INDIVIDUAL FARMS AND AGRO-TOURISM IN ROMANIAN BANAT. A PARALLEL ANALYSIS

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ABSTRACT

The specificity and diversity of the natural and anthropic patrimonies of the different regions can lead to the development of tourism and, as a result, to the sustainable development in those communities. Starting from the fact that Caraş-Severin and Timiş counties cover most of the historical region of Romanian Banat, thus preserving the traditions and multiculturalism specific to these regions (preserved in its rural communities), the research aimed for a comparative analysis of the evolution of individual farms and of agro-tourism in the two counties as a way of sustainable development and their advertise as tourist destinations. The results obtained highlighted, on the one hand, the existence and maintenance of an economic potential capable of ensuring the development of agro-tourism, a process in full development in this region, and on the other hand the fact that, at least so far, the effects of agro-tourism on the stability of residents are barely visible.

Introduction

Throughout historical evolution, peoples and civilizations have interfered by bringing together different cultures, ethnicities and beliefs that have lived more or less peacefully through the rise and fall of empires, that empires have failed to alter the cultural values of those communities. In this context, the historical province of Banat can be characterized, over time, by an area of interculturality and multilingualism (Dabu,

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2019), by mixed ethnic populations with identities and peculiarities transmitted from generation to generation through the port (Ada-Flavia & Marec- Sirb, 2014), customs and language and which, including in the context of globalization, tends to preserve its national culture, the feeling of social space with aspecific language for each ethnic group (Woudstra, 2006).

Today, the Romanian Banat fully covers the counties of Timiș and Caraş-Severin, a part of Arad county, located south of the Mureș river, as well as the Orşova area in Mehedinți county and some communes in Hunedoara county (ER, 2008). With the exception of Mehedinți County, the other counties are part of the West Development Region. From an ethnic point of view, although before 1989 there were, besides Romanians, communities of Germans, Serbs, Hungarians, Italians and Jews, after 1990 most Germans of Italians and Jews left the country (Para & Moise, 2014). However, the Banat spirit is still alive (Dabu, 2019), full of traditional values (Tripa & Gologan, 2010). The mentalities and cultural peculiarities being factors that help foreign investments in this region (Foldi, 2019).

The Banat Mountains constitute a significant tourist potential of this region, especially since there are a number of rural communities with specific anthropogenic potential on their area, which contributes to increasing the quality of tourist products (Danici-Patru, 2018). At the same time, traditional products specific to local communities, the important component of their culture, can be vectors of sustainable local development (Gheorghe, Nistoreanu & Filip, 2013).

Due to the specificity of tourist products, their immaterial character, tourist circulation depends fundamentally on the degree of awareness of tourists about the natural potential and cultural attractions of the area (Dinu & Dinu, 2017), advertising being a factor fundamentally influencing the behavior of the service consumer. On the other hand, through the positioning and specificity of this region, it can be a brand in Romanian tourism (Stancioiu et.al., 2011).

One of the most important roles in promoting Banat's cultural values belongs to the rural communities that still keep their customs and traditions unchanged.

In the conditions of increasing pollution and urban stress, holidays in the natural environment are increasingly preferred (Avram, 2016). The return to nature, the experience of life from traditional farms, is an effective mean of revitalization for urban citizens, especially from big cities.

Unfortunately, legislative imperfections and low political interest in rural areas have made the process of development and integration into the market economy system of small farms quite slow (Alexandri, 2014). A better perspective for rural communities began to be seen after the year 2000 when rural tourism, both concept and practice, began to make its presence felt.

Tourism as a phenomenon, by its spatial, economic, sociological, psychological, cultural, political and other connotations, has no counterpart in any other phenomenon of the modern world (Lakićević & Žarevac, 2014). In this way, in the last decades, rural

tourism has evolved upwards, gradually becoming a means of economic development of rural areas (Ibanescu et.al., 2018, Sagić et al., 2019; Durkalić et al., 2019) with positive results.Within it, agro-tourism came with significant offers to meet the needs of tourists with activities and products made in their own household (Marian, 2017). This is an important fact in ensuring sustainable development in those communities, on the one hand by capitalizing on local agricultural and non-agricultural raw materials, and on the other hand by creating jobs and revitalizing rural localities (Sima, 2016).

Considering that the rural tourism potential in Romania is still very little explored, a quantitative and qualitative increase of this form of tourism is to be expected (Pop, Coros & Balint, 2017).However, more attention is needed from the managers on regional sustainable development, given that in Romania differences between regions are deepening, among the causes being migration (Balan, 2018) so that Romania to be no more among the last places on the development index human beings (Zechariah, 2019).

Given these aspects, the main objective of the research was the parallel analysis of the evolution of agricultural production of vegetables and animals in individual farms in the West Development Region, focusing on Timiş and Caraş-Severin counties, and the evolution of agro-tourism highlighted through the accommodation infrastructure and the intensity of the tourist traffic, in the last 20 years. Also, in correlation with it, were analyzed aspects regarding the evolution trends of the population living in rural areas and the correlations between it and the intensity of tourist traffic in agritourism resorts.

Data sources and methodology

The source of the main data series included in the analysis was the National Institute of Statistics of Romania (NIS, 2020), the online database (TMPOL, 2020) and it refers to establishments of tourist reception with functions of tourists accommodation, tourist accommodation capacity in function by type of establishment, macro-regions, development regions and counties, arrivals and overnight stays in the establishments of touristic reception, livestock, by animal category and crop production by main crop in individual holdings, number and mean age of permanent resident population from rural area and , last but not least, local expenditures for environmental protection. The variables used and their meanings are shown in Table 1.

Table 1. Identifiers, meanings and units of measurement of the variables used

ABH	Agro-touristic boarding houses	number
ACF	Touristic accommodation capacity in function of agro-touristic boarding houses	place-days
ARV	Arrivals in agro-touristic boarding houses	number
OHS	Overnight stays in agro-touristic boarding houses	number
VP	Vgetable production of individual holdings	tonnes
LBV	Livestock of bovine animals	number
LPG	Livestock of pigs	number
LSH	Livestock of sheep	number
LHS	Livestock of horses	number

LPT	Livestock of poultry	number
LBF	Livestock of bee families	number
MAG	Mean age of permanent resident population from rural area	ages
PVA	Population residing in rural areas, aged 24-39 years	years
PVB	Population residing in rural areas, aged 40-54 years	years
PVC	Population residing in rural areas, aged 55-64 years	years
MAG	Mean ages of the population residing in rural areas	years

The characteristic of the distributions of the variables included in the analysis (Table 2) highlights the fact that from the point of view of the central tendency the variables ABH, ARV, OHS, LBV LSH, PVA, PVC and MAG are right skewed and the others are left skewed, with the observation that, given the relatively small value of skewness, the LPT variable can be considered to have a symmetrical distribution.

