

**THE EVOLUTION OF POPULATION STRUCTURE IN TERMS OF  
AGE GROUPS AND GENDER. CASE STUDY: THE SĂRĂȚEL  
DRAINAGE BASIN (THE BUZĂU SUBCARPATHIANS)**

**DINAMICA STRUCTURII PE GRUPE DE VÂRSTĂ ȘI SEXE A  
POPULAȚIEI. STUDIU DE CAZ: BAZINUL HIDROGRAFIC  
SĂRĂȚEL (SUBCARPAȚII BUZĂULUI)**

Ilinca-Valentina STOICA<sup>1</sup>, Florentina-Cristina MERCIU (IANCU)<sup>1</sup>, Andreea-  
Loreta CERCLEUX (CEPOIU)<sup>1</sup>

**Abstract:** The age group structure of the population in the Sărățel drainage basin was highlighted by means of an analysis of the three big age groups: 0-14 years, 15-64 years and 65 years and older. It revealed a gradual rise in the ratio of the elderly population, the main cause being the migration of the population during the communist period, which strongly disrupted the demographic evolution of the area analyzed. The population pyramid for 2002 highlights a clear difference between the southern part of the basin (the villages of Joseni, Policiori and Scorțoasa) and the northern part (villages of Crevelești, Ghiocari and Budești), suffering from strong depopulation. The sex ratio highlights a trend towards a feminization of the area, as a result of social and historic events to have influenced these settlements in the long run.

**Key-words:** age group and gender structure, the Sărățel drainage basin

**Cuvinte cheie:** structura pe grupe de vârstă și sexe, bazinul hidrografic Sărățel

## 1. INTRODUCTION

The structure of the population in terms of age groups and gender is relevant to the assessment of human capital, but also to identifying the capabilities to support economic activities that involve certain workforce characteristics (related to age, skills and training levels among others).

The need for an overview of population structure in terms of age and gender is easy to assess, taking into account the importance of those features in defining the role and place of each person in the process of population reproduction, economic activities and social organization in general (Sora V. et al., 1996, p. 75). It also exerts an influence on demographic indicators such as birth rates, fertility, and mortality rates, among others. Planning of educational activities, planning and outlooks of the workforce use, organizing service activities, population healthcare,

---

<sup>1</sup> University of Bucharest, The Interdisciplinary Center for Advanced Research on Territorial Dynamics (CICADIT)

and the specifics of consumption in general depend both on the size and on the population structure in terms of age groups (Sora V. et al., 1996, p. 77-78).

## 2. METHODOLOGY

In order to monitor the population's dynamics in terms of age groups and gender in the Sărățel drainage basin, an analysis was carried out of the three major age groups: 0-14 years, 15-64 years, 65 years and older, during the 1966-2002 time span, according to the available official data.

At the same time, for a better visual representation of the population structure in terms of age groups and gender by 2002, a population age pyramid was drawn for each village, using the regular five-year time periods: 0-4 years, 5-9 years, etc. For an overview as up-to-date as possible, a comparative analysis at commune village during 1966-2007 was also carried out.

In order to highlight the gender structure of the population, the sex ratio during 1930-2002 was also analyzed.

## 3. CASE STUDY: THE SĂRĂȚEL DRAINAGE BASIN

The Sărățel drainage basin is located in South-Eastern Romania, in the Central-Northern part of Buzău county. It comprises all of 26 rural settlements, grouped in the communes of Scorțoasa, Cănești and Chiliile, and another 2 villages - Joseni and Scorșești, part of the communes of Berca and Odăile, respectively.

Most settlements are small-sized, with the majority (73%) having less than 300 inhabitants; the villages of Scorțoasa, Policiori and Joseni alone are included in the medium-sized category, with more than 500 inhabitants (Stoica Ilinca-Valentina, 2009, p. 86). The present-time configuration and structure of the villages has been strongly influenced by the high level of migration typical of the communist period, with groups of migrants mainly heading towards the cities of Buzău, Râmnicu Sărat and towards the town of Berca. Smaller groups also left for Bucharest, Ploiești, Brașov or other, farther cities. The present-time aftermath of the high volume of migration at that time consists in a shrinking of the population, low birth rates, a rise of mortality, a drop in the workforce, and therefore the active population, and the aging of land-owners, among others (Stoica Ilinca-Valentina, 2008).

