

ANALYSIS OF THE SPATIAL TRENDS OF ROMANIAN TOURISM BETWEEN 2000-2012

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ABSTRACT:

Tourism is considered as one of the most important economic sectors, providing opportunities both for economy and development as it accounts for 5% of the GDPs in countries worldwide. This fact emphasizes the significance of the sector in Romania, as well, although tourism makes up only 1.9% of the Romanian GDP. The importance of tourism in regional development is also vital, which can be analysed by different statistical methods. During the research, our objectives were to examine the correlation between the economic development indicators and tourism; their spatial relationship, and, in close relation with these, we have also studied the characteristics of the spatial trends of tourism. To answer these questions, the method of weighted centroids statistical methods was used and it was supported by GIS tools. The results revealed that despite the increasing number of tourist arrivals, one of the biggest problems of Romanian tourism was the decreasing number of guest nights during the investigated period between 2000 and 2012. In our opinion, this phenomenon seriously threatens the sustainability of capacities, which can be a key issue of future tourism development policies. The results of our statistical research suggested a moderate correlation between tourism indicators and the examined development indicators. Nevertheless, it is clear that tourism indicators are definitely separated from most development indicators.

Key-words: Tourism trend, Statistical analysis, Romanian, Temporal and spatial distribution.

1. INTRODUCTION

The World Tourism Organisation (WTO) states that tourism represents the world's largest industry, generating billions of dollars' income and millions of jobs every year (www.unwto.org). In Romania, the development of tourism is considered as a priority economic option with regards to the existing outstanding potential of tourism.

The strategic economic importance of tourism lies in its contribution (direct and indirect) to the Gross Domestic Product (GDP). Tourism makes up 2.1% of the Romanian GDP, a rate that clearly indicates the importance of tourism industry in the Romanian economy (Surugiu, Freni & Surugiu, 2009; Zaman et al., 2010, Moraru, 2012). Nevertheless, Romanian tourism itself is not very successful in comparison with its direct competitors (Stănculescu & Micu, 2009). The contribution of tourism to the Gross Domestic Product in Romania is much less than the input of tourism to the GDP of Austria (4.3%) or Hungary (4.6%) (Moraru, 2012). In 2013, the country was ranked 32nd on the list of international tourist arrivals.

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In Europe, Romania is one of the countries where the number of arrivals has been increasing constantly in the past years (Costea, 2009). The only exception is the years of the economic crisis (2007-2009), but the same tendency appeared during these years throughout the whole continent and worldwide. Bujdosó et al. (2015) analysed the importance of tourism to Romania and they stated that the sector played an important role in the economy of the country. The vast majority of international tourists in Romania are from the EU and other European countries, while the number of visitors from non-European countries is significantly lower (Bucurescu, 2012).

Nevertheless, statistics also suggest that tourists with higher spending willingness tend to choose other destinations than Romania: it is also indicated by the country's 32nd place on the list of arrivals, but being only at 51th place when it comes to spending. When listing the countries of origin for tourists arriving in Romania, Hungary is number one (23.14%), followed by the Republic of Moldova (16.22%), Bulgaria (10.48%) and Ukraine (8,96%) (www.insse.ro) This clearly indicates that the country mainly has visitors from the neighbouring countries. Tourist arrivals in Romania differ significantly by region (Fig. 1).

The most popular destinations are the Black Sea coastline, the Danube Delta, Bucharest and Brasov county. These regions have the strongest economic dynamics, and the number of visitors has increased significantly over time in these areas (Ilies et al, 2010). At 'seaside' and 'mountain' destinations, the rate of visitors has also increased, but at a slower rate, while at 'spa' destinations, a slight regression has taken place (Bucurescu, 2012). These trends call for the examination of several problems, some of which our study focuses on. We have examined the correlation between some economic development indicators and tourism; their spatial relationship and in close relation with these, we have also studied the spatial trends of tourism in Romania.

