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DEMOGRAPHIC CHANGES IN THE URBAN SPACE OF APUSENI MOUNTAINS

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Abstract: The study aims to analyze demographic changes in the urban space of the Apuseni Mountains in the post-communist period (1992-2011). In order to observe the demographic changes, demographic evolution, natural dynamics and migratory dynamics were analyzed. Statistical data has been obtained from the website of the National Institute of Statistics. Numeric data has been processed resulting in a series of tables and graphs have been generated in parallel. It was found that during the studied period there were changes in the values of all the analyzed indicators. The most significant changes were mortality and immigration, whose values were increase. Higher mortality and immigration rates set negative demographic changes. The urban area of the Apuseni Mountains is confronted with demographic risk phenomena such as depopulation.

Key words: Apuseni Mountains, demographic changes, urban space, demographic risk phenomena, post-communist period

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INTRODUCTION

This study aimed at analyzing demographic changes at the level of urban space in the Apuseni Mountains. The urban area in Apuseni has undergone ascending and descending changes in terms of demographic evolution, the natural and migratory dynamics of the population. Urban Apuseni Mountains consists of 13 cities, all of them small (less than 25,000 inhabitants). Four cities are from Alba County (Zlatna, Abrud, Baia de Arieș, Câmpeni), five from Bihor County (Vașcău, Nucet, Ștei, Beiuș, Aleșd), two from Hunedoara County (Brad, Geoagiu), one from Arad County (Sebiș) and one from Cluj County (Huedin) (figure 1).

The geographic specificity of the analyzed territory is that it belongs to a mountainous area of old human habitation, which has a large spatial dispersion of the habitats, which is associated with the poor connectivity of the localities and with a low degree of development of the infrastructure.

On this background of conditional manifestation of regional development processes there was a oscillating demographic dynamics, marked by population growth phenomena in urban

centers (at certain time intervals) or a long-term regress, with major implications on maintaining the balance of the entire regional system of the Apuseni Mountains.

In any system, the territorial population is the structural-functional component that best reflects the state of equilibrium they are in. Several geographic studies that have been carried out so far integrate the Apuseni Mountains either partially or totally in the category of systems affected by "functional ruptures" (Ianoş, 2004, p. 67) or as a "disadvantaged area" (Cândea et al., 2006, p. 93), or regions with demographic risk phenomena (Surd et al., 2007), or "peripheral regions" (Dragan, 2011, p. 5) or "critical regions" (Mureşan, 2016, p. 171).

The geographic area analyzed, although it is the most accessible mountainous unit on the territory of Romania, is currently characterized by a weakly popular, the settlements are small and have a low degree of urban coverage (Surd et al., 2017). The analysis aimed at highlighting geographic changes with negative impact on current living, transposed into a diachronically correlative context based on the demographic data and economic, social-political and historical information processing.

Beginning with the 21st century, numerous studies have been carried out on settlements in the Apuseni Mountains, studies covering both rural and urban areas, analyzed under different geographic or geographic related branches. Subjects that formed doctoral theses were made (Buţiu, 2004; Constantin, 2011; Drăgan, 2011). Also, a study completed by a doctoral thesis was conducted on the research of the only country-type mental space entirely located in the Apuseni Mountains (Boţan, 2010). Specialized literature has also been enriched with other reference books on the Apuseni Mountains (Petrea, 2004; Surd et al., 2007; Surd et al., 2017).

Population, demographic dynamics was the target of study for researchers around the world (Josipovic and Repolusk, 2003; Malmberg and Tegenu, 2007; Finney and Simpson, 2009; Prioux and Mazuy, 2009; Sturtevant, 2013; Stupariu et al., 2018).