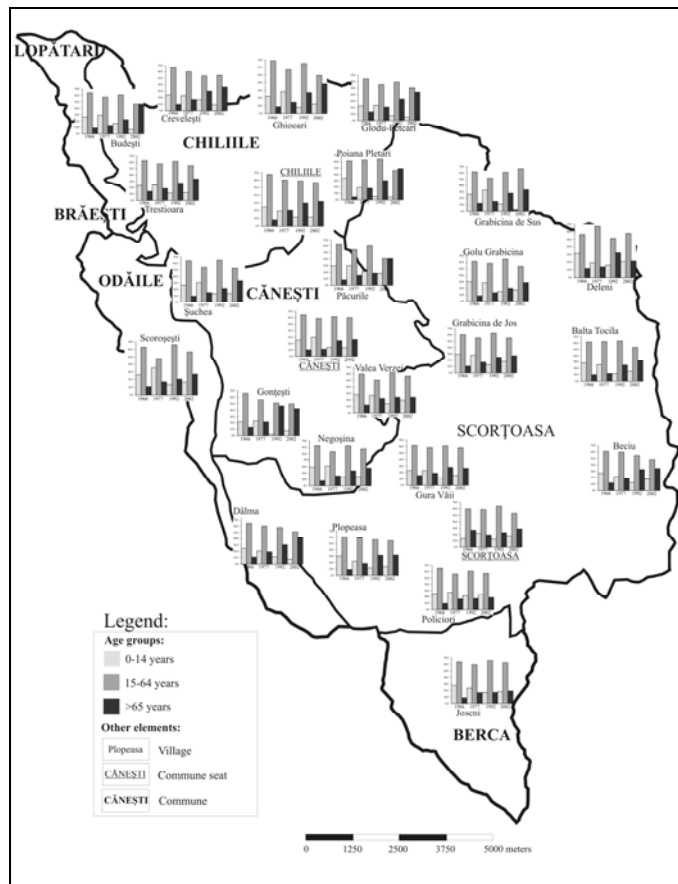
## 4. POPULATION STRUCTURE IN TERMS OF MAJOR AGE GROUPS

By 1966, the most important ratio in all villages was the age group ranging from 15 to 64 years, ranging in importance from 57% (Deleni) to 69% (Ghiocari). By 1977 the importance of that group had dropped, with the exception of the villages of Poiana Pletari and Deleni, where that indicator featured an upward trend, and the village of Balta Tocila, where indicators remained unaltered.

The population aged 0 to 14 ranged from 21% to 34%, with the sole outstanding exception being the commune of Scorțoasa, where this age group made up for 13% of the population.

The age group in the 65-and-older category was the least represented (Fig. 1), making up for up to 14% of the total, with the sole exception being the village of Scorțoasa with 27% (which proved the onset of a process of demographic aging).

By 1977 the ratio of the population aged 0 to 14 had risen or remained equal to 1966 levels in 50% of the instances; in general, the growth rates were limited, with higher rates only registered in the villages of Scorțoasa (8.4%), Grabicina de Sus (6.8%) and Ghiocari (6.4%). At the same time, the other villages registered a drop in that indicator, with noticeable drops registered in Poiana Pletari (-15.2%) and Deleni (-12.4%).



**Fig. 1. The ratios of the major age groups of the total population (1966, 1977, 1992, 2002) (percent)**

By 1992, in most cases (69.2%), the ratio of the age group ranging from 15 to 64 years had risen, in the context of a drop in birth rates, as a result of the waiving of the abortion law and a rise of the mortality rate.

The ratio of the 0-14 years age group dropped as compared to the previous period in all villages, to as low as an extreme 2% in the case of the village of Gontești,

5% in Poiana Pletari, and 8% in Ghiocari and Glodu-Petcari, proving that demographic aging rate had grown steeper.

The ratio of the population aged 65 and older was on an upward trend in all settlements as compared to the previous period, with the steepest rises occurring in Gonțești (25%) and Deleni (19%). The smallest values of the respective indicator were registered in the villages of Policiori and Joseni (17%). The growth rates were very low in the case of certain villages such as Valea Verzei and Policiori.

