GEODEMOGRAPHIC STRUCTURES IN SATU MARE COUNTY. SEX AND AGE STRUCTURES OF THE POPULATION

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ABSTRACT. – Satu Mare County. Geodemographic Structures. Sex and Age Structures of the Population. During the past century, at the level of Satu Mare County, the ratio of the female population increased constantly, however with considerable variations between the censuses of 1977 (50.4 %) and 2011 (51.7 %). As far as the age group structures are concerned, two main tendencies are to be observed: the significant decrease of the ratio of the younger population, on the one hand, and the increase of the ratio of the elderly and adult populations, on the other hand. The population structure reveals complex qualitative aspects, differentiated by a series of criteria: sex, age, ethnicity, religion, habitual environments, socio-professional distribution, level of education, marital status.

Keywords: geodemographic structures, evolution, feminity, aging, Satu Mare County.

INTRODUCTION

Satu Mare County lies in the northwestern extremity of Romania, on the border with Hungary and Ukraine. The marginal type position, even peripheral, during the communist regime, received a positive connotation within the context of the admission of Romania to the European Union, facilitating the bonds with the central and Western European countries, especially in terms of the migratory waves of the population, with implications upon many geodemographic aspects (Cocean, 2004; Pop, 2005).

THE SEX STRUCTURE OF THE POPULATION

After examining this type of structure according to the data registered at the censuses (INSSE, 2015), it results that during the past century, at the level of Satu Mare County, the ratio of the female population was consistently more increased,

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however with considerable variations between 1977 (5th of January) – 50.4 % – and 2011 (31st of October) – 51.7 %. The situation since the last census is not very different from the preceding one, in 2002 (51.6 %). The more consistent representation of the males at the end of the 1970s (49.6% in 1977) is explained by the highly increased birth rate beginning with the year of 1967, according to the known fact that at birth, the number of boys is higher than the number of girls (the average ratio is considered 105-106 born males per 100 born females).

Subsequently, an increase of the ratio fluctuation occurred in the favor of the females due to two following opposite phenomena: male higher mortality at more advanced ages and the more significant increase of the average life expectancy of the female population.

Table 1.

**The sex structure of the population of Satu Mare County
at the censuses during 1966-2011**

Years	1966	%	1977	%	1992	%	2011	%
Total	359,393	100.0	393,840	100.0	400,789	100.0	344,360	100.0
Male	176,997	49.2	195,160	49.6	197,980	49.4	166,344	48.3
Female	182,396	50.8	198,680	50.4	202,809	50.6	178,016	51.7
URBAN	107,625	100.0	149,915	100.0	185,406	100.0	157,025	100.0
Male	53,370	49.6	74,003	49.4	90,431	48.8	74,106	47.2
Female	54,255	50.4	75,912	50.6	94,975	51.2	82,919	52.8
RURAL	251,768	100.0	243,925	100.0	215,383	100.0	187,335	100.0
Male	123,627	49.1	121,157	49.7	107,549	49.9	92,238	49.2
Female	128,141	50.9	122,768	50.3	107,834	50.1	95,097	50.8

The analysis regarding the *types of habitats* reveals the existence of certainly more similar values between the two sexes within the urban area in the year of 1966, with a slight dominance of the females (50.4%), therefore before the emerging of the massive (extensive) industrialization, and in the rural area in 1992, with a weight of 49.9% of the males. After 1977, the proportion of the ratio among the sexes has deteriorated in the urban area, the male population decreasing to 47.2% at the census of October 2011, however the same phenomenon, much more reduced, took place in the rural area as well after 1992 (49.2% male population in 2011).

An important aspect is *the evolution of the ratio* among the two sexes *according to age*. After analyzing the rates on age subgroups divided on 5 years each, it is determined that until the age of 50, the male population predominates, quite obviously between 5-29 years (51.9% for the 5-9 and 20-24 years subgroups). The numeric and percentage preponderance of the female sex begins with the

50-54 years subgroup (51.9%), as opposed to the situation presented on the national level, where the change occurs at the previous subgroup, of 45-49 years (50.5 %). The disparity amplifies rapidly, along with the age, especially over the ages of 65 and 70: 62% female population in the 70-74 years subgroup and 71.5% for ages above 85 years. The two causes of this situation, also mentioned previously (male higher mortality and the more accelerated growth of the female life expectancy) are in fact effects of certain complex conditioning of socio-economic and even of biological (psychic and physiological) nature.

