

# DEMOGRAPHIC CHANGES IN THE RURAL AREA OF THE SOUTHERN CARPATHIANS (1992–2011)

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**Abstract.** The Southern Carpathians cover 21% of the Carpathian area in Romania and encompass 19% of all rural settlements. The population of this geographical space numbers some 640,000 people. The human habitat consists of numerous urban and rural communities grouped administratively into 11 counties and four development regions. It is the medium-sized communes that have the highest concentration of population. The varied range of landforms in the Southern Carpathians (depressions, valley corridors, and mountain slopes) have always offered favourable condition for the development of human settlements. The expansion of the household, its organisation and functional typology are influenced by the geographical position. The demographic transition has changed the age-group structure, the young-population group decreasing through migration in search for better-paid jobs (as did also other age-groups), ageing of the population, etc.

## 1. INTRODUCTION

As part and parcel of the Carpathian-Danubian-Pontic space, the Southern Carpathians have permanently been inhabited, the population developing a true Carpathian circulation. Archaeological finds stand proof to the presence of man from times immemorial, the caves that dot the area constituting secure natural shelters for habitation. However, the mountain zone has both positive and negative habitation assets. But, while the Alps and the Prealpine areas are inhabited in proportion of 60 and 50 per cent, respectively, settlement in the Romanian Carpathians has almost a compact character (Nancu, 1989). The geographical landscape of depressions has evolved in close correlation with and under the specific geographical influence of the great mountainous unit it falls into (Câdea, 1997).

The present study looks at the changes occurred in the demographic structure of the Southern Carpathian rural area in terms of evolution, making a comparative approach at micro-scale level (viz., local administrative units – LAU2). One finds ever more socio-economic and political factors involved in the evolution of the settlement network, local interests focussing on making the best of the natural and economic resources.

## 2. METHODOLOGY

Our study resorts to statistical information – LAU2 data-base (NUTS V), to the Tempo Online data-series published by the National Institute of Statistics, as well as to the 1992 and 2011 population and housing census results. The calculation of relevant indices, e.g. population by age-groups; population ageing; demographic dependence; workforce renewal; population sex structure; ethnic and confessional structure, outlining the changes experienced by the demographic structures.

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The main analysed indicators, referring to dynamics of population change, had in view the following aspects:

- a. Population structure by large age-groups (0-14, 15-64, 65 and over), the population being divided in three categories: young, adult and elderly.
- b. Population ageing index represents the ratio between those aged 65 and over, on the one hand, and young people (0-14 year olds), on the other.
- c. The demographic-dependence ratio was calculated by the formula:

$$Rd = [(P_{0-14} + P_{>65\text{-year olds}}) / P_{15-64\text{-year olds}}] * 100$$

where:

Rd = demographic dependence ratio

P = population.

- d. The labour renewal index was calculated by referring the population aged 15-29 and 30-44-years old.
- e. The sex structure expressed the numerical proportion of men / women per total population.
- f. Nationality and confession are important elements for a population-structure analysis, the data obtained revealing the proportion of a certain ethnicity or confession / total population.

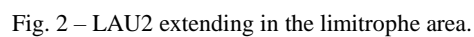
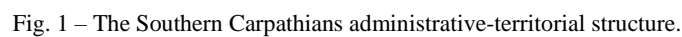
### 3. STUDY-AREA

The Southern Carpathians are flanked by the Timiș-Cerna Corridor in the West and the Prahova Valley in the East. They are approximately 50-70 km long from North to South and 250 kms from East to West. Geographically speaking, the Southern Carpathian eastern boundary is marked by the Dâmbovița Valley. With over 2,500 m altitude, massive build-up, and imposing rocky crests, justifies the name of Transylvanian Alps they are referred to in the older geographical literature (Emm. de Martonne, 1907); the main mountain groups are Bucegi-Leaota, Făgăraș-Iezer, Parâng-Cindrel, Retezat-Godeanu, and the Hațeg-Orăștie Depression (Badea *et. al.*, 2001; Badea, 2014).