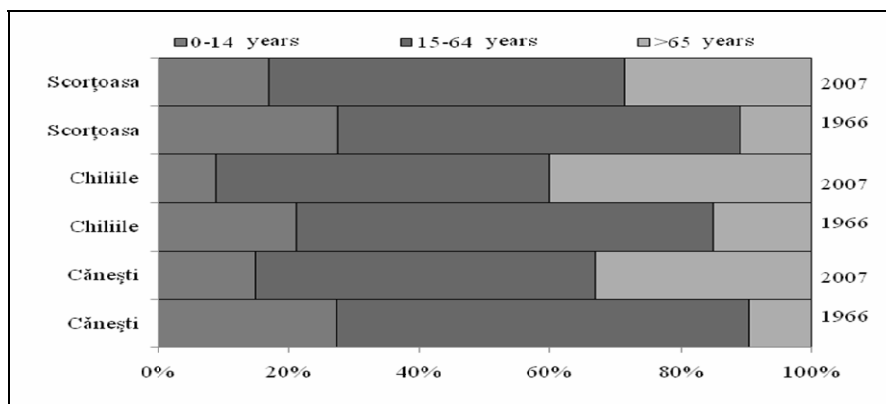
By 2002 the population aged 15 to 64 was on a downtrend, with the exceptions being the villages of Deleni, Grabicina de Sus and Crevelești. As far as the village of Grabicina de Sus is concerned, the values of that indicator are insignificant, considering the number of inhabitants; as far as the two other villages are concerned, the main factor was the increase of migration.

At the same time, for the first time in the period analyzed, the group aged 65 and older registered similar values (Dâlma, Gonțești), identical values (Budești, Păcurile) or even higher values (Poiana Pletari), proving the expansion of the demographic aging process. The lowest ratio was registered in the villages of Joseni and Policiori (19%), with the other villages registering rates of 27 % and higher.

A situation apart can be noticed in the village of Păcurile where by 1992 the ratio of that group stood at 19%, and by 2002 it had risen to 41%, as a large part of the adult population was assimilated into the elderly group.

In the context of intense migration during the communist period, the balance previously secured by a positive natural population growth in rural areas was profoundly changed, so the full effects of socialist policies of placing cities foremost and supplying them with raw material and workforce coming from rural areas are now felt.

Overall, at commune level, it can be noticed that, if by 1966 the 0-14-years age group made up for 27.4%, by 2007 it had dropped significantly, especially in the commune of Chiliile (Fig. 2), where it only makes up for 9% of the total population, which can be explained by the low birth rates.



**Fig. 2. The ratios of the major age groups in the communes of Cănești, Chiliile and Scorțoasa (1966, 2007)**

As far as the adult age group is concerned, a drop by more than 8% can be noticed, due to the poor representation, in the past two decades, of the young population group, which should substitute for the population aged 15 to 64. These drops, which characterized the young and adult age groups, resulted in the rise of the ratio of the elderly group, with 18% for the commune of Scorțoasa and more than 24% for the two other in 2007. In the context of enduring low birth rate and fertility, the ratio of this age group will rise.

## 5. POPULATION PYRAMID

The population pyramid is a graph that allows one to highlight the double effect of age and generation on the evolution of population in the long run (Zamfir Daniela, 2007, p. 137), allowing for a visual representation of the ratios between various age groups and genders, and a series of forecasts concerning their future evolution. In the area subject to this analysis, it is very difficult to establish correlations between the current structure of the population pyramids and events that caused their configuration because the area was the subject of intense influence by migration, and the normal course of evolution of these villages has been radically altered.

When analyzing the configuration of the pyramids one notices they are irregular in shape (Fig. 3), and cannot be included in the classical categories: triangular, bell-shaped or rectangular. However, in the case of certain villages (Scorțoasa, Balta Tocila, Grabicina de Jos, Șucea) a hourglass-shape can be identified, characterized by a high ratio of the elderly and young populations and low ratios of the intermediate age groups.

One can also notice that none of the villages features any triangle-shaped pyramid, which would have indicated a young population, which highlights the degree of demographic ageing, in more advanced or more moderate phases, which affects most of these villages.

The decrease of the birth rate brought about a shrinking of the bases of the pyramids, but a slight recovery can be noticed in certain sectors (for instance Grabicina de Jos, Scorțoasa and Policiori, among others).

In the long run, modifications in the population's structure in terms of age groups and gender are caused by variations in population size. Overall, a clear difference can be noticed between the southern part of the basin (the villages of Joseni, Policiori and Scorțoasa) and the northern part (the villages of Crevelești, Ghiocari, Budești), which is severely affected by depopulation.

At commune level, the territorial administrative unit to be most severely affected is Chiliile, where the villages of Budești, Ghiocari and Poiana Pletari are severely affected by demographic ageing, which has grown more acute in the context of depopulation. The base of the pyramid is all but inexistent, as well (Poiana Pletari, Budești), which proves that the young population is under-represented.

