

EDUCATIONAL FUNCTION AS A FACTOR IN CREATING THE GRAVITY AREA OF THE CITY OF TUZLA

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Abstract

Educational function as a factor in creating the gravity area of the city of Tuzla

The strong industrial development and urbanization of Tuzla since the second half of the 20th century influenced, among other things, the development of the educational function and the opening of schools of various educational levels and professions. Also, the educational function has influenced significant changes in the educational structure of the population, as well as the initiation of pupils and students from settlements whose place of residence is closer or further from the educational center. This led to a »migration wave« of pupils and students towards Tuzla as the educational center of Northeastern Bosnia.

The paper presents an analysis of the contemporary educational function of the city of Tuzla and its changes from the mid-fifties of the last century to today, as well as changes in the educational structure of the population as one of the important indicators of the educational function. When analyzing the gravity area of the educational function of the city, the paper uses data on the territorial range of daily migrations of pupils and students towards the center of education, obtained through field research.

Keywords

City of Tuzla, daily migrations, educational function, gravity area

1. Introduction

In the city of Tuzla area, the educational function was developing slowly until the end of the Second World War, only to experience its flourishing and expansion in the socialist period. Since the mid-fifties of the last century, intensive economic and social development and in this connection the increased need for educated professional staff, have influenced the development of the educational function. The city of Tuzla, as a regional center of the first order in the region of Northeast Bosnia, played the most key role in its development, and in the period from the 1960's to the 1980's, it became not only a mining and industrial center, but also an educational center. Hence, over 40000 daily migrants from various parts of the regional territory gravitated towards Tuzla at the end of the eighties, while the educational function of Tuzla attracted about 9490 high school students and about 3902 students. The gravitational area of Tuzla was quite wide and in various extents included the territories of all 19 municipalities of the Basic Chamber of Commerce Tuzla (Kudumović-Dostović 2017, 232), and mostly from the area of Tuzla and neighboring municipalities: Živinice, Kalesija, Lukavac, Srebrenik and Lopare (Kudumović - Dostović and Tufekčić 2016, 230).

In the period after 1995, until today, the number of pupils attending primary and secondary education, as well as students has decreased, which is primarily the result of the negative trend of natural population movement and emigration of the population to EU countries, and the gravitational area of the city of Tuzla has narrowed significantly, and to the greatest extent it is limited to the area of Tuzla Canton.

Considering that in the past period, in the new socio-economic conditions, the functions of the city have changed significantly, and therefore the educational functions, the aim of the work is to determine and analyse the characteristics of the modern educational functions of the city, with an emphasis on the analysis of the movement of the number of pupils and students, then the changes in the educational structure population, as an important indicator of the educational function, and the territorial reach of daily migrations (of pupils and students) as one of the key criteria for determining the gravity area.

Data from the scarce available literature and Federal Bureau of Statistics statistical data were used to prepare the paper, which were expanded and supplemented by field research. The analysis and synthesis, comparative, statistical methods and field research methods are the basis of the research.

2. The educational function of the city of Tuzla

Intensive economic and social development, as well as the increased need for educated professional staff, from the mid-fifties of the last century, influenced the development of the educational function. The network of schools expanded with the establishment of both primary and secondary schools, while the establishment of the University of Tuzla was of particular importance for the acquisition of higher and high education.

In the Tuzla area in the school year 1969/70 in 66 schools (40 primary and 26 secondary), the compulsory primary education system included 21048 students distributed in 607 classes, and 11404 students distributed in 349 classes in secondary education. Until the school year 1989/90 the number of secondary schools decreased (20), while the number of primary schools remained at the same level (40). In this period, the number of elementary school students decreased to 15994 or by 31,60%, as well as the number of secondary school students to 10131 or by 12,57%, which is a consequence of the decrease in the birth rate, i.e., the natural increase of the population (Tab. 1).

Tab. 1: Primary and secondary schools in the area of Tuzla in the school year 1969/1970 and 1989/1990 year.

School year	Primary School				Secondary School			
	Schools	Departments	Students		Schools	Departments	Students	
			Everything	Finished school			Everything	Finished school
1969/1970.	40	607	21048	9902	26	349	11404	1902
1989/1990.	40	567	15994	1823	20	322	10131	2535

Source: Statistical Yearbook of Bosnia and Herzegovina, Republic Institute of Statistics, Sarajevo, 1971, Statistical Yearbook of Bosnia and Herzegovina, Republic Institute of Statistics, Sarajevo, 1991

In the school year 1969/70, 1088 teachers and professors were employed in all primary and secondary schools, so that in the school year 1989/90, the number of teaching staff increased to 1636 or by 33,50%.