We have reviewed the spatial changes in bed place capacities, i.e. which regions have increased their importance as a tourist destination since 2001, and how much they have strengthened their positions. We have also examined the possible reasons behind the drastic decrease of guest nights that occurred at the same time when the number of arrivals increased. With the help of statistical methods, we wanted to determine whether tourism indicators really typify the level of development; and if tourism indicators are to be considered as development indicators. Besides regional characteristics, we have also focused on the examination of temporal attributes and their spatial projection.

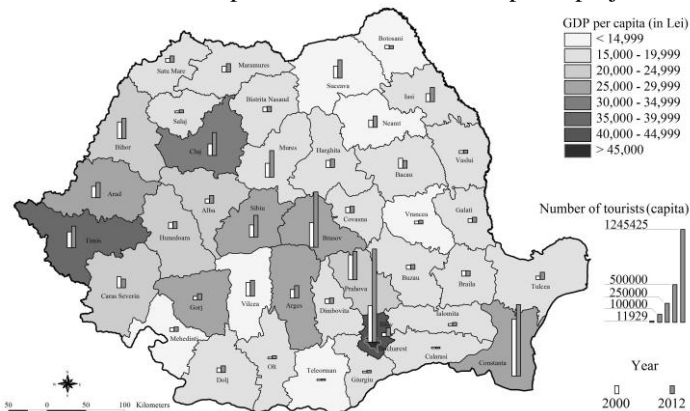


Fig. 1 Regional distribution of GDP and number of tourist in Romania
Source: own edition

2. REVIEW OF THE SCIENTIFIC LITERATURE

Tourism and regional development exist in close connection. Tourism policy is becoming an instrument for territorial development, and serves as a tool for economic development and job creation (Çağlayan, Şak & Karymshakov, 2010, Zaman et al., 2010). At the same time, tourism has become a major factor in regional economic development. Tourism, measured at regional level, is an activity that is complex and many-faceted like regions themselves (Bujdosó et al, 2011). Under certain circumstances, the regional development of tourism can trigger general economic growth, by creating new dynamisms (Balaguer & Cantavella-Jorda, 2002; Chang, Khamkaev & McAleer, 2010). It can also contribute to the better planning of land use, by countering rapid urbanisation in developed countries and by attracting residents to new regions where tourism is developing (Dritsakis, 2004).

Tourism obviously exists in close relationship with regional development. The links between them are very complex including; the regionalisation type of the given country; the typologies of the different regions (outlying and remote, intermediate or economically integrated); and their economic development level and tourism potential. The central government's willingness to play an active role in tourism development is also an important factor in regional tourism development (Lee & Chang, 2008).

The tourism industry has various effects on economic growth. Among other factors, tourism is a significant resource of foreign exchange income for many countries (McKinnon, 1964; Michalkó, 2012). The income generated by tourism boosts the whole of the host economy and also stimulates investment, therefore contributing to the financial growth of other sectors as well. To accelerate further economic growth, in some countries tourists are required to bring foreign currency with them – a minimum daily rate is calculated for the whole length of their stay.

In the light of these statements and findings the increasing importance of spatial analysis to the understanding of tourism is understandable. This research methodology provides a broad spectrum of tools (e.g. Dávid & Tóth, 2012; Moraru, 2012) including GIS (Geographical Information System) based application as well (e.g. Gîrbu, 2006; Magyar-Sáska & Dombay, 2008; Magyar-Sáska, 2014).

3. RESEARCH METHODOLOGY

A variety of quantitative analyses have been taken place on the field of tourism related researches. The bulk of these methods are closely related to the issue of regional competitiveness. A wide range of international literature on regional competitiveness is available, mainly due to the works of Michael Porter (see, among others Porter, 1996; 1998, 1999). Tourism competitiveness related publications have also been released in recent years (Schroeder, 1996; Jain, Murty & Flynn, 1999; Enright & Newton, 2004), however in this present paper the focus was, somewhat differently, on a specific GIS based methodology without covering deep mathematical-statistical analyses.