One can also notice that in certain villages the 65-69-year age group is very well represented, as they illustrate the high birth rates of the period before World War II.

In the villages of Scorțoasa, Joseni and Policiori the 30-34-years and 25-29-years age groups are well represented, mainly due to the effects of Decree no. 770 in 1966 concerning the ban on abortions. One could consider that these three settlements come closest to the natural state of things which would have been typical of the communities in the basin, were it not for the effects of socialist policies. These villages were not that strongly affected, as they are located in the southern region, where infrastructure is more developed and services are better organized as compared to the other villages, and migration was not as high.

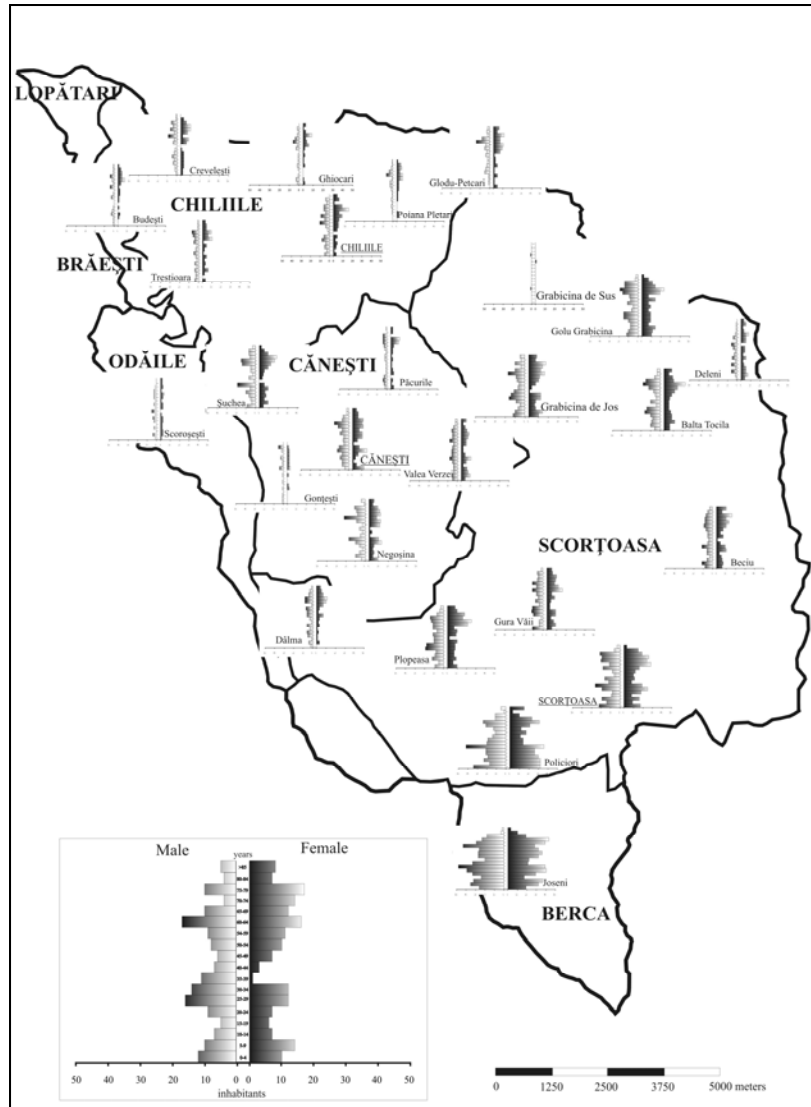


Fig. 3. Structure in terms of age groups and gender (2002)

## 6. SEX RATIO

In order to individualize structure in terms of gender, the sex ratio was calculated; it stands for the ratio between the number of men and the number of women. The sex ratio was analyzed, function of the available data, for five reference years: 1930, 1966, 1977, 1992 and 2002.

Overall, one can notice that the majority of the values tend to be sub-unitary (Table no. 1), which proves a trend towards a feminization of the area, as a result of social and historical events that have influenced these settlements over time, including the two world wars that caused a drop in the male population, and excess male mortality rate, among others.