Although the development of higher and high education dates back to the 50's of the last century, when the Higher Mining and Technical School was founded in 1958, for the acquisition of higher and high education for the population of the city of Tuzla, as well as the region of Northeastern Bosnia, the establishment of the University was of particular importance in Tuzla in 1976 (Kudumović-Dostović 2017, 232). The number of students increased from year to year and in the academic year 1984/85 4545 students studied at faculties and higher schools, which is an increase of 97,14% compared to the academic year 1959/60 (130 students) (Statistical Yearbook of FNRJ 1961; Statistical Yearbook of Yugoslavia 1986).

In the period after 1995, in the new socio-economic and political circumstances, the number of primary and secondary schools, as well as the number of pupils attending primary and secondary education, as well as students, is decreasing, which is closely related to the decrease in the rate of natural increase, as well as the increasingly frequent migration of the population to the countries of the European Union (Kudumović-Dostović 2017, 213).

Today, the city of Tuzla performs the function of education through pre-school institutions, then primary, secondary, higher schools and faculties, the Open University of Tuzla, and recently an increasing number of private faculties and higher schools, private primary and secondary »Richmond Park« school, schools for adult education, and for learning foreign languages or computer training.

Preschool education, as the initial stage of the educational system, in the area of the city of Tuzla takes place in 8 preschool institutions, including one public preschool institution »Naše dijete« with 10 kindergartens (Pčelica, Poletarac, Sunčica, Kolibri, Lastavica, Jelenko, Bambi, Zeko, Snjeguljica and Ciciban) and seven private preschool institutions (Aladin, Pupiljak, Maštaonica, Montessori IQ Tuzla, Sretna porodica, Zubić vila and Richmond Park International Preschool Tuzla). In preschool education institutions in the 2020/21 school year, 1349 children were accommodated in 2008/09, which represents an increase of 20,39% compared to year 2008/09 (1074), and the number of employees ranged from 145 in 2008/09 to 191 in the pedagogical year 2020/21. Out of the total number of employees, the lowest number of educators (66) was recorded in the pedagogic year 2008/09, with the tendency of a slight increase in the following period. In years 2020/21 and 2018, the number of educators reached 92, and there were on average about 19 children per educator, which is in accordance with the prescribed pedagogical standards (Statistical bulletins 126 and 342). However, the coverage of children in preschool education is still small and does not meet the real needs of the city's population. Therefore, it is necessary to work more on developing awareness and promoting the importance of preschool upbringing and education, as well as expanding the capacity of preschool institutions.

Primary education is organized in 36 primary schools, which include 22 central and 9 regional schools, 1 primary music school, 1 international primary school, the Institute for the Education of Persons with Disabilities in Mental and Physical Development, and the Center for Education and Training and Hearing Rehabilitation and speech.

In year 2011/12, 12725 students were included in basic education, which is a decrease of 3269 students or 25,69% compared to year 1989/90 (Statistical Yearbook 2006). Since then, the number of students attending primary education (regular and special schools) continued to decrease and in the last ten years the number of students decreased by 1029 students or 12,69% (from 9138 students in the school year 2011/12 to 8109 students in 2020/21 (Fig. 1)).

Along with the decrease in the number of students, the number of classes also decreased. In the 2020/21 school year, students were assigned to 393 classes, which is 26 classes less or 6,62% compared to the school year 2011/12 (425 departments). Although the number of students in primary education has recorded an alarming decline in recent years, the number of employees has not followed the trend of decreasing the number of students, and the reason for this is the transition from the eight-year primary education system to a nine-year one, which significantly changed the curriculum and program of primary education, requiring a larger number of teaching staff.

