

## GEO-DEMOGRAPHIC RISKS IN THE APUSENI MOUNTAINS. DEMOGRAPHIC AGEING

GABRIELA-ALINA MUREȘAN<sup>1</sup>, CRISTIAN-NICOLAE BOȚAN<sup>2</sup>

**ABSTRACT** – The territorial system of the Apuseni Mountains can be considered a critical region from a geo-demographic viewpoint. This is due to two major geo-demographic risks that affect it at present, namely the massive migration, mainly of the young and adult population, and the severe decrease in birth rate, also as a consequence of migration. These two processes determine the main two geo-demographic risks within the Apuseni Mountains: on the one hand, depopulation and *the geo-demographic decline of the settlements* and, on the other hand, *population ageing*. The present study aims to analyse the latter by focussing on the Land of the Moți. Conclusions emphasise a rather severe process of demographic ageing. The rate of the old age group increased from 17.9% in 1992 to 25.2% in 2011. All the 16 administrative-territorial units under analysis recorded an increase in the rate of the old age group. In 2011, the ratio of the extreme age groups (young population/old age group) is above the unit (1) both in the region as a whole and in the majority of its administrative units.

**Keywords:** critical region, migration, demographic ageing, population feminisation

### INTRODUCTION

The territorial system of the Apuseni Mountains can be considered a critical region from a geo-demographic viewpoint. This is due to two major geo-demographic risks that affect it at present, namely the massive migration, mainly of the young and adult population, and the severe decrease in birth rate, also as a consequence of migration. These two processes determine the main two geo-demographic risks within the Apuseni Mountains: on the one hand, depopulation and *the geo-demographic decline of the settlements* and, on the other hand, *population ageing* (Mureșan, 2014). The latter will be analysed within the present study, the focus being on how it reveals itself within the area of the Apuseni Mountains.

The structure of the population by age groups is directly influenced by the population dynamics, namely by birth rate, mortality and migration and their evolution in time. This population structure is especially significant as it determines the labour force potential and the dependency ratio, representing the basis of the social and economic planning of a country (Nicoară, 2004).

The main situations of risk generated by the changes within the structure of the population by age groups are mainly represented by the increase in share of young population and an intensified process of population ageing (Benedek, Schulz, 2003). Out of the two phenomena, the latter has greatly affected the Apuseni Mountains, especially in the last decade.

The least complex definition of population ageing is an increase of the share the over 60 or 65 year old population group has in a society. If this 60+ age (old age) group has an increasingly higher share within the general population structure by age, then one can conclude that the population experiences an ageing phenomenon (Rotariu, 2004). Population ageing and the increase in the old age group are mainly determined by two phenomena: a decrease in female fertility (and retaining a minimum figure for a significant period) and the death rate. Nevertheless, on smaller areas, population

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<sup>1</sup> Lecturer, Ph.D., Babeș-Bolyai University, Faculty of Geography, 5-7 Clinicilor Street, Cluj-Napoca, Romania. E-mail: amuresan@geografie.ubbcluj.ro

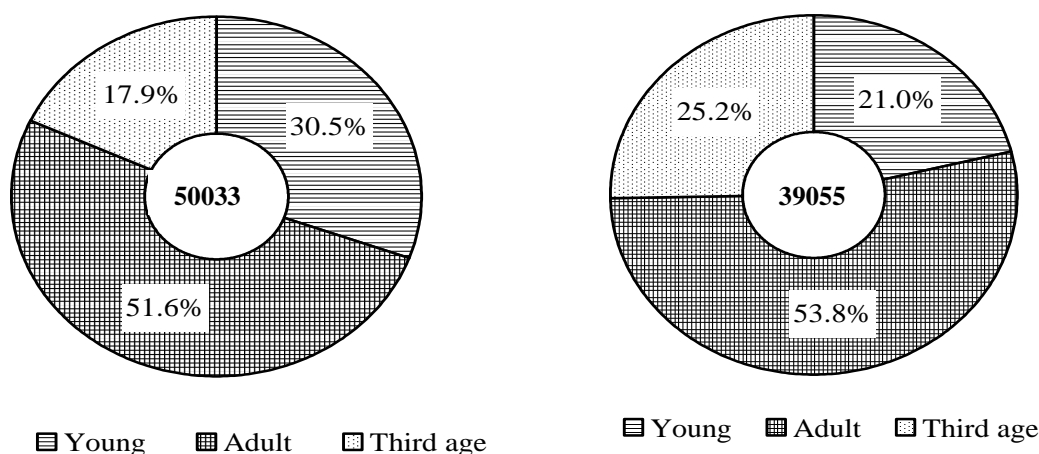
<sup>2</sup> Lecturer, Ph.D., Babeș-Bolyai University, Faculty of Geography, 5-7 Clinicilor Street, Cluj-Napoca, Romania. E-mail: cbotan@geografie.ubbcluj.ro

