7.0	10.3	-3.3
Sapna	6.6	4.7	1.9	6.1	7.0	-0.9
Srebrenik	11.0	6.3	4.7	8.6	7.7	0.9
Teočak	9.8	7.6	2.2	5.2	7.8	-2.6
Tuzla	7.8	7.6	0.2	8.7	10.5	-1.8
Živinice	11.7	5.3	6.4	9.5	8.5	1.0
Tuzla Can.	9.4	6.7	2.7	8.8	9.1	-0.3

Source: Statistical yearbooks 2007 to 2017. Institute for statistics of Federation of BiH. Sarajevo.

Changes in the birth rate and mortality rate have also resulted in changes in the natural change rate in the period from 2006 to 2016 in the Tuzla Canton area which decreased from 2.7‰ to negative value of -0.3‰. A decrease in natality rates, and increase in mortality rates have an impact on population aging or an increase in the share of the population aged 65 and over in the total population, and in the observation period, the age coefficient increased from 12.7% to 13.6%. (Tab. 2, Fig. 4 and Fig. 5). Municipalities of Tuzla Canton that recorded a decrease in natality rates and natural change rates, the growth of mortality rate and age coefficient also had a higher decrease in the population of elementary school age.

Emigration is the next significant factor affecting the depopulation processes in the Tuzla Canton, and thus to the reduction of the population of elementary school age. In 2010, from the territory of the Tuzla Canton 3990 inhabitants emigrated (314 persons emigrated abroad), in 2013, 3865 (253 persons emigrated abroad), and in 2016 about 3753 inhabitants (520 persons emigrated abroad) (Tab. 3).

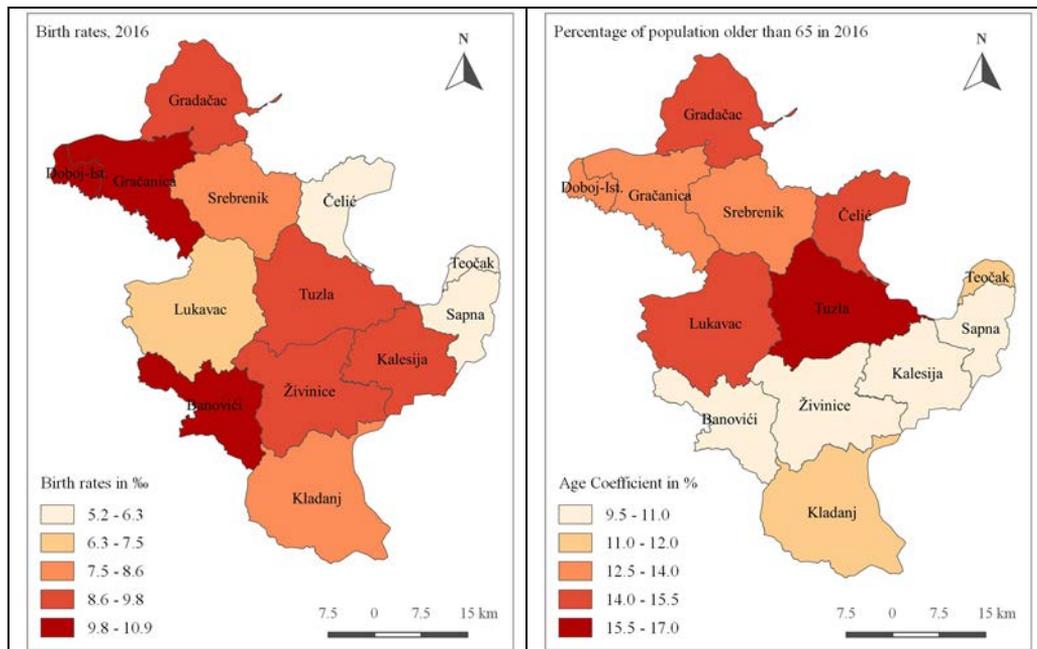


Fig. 4. and Fig. 5: Birth rates and age coefficient in Tuzla Canton 2016. Source: Statistical Yearbook 2017. Institute for statistics of Federation of BiH. Sarajevo. Author`s own elaboration.