Edifying, and frequently used, is *the masculinity ratio*, which shows the number of male individuals per 100 female individuals, *according to age*. The graphic representation of this is *the masculinity curve*.

Table 2.

Satu Mare County. Population ratio for the sexes and masculinity ratio, studied on subgroups of 5 years

Total stable population Age	Both sexes No. individuals	Male population (%)	Female population (%)	Masculinity ratio (no. male individuals./100 female individuals)
Age	344,360	48.3	51.7	93.4
Under 5 years	19,682	50.6	49.4	102.3
5-9 years	20,293	51.9	48.1	107.7
10-14 years	19,930	50.8	49.2	103.3
15-19 years	19,971	51.5	48.5	106.3
20-24 years	23,200	51.9	48.1	107.9
25-29 years	23,419	51.3	48.7	105.3
30-34 years	26,879	50.6	49.4	102.5
35-39 years	28,086	51.1	48.9	104.4
40-44 years	28,652	50.8	49.2	103.1
45-49 years	20,720	50.4	49.6	101.5
50-54 years	23,288	48.1	51.9	92.8
55-59 years	23,906	46.1	53.9	85.5
60-64 years	20,365	45.1	54.9	82.1
65-69 years	15,340	41.3	58.7	70.3
70-74 years	12,731	38.0	62.0	61.4
75-79 years	9,384	34.5	65.5	52.6
80-84 years	5,573	32.4	67.6	48.0
85 years and over	2,941	28.5	71.5	39.9

The above mentioned index clearly shows the fault produced between the sexes, under the numerical aspect, at approximately the age of 50. The highest rates of the masculinity ratio are found between the ages of 5-10 years

(over 107 boys per 100 girls). As the age advances, the number of males decreases more rapidly, in comparison to the number of females: 70 men/100 women between 65-70 years, then it decreases to half between 75-85 years and reaches to only 40 men/ 100 women at the ages over 85 years.

Due to the predominance of the female sex regarding the overall total population (of all ages, but in the territorial profile as well), the estimation of the reversed ratio to the masculinity ratio is more relevant, and namely *the femininity index ratio*. This suggestively expresses the differentiations found on the levels of the lower-ranked administrative-territorial units and habitual environments.

Provided that on the level of the entire county, the ratio is quite trenchant – 107 female individuals/100 male individuals – the discrepancies are even more pronounced between the two types of habitat: 111.9/100 in the urban area and 103.1/100 in the rural area respectively. This situation is surprising in terms of the more pronounced tendency of feminization in the rural area, as a consequence of the rural-urban migrations during the 1970s and the first half of the 1980s. However, during the past decades a slight process of remigration occurred, that included a predominantly male population. It can be however foreseen that the femininity ratio is going to develop within the rural areas of the county in the future.

The map of the femininity index at the level of the administrative-territorial units (municipalities), in 2011, allows the shaping of certain areas or micro areas with relatively similar values.

The polarized area of Carei registers the most remarkable differences between the sexes, a municipality that adds to itself the communes located in the west, north and south of it. Foieni commune holds the record value of the femininity index – 123.5 females / 100 men, followed by Petreşti (118.7), Urziceni and Cămin (112.2), as well as Sanislău, Tireanu, Berveni and Ciumeşti. Carei has the highest rate among the urban centers (113.1).

The second area, with less significant differences between the sexes, which however holds a third of the county population, is grafted on Satu Mare municipality, that has a femininity index of 112.5/100. The administrative urban unit Ardud is also added (108.5) to this category, as well as several other communes, among which Viile Satu Mare (109.7).