The Southern Carpathians cover 14,040 km<sup>2</sup>, basically 21% of the mountainous area, and 5.9% of Romania's surface-area. Average altitude: 1,136 m, most frequently with heights of 1,100-1,500 m (4%), and 700-1,000 m (19%) (*Geografia României*, I, 1983; *Geografia României*, III, 1987). Although they are the tallest mountains of the Romanian Carpathian Arch (with 16 out of the 21 peaks of over 2,000 m alt.), yet the valleys crossing, or bounding them (the Prahova, Olt, Jiu, and Cerna), their platforms and Intra-Carpathian depressions make this branch the best humanised one (Bugă, Vișan, 1997). The presence of some depressionary corridors or passes benefitting by traffic axes, was also a reason for settlement-building at higher or lower altitudes (the corridors of Rucăr-Bran, Timiș-Cerna-Bistra, the Merișor sector etc.) (Câdea, 1994-1995). Seemingly depressions closed within the compact Southern Carpathian mass, they are nevertheless inter-connected by passes and passages (Câdea, 1996).

The human habitat contains numerous rural and urban communities, grouped administratively on the territory of 11 counties (Alba, Argeș, Brașov, Caraș-Severin, Dâmbovița, Gorj, Hunedoara, Mehedinți, Prahova, Sibiu, Vâlcea) and four development regions (South, South-West, Centre and West) (Fig. 1).

The extended geographical space of this mountain range englobes 94 communes and 25 towns, with a population of some 640,000 inhabitants in 2011, i.e. 3.1% of Romania's total population; population density: over 50 inhab./km<sup>2</sup> in the depressions. A part of the area covered by 40 LAU2, overlaps administratively the Southern Carpathians, however, settlements are located in neighbouring relief units (Fig. 2).



Highest concentrations of population have the middle-sized communes (55 of them hosting each between 2,000 and 5,000 people, 57.9%); small communes (34, with under 2,000 inhab. each, i.e. 35.8% in all); large and very large communes (5 of them with over 5,000 inhab. each, i.e. 6.3% of the whole rural population) (Fig. 3).

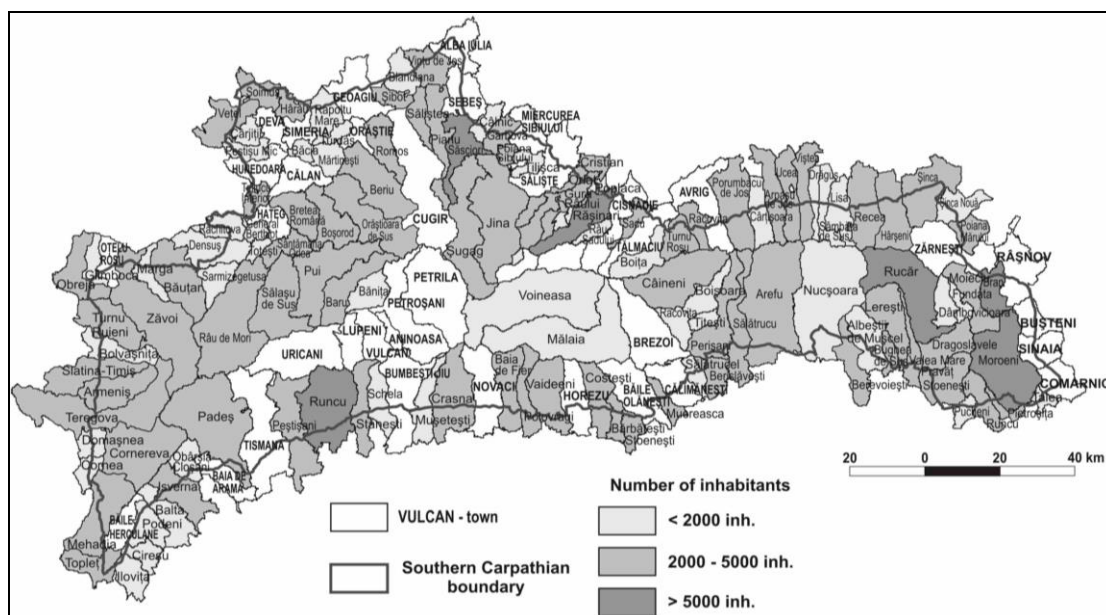


Fig. 3 – The demographic size of the Southern Carpathian communes.