Tab. 3: Basic indicators of socio-economic development of Tuzla Canton in 2006 and 2016.

Municipality	Unemployment (%)		Net salary (BAM)		Net migration rate (per 1000 population)	
	2006	2016	2006	2016	2010	2016
Banovići	49.3	51.0	582	844	-3.1	-2.0
Čelić	67.6	72.4	475	625	-4.3	-9.5
Doboj-Istok	69.8	57.6	442	532	-1.8	-6.3
Gračanica	54.4	48.7	415	541	-1.9	-3.2
Gradačac	59.8	49.3	496	602	-2.6	-1.7
Kalesija	79.4	69.3	532	622	-0.6	-6.6
Kladanj	59.5	57.1	554	647	-6.7	-8.7
Lukavac	54.6	55.5	534	764	-2.4	-3.3
Sapna	78.6	80.7	557	776	-10.7	-13.2
Srebrenik	63.0	61.9	544	626	-1.8	-3.8
Teočak	79.9	79.8	559	770	-4.1	-5.2
Tuzla	40.2	38.7	644	874	-0.1	-1.7
Živinice	61.2	59.8	519	725	-2.2	-2.1
Tuzla Can.	62.9	60.1	527	688	-2.0	-3.4

Source: Statistical yearbooks 2007 to 2017. Population migration 2010 and 2016, Statistical Bulletin 151 and 246. Institute for statistics of Federation BiH. Sarajevo.

The net migration rate in 2016 in the Tuzla Canton was about -3.4‰. The highest negative rate was recorded in the municipalities of Sapna (-13.2‰) and Čelić (-9.5‰), and the lowest negative rate of -1.7‰ in the municipalities of Gradačac and Tuzla (Tab. 3). From the data it can be seen that in all municipalities of the Tuzla Canton the emigration is more expressed than the immigration of the population. Out of the total number of emigrants, a significant number of emigrants migrate abroad. For example, in Tuzla, 185 people emigrated in 2016, out of which 63.2% of them emigrated abroad, 54.8% in Živinice, 37.7% in Srebrenik, 33.3% in Sapna etc. The emigration of the population of Bosnia and Herzegovina, but also of the population of Tuzla Canton, is caused by unfavourable economic, political, social and other circumstances in post-Dayton Bosnia and Herzegovina. Particular emphasis should be placed on economic factors such as high unemployment rates and low wages that have a direct impact on the population's emigration, and consequently on the reduction of the population of elementary school age in the Tuzla Canton area. Correlation analysis has shown that there is a strong link between the percentage of unemployment and migration, and a higher percentage of unemployment correspond to a higher negative values of net migration rate ($r = 0,729$). The largest unemployment in 2016 was recorded in the municipalities of Sapna (80.7%), Teočak (79.8%) and Čelić (72.4%), and these municipalities recorded the largest negative net migration rates at the same time (Fig. 6 and Fig 7). Likewise, the analysis showed that there is a significant correlation on population emigration and employment by activity sector. Larger emigration rates are recorded by municipalities with a significant number of employees in agricultural activities: Čelić (33.9%), Sapna (14.8%) and Dobož-Istok (13.3%) (BHAS, 2013).