ageing can also be influenced by migration. Therefore, within a region seriously affected by massive migration, mainly by demographic exodus, as in the Apuseni Mountains, the result is a phenomenon of demographic ageing and of population feminisation. This is due also to the fact that the age groups mostly affected by migration are the young group and the adult group. This leads to a decrease in the labour force potential, a severe reduction of the birth rate, an increase in the death rate and, last but not least, a decrease in the number of population. Hence, the existence of settlements is jeopardized and some of them do die away (Nicoară, 2004).

The **population ageing** phenomenon in the Apuseni Mountains has worsened in the last 20 years. Thus, the old age group has increased its share in numerous administrative-territorial units and, in some cases, it came to represent even 35–40% of the total population. In order to analyse the population by taking into consideration the old age group population structure, we chose the Land of the Moți as territorial model. We consider that it faithfully reflects the geodemographic phenomena that affect the whole region of the Apuseni Mountains. The area under study corresponds to the one analysed in a previous article (Mureșan, 2014) and it comprises the land called “Țara Moților” [the Land of the Moți], as defined and delineated in the book *Țara Moților. Studiu de geografie regională* [The Land of the Moți. Study of Regional Geography] (Boțan, 2010). Based on geographical, economic, ethnographical, social, historical and mentality-related reasons, the study identifies the Land of the Moți as a region in the centre of the Apuseni Mountains, located along the upper Arieș river basin, roughly delineated by the surrounding ridges. Administratively, it is entirely part of Alba County, The region includes two towns (Abrud and Câmpești), including their component settlements, and 14 communes, with the belonging villages.

#### THE RISK OF DEMOGRAPHIC AGEING

In order to highlight the population ageing process, we analysed the structure of the age groups for the period 1992–2011 for all administrative-territorial units. A first conclusion was that there was a severe decrease in the share of the young population (0–19 years old) and, at the same time, an increase in the share of the old age group. In 1992, the Land of the Moți registered a share of the young population of 30.5%, the adult population represented 51.6% and the old age group 17.9%. Nevertheless, there were significant mutations until 2011, a year characterised by the following shares: 21.0%, the young population, 53.8%, the adult population and 25.2%, the old age group (Figure 1). These figures are enough to emphasise the phenomenon of population ageing in the area. As one can see, even though the young population decreases, the adult population does not register an increase, the conclusion being that the area was affected by a powerful migration process of the adult group outside the area of study, determining a severe decrease in birth rate.



**Figure 1.** The rate of the main age groups in the Land of the Moți in 1992 (left) and in 2011 (right)

According to statistical data, the decrease recorded by the young population was more severe in the urban areas, namely from 33.7% in 1992 to 19.8% in 2011. The two towns of the region (Abrud and Câmpeni) recorded the greatest loss of young population (more than a half). Thus, Abrud recorded a decrease of 55.8% and Câmpeni 52.2%. The communes with mining economic activities also recorded significant decreases, so that Bucium was characterized by a decrease from 25.2% in 1992 to 13.8% in 2011 – the latter being the lowest value in the whole region under study – and Roșia Montană, from 28.8% in 1992 to 21.9% in 2011. The closing up of the mines was followed by a powerful exodus of the adult population and of the young group, along with it. Moreover, the emigration of the adult group meant also a decrease in the birth rate, determining a decrease in the young population number.

The decrease in the share of the young population can be highlighted also when analysing the administrative-territorial units. Thus, in 1992, none of the 14 communes and the two towns of the region had less than 25% of young population, while, in 2011, none of the administrative-territorial units had more than 25%. The communes with the highest share of young population are those which have a high number of inhabitants (Bistra) or the ones in which the depopulation phenomenon has been less severe (Horea). On the other hand, the lowest shares of young population are registered in the southern communes (Avram Iancu, Ciuruleasa, Sohodol, Vidra – which have shares around 20%) and in Bucium (13.8%). These are the communes most affected by depopulation and by the geodemographic decline of settlements (Mureșan, 2014).

