

# THE HUMAN RESOURCES IN THE UPPER ARIEȘ VALLEY

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**Abstract:** - *Human Resources in the Upper Arieș Valley.* People are one of the most important, if not the most important, asset that a region has. Any significant variation in the structure of the demography of the area has important consequences in the development of the region. The present study analyses the demographic situation that the region finds itself today by looking at its evolution in time and when relevant comparing it to the Abrud region, the other half of the Land of Moți. Even though the area is still characterised by phenomena of ageing and feminisation, mostly as the result of the rural exodus that affected the area in the 1970s and 1980s, when our country experienced an intense industrialisation, the economic problems in the area due to the collapse of mining in the last 20 years and of the new methods of contraception available after 1990, nowadays we notice that a certain stability of the population numbers has been reached. We also look at the structure of population, at ethnicity, gender and the employment and unemployment rate and how all these affect the future development of the region and its entrepreneurship spirit.

**Key-Words:** depopulation, feminisation, ageing, birth rate, dependency index, entrepreneurship

## 1. Introduction

The region that is the object of this work is located in the central area of the Apuseni Mountains and includes the town of Câmpeni, at the eastern limit of the region, and the network of rural settlements situated in the reception basins of Arieșul Mare, Arieșul Mic and Sohodol valley until its confluence with the Arieș River. The studied area includes a number of 227 rural settlements and one town totalling a population of 23194 inhabitants. The settlements are grouped in the town of Câmpeni and 10 communes: Arieșeni, Gârda, Scărișoara, Horea, Albac, Poiana Vadului and Vadul Moșilor - in the Arieșului Mare basin -, Avram Iancu and Vidra - in the Arieșului Mic-basin and Sohodol - in the Sohodolului basin, a tributary of first order of the Arieș river.

## 2. Materials and methods

The paper is based mostly on bibliographical work with information gathered from the censuses of 1900, 1910, 1930, 1941, 1956, 1966, 1977, 1992, 2002, 2011 while for the year 2020 the data was obtained from the Alba statistical service, from the bibliographic sources and last but not least from the docu-

ments of the town halls. As our research has frequently taken us in the area, data was also gathered from interviewing local authorities and from the questionnaires applied in the field. As the aim of this paper is to give an accurate diagnosis of the current state of the human component, a wide range of methods specific to human geography and mapping were used in order to process the collected data. We chose to do our analysis at the level of territorial administrative units, respectively of the 10 communes and one town and only occasionally, where required, the analysis was performed at the settlement level.

In the case of our study, in order to have a detailed view of the resource that is the population in the area, the following indicators, that look not only at evolution in number of the population but also at its structure, were taken into account:

1. Indicators of the natural movement of the population and migration (crude rate of increase, birth rate, mortality, migration).
2. Indicators of the structure of population (feminization index, the share of the aging population, ethnicity,

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the share of the young population in the total population).

3. Indicators that look at the economic and social aspects (the dependency rate, employment and unemployment rates).

### 3. Results and discussions

#### 3.1 Population Growth

The studied area has long been an inhabited environment, the evolution of the population following a twofold trend: a massive increase of population until the mid of the 19<sup>th</sup> century, followed by a continuous and significant decline until the recent years when a relative stability has been reached. In the early 1900s the population had high numbers even when the material condition of the population was very precarious. Gradually the population increase was absorbed by areas with demographic deficit (Banat, Saxon villages, Western Plain where settlements such as Albacul Nou or Scărișoara Nouă appeared) or by industrialized localities where labour was needed. In the current stage there is a constant and progressive demographic decline which is registered with different intensities in all rural localities in the area.

Thus, if we follow the numerical evolution of the population between 1869-2002, a constant and sustained growth is observed until 1956 when a total rural population of 46525 people is reached. After this period begins a period of demographic decline that is accentuated after 1966 due to the massive demand for labour created with the industrialization of the Romanian economy. In the period 1966-2002, the rural population as a whole in the region decreased by 13140 people, so by almost 48.52% of which 33.7% in the period 1966-1992 and only 11.1% from 1992-2002. While at the same time, the population of Abrud mining area (Abrud, Roșia Montană, Bucium, Ciuruleasa) had only a decrease of 12.45%. Here, the highest loss in number was recorded between 2002 and 2011,

of 30.3%, due mostly to migration caused by the problems in the mining sector.