The varied natural background has largely influenced the area's population, humanisation featuring a number of particularities shaped by the interaction among demographic, social and economic factors.

#### 4. DEMOGRAPHIC STRUCTURE

##### 4.1. Age-group structure of the population

The Southern Carpathians display a wide physical and economic-geographical diversity and complexity. Demographic transition in Romania lags a few decades behind the West-European countries, a situation derived from the pro-birth policies imposed by the communist regime, the result being major structural changes in the population: modification of age-groups, a depleted young population ratio, migration of people in search for better-paid jobs, population ageing, etc.

In analysing a territory it is important to look at the age, sex, nationality and religious structure of its population, which is largely influenced by political and socio-economic changes.

The time-variation of demographic processes induces changes in the age and sex structure, in that the share of some groups of people increases, while the share of others decreases correspondingly. It has been convened that a population is young provided the old age-group percentage is below 7%; between 7% and 12% the ageing process is underway; above 12% we have a demographically old population.

In 1992, the under 15-year-olds represented 20.4%, a value that fell to 16.1% in 2011. On the other hand, the over 65-year-olds and over would increase from 14.9% to 19.4%, the young population dropping by 4.5% between the two censuses. According to 1992 data, the youth topped 20% of the population (a value deemed to be optimal for a balanced structure) in over 50% of the administrative units, lower percentages (under 12% of the total population) being registered in the communes of Cârjiți, Mărtinești and Sălașu de Sus. In 2011, there were by 4.3% fewer young people than at the 1992 census, more than 20% youth below 15 years of age being registered only in eleven communes: Valea Mare Pravăț, Orlat, Gura Râului, Poiana Sibiului, Șinca, Sânciori, Căineni, Călnic, Racovița and Jina.

The evolution of population by representative age-groups in-between the two censuses shows a steady decline, from 57,694 to 39,508 among in the 0-14-year-olds, that is by more than 18,000 fewer individuals compared to an increase from 42,004 to 47,516 in the over 65-year-olds. This situation raises doubts as to the workforce renewal capacity.

The proportion of labour-supplying mature people (15-64 olds) had slightly dropped from 64.7% in 1992 to 64.5% in 2011. In 1992, highest values in the 15-64-age group exceeded 69% of the total population in Bănița, Zăvoi, Dâmbovicioara, Mălaia, Teliucu Inferior and Voineasa communes, with lowest values in Jina, Șinca, Perișani and Săsciori. In 2011, maximum values registered Bănița, Boița, Moroeni and Voineasa.

In 1992, the elderly group held the highest share (over 21%) in the communes of Șibot, Fundata, Podeni, Cârjiți and Mărtinești, lowest values (<10%) being recorded at Voineasa, Jina, Orlat, Mălaia and Șugag. In 2011, this group continued to increase in all the communes, highest values (over 30%) scoring five communes: Titești, Boișoara, Cârjiți, Fundata and Podeni, and lowest ones for the 65 and over age-group being found in the communes of Jina, Orlat, Moroeni, Poplaca and Călnic.

The age-group structure of the population accounts for the labour potential and for the specific share of the active population, it also underlies socio-economic planning (necessary consumption goods, jobs, education, health services, etc.). There is a close inter-dependence between the age-group distribution of population and the indicators of population dynamics (fertility, birth-rate, death-rate, migrations). A decrease of the natural balance and of female fertility entrained an ageing process, of the rural population, in particular.

Age-group evolutions indicate a steady numerical decrease of young people, with the elderly age-group on the increase, hence a diminished labour-renewal capacity and a greater burden on the pension and social security funds.

#### 4.1.1. The population ageing index

The index value for this category was 0.2 in 1992. More than half the administrative units (66) registered sub-unity values, with a minimum score at Jina (Sibiu County) and Voineasa (Vâlcea County), maximum values (over 1.5) recording the Hunedoara County communes: Sarmizegetusa, Șoimuș, Pestișu Mic, Sălașu de Sus, Mărtinești and Cârjiți (Fig. 4).