In 1992, the share of the old age group was of 17.9% out of the total population of the region. In urban areas, the share was lower, 12.4%, while in rural areas it was a little higher, 20.5%. There are some differences in the distribution of the old age group shares on administrative-territorial units, ranging from 12.3% (Abrud) and 28.4% (Avram Iancu commune). The two towns of the region recorded the lowest share of the old age group, around 12%, while other five communes also had low shares, not higher than 20% (Bistra 14.4%, Roșia Montană 18.2%, Horea 19%, Gârda de Sus 19.9%, and Arieșeni 20%). Two communes recorded the highest share of the old age group (more than 25%), namely Vidra with 25.5% and Avram Iancu with 28.4%. The rest of the communes (7) recorded shares between 20.1% and 25%: Albac 20.6%, Poiana Vadului 20.4%, Ciuruleasa 21.3%, Bucium 21.6%, Vadu Moților 22.2%, Sohodol 22.9%, and Scărișoara 23%.

The share of the old age group increased significantly in the Land of the Moți until 2011, reaching 25.2% of the total population. The absolute figures of the old age group recorded an increase, while the total number of population decreased significantly, by approximately 22%, during the period from 1992 to 2011 (Mureșan, 2014). The increase of the old age group share was huge in the urban areas, as there it reached 21.8%, while it was of 27% in the rural areas. All the administrative-territorial units recorded increases in the share of the old age group, even though the absolute number of old people decreased in many communes between 1992 and 2011 (Table 1, Figure 2).

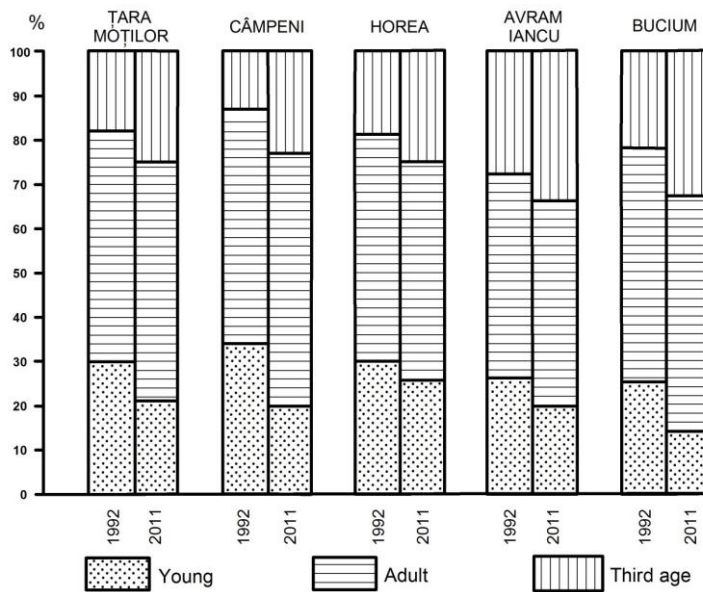
This phenomenon emphasises the intensity of the population ageing process, in the context of the decrease in the shares of the young and the adult age groups. The two above-mentioned factors (death rate and decrease in birth rate), along with population migration (mainly the young and adult groups who migrated to other regions at the periphery of the Apuseni Mountains or in the western or southern European states – Italy, Spain, Germany, and Portugal) contributed to this situation. If in 1992 only two communes had the old age group counting more than 25%, in 2011, 9 out of the administrative-territorial units went over this share and four of them went over 30%: Ciuruleasa 26.1%, Arieșeni 27.1%, Vadu Moților 27.4%, Gârda de Sus 28.5%, Sohodol 28.7%, Scărișoara 30.4%, Vidra 32.8%, Bucium 33.1%, and Avram Iancu 34.5% (Figure 3). Values under 25%, but not less than 20%, were recorded by the two towns and by five of the communes: Abrud 20.5%, Câmpeni 22.8%, Roșia Montană 20.7%, Bistra 22.6%, Albac, Horea and Poiana Vadului, each with 24.8%. The old age group increased in the two towns in the last two decades not only in share, but also in number: by almost 25% in Abrud, while it almost doubled in Câmpeni.

The current study is focused on an evolution model of the quality of population considering the region of the Land of the Moți. Nevertheless, the situation that characterises this area is also emphasised by the quality of the population in other administrative-territorial units in the Apuseni

Mountains. Considering only the mountain area of the Apuseni Mountains region belonging to Alba County, we can point out the involution of the population structure by age and a rather severe population ageing phenomenon. In many communes, the share of the old age group was over 35-40% in 2011, reaching even 50% out of the total population. Thus, the commune of Mogoș recorded 49.8%, Ocoliș 49.5%, Întregalde 45.6%, Râmeț 44.6%, Ponor 42%, Poșaga 38%, Ceru-Băcăinți 37.9%, etc. Consequently, the young population group recorded very low shares, below 15% and even below 10% in Ocoliș and Râmeț.