Regarding the *crude rate of increase*, (calculated by reporting the growth from a period (Pt + 1) to the number of the existing population at the beginning of the period (Pt), according to the formula  $R_c = (Pt + 1 - Pt) * 100 / Pt$ ) carried out comparatively for the period 1977-2002, shows a situation of accentuated demographic decrease. For the region as a whole, the population growth index is - 40.87%. By communes, Avram Iancu and Vidra register a maximum decrease index of - 53.61% and -53.23% respectively, the city of Câmpeni being the only one which during this period registers an increase of 12.69%. However, the study of the period 1997-2002 shows that during this period the population of Câmpeni decreases by almost 8%, only the commune of Horea registering a slight increase of the population of 3.72% in the last interval. Due to the precarious economic conditions and the urban attraction, the depopulation process continues today, with accentuated rhythms, especially in the settlements located in the higher areas and having a more isolated position. The numerical evolution at the level of communes is in line with the general trend of depopulation of the area, which can be seen in the graph of population evolution.

#### 3.2. The natural movement of the population and migration

In the general framework of the population evolution, the events that change the population number: birth rate, mortality and migration have evolved in the last 30 years against the background of the worsening of the material and spiritual living conditions of the population. Related to these indicators, what attracts attention is the rate of depopulation which is more pronounced at the level of higher subareas, a rate that has all the chances to worsen and reach worrying values if no urgent measures are taken to encourage the population to remain in mountain area.