Table 2. Descriptive Statistics of used vaiables at West Region level

	Min	Max	Mean	Median	Std. Dv.	CV*	Skewness	Kurtosis
ABH	7	211	95	81	58	0.62	0.678	-0.515
ACF	147953	1367679	824390	870919	428387	0.52	-0.262	-1.487
ARV	436	81499	26961	15524	26152	0.97	0.940	-0.327
OHS	1278	144926	53159	31157	49180	0.93	0.753	-0.924
VP	280266	465460	385622	387015	46991	0.12	-0.346	0.039
LBV	121718	235370	173032	170815	43793	0.25	0.186	-1.869
LPG	173252	556609	385512	402342	125394	0.33	-0.237	-1.419
LSH	890888	1508797	1191012	1184473	220016	0.18	0.134	-1.552
LHS	#	61253	36781	33161	15651	0.43	-0.244	0.281
LPT	2973454	6378276	4690204	4686403	818795	0.17	-0.084	1.399
LBF	81808	179454	139420	141431	35704	0.26	-0.440	-1.453
PVA	150423	173648	157896	156393	6510	0.04	1.170	0.953
PVB	123810	180204	153231	149640	17429	0.11	0.161	-1.352
PVC	122445	142507	131795	132002	5159	0.04	-0.143	-0.190
MAG	39.4	41.7	40.4	40.3	0.7	0.02	0.292	-1.249

*coefficient of variation, # missing data

Source: developed by authors using SPSS

From the point of view of the degree of spread, the highest values are registered for the variables ARV (97%), OHS (93%), and ABH (62%). Taking this into account, it results that the average values of the three variables do not provide statistically significant information in the analysis of their evolution. On the other hand, the lowest spreads were recorded for the variables MAG (2%), PVC and PVA (4%), PVB (11%) VP (12%), LPT (17%) and LSH (18%). . For these variables, as well as for LBV, LPG and LBS the average values are representative.

The characteristics of the amplitudes of the distributions of the values of the variables included in the analysis also highlight differences between them. Thus, while the VP variable has an approximately normal amplitude distribution, LHS, LPT and PVA are leptokurtic type, the others are platykurtic type.

The main tools used in data analysis and formulation of conclusions were econometric modeling and correlation analysis. The ANOVA methodology and the F test were used to test the statistical hypotheses regarding the statistical significance of the regression models, and the bilateral t (Student) test was used to test the validity of the regression model parameters and the statistical significance of the parametric correlation coefficients and partial correlations. For both tests the null hypothesis is: the model (respectively the value of the parameter) is not statistically significant. The significance threshold used was $\alpha = 0.05$ (95% confidence level).

Results and discussions

According to the objectives of the research, the analyzes focused on four aspects of the evolutions registered at the level of rural communities in the two counties that cover the vast majority of the Romanian Banat territory. These are: the evolutions of livestock and vegetable production from individual farms; the number of rural residents; development trends of agro-tourism and testing the existence of correlations between the structural evolutions of the rural population and the development of agro-tourism.

Individual farms - sources of income and basis for agro-tourism

During the analyzed period, both in terms of animal evolutions and vegetable production volumes in Caraş-Severin and Timiş counties, there were both similarities and particularities.

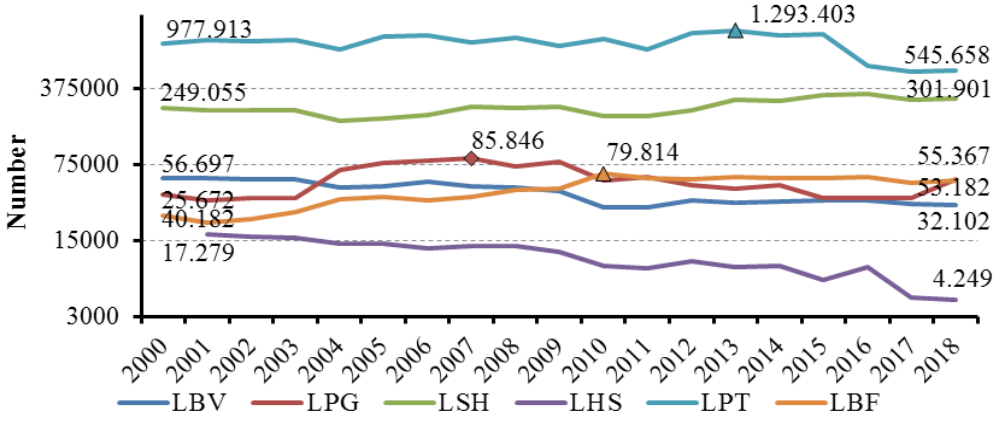
In the period 2000-2018, the percentage of livestock in individual farms in Caraş-Severin County, in relation to their total in the West Region, remained approximately same (about 24%) in cattle, increased significantly in pigs, from 7.94% in 2000, to 25.97% in 2018 and decreased both in sheep, by 6.49 percentage points (from 27.75% in 2001, to 20.26% in 2018), and in horses by 7.57 percentage points, (from 28.21% in 2001, at 20.64% in 2018). Regarding the number of poultry and bee families, the percentage of their amounts in relation to the West Region evolved with small fluctuations around 19% for poultry and 30% for bee families, respectively.

From a numerical point of view, in Caraş-Severin County, the first place was occupied by poultry (Figure 1), their number oscillating between 1293403 poultry in 2013 to 538514 in 2017. This category also corresponds to the most significant annual rates of evolution. Thus, in 2016 compared to 2015, there is the largest decrease in the number of birds by 47.92%, while the largest increase was recorded in 2012 compared to 2011.

Under the category of birds, the category of sheep occupies the second place in the ranking of the amounts. In 2016, the number of sheep reached a maximum of 336,202

animals. As for the smallest amounts (190074 sheep), it is recorded in 2004. The annual rate of evolution ranged between -20.41%, recorded in 2004 and 25.87%, recorded in 2013.