Secondary education is a crucial factor in the structure of the network of educational institutions of each settlement, which trains students for work or continuing education. According to the number of professions offered to high school students, the city of Tuzla can rightfully be considered the educational center of the Tuzla Canton. Secondary education in the area of Tuzla is currently organized in 17 secondary schools. These are: Meša Selimović Gymnasium, Ismet Mujezinović Gymnasium, Catholic School Center Sveti Franjo, Behram-beg madrasa, Mixed Electrical Technical High School, Mixed Construction-Geodetic High School, Mixed Chemical High School, Mixed Mechanical High School, Mixed Secondary Mining School, Mixed Secondary Traffic School, Tourism and Hospitality School, Secondary Economic and Commercial School, Secondary Medical School, Secondary Music School Čestimir Mirko Dušek, Richmond Park International Secondary School, and the Institute for the Education of Children with disorders in mental and physical development.

A constant decline in the total number of students has been evident in the high schools of the city of Tuzla in recent years, and a particularly large decline in the number of students was recorded in the 2020/21 school year, when it reached the lowest level of 5939 students, which is 3914 students or 65,90% less compared to the school year 2011/12 (Fig. 1).

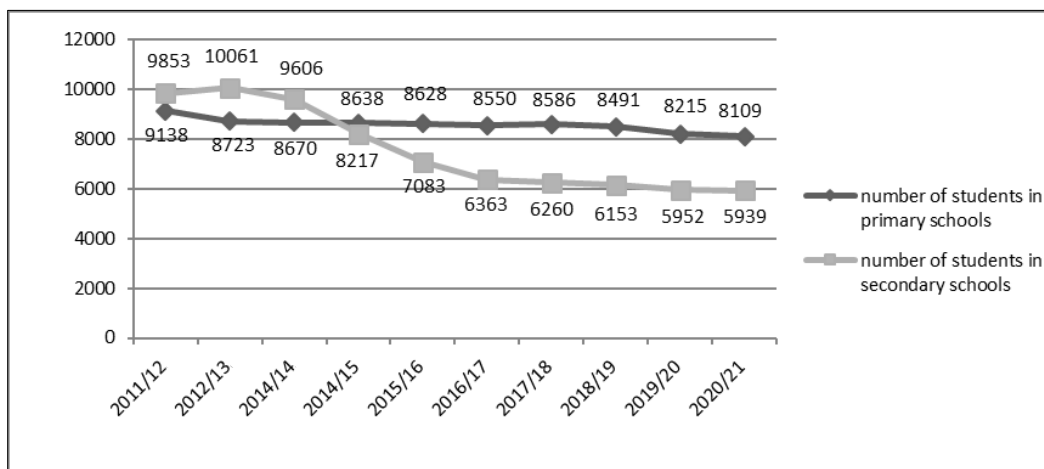


Fig. 1: Movement of the number of students in primary and secondary schools in the area of Tuzla for the period 2011-2021.

Source: Basic education in FBiH, SB: 185, 201, 217, 235, 250, 270, 288, 326; Secondary education in FBiH, SB: 174, 204, 221, 238, 253, 273, 294, 312, 330, Federal Statistical Institute, Sarajevo.

With the decrease in the number of students, the number of classes also decreased. In the 2020/21 school year, students were assigned to 277 classes, which is 101 classes less or 36,46% compared to the 2011/12 school year (378 departments). Due to a significant reduction in the number of classes, the average number of students in a class decreased from 26,07 students in the school year 2011/12 to 21,44 students in the 2020/21 school year and is slightly higher than the Tuzla Canton average of 20,27 students per class (2020/21). In the analysed period, the number of employees in secondary education varies over the years, and in 2020/21 it was at the level of 713 employees, which is slightly less compared to the school year 2011/12 (759).

The function of higher and high education is conducted at 17 higher education institutions, which also includes 4 private institutions, i.e. 17 faculties. Although classes also take place at several private faculties, the holder of the function of higher education in the area of Tuzla and the Tuzla Canton is the University of Tuzla, which has 14 organizational units, namely: 12 faculties, 1 Academy and 1 Student Center, with 7608 students enrolled in the academic year 2020/21 in all years of study. The University's members are the following faculties: Mechanical, Technological, Mining-Civil-Geological, Economic, Medical, Philosophical, Pharmaceutical, Natural-Mathematical, Electrical Engineering, Academy of Dramatic Arts, Educational-Rehabilitation, and several institutes.

The total number of students attending colleges in the Tuzla area has been steadily decreasing since 2010, so that in 2020/21 recorded its lowest level of 8869 enrolled students, which represents a decrease of 5688 students or 39,07% compared to the 2010/11 academic year (14557 students) (Fig. 2).