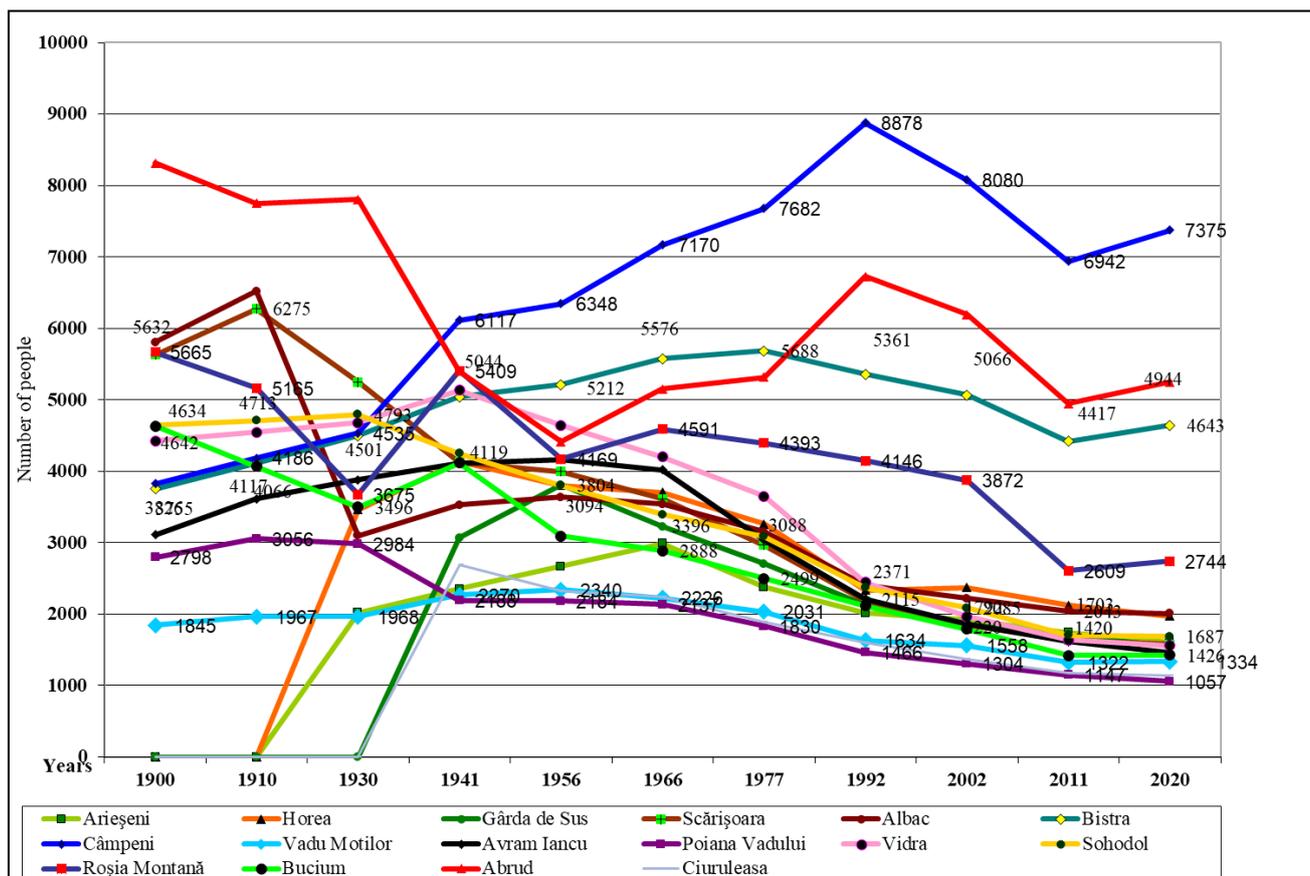


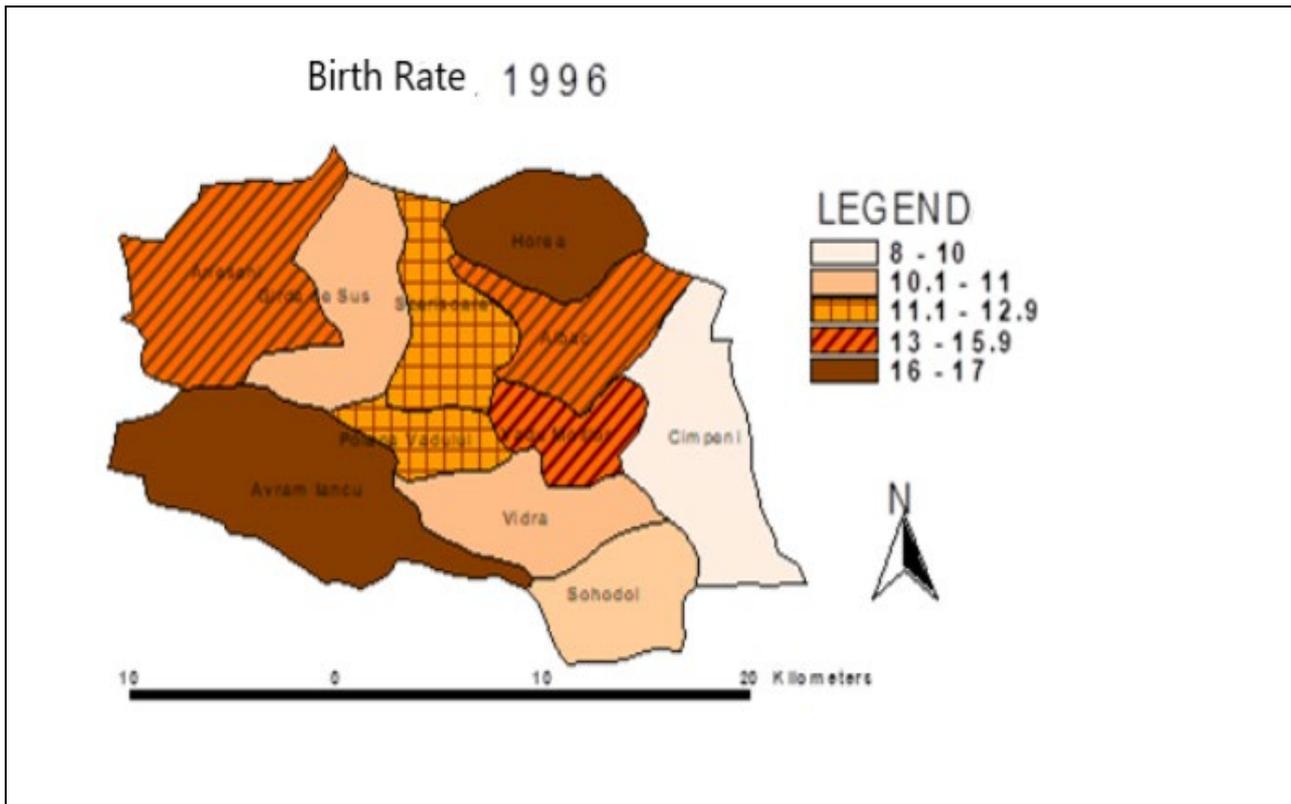
Fig. 1. The numerical evolution of population between 1990-2020 in the entire Land of Moși  
Data source: The National Institute of Statistics

