

ANALYSIS OF SINGLE AREA PAYMENT SCHEME (SAPS) BENEFICIARIES. CASE STUDY IN TIMIȘ AND CARAȘ SEVERIN COUNTIES, ROMANIA

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Abstract

This study investigates SAPS (Single Area Payment Scheme) beneficiaries in Timiș and Caraș Severin counties, Romania, categorizing them by legal entity type (individual, authorized natural person, legal entity, and enterprise), gender, age, and the respective monetary values attracted in each jurisdiction. Findings in Timiș reveal a numerical preponderance of individual beneficiaries, yet a cumulative analysis across legal entities underscores their quantitative superiority. Conversely, in Caraș Severin, the cumulative count of all legal entities does not exceed that of individual beneficiaries. Gender distribution in Timiș manifests as 70.5% male and 24.5% female, while in Caraș Severin, it is 71.1% male and 28.9% female, with statistically comparable proportions at a significance level of $\alpha=0.01$. Regarding age, beneficiaries uniformly exhibit a minimum age of 18 years, with noteworthy instances of advanced age, reaching 95 or 96 years. The rightward-skewed age distribution is explicable by a pronounced presence of elderly individuals within the cohort.

Key words: SAPS, European Agricultural Guarantee Fund (FEAGA), European Fund for Agriculture and Rural Development (FEADR), subsidies, finance

INTRODUCTION

The Western Region of Romania was established in 1998, comprising four counties, including Timiș and Caraș-Severin. The primary functions of the region are the coordination of regional development projects and the absorption of funds from the European Union (PNDR 2021-2027). The Western Region has vast agricultural lands, and the local pedoclimatic conditions offer multiple possibilities for agricultural development [1]. Compared to other regions in Romania, the Western Region has significant competitive advantages [10,16]. There is also a high interest from European Union investors in the region's agricultural lands, which are of superior quality and have not been treated with pesticides, as foreign investors cultivate organic and ecological agricultural products intended for export.

Consequently, attracting European funds in the field of agriculture has brought significant benefits to companies in Timiș and Caraș-Severin counties. From an economic efficiency perspective, there are two main effects. Attracting over 450 million EUR (EAGF, EAFRD, and National Budget funds) to the county since 2007 has substantially increased the financial stability of the sector, with a strong decrease in the volatility of companies. In the last 13 years, the trend of land consolidation and the increasingly easy access to non-repayable funds have made agriculture attractive for many strong foreign investors and have allowed Romanian farmers to expand their businesses [3, 8,11].

Investments made through accessing European funding programs have increased the level of equipment of farms with state-of-the-art machines, equipment, and technologies, which have led to both a

reduction in operating costs per unit of product obtained and an increase in the yields per hectare. All these factors have contributed to increasing the economic efficiency of businesses in the field [13,15].

In recent years, due to the increasing occurrence of extreme weather phenomena and the increasingly pronounced changes in annual climate patterns, the need for environmentally friendly agriculture has become more and more evident [5, 6]. The new Common Agricultural Policy (2021 – 2027), along with the European Green Deal, aims to set a global standard in terms of safety, supply security, nutrition, and quality [9,14]. Transitioning to a sustainable food system can have social, health, and environmental benefits, as well as more equitable economic advantages [4, 7, 12].

The most significant difference between the two counties, Timiș and Caraș-Severin, is their geographical configuration, which directly impacts the favourability of agricultural production: while in Timiș, the relief is largely favourable to agriculture, extending over most of the western plain, the neighbouring county's terrain is much less conducive, given the presence of mountains with the specificity of mountainous areas. Culturally, however, the areas are quite similar. Both are part of the Romanian section of the Banat region (the rest being divided between Hungary – 5% and Serbia – 40%) [1]. Nonetheless, the concept of the family farm passed down from generation to generation is better preserved in Caraș-Severin. This can be partly explained by the mountainous nature of the terrain in this county, which has made the process of expanding farms in terms of area difficult, but also by the historical fact of mass nationalization of land sown by large landowners in Timiș and their forced deportation and relocation to Bărăgan. Although the region was known in the past as an intensive pork production area (even today, Timiș hosts one of the largest pig breeding and pork processing complexes), in recent years, farmers have focused more on sheep and cattle raising, including in mixed farms,

especially from an economic standpoint, as the profit margins are significantly higher.