Figure 1. Evolutions of livestock, poultry and bee families in the individual agricultural exploitations from Caraş-Severin county



Source: authors based on TEMPO (2020)

The amounts of the following two categories of animals (cattle and pigs) oscillate in value around each other throughout the analyzed period. Thus, if in 2000 the bovine amounts (LBV) was higher than that of pigs (LPG), since 2004 the amounts of pigs exceeded that of cattle, due to a significant increase of 29681 animals (from 37217 to 66898), while the number of cattle is reduced by 9102 animals (from 55218 to 46116). The number of pigs increases until 2007 when it reaches 85846 animals, after which there is a decrease from one year to another until 2015 when their number reaches a difference of only 1829 animals compared to that of cattle, the decline continuing in the next two years. At the same time, from 2004 to 2018 the cattle amount registered a continuous decrease, except for the year 2006 when a small increase of the amount was registered, reaching almost the one registered in 2003 (52666 animals).

Regarding the annual rates recorded for both categories, it can be mentioned that the most significant developments are also recorded in the number of pigs. Thus, in 2004 compared to 2003 there is the highest increase in the number of pigs, with 79.75%, while the most significant decrease is recorded in 2010 compared to 2009 (-32.92%). For the cattle amount, the most significant increase is 16.47%, recorded in 2012, while the most drastic decrease does not exceed 27.83%.

The evolution of the number of bee families, in Caraş-Severin county, was generally on an ascending trend, increasing from 25672 bee families in 2000, to 53182 bee families in 2018, the average increase being 1528 families/year. There have been oscillations around this general trend. Thus, after the significant decrease by 3839 bee families in

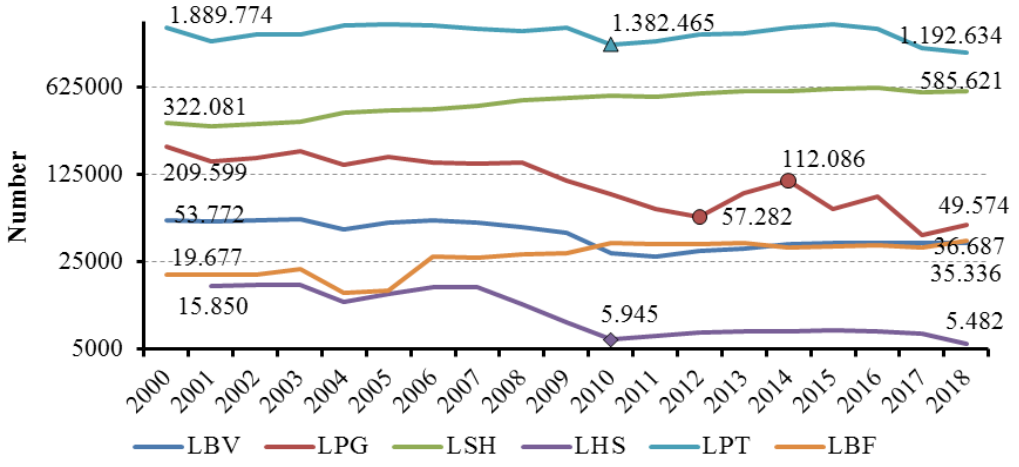
2001 compared to 2000 when, with 21,833 families this category is at the lowest level, significant successive increases follow, on average by approximately 4468 families/year, until 2010, when it is registered the largest number of bee families (62043 families) after which, in the following years, until 2018 their number decreases, on average by 1108 families/year.

The evolution of horse amount, the lowest compared to other categories of animals, followed a general downward trend from the highest level of 17279 animals, recorded in 2001, to 4249 animals in 2018, the average decrease being about 766 horses/year.

The analysis of the percentage of animal production in individual agricultural holdings in Timiş County in relation to their total production in the West Region highlights a different situation from that of Caraş-Severin County. Thus, in the period 2000-2018, the levels of the amount in Timiş County, those registered at the level of the West Development Region, increase for cattle from 22.85% to 26.96% (by 4.11 percentage points), for sheep from 34.53% to 39.29% (with 4.76 percentage points), respectively for birds from 36.91% to 40.11% (by 3.20 percentage points). Decreases in the amounts were registered in pigs, from 41.44% to 23.26% (by 18.18 percentage points) and in bee families from 23.56% to 20.87% (by 2.69 percentage points). At the same time, in Timiş County the levels of the amount of horses, during the analyzed period, remained approximately constant (about 26%).

The number of poultry, registered in Timiş County, is almost double that of Caraş-Severin, increasing from 2000 to 2005 (Figure 2), when the highest values are recorded (1993365 poultry). Since 2005 there is a decreasing trend to 119,264 poultry in 2018. The annual evolution rates ranged between -29.18% in 2017 and 19.25, a value recorded in 2004.

Figure 2. Evolutions of livestock, poultry and bee families in individual farms in Timiş County



Source: authors based on TEMPO (2020)

Sheep also register an increase in Timiş, as in Caraş-Severin, but this is manifested over a longer period, from a minimum of 30,178 animals in 2001, to a maximum of 6,14815 animals in 2016. The absolute increase recorded during this period of evolution of the number of sheep is 20873 sheep/year. After 2016, the number of sheep is slightly decreasing from one year to another, in 2018 being registered with 29,194 fewer animals than in 2016. In sheep, the annual rates of evolution were in the range of -6.42% (value recorded in 2017) and 18.11% (value recorded in 2004).

Regarding the number of pigs, it can be noted that it is the category that faces a quite sharp decrease from 2000 to 2017, on average with about 9922 pigs/year. An exception occurs in 2014 when the number of pigs reaches close to 2009, the difference being 23492 animals higher than in 2013 and 45721 animals compared to their number in 2015. In 2017 compared to 2016 the number of pigs decreased the most, by 51.15%, while the highest increase by 54.66% was recorded in 2013 compared to 2012.

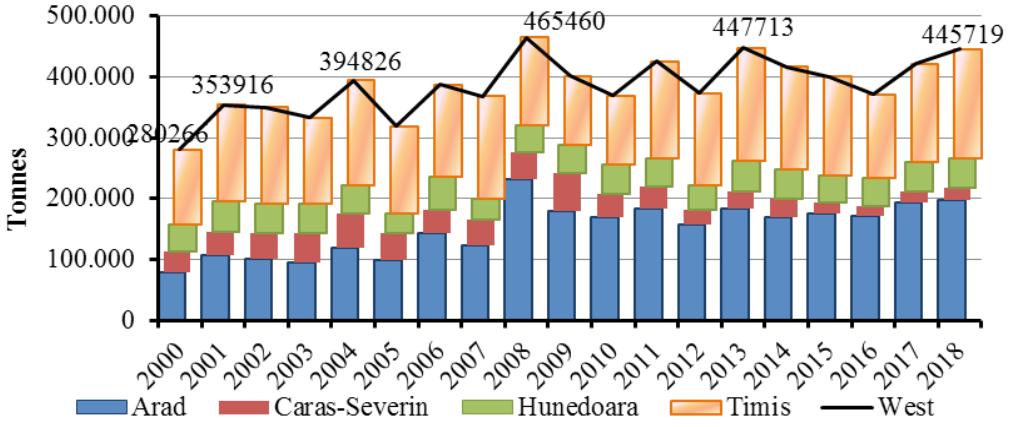
The evolution of the number of cattle and horses follows a similar decreasing trend. Thus, in both categories, the most significant decrease is from 2003 to 2010, for horses (from a maximum of 16433 animals to 5949 animals), and until 2011 for cattle (from a maximum of 54678 animals to a minimum of 27783 animals). In the next period, from 2010 to 2017 the number of horses increased from 6422 to 6750 horses, to reduce quite drastically in 2018 when the lowest number of the entire analysis period is recorded (5482 animals). For cattle, the evolution of the amount from 2012 to 2018 is of continuous increase, on average the increase being approximately 792 animals/year.