The central and north-eastern regions of Oaş Land represent the most homogenous areas as being an exception from the general rule, where the male population is most numerous. Târşolţ commune presents the most reduced femininity index in the county (89.8/100), while Cămărzana, Certeze, Bixad, Călineşti-Oaş and Gherţa Mică communes record rates between 95.8 and 97.0. In the western area of Oaş, Batarci commune is added as well. Hereinafter, in the western part of the county, Halmeu, Lazuri and Dorolţ communes register almost a

tied numeric and percentage balance among the sexes, with a slight predominance of the male sex. The other three communes with a more reduced or equal femininity index to 100, are located in the southern side of the county: Socond (97.2/100) – with a high ratio of the Roma ethnic population –, Căuaş and Cehal.
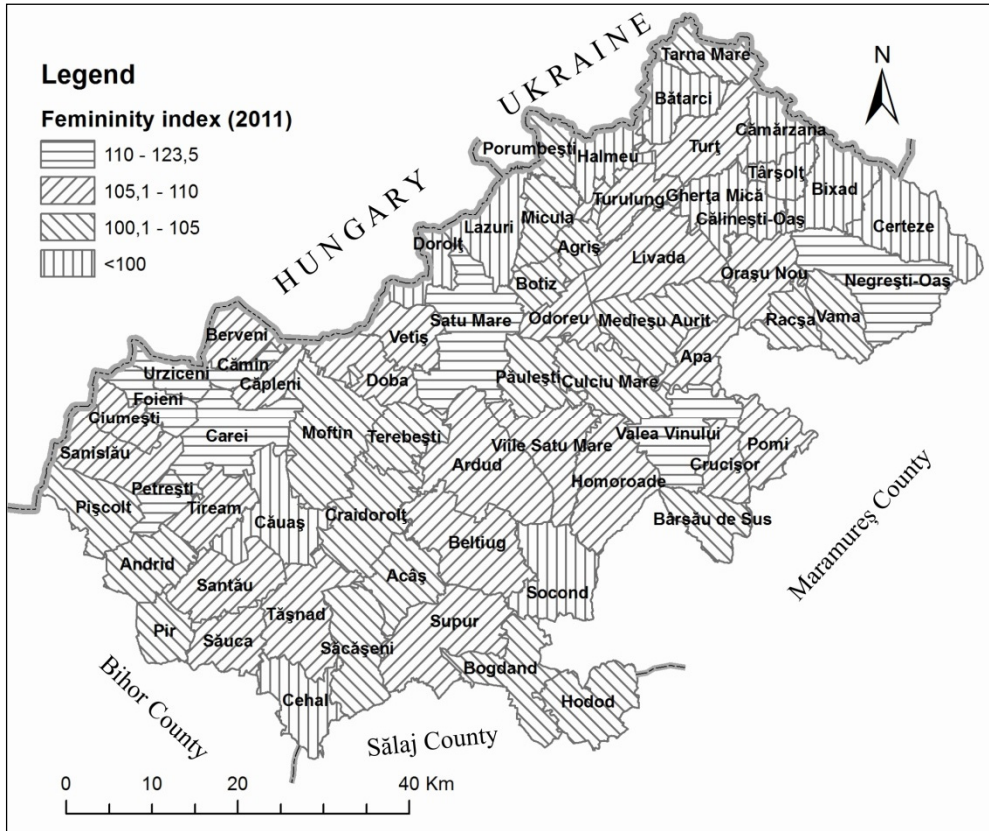
Fig. 1. The femininity index in Satu Mare County, 2011

From the spatial point of view, also in the southern area, there are a series of communes with rates belonging to the class of 100.1-105.0 female individuals/100 male individuals: Pişcolt, Andrid, Pir, Moftin, Terebeşti, Craidorolţ, Acâş, Săcăşeni, Hodod, Bogdand, as well as others located in the central and northern regions – Păuleşti, Culciu, Medieşu Aurit, Micula, Vama, Tarna Mare. On the whole, this particular category encloses almost one third (21) of the administrative units, however none of them of the urban type.

The class with a femininity index oscillating around the mean rate on the level of the county (105.1-110.0) comprises the most numerous administrative units - 23 (35.4 % of the total) – including the smallest urban units, in terms of population: Ardud, Livada and Tăşnad, with many villages belonging to these units.

The extreme categories hold together a third of the municipalities, the one with the lower rates 20% (only communes), and the class with the highest rates (over 110/100), the eighth part (12.3 %), where the most noticeable are Satu Mare and Carei cities, as well as Negreşti-Oaş town.