In this context, the purpose of the paper is to provide a detailed analysis of the Single Area Payment Scheme (SAPS) beneficiaries in Timiș and Caraș Severin counties in Romania, with a specific focus on understanding the distribution and characteristics of these beneficiaries by legal entity type, gender, age, and the monetary values attracted. Through this analysis, the paper aims to:

Evaluate the Impact of SAPS Funding: It seeks to assess how SAPS funding has been distributed among various categories of beneficiaries and to understand the financial impact of this support on the agricultural sector in the two counties.

Demographic Analysis: By categorizing beneficiaries based on legal entity type, gender, and age, the paper intends to provide insights into the demographic profile of those who are benefitting from SAPS, offering a glimpse into who is participating in and benefitting from EU agricultural policies.

Economic Efficiency and Technological Advancement: The study examines the economic efficiency and the adoption of advanced technologies and practices in agriculture as a result of SAPS funding. It discusses how investments made through European funding programs have enhanced the equipment level of farms, leading to reduced operating costs and increased yields.

Policy Implications and Recommendations: By providing a comprehensive analysis of SAPS beneficiaries and the broader agricultural context in Timiș and Caraș Severin, the paper likely seeks to inform policy decisions, contribute to the optimization of future funding schemes, and support the transition towards more sustainable and efficient agricultural practices in Romania and potentially in similar regions within the European Union.

MATERIALS AND METHODS

The research in this article was located in the Western Region, more precisely in Timiș and Caraș-Severin counties. The materials used for this study were provided by the Agency

for Payments and Intervention in Agriculture, the National Institute of Statistics, and various bibliographic sources. The collected data were subject to observation, analysis, interpretation, and comparison. Additionally, graphical representations were made using the Past 4.03 software (Statistical analysis software). The centralization, processing, and interpretation of the data allowed for the formulation of the main conclusions regarding the situation of SAPS beneficiaries in the two studied counties.

RESULTS AND DISCUSSIONS

Regarding the number of SAPS beneficiaries [2] in Timiș county, there are 198,238, representing approximately 75% of the total for the two counties. For comparison, in Caraș-Severin County, there were 65,535 beneficiaries. The highest proportion of SAPS beneficiaries consists of individual physical persons, both in Timiș county and in Caraș-Severin. It is immediately noticeable that in Timiș county, even if the number of individual persons is higher than the other categories taken separately, a numerical comparison with the other categories of legal persons taken together indicates the latter's superiority. The same is not observed in Caraș-Severin County, where even if all categories of legal persons are combined, they do not exceed the number of physical persons. Specifically, in Timiș county, the distribution by legal form of the beneficiaries is 47% for individuals, 39.9% for legal persons, 6.3% for authorized persons, 5.8% for individual enterprises, and 0.2% for family enterprises. In Caraș-Severin County, this distribution is: 72.7% for individuals, 18.7% for legal persons, 4.3% for authorized persons, 3.3% for individual enterprises, 0.9% for family enterprises, and 0.1% for foreign citizens. The χ^2 test of association indicates that the distribution by legal form differs significantly between the two counties, $\chi^2=1.3 \times 10^4$, $p < 0.001$. The data corresponding to this description are found in Table 1 and Figure 1. Following the distribution of SAPS beneficiaries by gender, in Timiș county, 70.5% are men and 24.5% are women, while

in Caraș-Severin County, 71.1% are men and 28.9% are women.