Analyzing the annual rates of change in livestock, there is a significant decrease in the number of horses in 2009 compared to 2008, by 28.65%, and by 31.99% for cattle, in 2010 compared to 2009. The largest increases were recorded in 2005 both for horses (14.35%) and for cattle (12.42%).

It is noticeably that in the next two years after 2016, all livestock, including poultry and bee families on individual farms, register a reduction from one year to another, both in Timiş and in Caraş-Severin.

The percentage of vegetable production both in Caraş-Severin County and in Timiş, in relation to their total production in the West Region, overall decreases during the analysis period. Thus, for Caraş-Severin the percentage of vegetable production in relation to their total production in the West Region, in 2018 compared to 2000 is reduced by 8.15 percentage points (from 12.58% to 4.43%), while for Timiş the decrease is only of 3.75 percentage points (from 44.18% to 40.42%). If for Caraş-Severin the highest percentage is registered in 2009 (15.74%), and the minimum in 2016 (4.0%), for Timiş the maximum is registered in 2002 (45.51%), and the minimum in 2010 with (30.73%).

Figure 3. The evolutions of vegetable production in Caraş-Severin and Timiş counties compared to the West Development Region



Source: authors based on TEMPO (2020)

The vegetable production analyzed by each county, in the period 2000-2018, highlights the different evolution trends (Figure 3). The level of vegetable productionin the West Development Region, it shows ascending trend of about 5585 tons per year.

Caraş-Severin County is characterized by a production of vegetables which, over the whole study period, registered an average decrease of approximately 862 t/year. The vegetable production reached the maximum value in 2009 (63271 t) and the minimum in 2016 (14863 t), the variation interval of the production being of 48408 t.

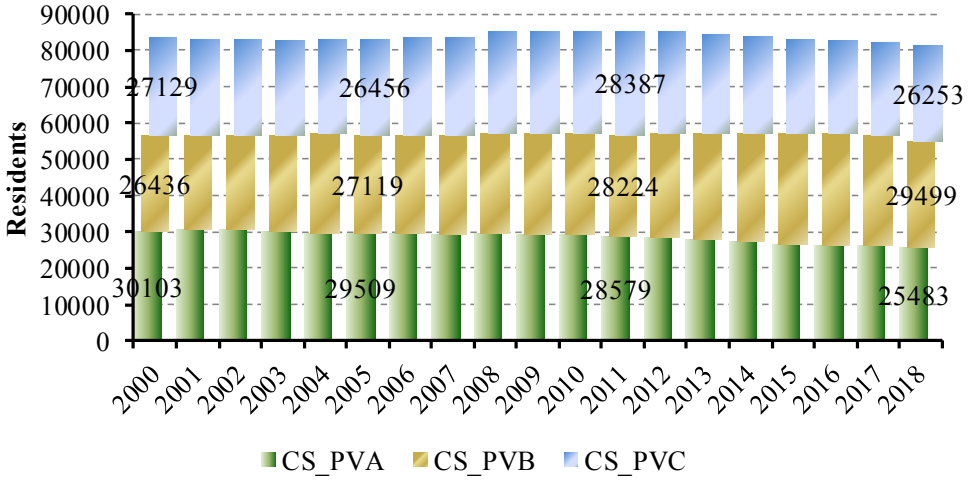
The evolution of vegetable production for Timiş County is different,recording an average increase of approximately 3129 t/year over the entire analysis period. The amplitude of the variation of the vegetable production is almost double compared to the Caraş-Severin county, of 73226 t, in the conditions in which the maximum of the vegetable production of 186216 t being obtained in 2013, and the minimum of 112990 t in 2009.

Low shares of the young resident population

In order to identify the structural changes from the point of view of the age of the resident population in rural areas in Caraş-Severin and Timiş counties, in the last two decades three age groups were formed: population residing in rural areas, aged 24-39 years (PVA), population residing in rural areas, aged 40-54 years (PVB), population residing in rural areas, aged 55-64 years (PVC).

Of the three age categories, in the analyzed period, in Caraş-Severin County (Figure 4), the one between 35-49 years is the only one in which there was an average increase of approximately 170 people/year. The other two categories registered decreasing trends, the rural population aged 50-64 decreasing on average by 49 people/year, while the rural population aged 20-34 decreased on average by 257 people/year.

Figure 4. Evolutions of the number of residents in rural areas, in Caraş-Severin county, by age groups

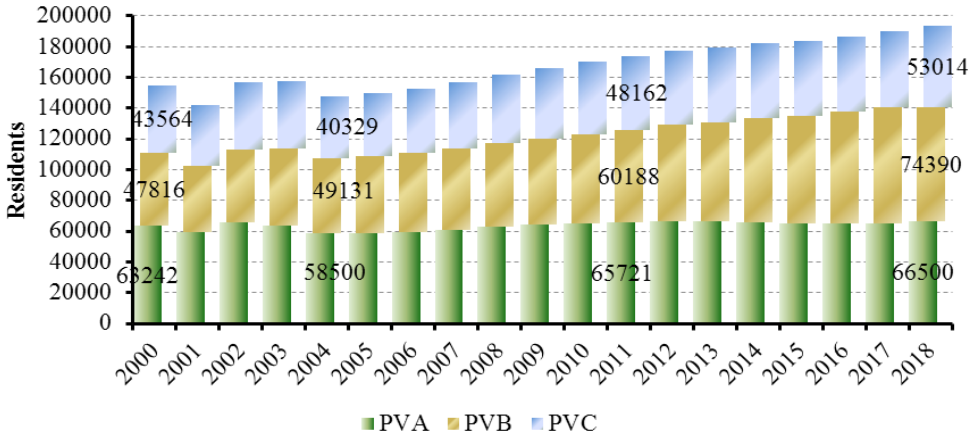


Source: authors based on TEMPO (2020)

Structurally, the rural population of the county is distributed quite balanced on the three age categories, the range oscillating around 30%. For the category of rural population aged 20-34 years, its amount is reduced starting with 2002 from 36.93%, to 31.37% in 2018. At the same time, in the case of the resident population in rural areas aged between 40 and 54 years, there was an increase in structural amount from one year to another, the amplitude of 6.12 percentage points being calculated between the maximum percentage of 37.30% from 2017 and the minimum of 31.18% since 2002. Regarding rural residents aged between 55 and 64, their percentage remained around 32%.