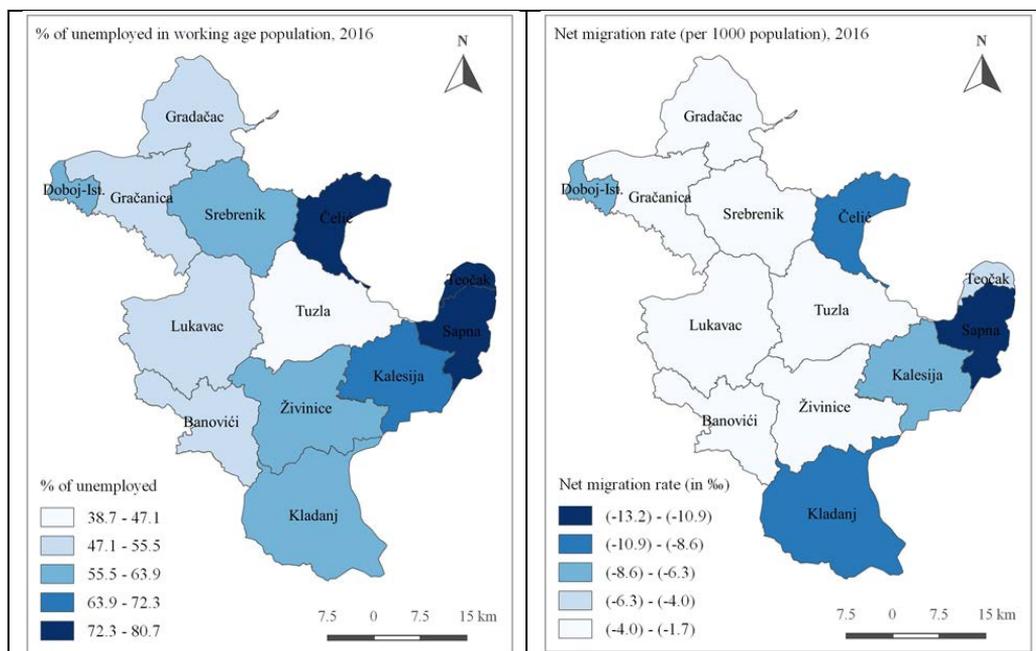


Fig. 6. and Fig. 7: The share of the unemployed in the working age population and the net migration rate in the Tuzla Canton, 2016.

Source: Statistical Yearbook 2017. Population migration 2016, Statistical Bulletin 246. Institute for statistics of Federation of BiH. Sarajevo. Author's own elaboration.

The results of the survey conducted at the end of 2017 confirmed that primary schools in the Tuzla Canton lost their students to emigrate abroad. The total number of pupils who withdraw from the surveyed elementary schools in the last five school years was 1043. The most common causes of pupils leaving school are withdrawing for further education in the other elementary school of the same municipality (23 schools), leave because of relocation to another municipality of Bosnia and Herzegovina (15 schools), and leaving out of school to emigrate abroad (24 schools). In the last five school years, 294 students or 28.2% were enrolled from school for further education in elementary school of some other municipality in Bosnia and Herzegovina, and 362 students or 34.7% for emigrating abroad.

Decrease of the elementary school population in the Federation of Bosnia and Herzegovina, and thus the Tuzla Canton, is to a certain extent influenced by the fact that a certain number of children remain outside the school system or outside the primary education system. According to the data of the Federal Ministry of Education and Science (2013) as a particularly vulnerable group, when it comes to the non-recognition and/or abandonment of elementary school, are the Roma pupils, followed by children from families in social need, most often in rural environments, and children with special needs. For example, the rate of primary education for Roma children in the Federation of Bosnia and Herzegovina is 68.9%, while 31.1% do not attend elementary school.

5. Future tendencies of the elementary school population development in Tuzla Canton

Prediction of future trends in the number of pupils in elementary schools can be a significant tool in planning the future development of education and the overall socio-economic development of the Tuzla Canton. Data on the number of pupils in elementary schools in the period from 2001/02 to 2016/17 school year were used to prepare the forecast for the elementary school population in the Tuzla Canton assuming that the future trends of the number of pupils in this area will be similar to the past flows. A scatter plot was developed to determine the direction of the trend and a linear trend was used, as the number of students continuously decreased (Fig. 8), and it is known that if the variations in a time series are such that a change of the observed events can be represented by constant growth or decline, then a linear trend can be used (Stojković 1998). The coefficient of determination of 0.9454 shows that 94.54% of the change in the number of students is explained by the obtained linear trend model $Y_c = -1347.5x + 59006$.