Table 1. Distribution of SAPS beneficiaries by legal form in Timiș and Caraș Severin counties

Legal_form		County		
		Timis	Caras Severin	Total
Individual	Count	94,598	47,666	142,264
	% within Legal_form	66.5%	33.5%	100.0%
	% within County	47.7%	72.7%	53.9%
	% of Total	35.9%	18.1%	53.9%
Legal person	Count	79,191	12,239	91,430
	% within Legal_form	86.6%	13.4%	100.0%
	% within County	39.9%	18.7%	34.7%
	% of Total	30.0%	4.6%	34.7%
Authorized person	Count	12,549	2,837	15,386
	% within Legal_form	81.6%	18.4%	100.0%
	% within County	6.3%	4.3%	5.8%
	% of Total	4.8%	1.1%	5.8%

Individual enterprise	Count	11,413	2,147	13,560
	% within Legal_form	84.2%	15.8%	100.0%
	% within County	5.8%	3.3%	5.1%
	% of Total	4.3%	.8%	5.1%
Family enterprise	Count	407	565	972
	% Legal_form	41.9%	58.1%	100.0%
	% within County	.2%	.9%	.4%
Foreign citizen	Count	80	81	161
	% within Legal_form	49.7%	50.3%	100.0%
	% within County	.0%	.1%	.1%
Total	Count	198,238	65,535	263,773
	% within Legal_form	75.2%	24.8%	100.0%
	% within County	100.0%	100.0%	100.0%
	% of Total	75.2%	24.8%	100.0%

Source: Authors' calculation based on the data from APIA [2] and INS [11].

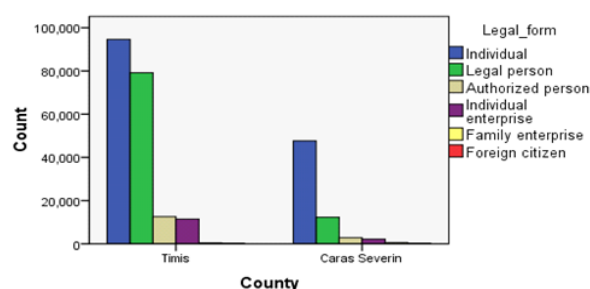


Fig. 1. Distribution of SAPS beneficiaries by legal form in Timiș and Caraș Severin counties

Source: Own design reflecting the results.

The proportions are close, and there are no statistical arguments at a threshold of $\alpha=0.01$ regarding the existence of differences between them in association with the counties.

These conclusions were reached by applying the χ^2 association test. The statistical data are presented in Table 2 and Figure 2.

Table 2. Distribution of SAPS beneficiaries by sex in Timiș and Caraș Severin counties

Sex		County		
		Timis	Caras Severin	Total
M	Count	66,666	33,903	100,569
	% within Sex	66.3%	33.7%	100.0%
	% within County	70.5%	71.1%	70.7%
	% of Total	46.9%	23.8%	70.7%
F	Count	27,884	13,759	41,643
	% within Sex	67.0%	33.0%	100.0%
	% within County	29.5%	28.9%	29.3%
	% of Total	19.6%	9.7%	29.3%
Total	Count	94,550	47,662	142,212
	% within Sex	66.5%	33.5%	100.0%
	% within County	100.0%	100.0%	100.0%
	% of Total	66.5%	33.5%	100.0%

Source: Authors' calculation.

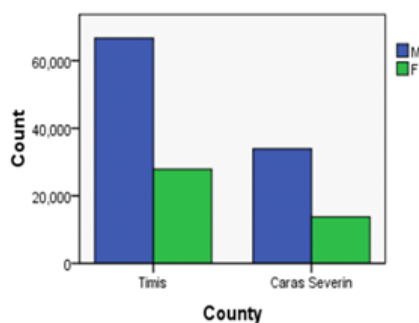


Fig. 2. Distribution of SAPS beneficiaries by sex in Timiș and Caraș Severin counties

Source: Authors' design of the results.

The age of SAPS beneficiaries is an useful subject for painting a picture of the future of agriculture in Romania. In the following discussion on age, only individual persons are considered, excluding any forms of legal entities and their representatives.