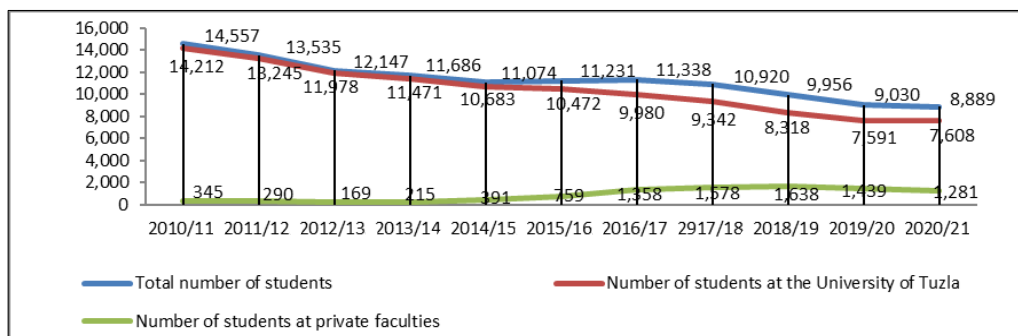


Fig. 2: Comparative analysis of the number of students at public and private higher education institutions in Tuzla for the period 2010/11 – 2020/21.

Source: Higher education in FBiH, SB: 154, 168, 182, 198, 214, 231, 260, 276, 296, 306, 324, Federal Statistical Office, Sarajevo.

The reasons for the decrease in the total number of students are primarily the result of external factors: a reduced number of students in grammar schools and vocational secondary schools, the policy of directing students to enrol in medical schools, pronounced trends in population emigration, but also internal factors: a significant number of outdated and unattractive study programs, low the level of equipment of the faculty with modern schools due to the lack of financial resources, the low level of digitalization of teaching content, lagging in the offer of quality student standards, etc. (Tuzla Canton Development Strategy 2021, 19).

When it comes to the interest of young people in studying at higher education institutions, UNTZ is in the 2020/21 academic year enrolled a total of 7590 students, with the following leading in terms of the number of students: Faculty of Medicine (2236), Faculty of Philosophy (899), Faculty of Electrical Engineering (885), Faculty of Economics (577), Faculty of Mining, Geology and Civil Engineering (537), Faculty of Pharmacy (506), and the Faculty of Technology (369). A total of 1279 students are enrolled in private higher education institutions, and the European University KALLOS-Tuzla (557), the International Business and Informatics Academy (377), the College

of Finance and Accounting (223) and the EMPIRICOM College (122) are the leaders in terms of the number of students enrolled (Statistical Bulletin 324).

The number of employees in higher education varied over the years and in 2020/21 it was at the level of 1247 employees, which is slightly more compared to the academic year 2014/15 (1130). On the other hand, the number of students per teacher and teaching assistant recorded a decrease in 2020/21 as well. In 2010, it amounts to 7,11 students, which is significantly less than the average of the Federation of Bosnia and Herzegovina, where 11 students per teacher and teaching assistant were recorded.

A principal factor in the development of society is the scientific research activity, which is organized within the University and Institute (economic, mining, construction and chemical) in Tuzla. The development of science in the area of the city of Tuzla and the canton is not given enough attention by the cantonal authorities (Bećirović and Kudumović-Dostović 2020, 77). Allocations from the budget for the development of science are minimal and are at the level of 100000 to 150000 KM and have not changed significantly in the last five years. The level of allocation of funds from the TK Budget for the financing of Higher Education in 2018/19 was 10,65% compared to the TK budget, which represented an increase of 3,3 percentage points compared to 2014 when the allocation level was 7,3% of the TK Budget. A significant part of these funds refers to the co-financing of the defence of doctoral and master's theses, and to the financing of scientific-research and research-development projects (Development Strategy of the Tuzla Canton 2021, 19).

3. Educational structure of the population

An important indicator of the educational function is the educational structure of the population. The level of education of the population in Tuzla after the end of the Second World War was quite low. According to the population census data from 1953, out of the total number of residents aged 10 and over (23788), most were without school education (39,31%), 36,97% had completed elementary school, and 36,97% had completed high school and faculties only (1,02%) (Census 1953, 344).