**Table 1.** Population structure by age groups in the Land of the Moți region in 1992 and in 2011

Settlement	Year	Total	Young		Adult		Old age group	
			Absolute figure	%	Absolute figure	%	Absolute figure	%
Abrud	1992	6729	2292	34.1	3609	53.6	828	12.3
	2011	5072	1014	20.0	3019	59.5	1039	20.5
Câmpeni	1992	8878	2975	33.5	4802	54.1	1101	12.4
	2011	7221	1423	19.7	4152	57.5	1646	22.8
Urban area	<b>1992</b>	<b>15607</b>	<b>5267</b>	<b>33.7</b>	<b>8411</b>	<b>53.9</b>	<b>1929</b>	<b>12.4</b>
	<b>2011</b>	<b>12293</b>	<b>2437</b>	<b>19.8</b>	<b>7171</b>	<b>58.3</b>	<b>2685</b>	<b>21.8</b>
Albac	1992	2403	696	29.0	1213	50.5	494	20.6
	2011	2089	477	22.8	1093	52.3	519	24.8
Arieșeni	1992	2017	580	28.8	1033	51.2	404	20.0
	2011	1765	386	21.9	901	51.0	478	27.1
Avram Iancu	1992	2217	571	25.8	1017	45.9	629	28.4
	2011	1636	325	19.9	746	45.6	565	34.5
Bistra	1992	5361	1828	34.1	2762	51.5	771	14.4
	2011	4540	1047	23.1	2467	54.3	1026	22.6
Bucium	1992	2115	533	25.2	1125	53.2	457	21.6
	2011	1454	200	13.8	773	53.2	481	33.1
Ciuruleasa	1992	1599	466	29.1	792	49.5	341	21.3
	2011	1197	233	19.5	651	54.4	313	26.1
Gârda de Sus	1992	2130	601	28.2	1105	51.9	424	19.9
	2011	1714	352	20.5	874	51.0	488	28.5
Horea	1992	2336	702	30.1	1191	51.0	443	19.0
	2011	2143	562	26.2	1050	49.0	531	24.8
Poiana Vadului	1992	1466	485	33.1	682	46.5	299	20.4
	2011	1139	284	24.9	572	50.2	283	24.8
Roșia Montană	1992	4146	1193	28.8	2199	53.0	754	18.2
	2011	2656	585	22.0	1520	57.2	551	20.7
Scărișoara	1992	2187	618	28.3	1066	48.7	503	23.0
	2011	1661	364	21.9	792	47.7	505	30.4
Sohodol	1992	2371	598	25.2	1230	51.9	543	22.9
	2011	1729	340	19.7	892	51.6	497	28.7
Vadu Moților	1992	1634	484	29.6	787	48.2	363	22.2
	2011	1348	282	20.9	697	51.7	369	27.4
Vidra	1992	2444	658	26.9	1162	47.5	624	25.5
	2011	1691	341	20.2	796	47.1	554	32.8
Rural area	<b>1992</b>	<b>34426</b>	<b>10013</b>	<b>29.1</b>	<b>17364</b>	<b>50.4</b>	<b>7049</b>	<b>20.5</b>
	<b>2011</b>	<b>26762</b>	<b>5778</b>	<b>21.6</b>	<b>13824</b>	<b>51.7</b>	<b>7160</b>	<b>26.8</b>
Total	1992	50033	15280	30.5	25775	51.5	8978	17.9
	2011	39055	8215	21.0	20995	53.8	9845	25.2



**Figure 2.** The structure of the main age groups in the Land of the Moți and in four of the settlements included in the region, in 1992 and in 2011

The level of demographic ageing is clearly highlighted by the ratio of the old age group and the young population ( $P_{>60 \text{ years}} / P_{0-19 \text{ years}}$ ), with 0.42 as threshold. The region was characterised by a ratio of 0.59 in 1992, emphasising a slight trend towards ageing. Population was much younger in the urban areas, where this ratio was 0.37, as compared to the one in the rural areas, where the value was 0.70. Besides the two towns with values under the threshold, only one commune (Bistra) had a balanced situation (with a ratio of 0.42). The other 13 communes had values that went over the threshold, yet remained under the unit (1). There were also exceptions such as Avram Iancu commune (with 1.10), the commune with the highest

share of the old age group in 1992. The 2011 situation looked different as the process of demographic ageing became generalised and more severe. This situation was present both in the region as a whole (the ratio of the old age group and the young population was 1.20) and in each of the communes and towns which are part of the region (in each case the ratio was higher than the standard value of 0.42). Only three communes – Bistra, Horea, and Roșia Montană – had values under the unit (1); the other administrative-territorial units, including the towns, had ratios above the unit (1), with a maximum in the case of Bucium commune (2.41) (between 1992 and 2011, Bucium recorded the most severe decrease in the young group and the highest increase in the share of the old age group).