**Table no. 1.**

Settlement / Years	Sex ratio				
	1930	1966	1977	1992	2002
Cănești	86.8	92.1	85.1	92.9	101.6
Gonțești	92.0	95.8	83.8	73.1	122.2
Negoșina	95.6	92.0	77.4	101.3	107.9
Păcurile	84.2	91.7	67.1	100.0	88.6
Șuchea	85.4	85.6	72.9	105.2	104.7
Valea Verzei	83.3	99.4	81.1	84.5	95.7
Chiliile	102.1	90.8	86.5	84.6	96.6
Budești	85.3	106.7	94.5	100.0	81.8
Crevelești	91.4	102.3	82.3	73.1	83.3
Ghiocari	-	93.0	81.3	75.0	78.0
Glodu-Petcari	92.6	87.0	72.8	87.6	78.0
Poiana Pletari	113.3	93.7	72.3	92.1	91.7
Trestioara	93.2	97.0	68.1	77.3	90.9
Scorțoasa	104.6	82.1	85.6	100.0	90.5
Balta Tocila	89.7	100.0	91.5	100.7	103.9
Beciu	95.3	79.2	87.3	85.0	87.3
Deleni	99.4	79.2	103.6	78.3	68.1
Dâlma	86.1	70.1	80.5	101.1	104.2
Golu Grabicina	-	96.5	83.1	98.8	98.4
Grabicina de Jos	98.4	84.6	98.8	106.0	94.3
Grabicina de Sus	82.3	86.3	76.7	113.5	200.0
Gura Văii	88.2	91.4	94.4	92.4	95.5
Plopeasa	86.4	81.4	86.9	94.6	94.8
Policiori	98.3	89.1	86.6	90.1	85.2
Joseni	84.3	72.9	91.8	92.5	98.0
Scoroșești	101.8	84.2	64.5	90.2	107.3

(Source: National Institute of Statistics and Economic Studies, processed data)

By 1930 male population was predominant in a mere 4 villages, but, as a result of the negative effects of the two world wars, by 1966 male population was

somewhat higher only in 2 villages, and by 1977 in 1, in the context of intensive industrialization, which brought about the migration of predominantly male population. By 1992 men were predominant in 5 villages, with that figure rising to 8 by 2002, in the context of a drop in migration rate.

Although female population is overall predominant, there are now villages with roughly balanced structures at the moment, such as Cănești, Golu Grabicina and Joseni.

If one analyzes the structure in terms of gender of the large age groups by 2002, one can notice the existence in the area of “demographic regularity, which means the predominance of males among younger populations, with a switch to female predominance among elderly populations” (Rotariu T., 2009, p. 26).

## 7. CONCLUSIONS

The analysis of population structure in terms of age groups in the selected time span (1966-2002) highlights the gradual rise of the elderly population’s ratio, the main cause being the migration occurring during the communist period (especially among the young population), which brought about a thorough modification of the demographic structure.

Population structure by 2002, highlighted by the population pyramid, indicates the drastic drop of certain age groups, or their ultimate absence, especially in the settlements in the central-northern part of the area analyzed, suffering from depopulation.

The sex ratio, which allows one to analyze structure in terms of gender, highlights a trend towards a feminization of the area analyzed, as a result of the effects of the two world wars and male excess mortality rate, among others.

Overall, one can notice the onset of a process of demographic ageing (unfolding in various degrees of intensity), with profound effects on the functional structure of the region, such as diminished capacity to farm the land, an increase in the untilled land areas and shrinking village surfaces, among others.

## ACKNOWLEDGEMENTS

This work was supported by CNCISIS –UEFISCSU, project number PNII – TD code 397/2007.

## REFERENCES

- ROTARIU T. (2009), *Demografie și sociologia populației: structuri și procese demografice*, Ed. Polirom, București;
- SORA V., HRISTACHE, I., MIHĂESCU, C. (1996), *Demografie și statistică socială*, Ed. Economică, București;
- STOICA ILINCA-VALENTINA (2008), *Dinamica mobilității teritoriale în bazinul hidrografic Sărățel*, in Terra, year XXXVI-XXXVII (LVI-LVII), Ed. Cd Press, București;
- STOICA ILINCA-VALENTINA, UNGURAȘ ADRIANA-IUSTINA, IANCU FLORENTINA-CRISTINA (2009), *Workforce quantity and quality assessment for the Sărățel drainage basin (Buzău Subcarpathians)*, in Analele Universității din Craiova, vol. XII, Ed. Universitaria, Craiova;
- ZAMFIR D. (2007), *Geodemografia orașelor mici din România*, Ed. Universitară, București.