METHODOLOGY

The analytical approach pursued as the first stage the administrative delimitation of the investigated mountain area. The literature highlights the existence of several opinions regarding the fixing of the Apuseni Mountains limit based on the regional decoupling resulting from the association of the administrative-territorial units integrated into this morphostructural subunit. In direct correlation with the specificity of the research in this paper, we adopted the spatial delimitation developed by Dragan (2011) in a comprehensive study on the resilience of the Apuseni Mountains regional system. A first stage was the administrative delimitation of the Apuseni Mountains (Drăgan, 2011). For delimitation, the Arc GIS 10.1 program was finally used and the map was made. In the continuation of the delimitation, the 13 cities that make up the urban space of the Apuseni Mountains were identified. The second stage consisted in obtaining statistical data on the website of the National Institute of Statistics. After obtaining the data, they were processed resulting in a series of tables and graphs on demographic change in urban space. Subsequently, based on the analysis of the data set on urban demographic demographics in this regional system, several chrono-spatial interpretations of the socio-economic and structural-functional correlation phenomena based on the identification of the main directions of propagation of the demographic flows in territory.

DEMOGRAPHIC EVOLUTION OF THE POPULATION

Most of the localities have been declared cities since the 20th century, especially the second half of the century. In order to highlight the demographic evolution, previous data were used to declare the status of the city. The urban population in the Apuseni Mountains has been on the rise. In 1880, in the 13 cities today, 51,423 people lived. In 1880 the largest settlement was Zlatna with 7,864 inhabitants, Geoagiu with 7,480 inhabitants, respectively Abrud with 7,462. The smallest settlements were Nucet with 807 inhabitants and Ştei with 377. These two were the only ones who registered in 1880, a population under 1000 inhabitants. After World War II, in 1966 the

population was 91 289 inhabitants. Demographics grew much in the post-war period. In 1966, Brad was the largest settlement with a population of 15,532 (figure 1).

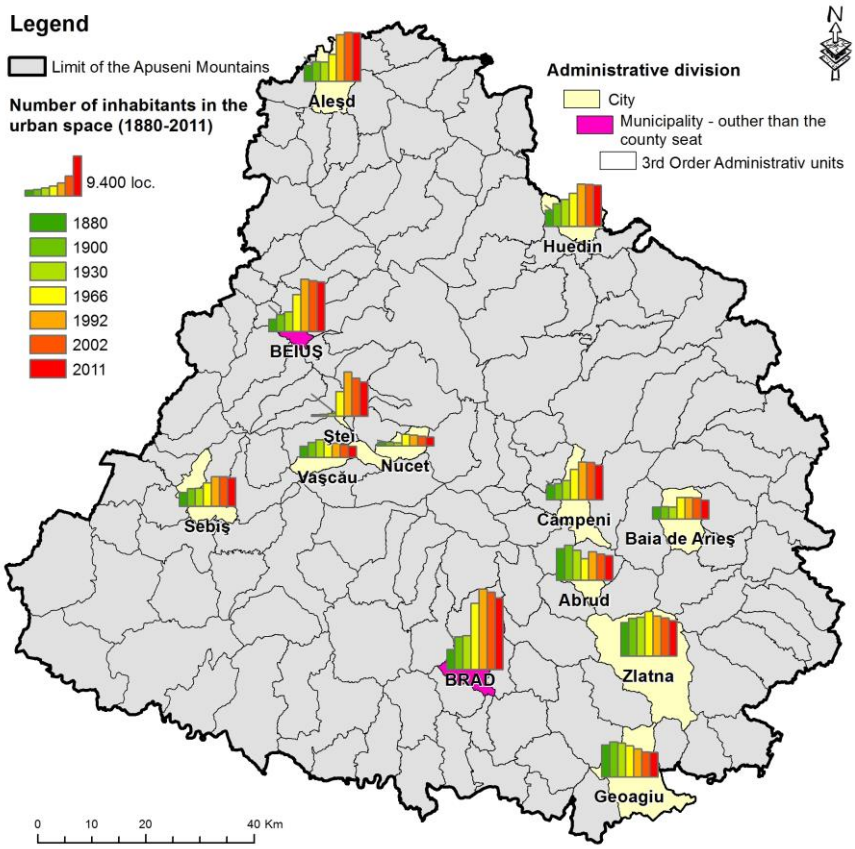

Figure 1. The numerical evolution of the population in the urban space of the Apuseni Mountains

Since 1880 the population has grown 3.3 times and would remain the largest urban settlement of the Apuseni Mountains. From 1992 all cities have had population losses, except in some cases where from 1992 to 2002 the population grew and then dropped. This is the case of Aleșd and Sebiș (table 1, figure 2).