THE AGE STRUCTURE OF THE POPULATION

Due to the demographic and socio-economic implications and significance, this qualitative aspect is of major importance within the geodemographic structures. The age structure of the population impacts on the current workforce potential of the population and in perspective, the specific weight of the active population; however, it also represents a socio-economic foundation of planning (the demand regarding the working places, of consumer goods, the quality of the educational system, health services, etc).

There is a strong interdependency between the distribution of the population on age groups and the dynamic indexes of the population (fertility, birth rate, mortality, migrations): the age structure of the population is, in a great measure, the result of the manifestation of these indexes over time, but, in its turn, it becomes a foundation of influence, enclosing their rates at that moment and their subsequent evolution (L. Nicoară, 1999). It is also influenced by other sociopolitical phenomena (wars, epidemics).

While bearing in mind the social and demographic aspects (especially the increase of the schooling duration and life expectancy at birth), regarding the situation of Satu Mare County (as well as on a national level) the setting out of the boundaries between the three main age groups (young, adult, elderly), at the age of 20 and at the age of 60 is more indicated.

Two main tendencies can be distinguished, especially during the past decades: the significant decrease of the ratio of the young population, on the one hand, and the increase of the ratio of the elderly and adult populations, on the other hand. In between the censuses from 1992 and 2011 only, the specific weight of the young group (0-19 years) decreased by 10.6 %, from 33.8%, to 23.2% (and numerically it decreased by 54,000 individuals, which would mean over 15% of the population of the county in 2011).

Alternatively, the adult group (20-59 years) increased with a ratio of 5.6 %, and the elderly one (≥ 60 years), by 4.6 %. There is, therefore, a process of relay transmission between the age groups, of the effects of modifying the natural

movement indicators (especially the birth rate), on the grounds of a slight increase of the life expectancy at birth.

If at the census from January 1992, there was a balance between the age groups, the young population being one third of the overall population, after two decades (November 2011) the ratio of the extreme groups tends to become similar: 23.2% (0-19 years) and 19.3% (≥ 60 years), in the conditions of the increase of the adult population ratio, to 57.5 %.

The differences between 1992 and 1977 are significantly lower, as a result of the enforced pronatalist policy of the Ceauşescu regime. However, the ratio of the younger group slightly decreased (from 36%, to 33.4%), and that of the elderly slightly increased (12.8% and 14.7 %).

Table 3.

**Main age groups of the population of Satu Mare,
at the censuses from the years of 1977, 1992 and 2011**

Years	Category	Total stated population	0-19 years	%	20-59 years	%	≥ 60 years	%
	County							
	Both sexes	391,930	141,180	36.0	200,676	51.2	50,074	12.8
	Male	194,189	71,965	37.0	99,933	51.5	22,291	11.5
	Female	197,741	69,215	35.0	100,743	51.0	27,783	14.0
	Urban							
1977	**Both sexes**	149,271	53,841	36.1	79,944	53.5	15,486	10.4
	Male	73,690	27,478	37.3	39,733	53.9	6,479	8.8
	Female	75,581	26,363	34.9	40,211	53.2	9,007	11.9
	Rural							
	Both sexes	242,659	87,339	36.00	120,732	49.7	34,588	14.3
	Male	120,499	44,487	36.9	60,200	50.0	15,812	13.1
	Female	122,160	42,852	35.1	60,532	49.5	18,776	15.4
	County							
	Both sexes	400,787	133,766	33.4	207,909	51.9	59,112	14.7
	Male	197,979	68,705	34.7	104,105	52.6	25,169	12.7
	Female	202,808	65,061	32.1	103,804	51.2	33,943	16.7
	Urban							
1992	**Both sexes**	185,406	62,708	33.8	102,522	55.3	20,175	10.9
	Male	90,431	32,042	35.4	50,088	55.4	8,301	9.2
	Female	94,975	30,666	32.3	52,434	55.2	11,874	12.5
	Rural							
	Both sexes	215,383	71,058	33.0	105,387	48.9	38,937	18.1
	Male	107,549	36,663	34.1	54,017	50.2	16,868	15.7
	Female	107,834	34,395	31.9	51,370	47.6	22,069	20.5