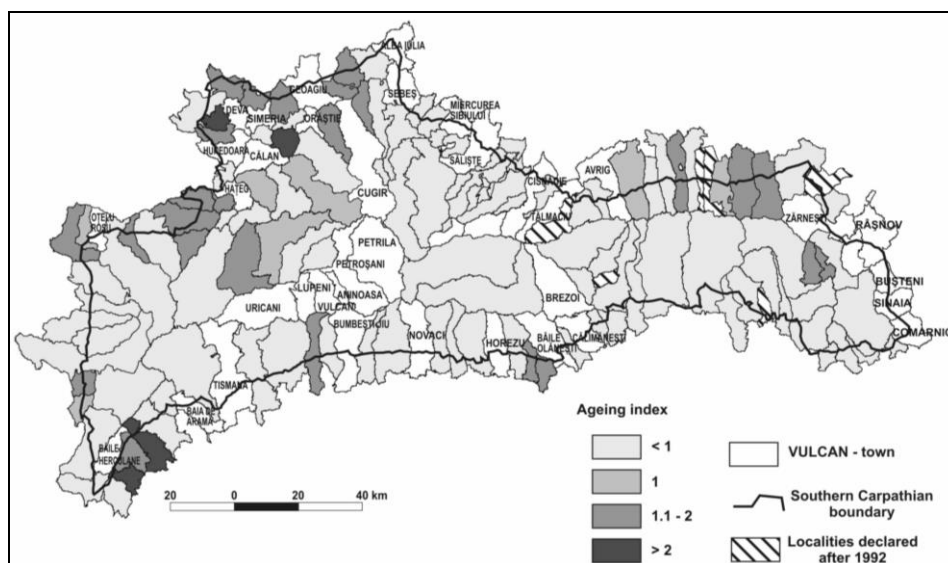


Fig. 4 – The Ageing Index (1992).



In 2011, this index registered an eight-time increase up to 1.6, the average Southern Carpathian value. That year it was only 21 rural settlements that had a low, sub-unity, record with a minimum in Jina (0.4), Călnic, Orlat and Săsciori, each staying at 0.6; the best score was attained by the communes of Peștișu Mic (3.1), Cârjiți (3.8) and Fundata (3.9) (Fig. 5).

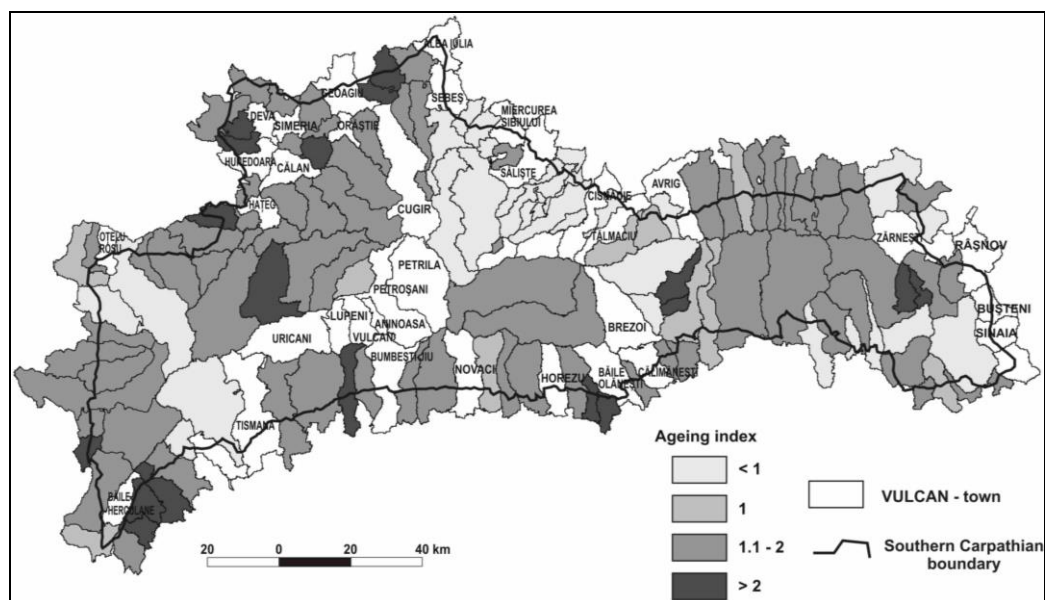


Fig. 5 – The Ageing Index (2011).