Aleșd's industry has persisted and adapted to the new economic conditions. Among the main industrial branches in Aleșd are those of construction materials, especially cement production. The city has a high potential for development because of its geographical location. It is located less than 50 km away from Oradea and is crossed by important communication routes. Another strong point of Aleșd is the short distance to the exit point of the country. The European road E60 helps to transport road products. The railway transport is ensured by the railway network Cluj-Napoca - Oradea. Also, at the beginning of the 21st century, thermal water resources were discovered in the city's perimeter. Their exploitation was not delayed, as a whole base was built with outdoor pools covered and the possibility of carrying out curative programs through qualified staff.

The city of Sebiș has developed economically due to the diversification of the industry with a focus on the light industry and the wood processing industry. Due to the wood processing, Sebiș has become an important furniture exporter. The case of this city is similar to that of Aleșd, both of which benefit from the favorable geographic position. Communication routes are an important

factor in the development of a settlement. As the city approaches the national road (DN 79A), and through its center two major county roads (DJ 793 and DJ 792B). The network of transport routes is complemented by the railway routes, passing through the city through one of the oldest railways in Romania built at the end of the 19th century.

Table 1. Number of inhabitans in the urban space of Apuseni Mountains
(Data source: data processed after the NIS and http://www.varga.adatbank.transindex.ro/?pg=3&action=etnik&id=1364)

No.	City	Year						
		1880	**1900**	**1930**	**1966**	**1992**	**2002**	**2011**
1.	Zlatna	7864	8892	9104	10453	9391	8976	8347
2.	Abrud	7462	8318	7122	5150	6729	6199	5860
3.	Baia de Arieș	2777	2892	2750	5055	5061	4956	4426
4.	Câmpeni	3469	3826	4535	7170	8878	8776	8095
5.	Vașcău	2570	3504	4147	3621	3337	2948	2649
6.	Nucet	807	902	779	2768	2531	2243	2135
7.	Ștei	377	417	586	5754	10415	8925	8048
8.	Beiuș	2947	4016	4683	8744	12353	11976	11677
9.	Huedin	3802	5313	6338	7834	9961	9859	9737
10.	Aleșd	3683	4608	4544	6371	10920	11463	11401
11.	Sebiș	3310	4218	4253	5537	6993	7016	6729
12.	Brad	4695	7643	7938	15532	18861	18141	16811
13.	Geoagiu	7480	8238	7953	7300	6527	5813	5775
	TOTAL	**51243**	**62787**	**64732**	**91289**	**111957**	**107291**	**101690**

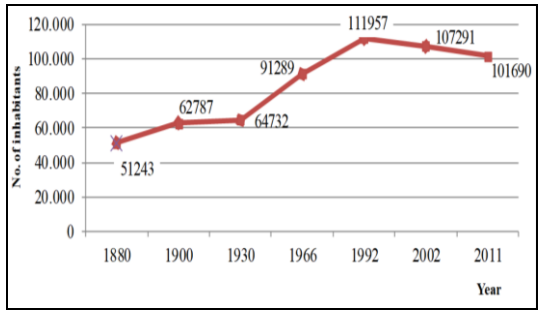

Figure 2. The numerical evolution of the population in the urban space of the Apuseni Mountains
(Source: data processed after the NIS)

The socialist period led to an increase in the population in most of the Apuseni Mountains. In smaller towns where the mining industry was the main one, the population grew heavily (Nucet, Ștei, Brad, Baia de Arieș). The communist industry favored the prosperity of the urban space of the Apuseni Mountains.