| Years	Category	Total stated population	0-19 years	%	20-59 years	%	≥ 60 years	%
2011	**County**							
	Both sexes	344,360	79,876	23.2	198,150	57.5	66,334	19.3
	Male	166,344	40,895	24.6	99,211	59.6	26,238	15.8
	Female	178,016	38,981	21.9	98,939	55.6	40,096	22.5
	Urban							
	Both sexes	157,025	31,542	20.1	95,500	60.8	29,983	19.1
	Male	74,106	16,064	21.7	46,064	62.1	11,978	16.2
	Female	82,919	15,478	18.7	49,436	59.6	18,005	21.7
	Rural							
	Both sexes	187,335	48,334	25.8	102,650	54.8	36,351	19.4
	Male	92,238	24,831	26.9	53,147	57.6	14,260	15.5
	Female	95,097	23,503	24.7	49,503	52.1	22,091	23.2

After studying the age group structure of the population on a longer period of time (approximately one century), one quite clearly notices the influence of the political and social factors, especially of the two world wars and of the intervention of the deciding factors during the communist regime.

Analyzing, for example, the data of the 1977census, a breach (a threshold) is distinguished at the 25-29 years subgroup, and especially between this one and the following, befitted in terms of birth to the year of 1947 and in general to the post-war years, with a highly reduced birth rate, as an effect of the misery caused by the Second World War.

The same phenomenon occurs at the 55-59 years old population, born at the end of the First World War and during the times following immediately after it, and, at a much more reduced level, even at the 65-69 years old group, in larger numbers than the previous subgroup, much younger (60-64 years), befitted in terms of birth to the time interval before the First World War (1907-1912), with a more problematic social situation.

During Ceauşescu's regime, the decree by which abortion was forbidden for all women left a considerable mark. The effect is clearly observed, based on the data of the same census (1977), the 5-9 years old population (born between 1967 and 1972) is by 32 % larger in number than the one from the later subgroup (10-14 years).
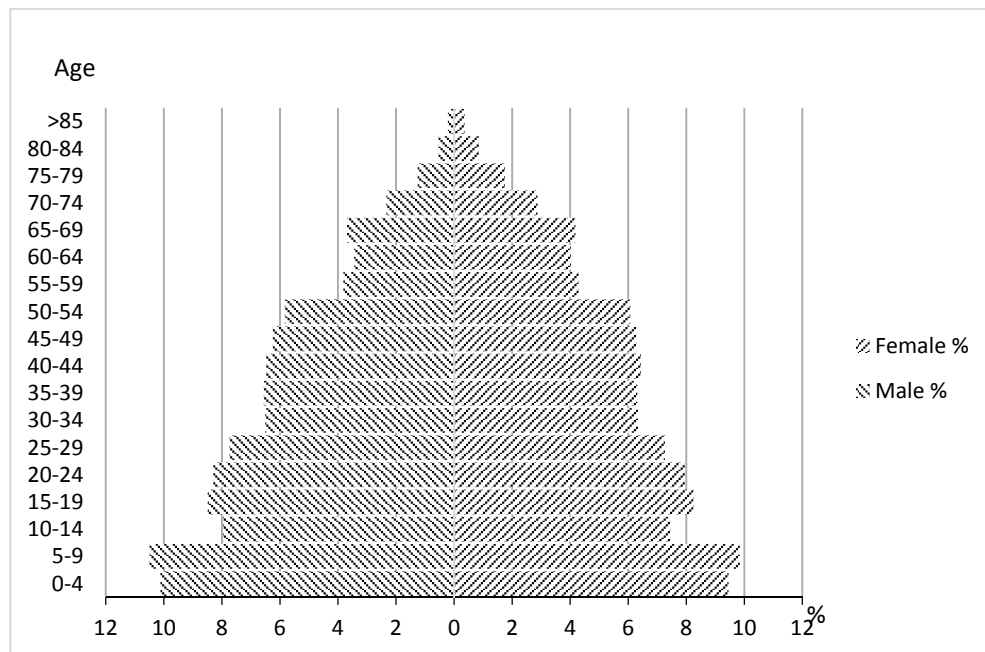
Fig. 2. Population pyramid of 1977