The consequence of these developments was the change in the relationships between the three age groups. Thus, if in 2000 the largest age group was 25-39 (35.98%), followed by the 55-64 age group (32.42%) and the 40-54 age group (31.60%), in 2018 the largest age group was 40-54 years (36.31%), followed by the 55-64 age group (32.32%) and the 25-39 age group (31.37%). The analysis of the evolution of the number of rural residents in Timiș County, highlights an evolution similar to that in Caraș-Severin County (Figure 5). It should be noted that, in Timiș County, all three age categories face the lowest number of people in 2004. Starting with 2005, their number increases by an average of 613 people/year for the age group between 20-34 years (PVA), with 916 people/year in the category aged 50-64 years (PVC) and with 1844 people/year for those aged 35-49 years (PVB).

Figure 5. Evolutions of the rural population residing in Timiş County by age groups



Source: authors based on TEMPO (2020)

Structurally, the rural population of Timiş County is no longer distributed balanced on the three age categories as it was in Caraş-Severin County. The number of residents aged 25-39 ranged between the maximum value of 41.81%, recorded in 2002, and the minimum value of 34.30%, recorded in 2018.

Also, a process of structural percentage reduction from one year to another, is also registered for residents aged between 50-64 years, the maximum variation range being 2.13 percentage points from 28.17% in 2000 to 26.04%. in 2017. On the other hand, the percentage of residents in rural areas, who are between 40-54 years old, generally registered with an increasing trend from 30.92% in 2000 to 38.36% in 2018.

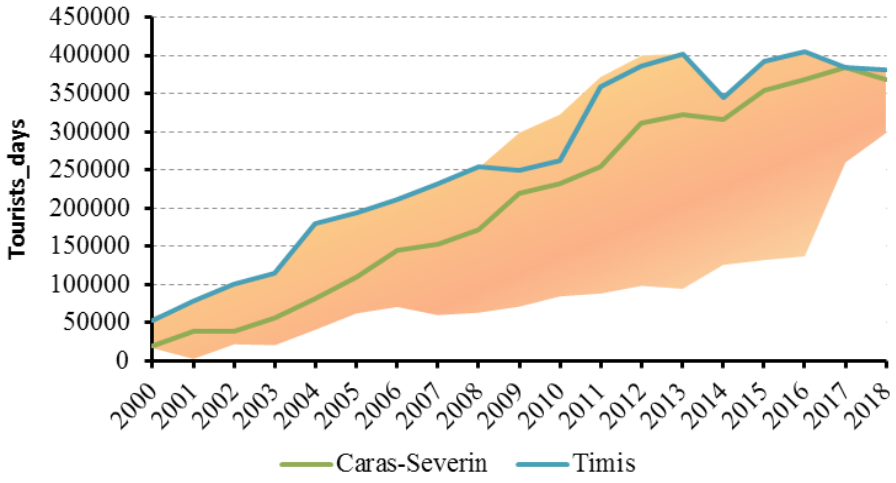
What made the two counties look like in terms of the age structure of rural residents is a negative phenomenon, this being the reduction of the percentage of residents in the age group 25-39 years. Thus, in the case of Caraş-Severin County, this age group reaches, in terms of amount, the first place in 2000, the last place in 2018, the reduction being 4.61 percentage points. In the case of Timiş County, the reduction was even higher, of 7.5 percentage points.

Reducing the percentage of the population of young rural residents has, both, present and especially future negative effects on the sustainable development of rural communities. A present consequence of this evolution is the increase of the average age of the rural residents from Caraş-Severin county from 40.7 years in 2001, to 43.7 years in 2019, and from 37.4 years in 2001, to 39.7 years, in 2019, in the case of Timiş county.

In the period 2000-2018, both the accommodation infrastructure and the tourist circulation at the level in the agro-tourist resorts, in Caraş-Severin and Timiş counties, evolved upwards and at a rather intense pace, which highlights an increase of the concern of the owners of individual agricultural exploitations to this new type of business.

From the point of view of tourist accommodation capacity in function of agro-tourism boarding houses, it evolved from 20411 places-days, in Caraş-Severin county and 52416 places-days, in Timiş county (Figure 6), values registered in 2000, at 357972 places-days, respectively 360466 places-days, in 2019, being in the upper part of the range of values corresponding to the entire West Development Region and represented in Figure 6 by the hatched area.

Figure 6. The evolutions of the accommodation capacity in operation of the agro-tourism facilities from Caraş-Severin and Timiş counties



Source: authors based on TEMPO (2020)

Compared to the other component counties of the West Development Region, the percentage of the number of places-days of accommodation capacity in function of agro-tourism boarding houses in Caraş-Severin and Timiş counties, their total number, varied between 54.84%, in 2010 and 63.81% in 2007.

In Caraş-Severin county, except for the years 2014 and 2018 when there were reductions of 1.86% and 4.13% respectively, accommodation capacity in function of agro-tourism boarding houses increased with annual rates between 47.22%, value registered in 2004, and 3.12 %, in 2013. Over the entire analyzed period, the evolution trend was on an upward trend represented by the linear model CS_ACF (Table 3). Taking into account the values of the parameters F and Sig.F, it results that the null hypothesis of the F test is rejected and, consequently, it results that the model is statistically significant

and offers a very good approximation of the time evolution of ACF (coefficient of determination R2 = 0.982) . Also, the regressor b is statistically significant (Sig.t = 0.000 <α = 0.05) and highlights the fact that accommodation capacity in function of agro-tourism boarding houses increased on average with values between 20874 and 23994 places-days, the most probable value being 22434 places-days.