CHANGES IN THE NATURAL DYNAMICS OF THE URBAN POPULATION OF THE APUSENI MOUNTAINS

Birth rates have been constantly changing between 1992 and 2011. The highest birth rate in 1992 was in Câmpeni town of 14.1 ‰, followed by Aleșd with 13.8 ‰, respectively two rates of 12.2 ‰ registered in the towns of Abrud and Nucet. In 1992, seven cities out of the 13 had a birth rate of more than 10 ‰. At the 2002 census, there were significant changes in birth rates. There have been large decreases in values, only two of the 13 having a rate of more than 10 ‰. The two administrative units were Huedin with 10.9 ‰ and Aleșd with 12.6 ‰. Câmpeni would have the largest decrease in the birth rate between 1992 and 2002. The significant decline was due to the restructuring that followed the 1989 Revolution, the lack of jobs that led to the migration of the

young population. The changes continued after 2002, with the lowest birth rate in 1992-2011 being recorded in the 2011 census. The lowest value was 4.5 ‰ in Baia de Arieș, compared to 1992, the rate declining 2.6 times. Of the natural demographic malfunctions facing most of the Apuseni Mountains we can recall the demographic phenomenon of risk, demographic aging and the migration of the young population. These phenomena have rapidly expanded into the countryside of the Apuseni, but they also gradually include urban space. If at the end of the 20th century the population migrated from the rural area to the urban environment, starting with the 21st century, the population migrated abroad (table 2).

Table 2. Birth rates for each city in the Apuseni Mountains
(Data source: data processed after the NIS)

No.	City	Year		
		1992	2002	2011
1.	Zlatna	11.7	6.1	7.3
2.	Abrud	12.2	7.4	5.3
3.	Baia de Arieș	12.1	7.1	4.5
4.	Câmpeni	14.1	6.8	6.4
5.	Vașcău	7.2	6.4	6.4
6.	Nucet	12.2	7.6	7.5
7.	Ștei	8.6	7.4	8.0
8.	Beiuș	8.1	7.4	8.9
9.	Huedin	11.4	10.9	12.4
10.	Aleșd	13.8	12.6	11.0
11.	Sebiș	9.3	6.6	6.5
12.	Brad	9.4	5.5	4.9
13.	Geoagiu	7.8	9.1	7.3

The number of born children in the 13 cities has been steadily decreasing since 1989. The maximum was registered in 1992, and then gradually dropped. At the 2002 census, the number of births has barely exceeded 800, and in the 2011 census, their number has fallen below the threshold of 800. In the urban area of the Apuseni Mountains, the number of your births is decreasing (figure 3).

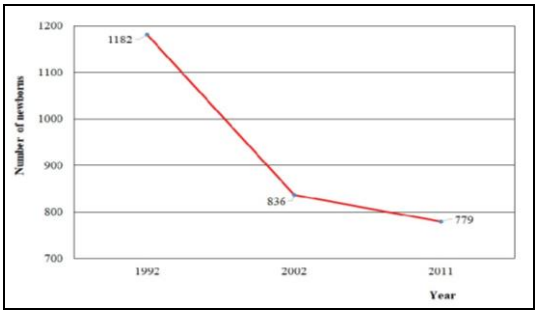

Figure 3. The numerical evolution of newborns in the urban space of the Apuseni Mountains
(Source: data processed after the NIS)

Mortality rates have been in a more rapid change since 1992. Evolution of mortality rates between 1992-2011 was considerably higher than birth rates. In 1992, ten of the 13 cities recorded values higher than 10 ‰. The highest rate of 16.5 ‰ was in Geoagiu, Zlatna with 14.6 ‰ and Vașcău with 13.5 ‰. In 2011, the highest mortality rate recorded for the whole period of 1992-2011 was in the town of Vașcău 18.9 ‰. In 2011, only three cities had a rate below 10 ‰, these being Beiuș with 8.3 ‰, Ștei with 8.0 ‰ and Nucet with 7.5 ‰. Geoagiu has been the city

with the most worrying mortality rates throughout the entire period. The aging population is more exposed to various diseases, leading to high mortality rates in the urban area of the Apuseni Mountains (table 3).