The method of weighted centroids played a major role in our research; that is why it is introduced in a more detailed way. The method of weighted centroids (called 'gravity centres in some studies) is suitable to represent the geographical location and spatial features of indicators that have a territorial dimension. The method itself can be regarded as a classic calculation technique among spatial analysis tools. The method is based on the theoretical adaptation of methods most commonly used in physics, to social sciences.

(Steward & Warntz, 1958; Tóth, Kincses & Nagy 2014; Fábíán, 2014). The Two-dimensional geo-coded points correlate with latitude/longitude coordinates. The points (geographical locations) of this theoretic social-economic surface are associated with social-economic weights. Related studies typically use population as weight (inter alia Bene & Tekse, 1966; Bracken & Martin, 1989; Thapar, Wong & Lee, 1999; Illés, 2004; Bántó, 2012). The method is also applied in comparative studies that focus on different indicators (inter alia Nemes Nagy, 2002). In given specific cases, the method can be used for practical applications – for example, in the field of health services (e.g. Jones at al, 2010) or for the analysis of criminal activities (Damle, West & Benzel, 2010). In recent years, due to the rapid development of GIS tools, there are several techniques available for rapid calculations, even in case of large databases; however, it has also opened the door for methodological debates at the same time (e.g. see Deakin, Bird & Grenfell, 2002; Rocchini & Cateni, 2006 on the assignation of centroids by different methods).

The planar system consists of n elements. The coordinates of their weighted centroid can be calculated by the weighted arithmetical means of the coordinates of the points. The calculation of the weighted centroid (x ; y) requires the coordinates of the basic points (x_i and y_i) and their weights (f_i).

$$x = \frac{\sum_{i=1}^n f_i x_i}{\sum_{i=1}^n f_i}; \quad y = \frac{\sum_{i=1}^n f_i y_i}{\sum_{i=1}^n f_i} \quad (1)$$

Centroids are useful in describing the general dynamic trends of territorial changes in case of specific indicators. They are also practical in illustrating the static situation of different indicators, by comparing the positions of their centroids to each other. Some related studies apply these aspects simultaneously (Nemes Nagy, 2002).

It is important to emphasize that the method also has limitations: it cannot address territorially homogenous growth nor a decrease in the indicators, and in some cases, it cannot express the qualitative modification of a given system (e.g. population exchange cannot be investigated solely by indicators that only describe the changes in the number of population).

In our research, the below listed indicators provided the variables as ‘weights’ (except for those relative ones that do not express real weights – e.g. life expectancy at birth). The basic points were identified by the county centres of every Romanian Nuts-3 county and Bucharest. Geographical coordinates for these cities were generated with the help of Quantum GIS 1.8.0 Lisboa, an open source GIS software (however the capacity exists in most GIS software including ArcGIS). The calculations were carried out by the same software. The aggregated county level data were added to the points of county seats as part of the calculations. This technique is a typical scientific practice when the applied data cannot be disaggregated or added to smaller locations.

4. INVESTIGATED INDICATORS

In order to detect the complex territorial development level in the Romanian counties (41 Nuts-3 units and Bucharest), a database was created from the data provided by the Romanian National Institute of Statistics (<http://www.insse.ro>). These indicators - often used in international and national comparative studies - reflect different segments of

development. Obviously, there are many multidimensional relations among them, however, we tried to avoid indicators that are either calculable from each other or have direct connections with each other. The available database was limited, and the indicators that we used were filtered by focusing on the input database with specific indicators of a theoretical factor analysis (and cluster analysis as well) - but these methods are not part of the current investigation:

- 1; GDP per capita, Lei (real value for 2010)⁵;
- 2; number of enterprises per 1000 inhabitants;
- 3; average monthly income per capita, Lei (real value for 2010);
- 4; employment rate, %;
- 5; unemployment rate, %;
- 6; rate of urban population, %;
- 7; migration (within country) balance per 1000 inhabitants;
- 8; life expectancy at birth, in years;
- 9; rate of population without completed primary school, %;
- 10; rate of population with completed secondary education, %;
- 11; rate of population with a university degree, %;
- 12; rate of population with access to sewage system, %;
- 13; finished dwellings during 2010 per 1000 inhabitants;
- 14; number of personal cars per 1000 inhabitants.
- 15; number of staying overnights per 1000 inhabitants;
- 16; number of tourist accommodations per 1000 inhabitants;
- 17; number of tourists arrived per 1000 inhabitants.