Thanks primarily to the development of the network of educational institutions from the lowest to the highest level of education, there have been significant changes in the educational structure of the population of the city of Tuzla in all categories in the following periods. The share of residents with no school education, as well as those with unfinished primary school, has decreased, while the share of residents who have completed secondary and higher education has increased in the same period. The largest share is with a completed secondary school, which includes qualified and highly qualified workers (Tab. 2).

Tab. 2: Educational structure of the population of Tuzla (municipality and city) aged 15 and over according to the 2013 census.

Centus year	Total population	In total Population 15+	School readiness							
			Without any education	Incomplete primary education	Elementary School	High school	Specialization after high school	High school and first degree of univer.	High school	Unknown
1991	131618	103034	9279	14525	20940	44638	-	4490	6122	3040
	100,00	100,00	9,00	14,10	20,30	43,30	-	4,40	5,90	3,00
2013	110979	96349	3226	6228	15907	52917	1125	3591	13355	-
	100,00	86,82	3,34	6,46	16,51	54,92	1,17	3,73	13,86	-

Source: Census 1991, Documentation FZS, Sarajevo, Population Census 2013, year, Educational characteristics of the population, Population aged 15 and over according to highest completed school, age and sex, by municipalities, Book 4, FZS, Sarajevo.

4. Gravitational area of the educational function of the city of Tuzla (Territorial schedule of daily migrations)

Considering the wide choice of occupations that young people can opt for in the city of Tuzla, with the simultaneous limitation of choices in other city and municipal centers of the Tuzla Canton, as well as the wider area, the city of Tuzla affects the permanent or occasional movements of pupils and students from the settlements that are located closer or further from the educational center. Thanks to the educational function, the influence of the city of Tuzla crosses administrative borders, spreads to neighbouring city and municipal centers, and thus creates a new »migration wave« - pupils and students (Bubalo-Živković 2003, 115 and 116).

Different criteria are used to determine the gravity area or nodal region, such as: daily frequency of means of transport, territorial range, and territorial schedule of daily migrations (Bugarski 1982, 187). In the paper, attention will be focused on the territorial distribution of daily migrations, as one of the criteria for determining the gravitational sphere of the city of Tuzla. Given that there are no relevant statistical data on the place of residence and place of education, the territorial distribution of daily migrants was processed on the basis of data obtained by field research, conducted in the period from December 2020 to June 2021. The research included primary and secondary school students, as well as students at the University of Tuzla and private colleges in the city.

Out of the total number of pupils and students surveyed (14352), about 9427 or about 65,69% were daily migrants. The structure of daily migrants is dominated by students, who numbered around 6105 or 73,68%. About 3619 or 59,28% migrated from urban settlements daily, and 2486 or 0,72% from rural settlements. Second in terms of participation are secondary school students, of which about 3127 persons or 53,55% migrated on a daily basis, of which about 716 or about 22,90% from urban settlements, and about 2411 or about 77,10% from rural areas. The smallest share in daily migrations was achieved by elementary school students. Out of a total of 8481

students attending primary education, 195 of them are daily migrants or 2,29%, which is a negligible percentage compared to the total number of primary school students, and the gravitational sphere of primary education mostly coincides with the area of the city of Tuzla.

How far the gravitational influences of the educational function of the city of Tuzla reach today can be seen from the following data. According to these data, the city of Tuzla received daily migrants from the wider area of Bosnia and Herzegovina, i.e., daily migrants to the city of Tuzla came from 590 settlements and 93 municipal and city centers.

In relation to the number of daily migrants (pupils and students) that they provided, all these settlements can be classified into several groups or directions (Fig. 3).