### 3.2.1. Birth rate

A significant role in the demographic phenomena that structured the population dynamics in the period 1966-2020 was played by the birth rate. Birth rate is the number of live births per 1000 inhabitants in a given period of time compared to the average population.

The evolution of the birth rate during this period synthesizes the influence on this indicator of a set of factors of demographic, socio-demographic or legislative nature. Among the demographic factors, the strongest influence was the migration of the female contingent between 15-49 from rural to urban areas. Socio-demographic and legislative factors have also influenced the demographic behaviour of family couples. Thus, the deterioration of material living conditions led to the limitation of the number of children per family. This was exacerbated after 1990 following the repeal of the law banning abortion.

As it can be observed, the birth rates by communes decrease continuously between 1977 and 2002. If in 1977, the average birth rate in rural areas (the 10 communes minus Câmpeni) was 15.1 live births per 1000 inhabitants, in 1996 it reached an average of 13.2 live births per 1000 inhabitants (thus a decrease of 1.9). However, it was slightly higher than the national average of 11 ‰. By communes, the maximum values in 1996 were found in Horea 16.6 ‰ and Avram Iancu 16.3 ‰ (high values are due to the presence of Roma communities that have a specific demographic behaviour) while the minimum values were found in Sohodol of 10.1 ‰. In the following years the decrease in the birth rate is more significant, reaching only 7.22 ‰ in 2020 with 6.64‰ in Câmpeni. The smallest birth rate in 2020 has Arieșeni with 3.10‰ and the highest is in Poiana Vadului with 9.46‰.



*Fig. 2. Birth rate per administrative unit in 1996. Data source: The National Institute of Statistics*

### 3.2.2. Mortality

Mortality, which is defined as the number of deaths per 1000 inhabitants in a given period of time compared to the average population, is another indicator with a significant impact in terms of population evolution.

The period between 1977-1996 is characterized by a significant increase in mortality. This is an increase in the region average of 5.73 ‰ from 9.19 ‰ in 1977 to 14.92 ‰ in 1996. The average mortality in the area in 2020 is of 14,51‰, with Gârda de Sus 21,26‰ and Horea 20,27‰ having the highest value while the lowest values we find in Poiana Vadului 8,51‰. So a higher mortality level than the country level of 11.7 ‰ (2019, pre-pandemic, while in 2020 is of 13.4‰), which would be due to a more pronounced aging of the population in the area, poor medical care and difficult working conditions.

### 3.2.3. Natural increase

The natural increase is the difference between birth rate and mortality calculated per 1000 inhabitants in a given period of time and relative to the average population. With the

increase in mortality and the decrease in the birth rate, the natural increase also registers today, lower and lower values. If the average per commune in 1977 was 2.1 ‰ in 1996 it decreases to -0.8 ‰ so, already a negative value, a reflection of the massive depopulation of -33.7% in the period 1966-1992, especially by the departure of the youth in the '70s and' 80s. The most negative values are registered in 2020 at the level of Gârda de Sus commune - 14.8 ‰ (on the background of a very high mortality) and the highest values, in Poiana Vadului of + 0.95‰.

### 3.2.4. Population migration

In the studied region, the negative natural increase that has characterized the last 20 years has led to depopulation over time. Determinant, however, in shaping the evolution of the population in the upper basin of the Aries, was migration.