In the case of tourism indicators, new ones were available. These were built into the weighted centroid calculation. The other analyses worked with a homogenous database, so in these cases, the indicators were collected for one static year – 2010.

According to the requirements of the calculation every indicator must be converted into real weights as basic indicators with positive signs. As the result of this, two indicators were filtered out - life expectancy at birth and migration balance.

5. RESULTS AND DISCUSSION

5.1 Results of the analysis of weighted centroids

The selected indicators were all involved in the investigation (except for the aforementioned life expectancy and migration). The results of the comparative static analysis are illustrated by **Fig. 2**.

The visual interpretation of the results leads to interesting and important conclusions. The relative positions of the weighted centroids express the spatial characteristics of each indicator. It is clearly shown that almost all of the indicators took place in the southern part of Brasov county, and were located east or south-east from the geometric centre of the reference points (in this case, it meant the non-weighted average of the cities' coordinates). Those indicators that reflect development and dynamism are strongly affected by the outstanding weight of Bucharest and Ilfov, as these centroids are closer to them, in terms of geographic proximity. Regarding the indicators of 'underdevelopment' (for example, the

⁵ 1 Euro = 4.2877 RON in 30. dec. 2010, Source: <http://www.cursbnr.ro/arhiva-curs-bnr-2010-12-30>

number of people without completed primary school or the level of unemployment near the north-east counties), there is only one exception: the number of finished dwellings during 2010 (although, the static view of this indicator is not suitable to lead to considerable conclusions). Tourism-related indicators clearly suggest the outstanding significance of the capital and Constanta county; therefore, these indicators were investigated with special attention in this study.

The analysis of tourist arrivals was carried out separately for Romanian and international tourists. The different territorial pattern of the two groups justified this segmentation.

The concentration of international tourists is clearly visible in the case of Bucharest: 40.9% of them arrived here in 2012, while Romanian tourists preferred Constanta and Brasov counties (14.9% and 10.4% of domestic tourist arrivals respectively) over the capital (9.4%). (Ilieş, et al, 2010)

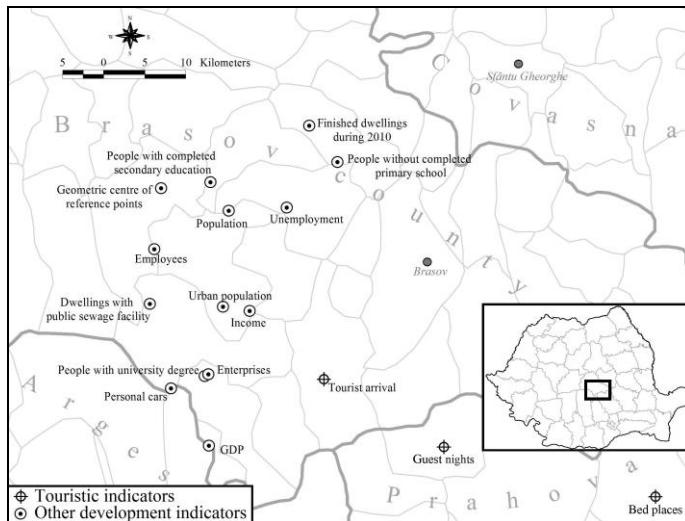


Fig. 2 The weighted centroids of the investigated tourism and development indicators

Source: calculated and edited by the database from Romanian National Institute of Statistics

According to the official statistics, domestic tourism made up almost 80% of the total number of tourist arrivals after the millennium (however, it is important to note that tourism is the industry that generally provides the least reliable indicators, due to the high rate of semi-legal or illegal activities). Between 2000 and 2012, the centroids of domestic tourists stayed within the borders of Brasov county. (Fig. 3) Their shifts were more or less random, and did not particularly change the character of the spatial pattern.