Table 3 provides information on direct numerical and percentage comparisons between the groups' volumes in the two counties (% within Age group). Moreover, consulting the columns on the percentage distribution of the volume in each county, we find that in Timiș, 0.1% of SAPS beneficiaries are under 20 years old, 3.8% between 20-29 years, 10% between 30-39 years, 19.4% between 40-49 years, 23.9% between 50-59 years, 24.4% in the 60-69 age group (being the largest age group in terms of volume),

14.3% in the 70-79 age group, 3.9% in the 80-89 age group, and even 0.2% in the 90-99 age group. On the other hand, in Caraș-Severin County, like in Timiș, 0.1% are under 20 years old, 3.7% between 20-29 years, with a similar value close to that of Timiș county, 10.6% between 30-39 years.

However, only 18.1% of SAPS beneficiaries in Caraș-Severin are in the 40-49 age group, a value observed to below compared to Timiș county where the proportion of SAPS beneficiaries is higher in this age group.

The same phenomenon is observed in the 50-59 age group where there are 21.7% of the beneficiaries in Caraș-Severin, a lower value compared to Timiș county.

The two age groups, 40-49 and 50-59 years, constitute very efficient periods when characterizing the results of human resources in the field of agricultural management.

It is note worthy that in the 60-69 age group in Caraș-Severin County, the proportion of SAPS beneficiaries is 26.4%, a value higher than the same age group in Timiș county. Similarly, in the 70-79 age group, the proportion is 15.4%, a higher value in Caraș-Severin compared to Timiș.

The fact that these groups have a higher proportion in Caraș-Severin compared to Timiș can be attributed to the aging population phenomenon, particularly due to the migration of the youth for educational purposes to the neighbouring county of Timiș, among other reasons.

Moreover, the well-developed industry in the past in Caraș-Severin County has resulted in many individuals from these age groups being settled in this county, who are now retired but still active in the agricultural sector.

From a statistical significance perspective, an association of the values corresponding to the age groups with the counties is noted, applying the χ^2 association test, $\chi^2=199.2$, $p<0.001$.

Table 3. Frequency distribution of SAPS beneficiaries by age group in Timiș and Caraș Severin counties

Age group	County			
		Timis	Caras Severin	Total
<20 years	Count	82	31	113
	% within Age group	72.6%	27.4%	100.0%
	% within County	.1%	.1%	.1%
	% of Total	.1%	.0%	.1%
20-29 years	Count	3,558	1,743	5,301
	% within Age group	67.1%	32.9%	100.0%
	% within County	3.8%	3.7%	3.7%
	% of Total	2.5%	1.2%	3.7%
30-39 years	Count	9,460	5,029	14,489
	% within Age group	65.3%	34.7%	100.0%
	% within County	10.0%	10.6%	10.2%
	% of Total	6.6%	3.5%	10.2%
40-49 years	Count	18,317	8,631	26,948
	% within Age group	68.0%	32.0%	100.0%
	% within County	19.4%	18.1%	18.9%
	% of Total	12.9%	6.1%	18.9%
50-59 years	Count	22,642	10,324	32,966
	% within Age group	68.7%	31.3%	100.0%
	% within County	23.9%	21.7%	23.2%
	% of Total	15.9%	7.3%	23.2%
60-69 years	Count	23,119	12,717	35,836
	% within Age group	64.5%	35.5%	100.0%
	% within County	24.4%	26.7%	25.2%
	% of Total	16.3%	8.9%	25.2%
70-79 years	Count	13,532	7,320	20,852
	% within Age group	64.9%	35.1%	100.0%
	% within County	14.3%	15.4%	14.7%
	% of Total	9.5%	5.1%	14.7%
80-89 years	Count	3,693	1,776	5,469
	% within Age group	67.5%	32.5%	100.0%
	% within County	3.9%	3.7%	3.8%
	% of Total	2.6%	1.2%	3.8%
90-99 years	Count	195	95	290
	% within Age group	67.2%	32.8%	100.0%
	% within County	.2%	.2%	.2%
	% of Total	.1%	.1%	.2%
Total	Count	94,598	47,666	142,264
	% within Age group	66.5%	33.5%	100.0%
	% within County	100.0%	100.0%	100.0%
	% of Total	66.5%	33.5%	100.0%

Source: Authors' calculation.