Migration in the studied area had two different causes: at first, till 1956, it was due to overcrowding resulted from high birth rates and limited resources, after that, migration was caused mainly by the demand of labour

resulted from the intense industrialization of Romania in the 1970's. In the upper Arieș region in 1977 migration reached -25.37 ‰ and in 1992 was -29.14 ‰ while in Abrud area was only -9‰. In 2020, the volume of migration is low, of only -0.09‰ due to the restrictions caused by the Covid19 pandemic but also mainly due to an aging population, as migration mostly occurs among the young adult population. This selective loss, through migration, of the young ones, affected the birth rate and lead to the disappearance of some villages like: Bordeștii Poieni, Hărăști, Hoancă, Poieni, Medrești, Țoci etc. The critical point when it comes to the depopulation of a village is reached when there is a loss of the primary school as a result of insufficient children to form classes or a lack of teachers. In 2020 the numbers of pupils in the schools in the region continue to decline, Sohodol for example, with a population of 1687, has only a total of only 70 pupils: 18 children in kindergarten, 27 primary grade students and 25 from the fifth to eighth grade. In this rhythm in ten years it is expected that the numbers of students will be too low to justify the existence of the school.

Nonetheless, we also have to mention the fact that after 1995, a new phenomenon is registered in the country though to a much smaller degree: remigration (return migration) from urban to rural. This is due to the shock of post-communist economic restructuring. The reduction in the number of jobs in the state sector mainly affected commuters, the rural workforce working in urban areas. The number of commuters returning to the village was high due to the fact that the costs of returning to the village were much lower for them than for the rural people who already lived in the cities. This remigration from urban to rural, although far from the values of the first is an interesting phenomenon characteristic for the post-December period. So, after 1990, we can talk about two migrations in parallel: from the village to the city, much stronger and a migration from the city to the village, of a

lower intensity. Today, migrations to the city are made mainly to the Banat area, unlike the '70s when it took place mainly in the direction of Turda-Alba. This is because the Alba-Turda area is undergoing strong restructuring of the industry and is no longer an area of attraction for migration, but on the contrary is an area of remigration to rural areas, especially those returning to their native villages. The "returned" population is of great importance because they bring with them a new breath, a new energy, initiative and new ideas with an urban touch, which could help improve the chances of future development of the respective villages.

For example, in spite of the decline in population, of the ageing or feminisation of it, the *entrepreneurship spirit* remains high in the area as it is proved by the high number of projects accessed in the last 30 years, this region in Alba county being one of the two with the highest number of projects approved according to Erchedi (2012) and Munteanu and Drăgan (2020).

Erchedi, 2012, mapped the number of projects financed per administrative unit in the land of Moți (Fig.3.) and a significant difference between north and south was noticed. "In the northern half, most projects were done in Câmpești-28, Bistra-11 and Albac-10, followed by Arieșeni -9 and Gârda de Sus-8. The least number of projects, just 2, (minus the projects financed through EAFRD Measure 141) were done in Poiana Vadului. There is a significant difference in the number of projects done by the authorities and by the communities of the administrative units situated in the south of the region, totalling 269 projects, and those situated in the north of the region, totalling 568 projects, so twice as much, is the result of several causes like: the stagnation in economy and the 10-years uncertainty created by the mining project proposed by RMGC that deferred those that wanted to invest in tourism and agriculture." (Erchedi, 2012)