Using the trend method, it has been established that in the period from 2001/02 until 2016/17 number of pupils on average decreased by 1347.5 per school year and the average rate of change over years was -3.2%, i.e. on average the number of pupils dropped by -3.2% in each school year. Given the current demographic and economic trends in the Tuzla Canton as well as in the entire Bosnia and Herzegovina, and in the future, a similar trend in the number of students is expected.

The problem is further aggravated by the fact that there is no conceptual population policy in Bosnia and Herzegovina and even at the level of the Tuzla Canton, but by the Entities and Cantons the Act on Social Protection, Labor Law and other laws certain measures and activities of population policy are provided (e.g. the right to maternity leave and allowances instead of a fee, the aid for nursery equipment for newborns, the right to a third child allowance, etc.).

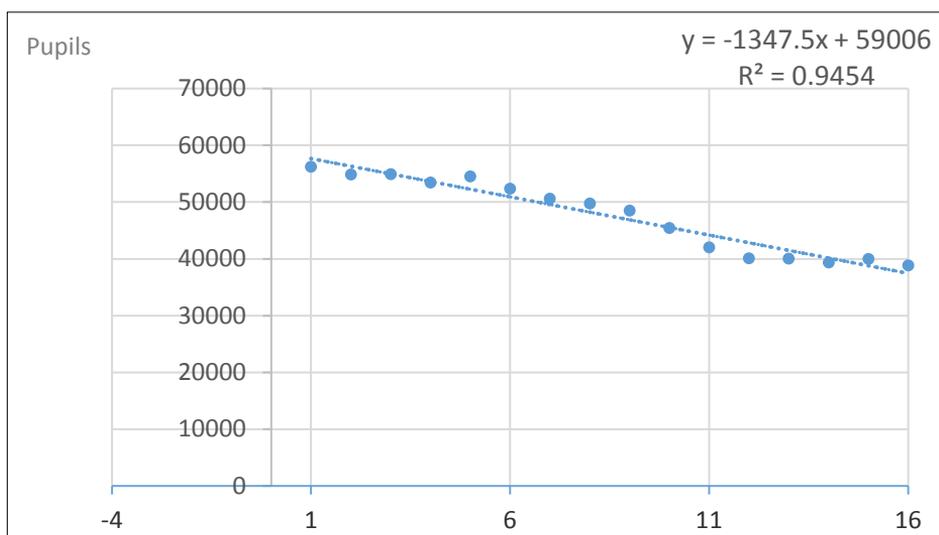


Fig. 8: Number of elementary school population in the Tuzla Canton during the period 2001/2002 to 2016/2017 school year.

Source: Statistical Yearbook 2007 to 2017. Institute for statistics of Federation BiH. Sarajevo. Author's own elaboration.

For example, in the Tuzla Canton, the Law on Social Protection provides a childcare support. However, the right to a child allowance is only provided to families whose monthly income per household member does not exceed 15% of the average salary in this canton (Official Gazette TK No. 12 2000).

However, these incentives are insufficient given the general characteristics of the natural reproduction of the Tuzla Canton population, which in the existing economic, health and social conditions are characterized by low and declining birth rates and mildly increasing mortality so that low natural change rate shows a tendency towards the zero level and negative values. If this trend continues, the process of natural depopulation will lead to the total depopulation of Tuzla Canton. For this reason, it is necessary to define population policy activities (such as various financial actions, work and family incentives, wider social support for children and parenting) in the future that will lead to positive demographic trends in the Tuzla Canton.

6. Conclusion

Inadequate post-war socio-economic conditions deepened the unfavourable demogeographic trends in the area of Tuzla Canton. In the post-war period, the aging process of the population caused by a decrease in birth rate is noted, with a repercussion on further decline in birth rates, an increase in mortality and a decrease in natural change rates. So, in the period from 2006 to 2016 the age coefficient of the Tuzla Canton or the share of the population older than 65 in total population increased from 12.7% to 13.6%. As a result, as well as other factors, birth rates in this area decreased from 9.4‰ to 8.8‰, mortality rates increased from 6.7‰ to 9.1‰, while natural change rates decreased from 2.7‰ to -0.3‰. Such biodynamics of the population of Tuzla Canton resulted in a reduced number of children in elementary schools. Thus, the number of pupils in elementary school from 2001/02 to 2016/17 decreased by about -30.9%, and in the period from 2006/07 to 2016/17 by -25.8%.