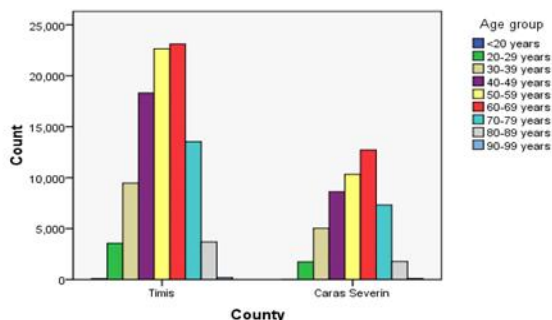


Fig. 3. Frequency distribution of SAPS beneficiaries by age group in Timiș and Caraș Severin counties
 Source: Authors' design of the results.

In both counties, the age distribution of SAPS beneficiaries has some similarities with the normal distribution, in that the extreme values, namely the age groups corresponding to the very young and the elderly, are quantitatively lower and there is also a tendency towards symmetry around the average age of approximately 55.78 years in Timiș county and 56.3 years in Caraș-Severin. However, the Kolmogorov-Smirnov test yields values of $D(94,598) = 0.049$ and $D(47,666) = 0.067$ with $p < 0.001$ in both cases. Therefore, the total number of cases deviating from the normal distribution is statistically significant, suggesting that neither group follows a normal distribution.

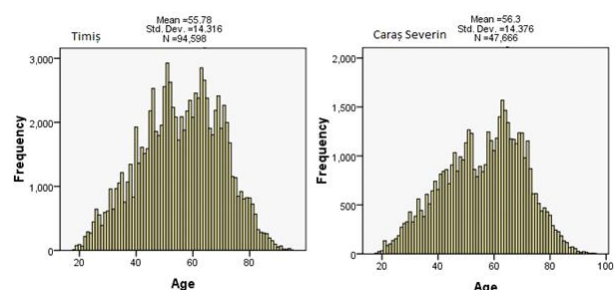


Fig. 4. Histograms related to the age distribution of SAPS beneficiaries in Timiș (a) and Caraș Severin (b) counties.

Source: Authors' design.

For characterizing the statistical populations of SAPS beneficiaries in terms of age in the two counties, data from Table 4 were presented.

The minimum age is 18 years in each case. However, it's note worthy that the maximum age is very advanced, at 95 and 96 years, for some SAPS beneficiary individuals. Negative skewness in both situations, albeit light, indicates an asymmetry in the distributions. The curve is shifted to the right, a phenomenon explained by a high number of older individuals.

Negative kurtosis values for the populations of both counties indicate flattened distributions.

This is related to the same phenomenon of the aging population engaged in agriculture and the reduced number of individuals with an average age. The average age of individuals in Timiș county is 55.78 years, while in Caraș-Severin County, it is slightly higher, at 56.3

years. This difference is statistically significant, $t=-6.4$ with $p<0.001$. The median values are 56 years for the group from Timiș and 58 years for that from Caraș-Severin.

Table 4. Statistical summary for describing the age of SAPS beneficiaries in Timiș and Caraș Severin counties

Timiș			Caraș Severin		
Mean		55.78	Mean		56.3
95% Confidence Interval for Mean	LowerBound	55.69	95% Confidence Interval for Mean	LowerBound	56.17
	UpperBound	55.87		UpperBound	56.43
5% TrimmedMean		55.91	5% TrimmedMean		56.48
Median		56	Median		58
Variance		204.935	Variance		206.674
Std. Deviation		14.316	Std. Deviation		14.376
Minimum		18	Minimum		18
Maximum		95	Maximum		96
Range		77	Range		78
Interquartile Range		21	Interquartile Range		21
Skewness		-0.142	Skewness		-0.218
Kurtosis		-0.567	Kurtosis		-0.601

Source: Authors' calculation.

The requests for organic agriculture vary in proportion between the two counties.

There was a statistically significant association between organic requests and the counties studied, applying the χ^2 association test, $\chi^2=3157$, $p<0.001$.