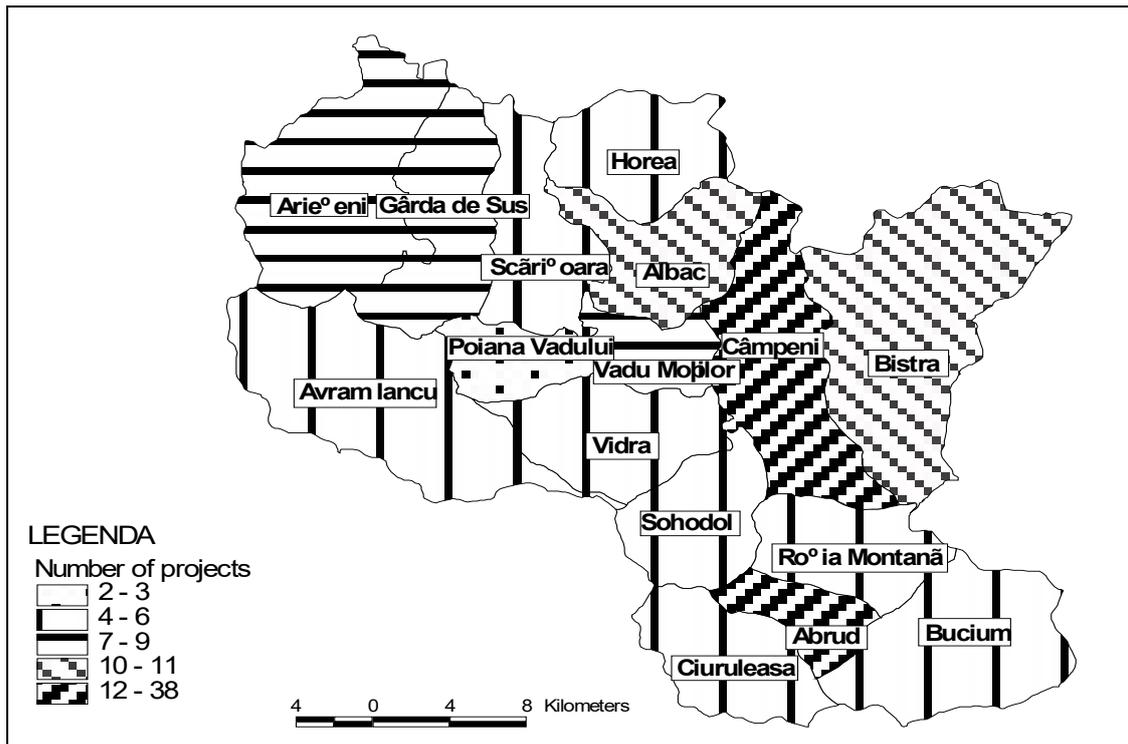


Fig. 3. Number of projects financed per administrative unit (minus those financed through EAFRD Measure 141) in the Land of Moți (Data source: Erchedi, 2012)

According to Munteanu and Drăgan (2020) who collected data from AFIR (The National Agency for Financing Rural Investments), on Measure 313- “Encouraging of tourism activities” of the 2014-2020 PNDR (National rural Development Program), there were 9 projects contracted: 5 in Gârda de Sus and 4 in Vidra. While for the sub-measure 6.4 – “Investment in the creation and development of non-agricultural activities” they found that the upper Arieș Valley had 39 projects in: Arieșeni, Vadu Moșilor, Horea, Gârda de Sus, Albac and Vidra.

### 3.3. Population structure

In addressing the issue of population structuring in the region, we will focus in particular on structuring by age groups and gender. Regarding the national structure and the cults, it has not known important variations in the last 50 years, in the region the vast majority of the population being made up of Romanian Orthodox. Practically out of a total population of 27,083 inhabitants in 2002 we have only 639 Roma, 18 Hungarians and 6 Germans, other minorities not existing. The

small number of ethnic minorities is due both to the difficult living conditions of the area and to the mentality of the Moți who due to the long persecutions suffered throughout history have become intolerant of foreign elements. Nonetheless, an important consequence of the minority and religious structure is the presence of Roma population and of the new reformed churches which have a specific demographic behaviour which led over the years to a higher number of birth rates in some communes (like in 1996 in Horea 16.6 % and Avram Iancu 16.3 % for example).

The structuring by age groups of the region's population also reflects the phenomenon of continuous demographic decrease, especially in the young-adult groups.

Thus, comparing the data from 1977 and 1992 from the age pyramid, there is a drastic reduction of the population in the age categories of 0-14 years (here there is even a halving of values, from 8380 to 4194) and 25-49 years old. In both cases, the reductions are due to the migration of the young and adult population: in the first case, of the one that took place in the years before 1990 and in the

second case, after. On the other hand, the age categories between 55-64 and those over 75 increase significantly. This explains the increase in mortality for the whole population.

This general trend of aging population and implicitly of decreasing the number of young population is reflected in the share of the elderly population over 60 years and the share of young population under 14 in the total population. *The share of the elderly population over 60 years old* shows us that the critical threshold of 12-14% of this indicator was

exceeded in all localities in the area over the last 30 years. In 2002 the highest was in Vidra (32%) and Avram Iancu (34%) communes and especially in their areas with isolated villages where the depopulation was particularly strong. For this indicator, in 2020 the average is of 24,27% and as follows, the administrative units can be divided in two categories: under 25% in Albac, Câmpeni, Poiana Vadului and Horea, between 25 and 30% in Gârda de Sus, Arieșeni, Scărișoara, Avram Iancu, Sohodol and Vidra.