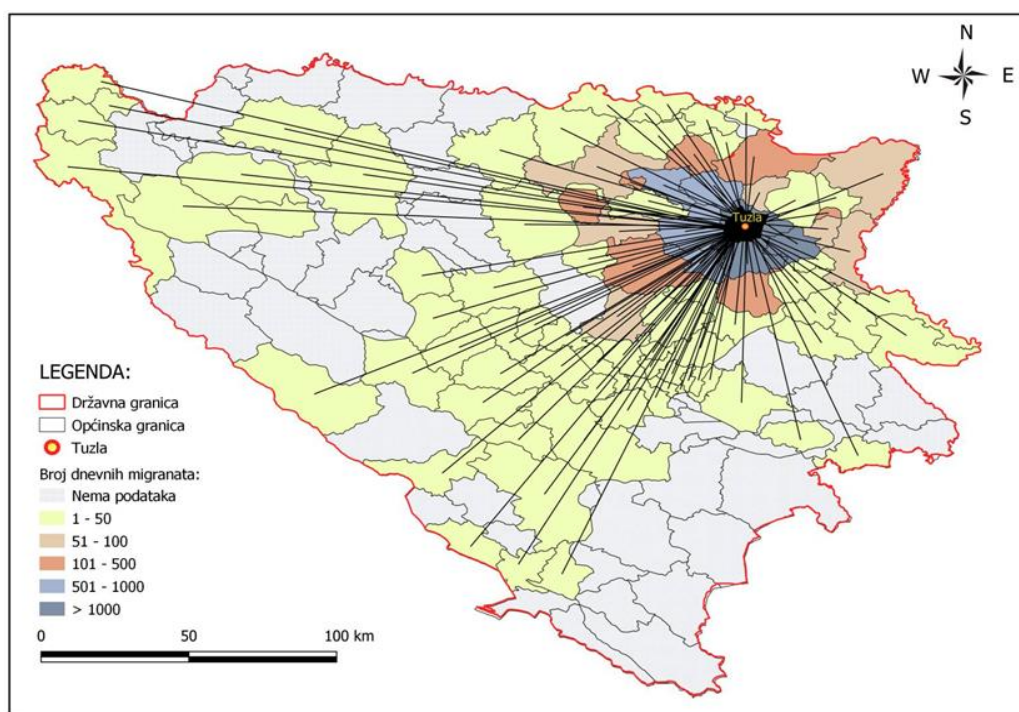


Fig. 3: Daily migrants from individual city and municipal centers to the city of Tuzla.

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Source: Digital Atlas of Bosnia and Herzegovina, data adapted by the authors based on the results of field research.

The first direction includes settlements from which most migrants moved towards the city of Tuzla (over 1000 people). These are settlements that belong to the cities of Živinice and Kalesija, and settlements that are located in the rural area of the city of Tuzla. About 1489 people (646 primary and secondary school students and 843 students) or about 15,80% of all daily migrants to Tuzla circulated daily from the settlements in the area of Živinice. A considerable number of migrants (683) come from the urban part of Živinice, about 15,3 km from Tuzla, while 806 people are from

the rural area, where the settlements of Dubrave Gornje (98), Šerići (90), Dubrave Donje stand out in terms of the number of daily migrants. (86), Đurđevik (78) and Priluk (70). About 1009 people (588 primary and secondary school students and 421 students) or about 10,70% of all daily migrants to Tuzla circulated daily from the settlements in the area of Kalesija. About 258 people circulated from the urban settlement of Kalesija, 19,4 km from Tuzla, and 751 people from rural settlements. The largest number of daily migrants circulated from Tojšići (124), Vukovije Gornje (85), Vukovije Donje (68), Seljublje (63), Rainci Donji (51) and Rainci Gornji (50). From the rural part of the city of Tuzla, (there are 39 settlements), about 1025 people (622 primary and secondary school students and 403 students) or about 10,87% circulated daily. The largest number of migrants circulated from Gornja Tuzla (170), Novi Mramor (154), Dokanj (90), Dobrnja (65), Lipnica (67), Ljubače (56) and Kiseljak (55).

The second direction (from 501 to 1000 people) takes place between Tuzla and settlements from the area of four cities of the Tuzla Canton: Srebrenik and Gračanica in the northwest, Lukavac in the west and Banovići in the southwest. About 2852 persons or 30,25% of the total number circulated daily from their settlements.

The largest number of daily commuters comes from the area of the city of Srebrenik, from whose settlements about 871 people or about 9,24% traveled daily (387 primary and secondary school students and 484 students). About 348 people came from the urban settlement of Srebrenik, 36 km from Tuzla, while 523 people came from the rural part. The largest number of migrants came from the settlements of Tinja Gornja (61), Duboki Potok (51), Tinja Donja (44), and Podorašje (40). About 839 people or about 8,85% (277 pupils and 562 students) came from Lukavac, which is 15,6 km from Tuzla. The largest number circulated from the urban settlement of Lukavac, around 454 persons, and from the rural part, around 385 persons. The largest number came from Poljice (80), Puračić (54), Dobošnica (37) and Devetak (36). About 574 migrants or about 6,09% (71 pupils and 503 students) circulated from Gračanica, 27 km from Tuzla. About 336 people came from the urban settlement of Gračanica, and about 238 people from the rural part, and the largest number came from the following settlements: Miričina (36), Stjepan Polje (32), Orahovica Donja (28) and Malešići (24). About 568 persons or 6,03% (127 pupils and 441 students) travelled from Banovići, 19 km away. The largest number came from the urban settlement Banovići (332), followed by the number of daily migrants from Banovići settlements: Banovići selo (44), Repnik (26), and Grivice (22).