Table 3. Characteristics of the evolution models of accommodation capacity in function of agro-tourism boarding houses in Caraş-Severin and Timiş counties in the period 2000-2018

Model	R	R^2	F	Sig.F	Coefficients		t	Sig.t	Lower*	Upper*
CS_ACF	.991	.982	920.7	.000	a	-16587	-1.968	.066	-34374	1198
					b	22434	30.343	.000	20874	23994
TM_ACF	.960	.921	199.2	.000	a	57773	3.499	.003	22935	92612
					b	20442	14.115	.000	17386	23497

* Confidence interval 95%

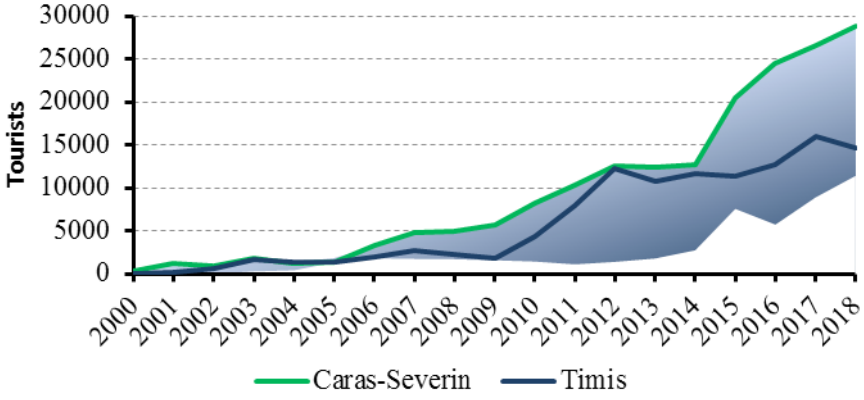
Source: developed by authors using SPSS

The evolution of accommodation capacity in function of agro-tourism boarding houses in Timiş County differs from the one registered in Caraş-Severin County mainly by the fact that in 2014 it registered a decrease of 14.34% compared to 2013 compared to only 1.86% in Caraş-Severin. There were also reductions in 2009 (-1.96%), in 2017 (-4.99%), in 2018 (-1.06%) and in 2019 (-5.67). Above all, in Timiş County, the evolution of accommodation capacity as a function of agro-tourism boarding houses was also in line with an upward trend described by the TM_ACF model (Table 4). And in this case, although, both the TM_ACF model, as a whole, and the regressor (b) are statistically significant, it results that, in Timiş County, accommodation capacity in function of agro-tourism boarding houses increased on average with values between 17386 and 23497 places-days the most probable value being 20442 places-days.

Regarding the number of arrivals in agro-tourism resorts, an ascending evolution can be noticed both for Caraş-Severin county and for Timiş. If in Caraş-Severin the amplitude of the variation of the number of arrivals is 28501 tourists (from 373 tourists in 2000 to 28874 tourists in 2018), in Timiş the arrivals in the agro-tourism resorts increased from 103 tourists in 2001 to 14642 tourists in 2018.

Comparing the arrivals of the two counties with those of the West Region, it can be highlighted that, for Caraş-Severin, due to aquite high number of arrivals, it is as in the case of the accommodation capacity in operation, on the whole, in the upper range of values corresponding to the entire West Development Region (Figure 7) through the hatched area. The situation is different for Timiş County when, between 2005 and 2009 the number of arrivals in agro-tourism resorts is very low compared to that of the West Development Region, so that, after an increase from 2010-2012 it started to decrease, so that in 2018 to be placed below half of the hatched area.

Figure 7. The evolutions of the number of arrivals in the agro-tourism facilities from Caraş-Severin and Timiş counties



Source: authors based on TEMPO (2020)

In both counties (Caraş-Severin and Timiş) the percentage of arrivals, compared to the other component counties of the West Development Region, ranged between 43.66% in 2005 and 79.91% in 2003.

From the point of view of the annual rates, for Caraş-Severin county there are three years in which there are decreases: in 2002 compared to 2001 by 22.18%, in 2004 compared to 2003, when the most significant decrease is registered, by 33.26%, and in 2013 compared to 2012 by only 0.74%. In terms of annual growth rates, they vary between 2.04% in 2014 compared to 2013 and 89.25% in 2003 compared to 2002.

In Timiş County, the agro-tourism resorts faced small problems during the analysis period, a fact highlighted by several negative values of the annual evolution rates. There are reductions in the number of tourist arrivals in 2004 (-13.51% compared to 2003), 2008 when there is the largest reduction (-19.59% compared to 2007), 2013 (-11.97% compared to 2012), 2014 (- 13.51% compared to 2013) and 2018 (-8.49% compared to 2017).

Table 4. The characteristics of the evolution models of arrivals in agro-tourism boarding houses in Caraş-Severin and Timiş counties in the period 2000-2018

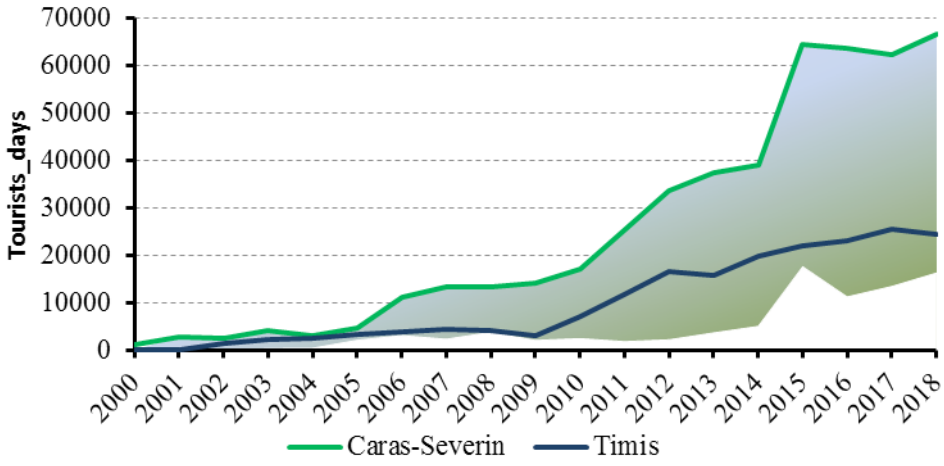
Model	R	R^2	F	Sig.F	Coefficients		t	Sig.t	Lower	Upper
CS_ARV	.934	.873	116.7	.000	a	-5888	-3.6	.002	-9330	-2446
					b	1546	10.8	.000	1244	1848
TM_ARV	.961	.921	199.2	.000	a	-3928	-3.7	.002	-6143	-1715
					b	984	11.1	.000	796	1174

Source: developed by authors using SPSS

However, the evolution trend of arrivals in agro-tourism resorts, in the period 2000-2018 is increasing, as in the case of accommodation capacity in operation, both for Caraş-Severin county and for Timiş, a fact highlighted by linear models CS_ACF and TM_ARV (Table 4). Both models are statistically significant (Sig.F is lower than the significance level of 5%) and provide a good approximation of the evolution of arrivals, an observation based on the values of the coefficients of determination (R2) of 87.3% for Caraş-Severin and 92.10% for Timiş County. As a result, according to the econometric models CS_ACF and TM_ARV, in the period 2000-2018, the arrivals of tourists in the agro-tourism resorts from Caraş-Severin county increased on average by approximately 1546 tourists/year, and in those from Timiş county by approximately 984 tourists/year.