Table 3. Mortality rates for each city in the Apuseni Mountains
(Data source: data processed after the NIS)

No.	City	Year		
		1992	2002	2011
1.	Zlatna	14.6	13.8	13.3
2.	Abrud	10.1	6.9	11.3
3.	Baia de Arieș	9.5	8.9	11.3
4.	Câmpeni	10.1	9.2	10.3
5.	Vașcău	13.5	15.9	18.9
6.	Nucet	10.7	12.5	7.5
7.	Ștei	6.5	7.7	8.0
8.	Beiuș	10.1	8.7	8.3
9.	Huedin	9.0	9.1	11.3
10.	Aleșd	10.3	11.1	10.4
11.	Sebiș	13.4	12.8	12.2
12.	Brad	10.3	11.5	13.7
13.	Geoagiu	16.5	16.2	14.9

The death rates are noticeably higher than the number of births. The maximum number of deaths was in 1992, the number being down until 2002. The numerical decrease in deaths between 1992 and 2002 did not positively affects the natural dynamics. Since 2002, the number of deaths has started to increase, reaching 1,165 in 2011. By comparing the numerical value of the number of births in 2011 with the numerical value of the deaths, there is a clear natural deficit (figure 4).

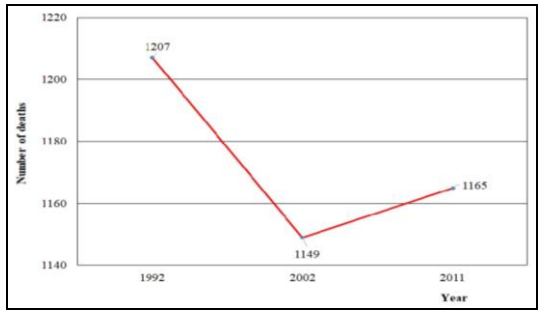

Figure 4. The numerical evolution of deaths in the urban space of the Apuseni Mountains
(Source: data processed after the NIS)

CHANGES IN MIGRATORY DYNAMICS OF THE URBAN POPULATION OF THE APUSENI MOUNTAINS

Among the dysfunctions faced by most cities in the Apuseni Mountains we can mention: the closure of mining activities, especially because there were strictly mono-industrial cities that developed on the basis of the extraction and processing of the underground deposits (Nucet, Vașcău, Ștei). After the closure of the industrial branch, the population faced a lack of jobs, the labor force being forced to move to other places to look for a job. The highest three immigration rates in 1992 were registered in Ștei with 18.1 ‰, Câmpeni with 17.7 ‰ and Nucet with 17.4 ‰. Changes in population migration have continued since the 21st century. In 2002, the highest rate was 20 ‰, being totally of Ștei, and in 2011 it reached 22.2 ‰. Three cities from 2002 to 2011 saw the decrease in the immigration rate, Zlatna, Vașcău and Huedin (table 4).

Table 4. Immigration rates for each city in the Apuseni Mountains
(Data source: data processed after the NIS)

No.	City	Year		
		1992	2002	2011
1.	Zlatna	10.5	10.5	9.5
2.	Abrud	12.0	16.0	19.8
3	Baia de Arieș	14.0	12.1	16.3
4.	Câmpeni	17.7	15.0	19.0
5.	Vașcău	15.9	16.3	13.2
6.	Nucet	17.4	10.3	11.7
7.	Ștei	18.1	20.2	22.2
8.	Beiuș	13.2	13.5	14.1
9.	Huedin	14.8	15.9	13.7
10.	Aleșd	12.5	12.6	13.7
11.	Sebiș	13.4	13.4	19.6
12.	Brad	15.2	13.2	15.8
13.	Geoagiu	15.3	11.5	13.9