In most cases, the process of demographic ageing is accompanied by a process of population feminisation. However, the latter is not so emphasised in the Land of the Moți. In 2011, the feminisation index was 98.1 women per 100 men, which reflects the prevalence of men. It was only in the case of the town of Câmpeni and three communes (Bucium, Roșia Montană, and Gârda de Sus) that the number of women was higher than that of men. If we consider the female/male ratio on each of the age groups, the findings show that women outnumbered men in the case of the old age group, both numerically and in terms of share.

We hold that the age pyramid offers a clear image on the intensity of the geodemographic ageing phenomenon and on that of feminisation. We chose to draw some conclusions upon these phenomena affecting the Land of the Moți based on a couple of charts which represent the age pyramid for the town of Câmpeni (Figures 4a and 4b) and for Bucium commune (Figures 4c and 4d), comparing the situation in 1992 with the one in 2011. Yet, the analysis conducted on all the administrative-territorial units in the region shows that some units (Câmpeni, Bistra, and Horea) recorded a slow increase in the old age group during the above-mentioned period, while in the case of other units (Avram Iancu, Bucium, and Vidra communes) the ageing process was intense. In all the cases we analysed, the increase in the rate of the old age group was accompanied by a severe decrease of the young population, following the decrease in birth rate. The age pyramid emphasises the intense process of feminisation which affects the old age group, as in all the administrative-territorial units under analysis the number of women was higher than that of men in the case of the old age group.

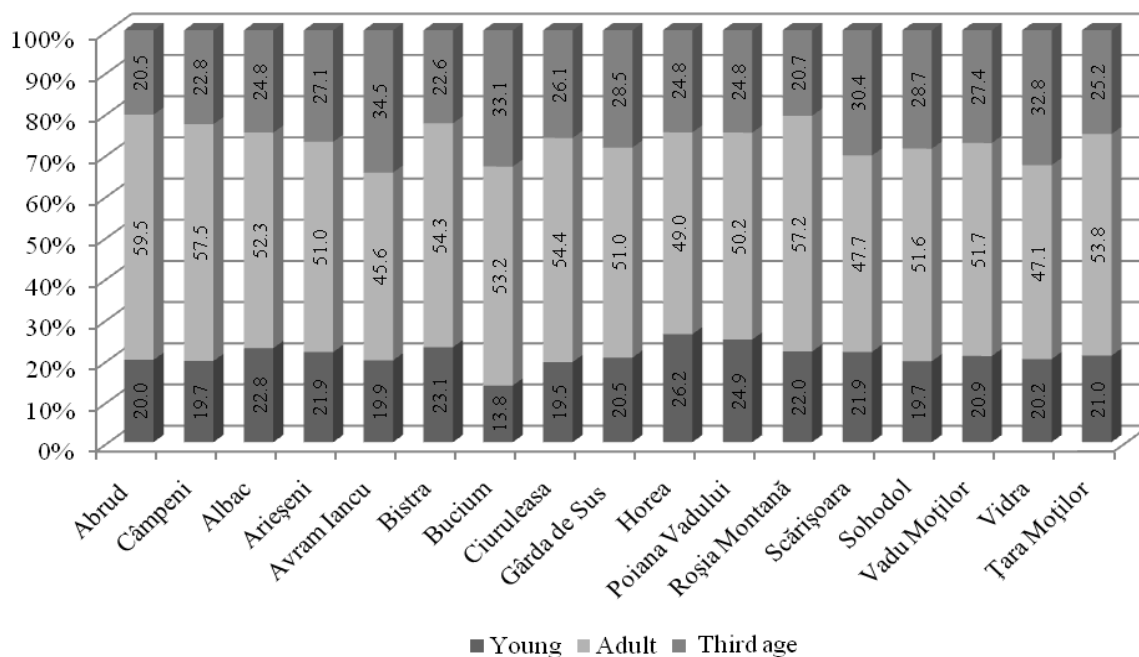


Figure 3. Population by age groups in the administrative-territorial units of the Land of the Moți in 2011