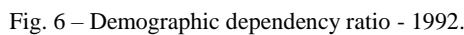
The number of elderly tops that of youth, an indication that the ageing index value is higher than in 1992; this situation suggests that the population ageing process is on the increase. An obvious correlation between this process at settlement level and the other demographic phenomena (higher average population age, lower fertile population age and labour-fit population age) all of which do influence the future of a population. Demographic ageing in the region is also closely related to the existence of small villages deprived of favourable natural and human development conditions.

#### 4.1.2. The demographic dependence ratio

The changes recorded in the population age and sex structure did affect the socio-economic activities by altering the age-dependent ratio, which kept growing steadily due to the numerical increase of elderly people, hence the pressure put on the adult working population. The effects of ageing on the economic and social life, as well as on the prospects of demographic evolution are expressed in the dependency ratio.

Economically speaking, the relation between the extreme age-groups (0-14 and 65 and over) on the one hand, and the labour potential population (15-64) on the other, yields the demographic dependence ratio, which is an edifying theoretical expression of the pressure put by the upkeep population on the potentially active one.

In 1992, this ratio was of 54.6% in the Southern Carpathians. However, territorial differences between depleted birth-rates and population ageing do exist among the area's administrative units, 42 settlements having an above-average score in the Southern Carpathians, with highest ratio values in the communes of Șinca (69.8%) and Jina (70.7%) (Fig. 6). One can explain the lower or higher demographic dependence ratio values by analysing a settlement's birth-rate, death-rate, life expectancy, development level, etc.



The working-age population is well-represented, but age-groups are dominated by people close to retirement age. There are ever fewer youth (depleted birth-rates by the year), thus ever fewer young occupants in the labour-market and increasingly more elderly. In view of it, measures are required to stimulate population increase, the more so, as the expected economic upsurge relies largely on the quality of the stock of human resources.

#### 4.1.3. The labour renewal ratio

This index is characteristic of a settlement's demographic and economic vitality. Calculations refer to the years 1992 and 2011. According to this indicator, labour renewal values were of 1.3 in 1992. Most administrative units had an above-unity score, except for Sarmizegetusa commune (0.9); six communes Bretea Română, Băuţar, Mehadia, Zăvoi, Bolvaşniţa and General Berthelot were not above unity score, maximum values (over 1.6) recording Boişoara, Racoviţa and Dâmbovicioara, which indicates a higher Southern Carpathian population aged 15-29 than the 30-44 olds (63,091 pers. to 48,955) (Fig. 8).

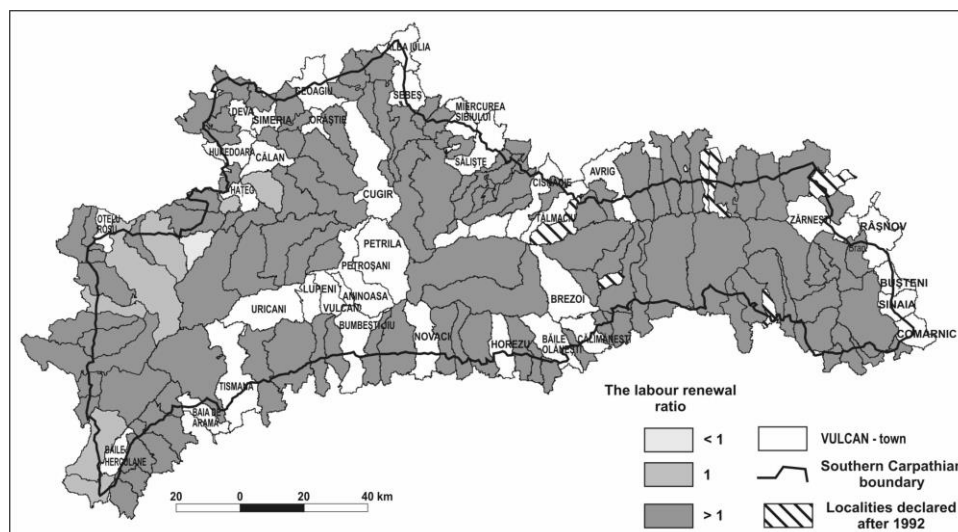


Fig. 8 – The Labour Renewal Index in 1992.