The discrepancies among the *habitual environments* regarding the age group structure are shaped during the 1970s, within the adult and elderly groups, and evolve significantly until the 1990s. At the 1992census, in the urban area, the adult group held 55.3%, and in the rural area, 48.9%, while the fluctuation regarding the elderly group is even larger: 10.9 % in the urban area and 18.1%, in the rural one respectively. Until the end of the year 2011, over a period of two decades, the differences regarding the elderly group almost disappeared (19.1 % and 19.4% respectively), as a consequence of the notable aging of the urban population. The interesting point is the reversing of the ratio of the younger group, as a result of the drastic decrease of the birth rate in the urban environment, where it presents a ratio of 20.1 %, compared to the rural area with 25.8 %. A discrepancy of 6% is however maintained with the adult population in the favor of the urban area, amid the increase of its percentage in both habitual environments.
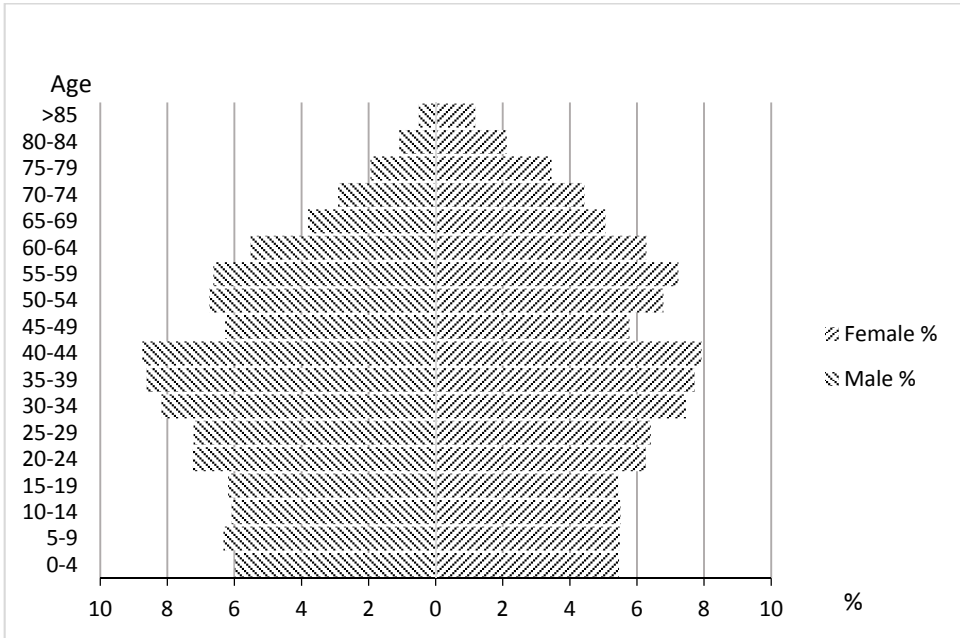
Fig. 3. Population pyramid of 2011

The aging level of the population is significantly illustrated using the aging coefficient, as a relation between the extreme age groups.

$$K_i = \frac{P \geq 60\,years}{P0 - 19\,years} \cdot$$ The threshold rate is considered to be 0.42.

In the case of Satu Mare County, this is of 0.83, namely double in regard to the situation of perfect balance. Surprisingly, the aging coefficient of the population is more increased in the urban area (0.95), than in the rural environment (0.75), taking into consideration all the depopulation resulted during the final period of the communist regime.

The aging coefficient at the level of the lower-ranked administrative-territorial units, estimated according to the data of the census from 2011, oscillates between very broad limits, from 0.26 (Gherţa Mică commune) to 1.50 (Cehal). The most reduced values (up to 0.75) are registered in Oaş and, hereafter, in the Livada-Halmeu area and around Satu Mare city (excluding the city). The low or regular (up to 0.50) aging coefficient is present in only five communes: Gherţa Mică, Târşolţ, Călineşti-Oaş, Halmeu and Dorolţ.