In addition to demographic factors, the economics, social, political and other factors affect the reduction of the population of elementary school age, as they affect population emigration. In the post-war period, the area of Tuzla Canton has a negative value of net migration rate of around -3.4‰ and migration do affects this decrease as shown by a survey conducted among elementary schools of Tuzla Canton because only in the last five school years 362 pupils, from 32 primary schools (about 15.2% of the total number of schools in TK), withdraw from school for emigrating abroad. Concerning the social and economic circumstances currently present in the research area as well as in Bosnia and Herzegovina, negative demographic trends can still be expected in the future, leading to the closure of a certain number of schools and the excess of teaching staff. It is therefore necessary to devise appropriate measures and activities of population policy that could be implemented in order to overcome the negative demogeographic trends in the Tuzla Canton. These may be various incentives and activities that will go in the direction of natality growth and immigration population policy.

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NATALITY EFFECTS ON THE ELEMENTARY SCHOOL POPULATION IN TUZLA CANTON

Summary

The Tuzla Canton administratively belongs to the Federation of Bosnia and Herzegovina. It is located in the north-eastern part of Bosnia and Herzegovina, and covers an area of 2649 km², i.e. 10.1% of the territory of the Federation of Bosnia and Herzegovina. It is administratively divided into thirteen municipalities where in 2016 lived 443053 inhabitants or 20.1% of the population of the Federation of Bosnia and Herzegovina.

The Tuzla Canton, as part of the Entity of the Federation of Bosnia and Herzegovina, is responsible for the education sector, and in this canton from 2004/05 school year, a nine-year primary education was introduced. In the period from 2005/06 to 2016/17 school year, in elementary schools of Tuzla Canton there is a continuous decrease of pupils, from 54511 to 38836 or by -28.8%. At the same time, the number of students enrolled in the first grade of primary school decreased from 6033 to 4268 or by -29.3%.

Two groups of factors are affecting the reduction of the elementary school population in the Tuzla Canton: direct and indirect factors. In the group of direct factors, the birth rate and emigration of the population are included, while in the group of indirect factors there are factors influencing direct factors such as age coefficient, unemployment, and average salary level, pupils' school dropouts due to resettlement or leave of schooling.

In the period from 2006 to 2016, birth rate in the Tuzla Canton decreased from 9.4‰ to 8.8‰, the mortality rate increased from 6.7‰ to 9.1‰, and as a result of the birth rate and mortality rates, the rate of population natural change decreased from 2.7‰ to -0.3‰. The decline in the potential biodynamics of the population also reflected the aging process of the Tuzla Canton population. In the period from 2006 to 2016 the share of the population aged 65 and over in the total population increased from 12.7% to 13.6%.

Emigration of the population of Tuzla Canton affects the decrease of the population of elementary school age. In 2010, in the Tuzla Canton area, 314 inhabitants emigrated abroad, while in 2013, 253, and 520 in 2016. The net migration rate in 2016 was about -3.4‰ and the rate of emigration was around 8.5‰. Also, the survey conducted at the end of 2017 in the Tuzla Canton primary schools showed that emigration plays a significant role in reducing the number of pupils in elementary schools. In the last five school years, 1043 students from the surveyed elementary schools in the Tuzla Canton, left the school of which 362 or 34.7% of the students emigrated abroad. Economic conditions are the most significant reason for the emigration in Tuzla Canton, i.e. high unemployment rates and a low standard of living for the population.

The trend method showed that in the period from 2001/02 to 2016/17 school year, the number of students in Tuzla Canton decreased by 1347.5 or by the rate of -3.2% on average. Given the current unfavourable demographic and economic conditions in the Tuzla Canton, and in the future, a decrease in the elementary school population could be expected. A serious problem is the absence of a clearly defined population policy which contributes to the depopulation processes in the Tuzla Canton.