In 2011, this index value was by far lower (only 0.8) than in 1992, which is suggestive of a significant decrease (by more than 20,000 people) in the 15-29-year-old group (Fig. 9). Census data showed subunity values in most communes, only four (Racoviţa, Săsciori, Gârbova and Jina) having an above-unity score.

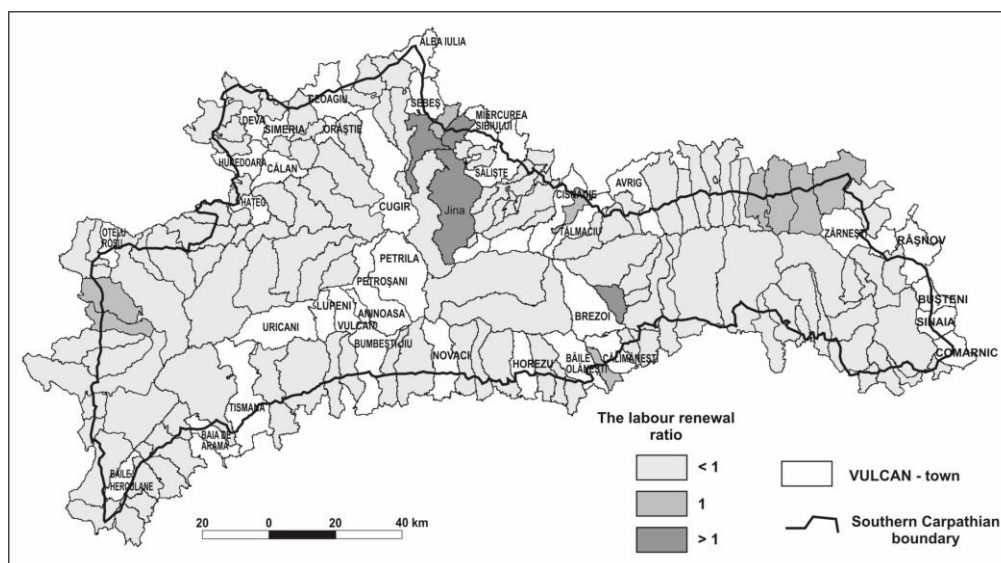


Fig. 9 – The Labour Renewal Index in 2011.



The youth-to-elderly ratio should be viewed not only in terms of quantity but especially of legislation to ensure the workforce for the present and the future, in particular. Therefore, measures are required to stimulate the numerical growth of population. Some demographic indicators have outlined specific types of evolutions.

#### 4.2. The population sex structure

This represents an important element for a geo-demographic analysis of population. Normal evolution conditions between the two sexes (males and females) stay at a 1-3% difference in favour of female, hence a process of feminisation of the population. In the wake of a demographic decline, the age-structure suffered some changes.

Towards the end of the 20<sup>th</sup> and the beginning of the 21<sup>st</sup> cc., the female population prevailed (50.3% - 1992, 50.4% - 2011). Between 1992 and 2011 decreases in the number of females were lower than among males, which did maintain the numerical gap between the two sexes. The ratio between the two being relatively balanced, the female population exceeding the male one by 1,505 and 1,937 individuals in 1992 and 2011, respectively.

The statistical data of the last two censuses afford several conclusions: a decrease in the proportion of young population (0-14-year-old) and an increase in the elderly one (65-year-old and over), with the female population prevailing especially in the latter category, women living longer than men. Small oscillations were found in the adult population (15-64-year-olds).

The age-and-sex structure of the population reflects the impact of natural population dynamics and of the migratory balance. The age and sex distribution indicates certain tendencies in the time-evolution of demographic phenomena and in the internal and external migratory flows. The population sex-structure is of particular importance for its notable demographic, economic and social consequences.

#### 4.3. The ethnic structure

“The Romanians’ ethnical and territorial unity has been acknowledged from times immemorial. The expression of this unity is found in the look, language and customs of the inhabitants” (Cucu, 1992). Nationality is a major element in analysing the structures of a population.

At the October 20, 2011 census, ethnicity and religion were registered based on the responders’ free declaration. Information on people who did not wish to declare it, or information on people collected indirectly from administrative sources are not available. Therefore, the structures further presented are calculated in terms of the total number of persons who did declare their ethnicity and religion and not of the total number of stable population. Information on ethnicity was available for 237,309 persons (out of a 245,179 total).