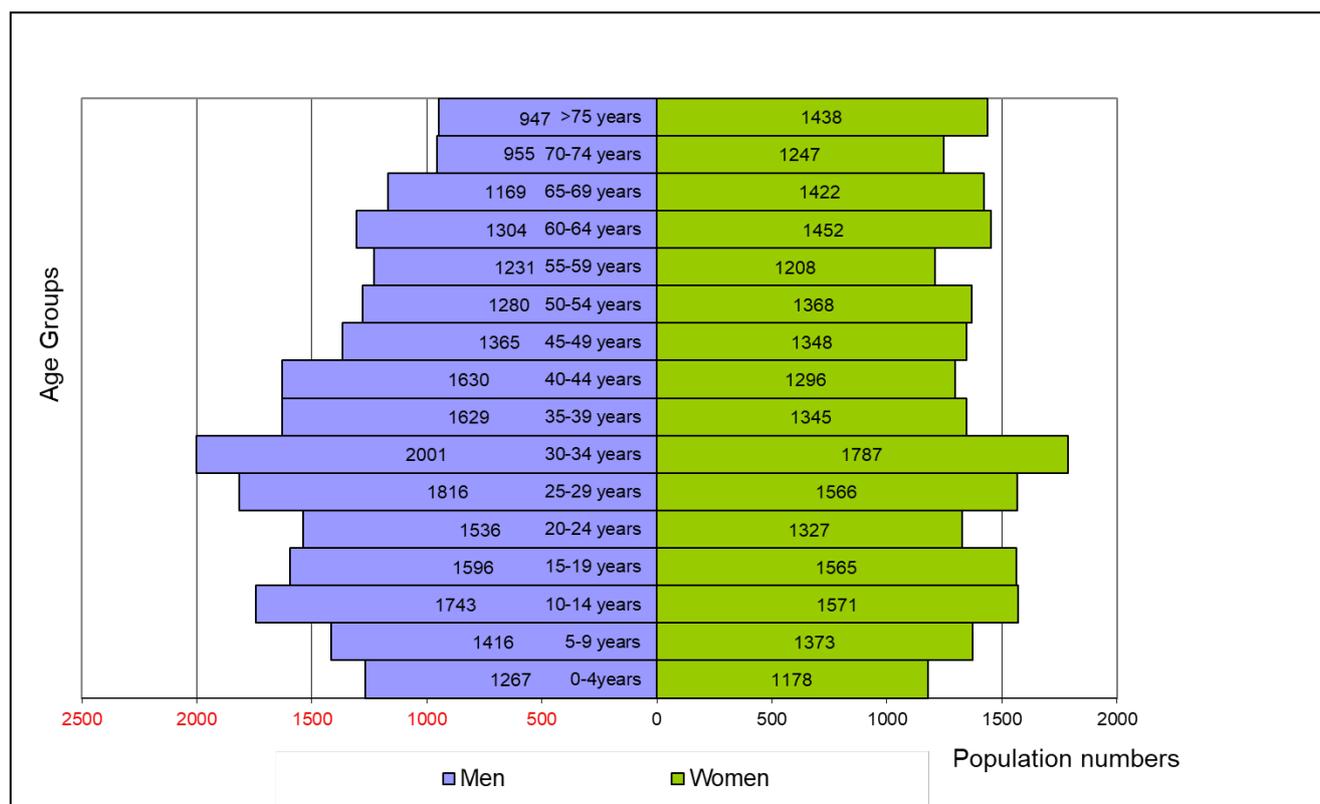


Fig. 4. The Age Pyramid in 2002

In full accordance with the above data, *the share of the young population (<14 years)* did not exceed the 25% threshold in the last 30 years. It had in 2002 falling values between 15% and 20%, while the share of the elderly population was rising compared to 1977. In 2020, the situation is critical for all the settlements, the average for the area being 12,6%, going from as low as 10.1% in Arieșeni and 10,4% in Gârda de Sus to 15,8% in Scărișoara, 14,1% in Albac, 14,9% in Poiana Vadului. If the higher numbers are usually due

to the Roma population in case of Poiana Vadului the population did not migrate despite the isolation of the Neagra valley, due both to the attachment to the village also to the facts that locals lacked the minimum resources to migrate elsewhere.