The third direction (from 101 to 500 circulators) took place between Tuzla and seven municipalities and cities of BiH, namely: Gradačac, Brčko, Kladanj, Tešanj, Zavidovići, Dobož Istok and Teočak. 1789 migrants or 18,98% circulated daily from the aforementioned centers. The largest number came from the town of Gradačac (462), 38 km from Tuzla. About 298 people came from the urban area, and 164 from rural areas: Mionica (25), Donja Međeđa and Vučkovci (13). About 387 people came from Brčko, which is 67 km from Tuzla. About 260 people came from urban settlements, and 127 from rural settlements: Maoča (27) and Brka (16). About 342 people or about 3,70% came from the area of Kladanj. The largest number circulated from the urban settlement of Kladanj, 40 km from Tuzla (224 persons), and only 118 persons from rural settlements, of which the settlements: Stupari Selo (24) and Stupari centar (11) contributed the most. About 332 persons or 3,52% came from the Tešanj

municipality. The majority came from the urban part, about 186, and from Jelah (24). About 164 persons or about 1,77% (14 pupils and 150 students) came from the area of the municipality of Zavidovići. The largest number came from the urban settlement of Zavidovići, about one hundred people, and from the rural settlements, the largest number of migrants came from the settlements of Vozuća and Ribnica, 12 each. From the area of the municipality of Doboj Istok, about 137 persons or 1,48% came, and the most from the settlement: Klokočnica (40), Velika Brijesnica (29) and Mala Brijesnica (26). About 126 people or 1,34% circulated from the Teočak municipality, and the largest number came from the Teočak-Krstac settlement (60), and from Snježnica (27) and Jasikovac (12).

In the zone of the fourth direction (from 51 to 100 circulars), Tuzla interacted with seven municipalities and cities in Bosnia and Herzegovina: Sapna, Kakanj, Maglaj, Zenica, Doboj, Bijeljina and Zvornik. From their settlements, 449 migrants (pupils and students) or 4,86% of all daily migrants to Tuzla circulated from the municipalities of Sapna (90), Kakanj (69), Maglaj (64), Zenica (83), Doboj (57), Bijeljina (78) and Zvornik (69). 301 migrants traveled from urban settlements, and the rest circulated from rural settlements.

The zone of the fifth direction (up to 50 circulars) is a zone of very weak interaction in which there are as many as 71 city and municipal Bosnia and Herzegovina centers, from which around 733 daily migrants or 7,93% circulated daily. However, considering their distance from Tuzla, as well as some centers from the fourth direction (Kakanj, Maglaj, Zenica, Bijeljina, Zvornik), it is certain that these are weekly migrants in Tuzla. Some of them decide to travel daily from their place of residence to the city where they study and back, while others decide to stay temporarily in the place of education.

Based on the data obtained through field research and analysis of the distance of the settlement from the city of Tuzla, a certain regularity is present, which is based on the reduction of the number of daily migrants per cent of education. The largest number of daily migrants comes from Tuzla Canton, about 7587 people or about 82,05% of all daily migrants. The most pronounced daily interaction of Tuzla is with the settlements in its suburban belt, from which around 1151 persons or 15,17% of daily migrants from the area of the city of Tuzla circulated, and with the settlements of the neighboring towns of Živinice, Kalesija, Srebrenik and Lukavac, from which around 4208 persons or about 55,46% of all daily migrants from the area of Tuzla Canton.

According to the results of field research, the largest number of daily migrants circulated from the narrower gravity area of Tuzla, which is enclosed by an isobody of 20 km (Tab. 3). Outside the urban area, which includes 15 whole local communities with 44 settlements, about 1151 people or about 17,82% circulated daily. Of the total number, about 9,12% are elementary school students (105), about 46,13% are high school students (531) and about 44,75% are students (515).

Tab. 3: Zones of influence of Tuzla.