By contrast, the centroids of international tourists showed a tendentious drift towards the east: from Arges county to the territory of Brasov county, until the early 2000s. (Fig. 3) After that, the shift clearly changed direction towards south, and in recent years, the centroids are located in the area of Dambovit county. The dominance of Bucharest (shown by the ratio within international tourist arrivals) has not changed, and the total number of international tourist arrivals in Romania has almost doubled. This is the most important reason behind the movement of the centroid.

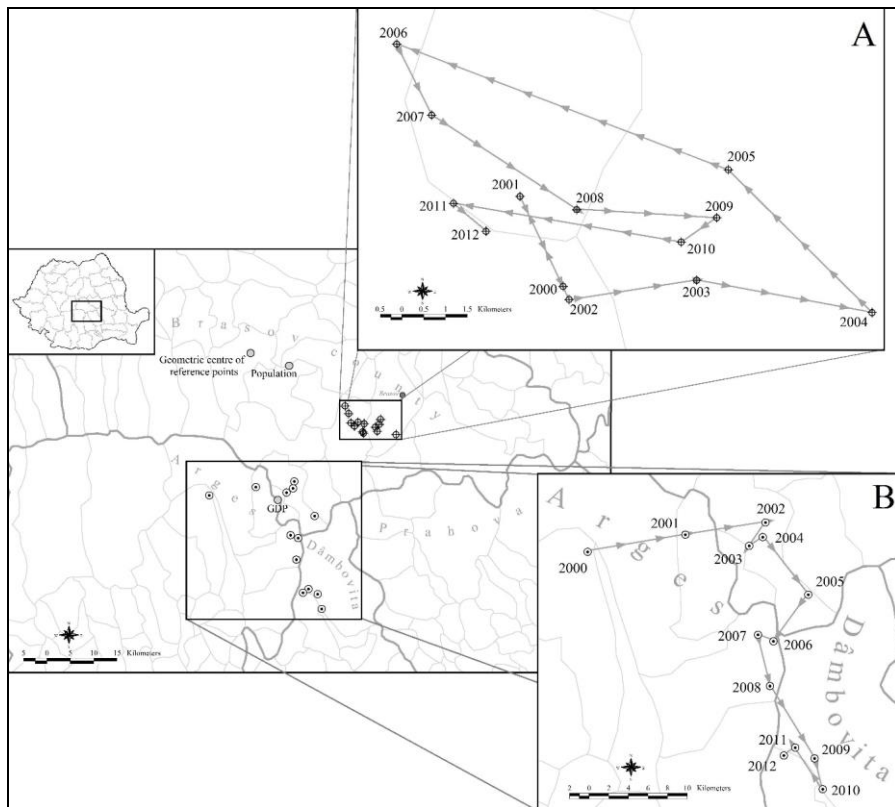


Fig. 3 The weighted centroids of the number of domestic (A) and international (B) tourists between 2000 and 2012

Source: calculated and edited by the database from Romanian National Institute of Statistics

The duration of stays (a.k.a guest nights) is one of the basic tourism indicators. Most tourism development activities aim to increase the length of visitors' stay. The centroid calculation revealed interesting spatial trends in comparison with tourist arrivals. (**Fig. 4**) The weighted centroids of domestic guest nights used to be in the area of Prahova county, but a tendentious drift had taken place towards west, which seems to have stopped in recent years. This trend was caused by the reduction of guest nights spent by Romanian tourists: between 2000 and 2012, the average duration of their stay fell from 3.8 nights to 2.6 nights, with the highest rate of decrease in Constanta (from 6.3 to 4.0).