Studying the structure pyramid by sex and age group from 2002, it can be observed that men are more numerous than women in the age group of 15-19 years, while women dominate in the age group over 60 years. We notice that in the elderly population there is a

strong process of feminization of the population which varies from 105.2% in Arieseni to 133.2% in Avram Iancu. In 2020 the phenomenon of *feminization of the population* shows high values, between 100-110% in Cămpeni and Gârda de Sus, while the average for the region is 95,53%. This data is the result of the high percentage of women in the group age of over 60, that is 74% for the region which is a consequences of the higher mortality in men due to the strenuous work in the mountains and the migration of men for work outside the studied mountain area.

These indices clearly show us, once again, the critical demographic situation in which the region finds itself, mainly due to the migration to urban areas during the period of Romania's industrialization but also after 1990 due to the restructuring in the mining sector in the Abrud area and the industry sector in Turda.

### 3.4. Economic and social indicators

The economic and social dimensions of the population are affected by the risks induced by the aging population, feminisation and migration. The economy of the region suffers as a result of the decrease in employment potential of the population as it is shown in the high rates of the *economic dependency index* calculated as a ratio between the sum of the population under 15 years old and that over 60 and the population between 15 and 59 years old (assumed to be active).

$$(D_r) = \frac{P \leq 14 + P \geq 60}{P(14 - 59 \text{ years})} * 100$$

The average in the area of this index is of 61,5%, 5 of the studied communes, with values of over 61 in Sohodol, Gârda de Sus, Vidra, Avram Iancu, and Scărișoara, which has the highest dependency index of 73,6%.

The *unemployment rate* was in 2020 of 8.1% well above the national average of 5%. Scărișoara with 14,6% and Albac with 10,6% have the highest numbers while Arieșeni with 4,6% and Cămpeni with 4,3% have the lowest numbers. The percentage of women unemployed compared to the men is of 41.3% in the area with the highest of 55.3% in Arieșeni and the lowest of 33.8% in Horea.

In 2020 *the employment rate* of the total of active population was of 11,25 in the region, the highest values being registered in Cămpeni of 45,3% and for the communes, in Arieșeni with 20,85 and 20,5% in Albac while the lowest were registered in Avram Iancu 7,3% and Sohodol with 7,7%.

### 4.4. Conclusions

At the end of this study, some main ideas on the current characteristics of demographic processes in the region are outlined. First of all, we found out that the depopulation process of the region continues although it is done at a slower pace than in the early 1990s and 2000s, with some administrative units showing a slight increase in the last 10 years like Cămpeni from 6942 to 7375 people and Vadu Moților from 1322 to 1334 people. The lower level of migration at the moment is not due to a significant increase in living standards but to the strong restructuring of the industry in the Abrud and Turda area that makes the urban less attractive. Even more, this lack of perspective in some cities has generated a remigration to rural areas. This is of great importance because these type of people bring with them initiative and new ideas with an urban touch, which could help improve the chances of future development of the respective villages and might explain the high levels of entrepreneurship in the area, proved by many European funded projects contracted in the area in the last 30 years.

However, the accentuated aging of the population and hence the high mortality lead to the loss of a very important resource of the area: the labour force, which has a particularly negative impact on the possibilities for further development. The dependency rate in the area remains high 61,5%. This results in the economic decline of the region, which in turn will generate a further migration of the population.

From this vicious circle of underdevelopment, the region is trying to get out by promoting agrotourism in the area, which will complement the agricultural income of the population. However, this is in turn threatened by the irrational exploitation of wood currently practiced in the area, which threatens to de-

stroy one of the main attractions in the area: the forest. Concluding, effective measures for economic diversification and development of

the infrastructure in the area need to be taken as means to retain in the area, its most important asset: the human resource.

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