The number of overnight stays in agro-tourism boarding houses also has ascending evolutions both for Caraş-Severin county and for Timiş county. Thus, their number increased from 1207 overnight stays in 2000 to 66608 overnight stays in 2018, in Caraş-Severin county, and from 1030 overnight stays in 2000 to 24552 overnight stays in 2018 in the county. Compared to the other counties of the West Development Region, the number of overnight stays in agro-tourism resorts in Caraş-Severin is in the upper part of the range of values corresponding to the entire West Development Region (Figure 7), while Timiş county is about half it.

Figure 8. Evolutions of the number of overnight stays in agro-tourism facilities from Caraş-Severin and Timiş counties



Source: authors based on TEMPO (2020)

Regarding the percentage of the cumulative number of overnight stays of the two counties, compared to the other component counties of the West Development Region, it ranged between a minimum of 61.20% in 2005 (61.20%) and a maximum of 83.17% in 2003.

From the point of view of the values of the annual rhythms of evolution of the number of overnight stays, in the analyzed period, in both counties, four negative values are highlighted: In Caraş-Severin County, negative values of the evolution rate of overnight stays in agro-tourism resorts were registered in 2002 (-7.46% compared to 2001), 2004 when the largest reduction was registered (-29.16% compared to 2003) , 2016 (-1.21% compared to 2015) and 2017 (-1.99% compared to 2016). In the case of Timiş county, the negative values were registered in 2008 (-5.13% compared to 2007), 2009 when the biggest reduction is registered (-26.41% compared to 2008), 2013 (-3.68% compared to 2012) and 2018 (-3.64% compared to 2017).

Table 5. The characteristics of the evolution models of overnight stays in agro-tourism boarding houses in Caraş-Severin and Timiş counties in the period 2000-2018

Model	R	R Square	F	Sig.F	Coefficients		t	Sig.t	Lower	Upper
CS_OHS	.941	.885	131.2	.000	a	-14373	-3.6	.002	-22704	-6043
					b	33966	11.5	.000	3235	4697
TM_OHS	.950	.903	149.4	.000	a	-6463	-4.1	.001	-9775	-3152
					b	1630	12.2	.000	1347	1913

Source: developed by authors using SPSS

In the period 2000-2018, the evolution trend of overnight stays in agro-tourism resorts in the two counties includes ascending trends described by the econometric models CS_OHS for Caraş-Severin county and TM_OHS for Timiş county (Table 5). Taking into account the values of the parameters F, Sig.F it results that each of both models is statistically significant. Also, taking into account the values of the determination coefficients (R2 of 0.885 in Caraş-Severin and 0.903 in Timiş) it results that this provides a good evaluation of the studied process, so that, with 95% confidence level, it can be estimated that during analyzed, the number of overnight stays in agro-tourism resorts in Caraş-Severin county increased by 33966 overnight stays per year, and respectively by 1630 overnight stays per year in Timiş county.

Correlations and non-correlations

The analysis also aimed to identify possible correlations between the evolution of accommodation capacity in operation, indicators of tourist traffic in agro-tourism resorts in Caraş-Severin and Timiş counties, and the evolution of the number of residents in rural areas, by the three age groups taken into account during the performed analysis.

For Caraş-Severin County, the bilateral correlation coefficients (Table 6) show that there are significant correlations both in terms of accommodation capacity and the intensity of tourist traffic in agro-tourism resorts and the population in the age groups 25-39 and 40 -54 years. In the case of the population in the 55-64 age group, the correlations are insignificant conclusion underlined on the one hand by the very low values of the correlation coefficients, and on the other hand, by the fact that the values of the Sig. (2-tailed) indicator are higher than the significance threshold used ($\alpha = 0.05$).

Table 6. The values of the bilateral correlation coefficients between the agro-tourism evaluation indicators and the number of rural residents in Caraş-Severin County

Correlate Variables		CS_PVA	CS_PVB	CS_PVC
CS_ACF	Pearson Correlation	-0.923**	0.956**	-0.022
	Sig. (2-tailed)	0.000	0.000	0.928
CS_ARV	Pearson Correlation	-0.977**	0.922**	-0.315
	Sig. (2-tailed)	0.000	0.000	0.188
CS_OHS	Pearson Correlation	-0.978**	0.951**	-0.314
	Sig. (2-tailed)	0.000	0.000	0.190

**. Correlation is significant at the 0.01 level (2-tailed).

Source: developed by authors using SPSS

The analysis of the values of the bilateral correlation coefficients highlights an aspect that requires a wider investigation. It's about that the correlations between the tourist traffic indicators and the population in the age group 25-39 years are negative (inverse correlation), while for the age group 40-54 years they are positive (direct correlation).

In order to elucidate this aspect, the partial correlation coefficients were determined between the accommodation capacity in operation, the tourist traffic indicators and the number of residences in the age group 40-54 years, given the constancy number of residents in the age groups 25-39 and 55-64 years (Table 7), as well as the correlation between the same indicators and the residents in the age group 24-49 years, in the conditions of the constancy of the number of residents from the other age groups.

Table 7. The values of the partial correlation coefficients between the agro-tourism evaluation indicators and the amount of the rural resident population from the age groups 25-39 years and 40-54 years from Caraş-Severin county

Control Variables		CS_PVA & CS_PVC	CS_PVB & CS_PVC
Correlate Variables		CS_PVB	CS_PVA
CS_ACF	Correlation	0.692	-0.659
	Sig. (2-tailed)	0.002	0.004
CS_ARV	Correlation	-0.216	-0.834
	Sig. (2-tailed)	0.404	0.000
CS_OHS	Correlation	0.270	-0.731
	Sig. (2-tailed)	.294	0.001

Source: developed by authors using SPSS

In the case of residents aged 40-56, the results show, on the one hand, the existence of a direct correlation between the evolution of their number and the accommodation capacity in operation, and on the other hand the non-existence of a significant correlation between tourist traffic indicators in agro-tourism resorts (arrivals and overnight stays)

in Caraş-Severin county and the number of rural residents in this age group. This result may lead to the conclusion that the development of agro-tourism facilities can contribute to increasing the stability of rural residents in the age group 40-56 years.