The weighted centroids of international guest nights are located south from the former indicator. The centroids moved rapidly eastward until the mid-2000s, but after that, the trend began to slow down. This tendency was caused by the decline in the average number of guest nights in Constanta (the number of guest nights had fallen from a high of 7.3 to 3.6 by 2012. This rate of decrease was much higher than the national average). In Bucharest and in the eastern counties, a slight decrease took place, while the western counties experienced a moderate increase (except for Bihor county, which faced a massive decline in the number of guest nights). (**Fig. 4**)

The number of accommodation facilities also reflected the changes illustrated above, clearly indicating the concentration of capacities along the coastline in Constanta county, in Brasov county and in Bucharest. The eastern location of the centroids in Buzau county also confirmed the same trend, and because of the changes, the centroids moved into Prahova county. The relative rearrangement of territorial features was in close connection with the significant growth of bed capacities in Bucharest and especially in Ilfov (with more than a fourfold increase). In recent years, the total tourist bed capacity grew in Dolj, Brasov, Timis and Alba counties, but in Constanta county, the numbers fell drastically. This trend can be explained by the economic crisis, but there is another significant factor behind the changes: after Romania's accession to the EU in 2007, the seaside offers of the neighbouring countries (Bulgaria, Greece, Turkey, Croatia) created a new situation on the tourism market, offering better prices or higher quality services for the same price. At the same time, domestic tourism indicators also decreased, and as a result, by 2010-2011, the number of accommodation facilities had decreased in Constanta.

6. CONCLUSIONS

Our research explored the temporal and spatial distribution of the changes in Romania's tourism since the millennium. We examined a possible connection between tourism and economic development and the strength of this relationship. In order to obtain the most reliable results, we used an analysis of weighted centroids and statistical methodologies.

The results revealed that despite the increasing number of tourist arrivals, one of the biggest problems of Romanian tourism is the decreasing number of guest nights as average stays shortened. In our opinion, this phenomenon seriously threatens the sustainability of lodging capacity, which can be a key issue of future tourism development policies.

In the past decade, the spatial restructuring of tourism capacity was remarkable in Romania, especially in recent years. The most prominent example was the decline of Constanta, and the revaluation of Bucharest, Ilfov and a few south-western counties. The main reasons behind this phenomenon were Romania's accession to the EU in 2007 and the economic crisis that started in 2008.

The results of our statistical research suggested a moderate correlation between tourism indicators and the examined development indicators. Nevertheless, it is clear that tourism indicators are definitely separated from most development indicators. Our investigations also demonstrated that tourism indicators cannot be categorically classified as development indicators, partly because of their spatial concentration.

The analysis of weighted centroids pointed out the spatial characteristics and temporal changes in the tourism of Romania. The difference between the spatial structure of domestic and international tourists is clearly visible, just like the rapid change and redistribution (with the dominance of Bucharest) in the numbers of international tourism. The most significant spatial transition was caused by the devaluation of tourism on the Black sea coastline.

Our results may provide a basis for further and more detailed analyses in the field of tourism and regional development, and also can help policy makers to locate the axes of development.