Zones	Distance in km	Number of daily migrants				Share in the total number of migrants (%)	The number of settlements that provide daily migrants	Settlement share (%)
		In total	Elementary school students	High school students	Students			
I	to 10	782	64	362	356	67,94	21	63,63
II	10-20	369	41	169	159	32,06	12	36,37

Source: Field research, Distance determined on the basis of circles that enclose isotels of 10 and 20 km.

Considering the spatial distribution of daily migrants, two functional or gravity zones can be distinguished in the area of the city of Tuzla, which are located at different distances and at different degrees of connection with the center.

The highest concentration of daily migrants is in the first functional area (zone I), where the suburban settlements up to 10 km from the city center. There are 21 settlements in this zone: Breške, Breze, Čanići, Dobrnja, Dokanj, Gornja Tuzla, Kosci, Kovačevo selo, Lipnica, Lipnica Gornja, Ljepunice, Ljubače, Morančani, Obodnica Donja, Pasci Gornji, Petrovice Donje, Pogorioci, Svojtina, Ševar, Tetima and Tisovac. According to the results of field research, about 1687 persons or 71,97% of all daily migrants in the narrower area of Tuzla circulated from these settlements on a daily basis. The largest number of daily migrants came from Gornja Tuzla, Dokanj, Dobrnja, Lipnica, Lipnica Donja and Obodnica Donja. About 782 people came from these settlements (182 students, 232 high school students and 64 elementary school students). This is a gravitational area of extraordinarily strong influence that is closely connected to the center, continues to the narrower area of the city and is urbanized to a considerable extent.

The second functional area (zone II) makes the wider city environment, whose settlements are located on the very edge of the city territory, at a distance of 10 to 20 km from the center. They also feel the considerable influence of city functions, but the frequency of traffic is significantly lower, and they are characterized by rural landscapes, i.e., the predominant agricultural activity. In this zone, which includes the outskirts of the city of Tuzla, there are only 12 settlements from which daily migrants come (Brgule, Dragunja Donja, Dragunja Gornja, Kiseljak, Milešići, Mramor, Mramor Novi, Obodnica Gornja, Osoje, Poljana and Požarnica). About 369 migrants (about 41 elementary school students, about 169 high school students and about 159 students) circulated from these settlements on a daily basis, which was only about 32,06% of the total number of daily migrants. The settlements Mramor Novi, Kiseljak and Požarnica produced the largest number of daily circulations.

The daily frequency of migrants, in addition to distance is influenced by other factors, such as the number of inhabitants of the settlement, the age and economic structure of the inhabitants of those settlements, and the traffic connection of the settlement with the center.

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EDUCATIONAL FUNCTION AS A FACTOR IN CREATING THE GRAVITY AREA OF THE CITY OF TUZLA

Summary

The role of the city of Tuzla as an educational center is extremely large. Until the beginning of the 90's of the last century in the region of Northeastern Bosnia, the function of education was the most developed in the area of the city of Tuzla, where 26125 students were educated in 60 primary and secondary schools. The establishment of the University of Tuzla in 1976 was of particular importance for the acquisition of higher and high education.

From the 1990's until today, there has been a trend of declining numbers of primary and secondary school students, as well as university students, which is primarily a consequence of a reduced birth rate, and more recently, an increasingly pronounced emigration of the population. The compulsory primary education system in the 2020/21 school year, included 8109 students, secondary schools were attended by 5939 students, while there were about 8869 students at colleges, which is the lowest level compared to the analysed period.

The increasingly emphasized needs of the economy and non-economic activities for professional staff have initiated changes in the educational structure of the population, and the biggest changes are in the category of population without any education, with incomplete basic education, and in the category of higher education.

Educational functions encourage more significant daily or occasional circulation of the population towards the centers where educational institutions are located. The structure of daily migrants is dominated by students, who numbered around 6105 or 73,68%. Second in terms of participation are secondary school students, of whom 3127 or 53,55% migrated on a daily basis.

To assess the gravity area of the city of Tuzla, the criterion territorial range of daily migrations was used. It is estimated that travellers arrive in the city of Tuzla from over 509 settlements, and according to the number of migrants, they are divided into six directions or groups. Over 82,05% of daily migrants come from the area of Tuzla Canton, which significantly narrowed the gravitational area compared to the period up to the 1990's of the last century.