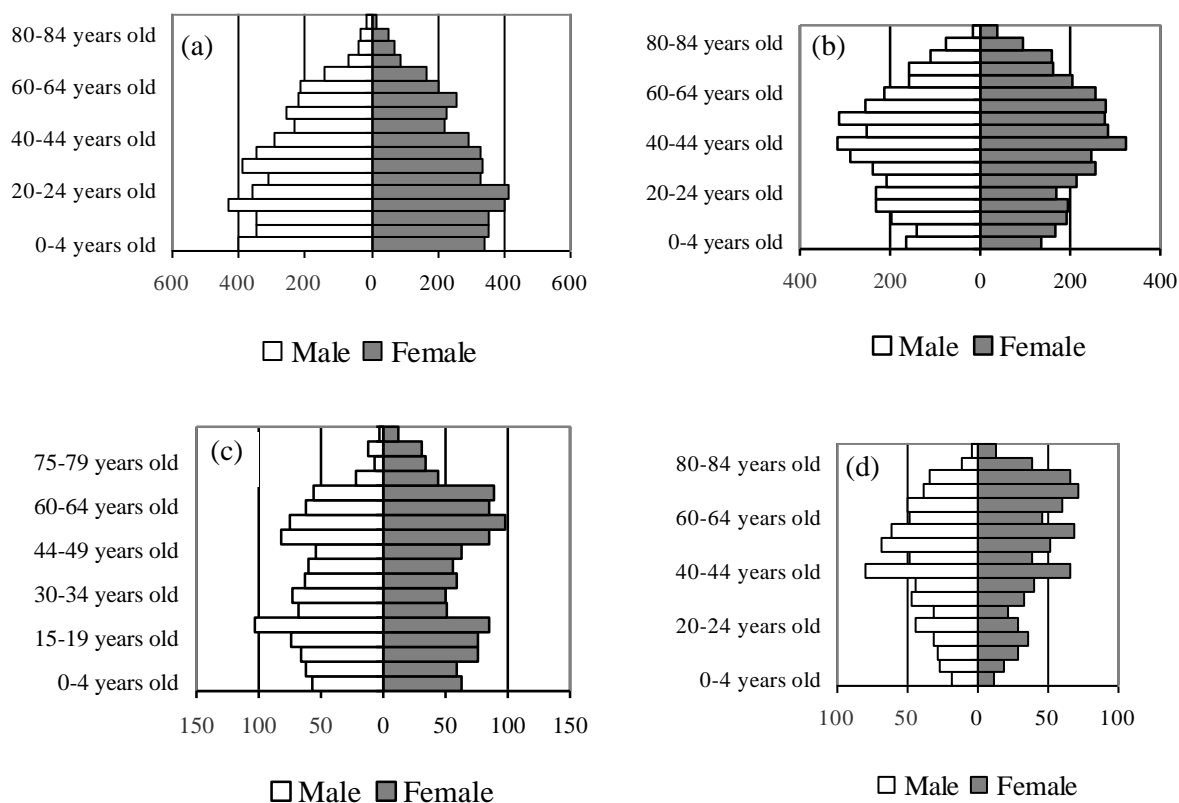


Figure 4. Age pyramid in the case of Câmpeni town in 1992 (a) and 2011 (b) and in the case of Bucium commune in 1992 (c) and 2011 (d)

## CONCLUSIONS

In the last two decades, the Land of the Moți has been characterised by a rather severe process of demographic ageing. This is highlighted mainly by the increase in the share of the old age population between 1992 and 2011. The share of the old age group registered an increase both in the area under study as a whole (from 17.9% to 25.2%) and within its administrative-territorial units. The intensity of the demographic ageing process is emphasized also by the increase in the share of the old age group in many communes while the number of old age people, in absolute figures, decreased. If in 1992, the old age group accounted for over 25% only in two communes, in 2011, nine administrative-territorial units (out of 16) had figures higher than 25% and over 30% in the case of four communes.

In 2011, the ratio of the old age group and the young population was above the unit in the majority of the communes and in the two towns, highlighting the intensity of the phenomenon we analysed.

At the same time, the share of the young population decreased severely, especially in the two towns of the region, in the communes with mining activities and in the ones which have been affected by demographic exodus and by depopulation.

The process of feminisation is not so prominent in the Land of the Moți. Nevertheless, a female predominance can be observed affecting the old age group in all the administrative-territorial units that were analysed.

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