Immigration of urban population had a period of decline in the late 20th century, and then increased at the beginning of the 21st century. Worsening economic conditions, redundancies and a small number of jobs forced the population to move. Due to the improvement of the transit conditions in Europe and after Romania's accession to the European Union, the population could travel more easily outside the country. Mortality and immigration are two indicators that lead to negative demographic changes in the urban space of the Apuseni Mountains (figure 5 and 6).

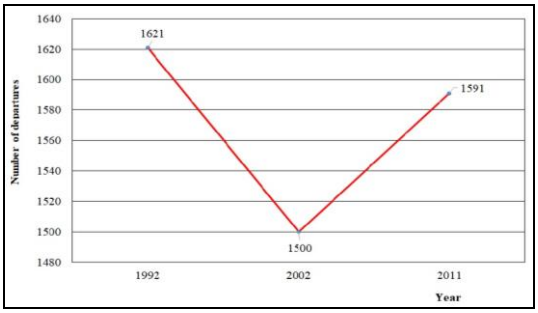

Figure 5. The numerical evolution of the departures from the urban space of the Apuseni Mountains
(Source: data processed after the NIS)

The emigration was much smaller than that of the departure, especially after 2000. In 2002, the highest rate of settlements was in Geoagiu by 21.8 ‰.

If we look at the evolution from 1992 to 2002, we can see that Geoagiu's population is very much identified with their native place. The territorial identity of the Geoagiu population is a unique phenomenon for the urban space of the Apuseni Mountains. Vertical development is poorly represented, with the city having more of a village look.

The development potential is particularly high, as there are important thermal water resources in the vicinity of the settlement. The high therapeutic value of these waters could be an engine for the city's economic development. Also, the long tradition of using thermal water should be exploited to the benefit of local development. In 2011, only three cities had a rate below 10 ‰, such as Zlatna 9.0 ‰, Ștei 8.9 ‰ and the lowest rate of 6.1 ‰ in Baia de Arieș (table 5).