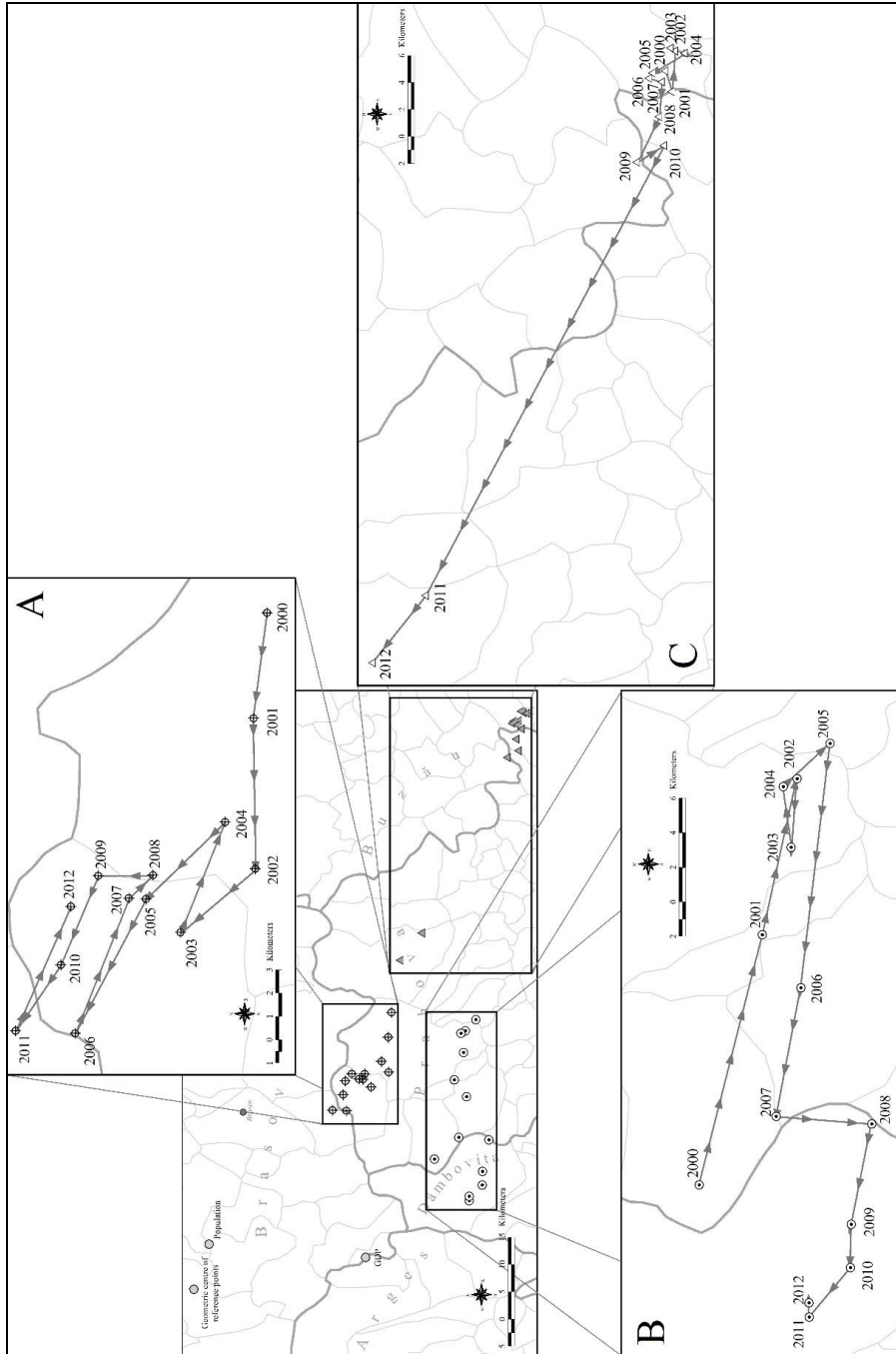


Fig. 4 The weighted centroids of guest nights in case of domestic (A) and international tourists (B) and red places(C)
 Source: calculated and edited by the database from Romanian National Institute of Statistics

ACKNOWLEDGEMENT

This research was supported by the European Union and the State of Hungary, co-financed by the European Social Fund in the framework of TÁMOP-4.2.4.A/ 2-11/1-2012-0001 'National Excellence Program'.

This paper was supported by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences.

The paper was compiled within the frameworks of the TÁMOP Programme (Social Renewal Operative Programme) Research, Innovation, Cooperation - Strengthening the cooperation of social innovation and research networks by the collaboration of Eszterházy Károly University -Applied Sciences, Bay Zoltán Applied Research Non-profit Ltd. and Agria TISZK Non-profit Ltd, project identification number: TÁMOP-4.2.1.D-15/1/KONV-2015-0013. The project is co-funded by the European Union and the European Social Fund.

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