Regarding the age group 25-39 years, although there is a reduction in the intensity of the correlation between the analyzed indicators, the fact that the signs of correlation coefficients remain negative, indicating an inverse correlation, raises questions about the veracity of the link between those variables. It is possible that the downward trend in the number of rural residents in Caraş-Severin County is primarily the result of reduced birth rates and emigration than other factors.

In the case of Timiş county (Table 8), a first difference compared to Caraş-Severin county is that all bilateral correlation coefficients are statistically significant, indicating only direct correlations, but of different intensities, the lowest being recorded for the group of age 25-49 years, and the oldest for the age group 40-54 **years.**

Table 8. The values of the bilateral correlation coefficients between the agro-tourism evaluation indicators and the number of rural residents in Timiş County

Correlate Variables		TM_PVA	TM_PVB	TM_PVC
TM_ACF	Pearson Correlation	.614**	.915**	.848**
	Sig. (2-tailed)	.005	.000	.000
TM_ARV	Pearson Correlation	.716**	.961**	.892**
	Sig. (2-tailed)	.001	.000	.000
TM_OHS	Pearson Correlation	.687**	.977**	.880**
	Sig. (2-tailed)	.002	.000	.000

**. Correlation is significant at the 0.01 level (2-tailed).

Source: developed by authors using SPSS

In order to eliminate the reciprocal influences between the age groups considered and the three indicators for evaluating agro-tourism in Timiş County, the partial correlation coefficients corresponding to each age group were determined given the constancy of the number of residents in the other age groups (Table 9). The obtained results lead to the conclusion that there are no correlations between the indicators analyzed in the case of residents in the age groups 25-39 years and 55-64 years.

Table 9. The values of the partial correlation coefficients between the agro-tourism evaluation indicators and the population of the resident population by age groups from Timiş county

Control Variables		TM_PVB & TM_PVC	TM_PVA & TM_ PVC	TM_PVA & TM_ PVB
Correlate Variables		PM_PVA	TM_PVB	TM_PVC
TM_ACF	Correlation	-0.247	0.443	0.308
	Sig. (2-tailed)	0.357	0.085	0.245
CS_ARV	Correlation	0.154	0.759	-0.097
	Sig. (2-tailed)	0.568	0.001	0.721
CS_OHS	Correlation	0.223	0.885	-0.322
	Sig. (2-tailed)	0.406	0.000	0.223

Regarding the residents in the age group 40-54 years, it can be admitted the existence of a correlation of average intensity between their number and the accommodation capacity of the agro-tourism facilities in Timiş county for a 90% confidence level (α = 0.10) and have relatively strong intensities in the case of arrivals (75.9%) and overnight stays (88.5%) for 95% confidence level (α = 0.10).

These results could indicate that, in Timiş County, the agro-tourism is a factor of stability of the rural population, at least for the middle-aged population. With positive effects on the sustainable development of rural communities.

Conclusions

Sustainable economic development of rural communities cannot be done without paying attention both to the development of individual farms and to supporting the capitalization of their results. A good way to act in this way is the development of rural tourism and especially agro-tourism as much as it is a form of tourism increasingly in the options of potential tourists, nowadays.

In this context, the specificity and diversity of the natural and anthropic tourist potential in the Romanian Banat can become a tourist destination of first interest. Analysis performed on the evolutions of vegetable production and livestock in individual farms, as a basis for agro-tourism development, in the main counties of Banat (Caraş-Severin and Timiş), parallel to the evolution in the last 20 years of rural tourism in this region lead to the conclusion that in this region rural communities can become a tourist attraction of prime interest.

From the point of view of livestock, in the last two decades, it continues to play an important role in terms of the percentage in the total number of West Development Region amount, both in Caraş-Severin County and in Timiş County, even if the relations between the two counties fluctuated from year to year. As common aspects, during the analysis period, at the level of these counties, there were increases in the number of

sheep and the number of bee families, and reductions in the number of cattle, horses and poultry. A differentiation was highlighted in the number of pigs that increased in Caraş-Severin county and registered a reduction in Timiş county.

From the point of view of vegetable production, there was a decreasing trend for Caraş-Severin and an increase for Timiş, in the period 2000-2018, while, compared to their total production in the West Region, the percentage of vegetable production is recorded for both counties a relative decrease.

The development of rural communities, and in particular of individual agricultural holdings, is closely linked to the evolution of the age structure of the population residing in rural areas as well as to the evolution of its average age. The analysis showed a tendency to reduce the number of residents aged between 25 and 39 years both in Caraş-Severin County and in Timiş, while for the age group 40-54 years there was an increase. Of course, these developments are mainly due to significant changes in the birth rate in recent decades. However, it must also be taken into account that part of the young rural population migrates to urban communities, further reducing the workforce in rural communities.

In parallel, the analysis of the evolution of rural tourism showed that the accommodation infrastructure, assessed by the accommodation capacity in operation, as well as the intensity of tourist traffic at the level of agro-tourism resorts, assessed by the number of arrivals and overnight stays in agro-tourism facilities, shows an upward trend, with a fairly sustained pace throughout the analysis period for both counties.

It should be noted that, for Caraş-Severin County, all three indicators analyzed are in the upper part of the value range corresponding to the entire West Development Region, while for Timiş County, the values of the indicators are lower, being placed in the middle of the value range corresponding to rural tourism in the entire West Development Region.

Starting from the results obtained regarding the evolution of rural tourism, there was analyzed the possibility of correlation between it and the number of rural residents from the three age groups included in the research. Given that the analysis of the two-way correlations between the indicators under analysis may lead to erroneous conclusions due to the multitude of influencing factors, there was used the partial correlation. The obtained results highlighted the fact that in Caraş-Severin there are no correlations between the analyzed indicators which means that, at least, until now, the development of rural tourism in this county has not led to a visible increase of jobs or to a stabilization of active population in rural areas. A different situation was highlighted in Timiş County, where a partial correlation was identified between the evolution of rural tourism and the resident population in the age group 40-54 years old.

The aspects highlighted in the paper about the evolutions and interdependencies manifested at the level of Caraş-Severin and Timiş counties in the period 2000-2018 considering the agricultural production of vegetables and livestock from individual

farms, the population living in rural areas, the capacity and the intensity of tourist traffic in agritourism guesthouses, is on the one hand, the starting point for future research in this field, and, on the other hand, useful information in developing strategies for sustainable development of, both, rural communities at the level of Caraş-Severin and Timiş counties, as well as of the West Development Region.

Conflict of interests

The authors declare no conflict of interest.

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