The ethnical structure reveals the majority proportion of the Romanian ethnic block along the time. According to data analysis, Romanians represented 96.0% of the population (227,955 pers.) in 2011, compared to 97.6% (277,065 pers.) in 1992. Next in line come the Rroma – 3.5% (8,227 pers.), with a two-fold increase versus the first census (1.4% – 3,935 pers.); the Magyars – 0.3% (814 to 1,897 in 1992); other ethnicities: 197 pers. to 319 in 1992.

By and large, the nationality structure in 2011 is not different from that in 1992. Beside the majority Romanians with close percent values in the two census years, the three more important national minorities in terms of number and proportion are the Rroma (Gypsies), on the increase, the Magyars and the Germans, on the decrease versus 1992.

The 1992 Romanian population held the majority (over 82%) in all the Southern Carpathian communes, 14 of these settlements having only Romanian inhabitants; lowest percentages of Romanian ethnics were at Bolvaşniţa (Caraş-Severin County), Valea Mare Pravăţ (Argeş County), Mărtineşti (Hunedoara County) and Gârbova (Alba County). In the studied area, next in line stand the

Roma (1.4 of population total), but no Roma inhabitant existed in 38 communes; the Magyars (over 5%) live in four communes: Harău, Băcia, Mărtinești and Bolvașnița.

In 2011, the Romanians represented over 68% in all the settlements, and 100% in 11 of them. Looking at these data, it appears that next in line after the Romanians, come the Roma, with over 20% of the population in settlements like Turdaș, Dragoslavele, Valea Mare Pravăț, Călnic and Bughea de Sus, an increase due to a high natural balance, migration from other settlements, awareness of belonging to this ethnicity and declaring it.

#### 4.4. Confessional structure

According to the space-time analysis, the Orthodox religion is in the majority, having constantly held this position through time. Favourable conditions of habitation have made other ethnics settle here. Co-habitation with the local population has led to changes in elements of culture and civilisation.

The religious structure, resulting from one's free response, come close to 2002 census data, despite referring to a numerically decreased population. By and large, the confessional structure in 2011 does reflect the ethnical structure, the vast majority of Romanians identifying themselves with the *Orthodox Christian* creed (93.0%, i.e. 221,916 pers.); other confessions: Pentecostals (2.5%) – 5,889 pers. and Baptists (1.6%) – 3,933 pers.; other religions in the Southern Carpathians: Roman-Catholic – 0.7%; Evangelist – 0.6%; Adventist of the Seventh Day – 0.5%, etc. a fairly high proportion (0.3%) of no religion answers, atheists, or no appurtenance to a religious belief.

The territorial distribution of the population by religious belief shows the *Orthodox* to be dominant in all the Southern Carpathian communes, and in proportion of 100% in four of them (Căineni, Talea, Muereasca and Titești).

The neo-Protestant cults are present mostly in the multi-confessional counties. The *Pentecostal* Cult (2.5%) has most believers in the communes of Beriu, Densuș, Râu de Mori, Obreja and Turnu Ruieni.

The *Baptist* cult has a higher percentage – 1.6% of the entire population, with significant values – over 11 of the total population, in five communes (Turnu Ruieni, Băuțar, Răchitova, Râu de Mori and Bolvașnița). The Evangelist cult (0.6%) registers notable values, totalling over 5% at Rucăr, Gârbova, Stoenești and Dragoslavele.

#### 5. CONCLUSIONS

The Southern Carpathian population is steadily decreasing, simultaneously with advanced ageing and depleted birth-rate. All small villages show a depopulation trend. Changes in the age-structure of the population reveal enhanced demographic ageing – reduced number of young people (under 15-age old) and an increase of the elderly category (65 and over). Improving the current situation and the proportion of population by age-groups requires legislative measures.

There are several factors liable to alter the structure of a population. The intensity of this alternation in a geographical space depends on living standard, natural conditions and the main demographic characteristics.

Certain groups of populations and the changes having affected them in time and space are related to characteristic territorial, demographic, socio-cultural and economic features. The socio-economic development of a territory is accompanied by several modifications and studying them represents a prerequisite for sustainable development.

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