The most pronounced aging is manifested in the peripheral communes from the eastern, southern and south-western areas of the county, and in the two cties as well – Carei (K_i = 1.16) and Satu Mare (1.01). The communes of Cehal (1.50), Homoroade (1.47), Valea Vinului (1.33), Bogdand (1.24), Foieni (1.20) and Urziceni (1.17) have the highest values.
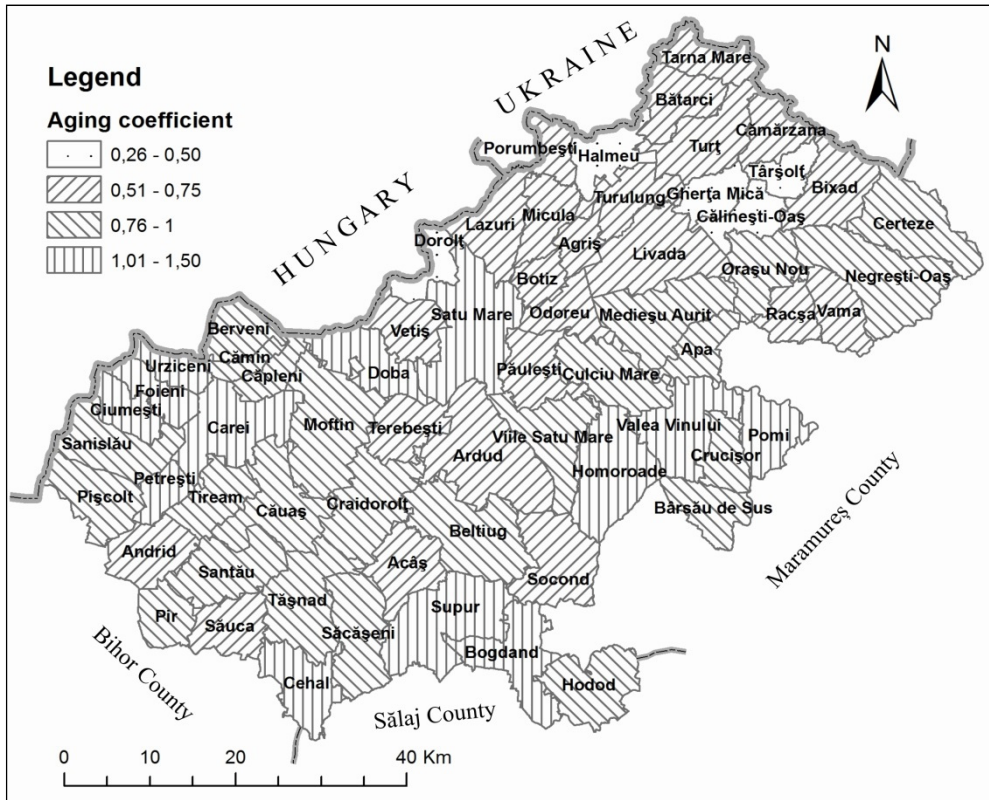
Fig. 4. The aging coefficient in Satu Mare County, 2011

From the economic point of view, *the dependency ratio* is edifying, expressing the relations among the extreme age groups, on the one hand, and the current workforce potential, represented theoretically by the adult population, on the other hand:

$$\text{R.D} = \frac{P0-19\,years + P \geq 60\,years}{P20-59\,years} x100 \cdot$$

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Its value was 84% at the 2011census, lower than the ones in 1977 (95.3%) and 1992 (92.7 %), as a consequence of the significant decrease of the ratio of the younger group, even in the conditions of the increase of the ratio of the elderly population, as well as of the adult population, on the other hand. If at the 1977 and 1992 censuses, theoretically, the pressure of the younger population (up to the age of 20) was much stronger than that of the elderly one (2.8, and 2.3 times higher respectively), during the past years the pressure of the extreme age groups tends to balance out. The situation of Satu Mare County is a lot similar to the one present on a national level.

CONCLUSIONS

The population of Satu Mare County went through all three stages, from the progressive type, with a high ratio of the younger group, to the stationary type, with a balance among the three groups, and then, quite rapidly, to the regressive type, defined by a more pronounced degree of aging.

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