In Timiș county, 7.2% of the applications are for organic farming, and 92.8% are not, while in Caraș-Severin County, the proportion is higher, with 14.4% being organic and 85.6% not. However, in absolute numbers, the number of organic applications is higher in Timiș county.

The data indicating these conclusions are presented in Table 5 and in Figure 5.

Table 5. Distribution of the number of applications for organic farming in Timiș and Caraș Severin counties

County		Ecological		
		No	Yes	Total
Timis	Count	184,036	14,202	198,238
	% withinCounty	92.8%	7.2%	100.0%
	% withinEcological	76.6%	60.1%	75.2%
	% of Total	69.8%	5.4%	75.2%
Caras Severin	Count	56,101	9,434	65,535
	% withinCounty	85.6%	14.4%	100.0%
	% withinEcological	23.4%	39.9%	24.8%
	% of Total	21.3%	3.6%	24.8%
Total	Count	240,137	23,636	263,773
	% withinCounty	91.0%	9.0%	100.0%
	% withinEcological	100.0%	100.0%	100.0%
	% of Total	91.0%	9.0%	100.0%

Source: Authors' calculation.

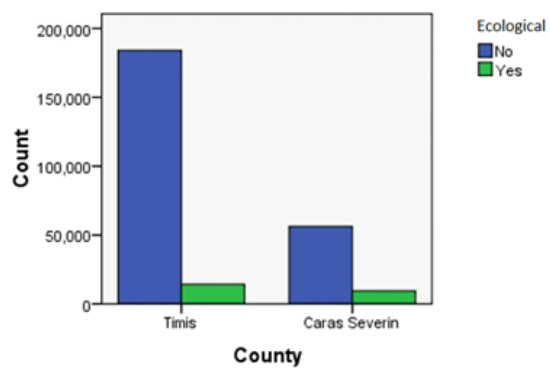


Fig. 5. Distribution diagram of the number of applications for organic farming in Timiș and Caraș Severin counties

Source: Authors' design.

CONCLUSIONS

The mobilization of European funds in the agricultural sector has significantly benefited both farmers and companies in Timiș and Caraș-Severin counties. This influx has played a pivotal role in both consolidating and stabilizing agricultural enterprises, thereby enhancing overall business profitability. Such financial support has been instrumental in fostering a more resilient and economically viable agricultural landscape within these regions.

An examination of the farm structures and subsidy applicants in both counties up to 2021 reveals a closely matched scenario, with Timiș recording 17,584 beneficiaries and Caraș-Severin slightly higher at 18,694. This parity underscores a widespread engagement with SAPS across both counties, reflecting the scheme's relevance to the agricultural community.

The distribution analysis of SAPS beneficiaries unveils a dominant presence of individual farmers in both counties, constituting the majority. Specifically, Timiș County reported 198,238 beneficiaries, about 75% of the total for both counties, with Caraș-Severin accounting for the remaining 65,535 beneficiaries. This distribution pattern emphasizes the critical role of individual farmers in the region's agricultural economy. Gender distribution among SAPS beneficiaries reveals a notable male predominance, with 70.5% male beneficiaries in Timiș and 71.1% in Caraș-Severin. However, the significant representation of

women, 24.5% in Timiș and 28.9% in Caraș-Severin, highlights an encouraging trend towards gender diversity in agricultural participation.

Age demographics of SAPS beneficiaries present insightful trends for the future of agriculture in Romania. In both counties, the distribution spans from youths under 20 to seniors in their 90s, with the largest concentration in the 60-69 age group. This age diversity not only reflects the broad appeal and accessibility of farming across generations but also signals potential challenges and opportunities in encouraging younger entrants to agriculture, ensuring sustainability and continuity.

These findings collectively illustrate the substantial impact of European funding on the agricultural sectors of Timiș and Caraș-Severin counties. They underscore the importance of continuous support and tailored policies to sustain growth, encourage inclusivity across gender and age, and ultimately, secure the future of agriculture in Romania.

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