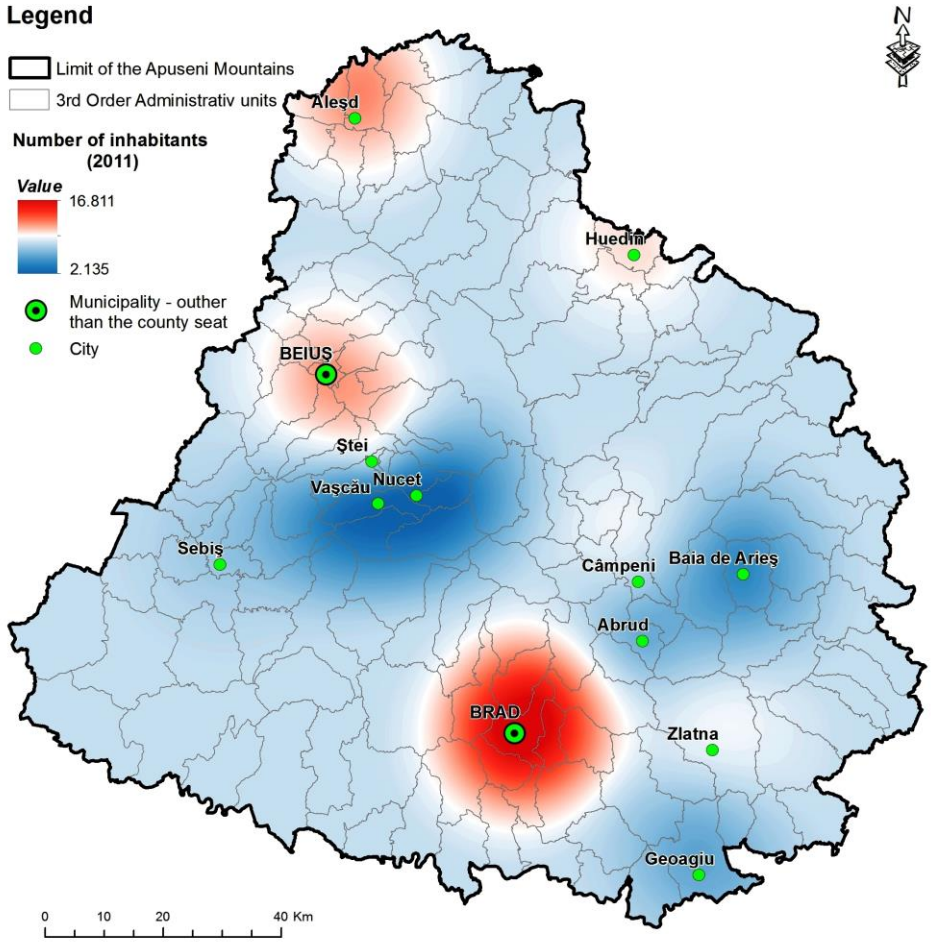

Figure 6. Areas of concentration-dispersion of the urban population in the Apuseni Mountains

Table 5. Emigration rates for each city in the Apuseni Mountains
(Data source: data processed after the NIS)

No.	City	Year		
		1992	2002	2011
1.	Zlatna	12.8	6.8	9.0
2.	Abrud	22.7	13.4	10.6
3.	Baia de Arieș	27.5	9.5	6.1
4.	Câmpeni	16.0	10.6	12.4
5.	Vașcău	11.7	12.6	11.3
6.	Nucet	15.4	7.6	10.8
7.	Ștei	14.5	9.5	8.9
8.	Beiuș	13.4	15.1	16.2
9.	Huedin	14.5	16.1	14.7
10.	Aleșd	16.8	12.4	11.3
11.	Sebiș	13.3	10.8	14.6
12.	Brad	13.8	12.6	12.2
13.	Geoagiu	26.0	21.8	11.1

The number of establishments in the 13 cities in the post-communist era has been steadily decreasing. The maximum number was 1 800 in 1992, and in 2011 the number of establishments was 1 200. There is a decrease of about 600 establishments. The best evolution of fixations was between 1992 and 2002, with the number being reduced from 2002 to 2011. The poorer living standard was not an attraction for the population (figure 7).

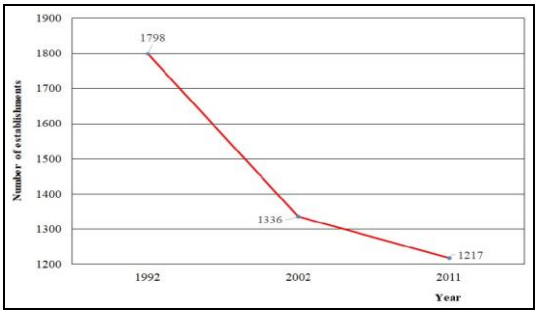

Figure 7. The numerical evolution of establishments in the urban space of the Apuseni Mountains (Source: data processed after the NIS)

CONCLUSIONS

Demographic changes in the urban space of the Apuseni Mountains began with the communist period, when demographic input was made by moving the rural population to the urban environment. Most of the cities were mining centers where labor was needed. After 1989, industrial activities in most cities began to fall back. After the Revolution of 1989, the demographic changes in the urban space of the Apuseni Mountains began to be significant. The young population had to migrate in search of a job. After them remained the aging population, which with great difficulty could be supported. Demographic changes have led to the emergence of demographic risk phenomena, also present in rural areas. Mortality rates have risen above birth rates and departure values are higher than setting values. Under these conditions, we can talk about the depopulation of the urban space of the Apuseni Mountains.

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