

## TRENDS AND PATTERNS OF TOURISM DEVELOPMENT AT THE LOCAL AND COUNTY LEVELS IN THE WEST DEVELOPMENT REGION OF ROMANIA

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### RESEARCH ARTICLE

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#### Abstract

*This paper consists of a comprehensive analysis of tourism development at the local and county levels within the West Development Region of Romania, utilizing panel data comprised of key metrics including tourism arrivals, overnight stays, and total capacity. Employing a spatial autocorrelation analysis approach, the study examines temporal variations and spatial correlations in these variables to uncover patterns and dynamics shaping tourism in the region. The findings contribute some valuable insights into the drivers of tourism growth and the effectiveness of tourism policies at the regional level by showing the counties and localities with the highest average growth and spatial clustering of tourism development. Furthermore, the study provides practical implications for stakeholders and policymakers in fostering sustainable tourism development strategies tailored to the West Development Region*

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#### INTRODUCTION

Tourism plays an important role in the socioeconomic and sustainable development of regions worldwide, serving as a significant contributor to economic growth and employment, while at the same time promoting cultural exchange (Gordan et al., 2023).

In the case of Romania, a country characterized by its diverse natural landscapes, historical heritage, and cultural richness, tourism emerged as a vital sector with considerable potential for fostering regional prosperity (Necheș & Erdeli, 2015; Rățulea et al., 2023).

Within the West Development Region of Romania, encompassing the Arad, Caraș-Severin, Hunedoara, and Timiș counties, the dynamic of tourism development reflects an accumulation of various factors, including geographic features, historical legacies, infrastructural investments, and evolving consumer preferences, as well as economic factors (Florina et al., 2018). Timiș and Arad are identified as the most economically developed counties, with predominantly plain terrain favoring human-centric tourism activities, such as wellness tourism, cultural tourism, rural tourism, and sports tourism. The geographical features of Caras-Severin and Hunedoara are also attractive factors for tourism development, with nature-based tourism in

natural parks being of significant importance. The region's tourism resources can be described as diverse, ranging from natural landscapes to cultural heritage sites. These resources include varied natural features, such as landform types, climatic elements, hydrographic networks, forests, and hunting grounds, making the region highly attractive to tourists (Pascariu et al., 2022). From an economic perspective, small and medium-sized businesses contribute significantly to the economic growth and employment in the tourism industry in this region.

The region boasts a rich cultural heritage, with historical sites, fortresses, castles, and archaeological remains adding to its tourism appeal. Counties like Hunedoara have well-preserved historical sites such as the Corvin Castle and archaeological remains from the Roman and pre-Roman era (Brad et al., 2017; Manescu et al., 2023).

As such, the significance of those factors can be quantified by analyzing the spatial patterns in tourism development present in those counties, which is the main goal of this research paper. On the other hand, a lack of spatial autocorrelation can be a sign that tourism growth is more related to the individual traits of a locality, such as tourism offer attractiveness. In such a case, it is in the interest of local authorities

to develop strategies for promoting tourism specific to their area, and tourism growth in a neighboring locality does not assure success.

## MATERIAL AND METHOD

The primary data sources utilized in this study are publicly available datasets, predominantly extracted from the TEMPO online statistical database. TEMPO serves as a comprehensive repository of statistical information covering various socio-economic indicators at the regional and national levels. The database offers a wide range of data related to tourism necessary for conducting spatial analyses (National Institute of Statistics, 2023; Necula et al., 2019).

TEMPO provides accessible and reliable data, making it an ideal resource for researchers and policymakers to obtain statistical information for different regions and administrative units within Romania. By leveraging this platform, we were able to gather relevant data sets specific to the Western Region, encompassing Arad, Timis, Caras-Severin, and Hunedoara counties.

The method employed in this study involves the calculation of the average year-on-year growth rates for all available localities within the aforementioned counties. These growth rates serve as indicators for highlighting the dynamic changes occurring within each locality over time. Localities with less than 3 data points were removed from the dataset.

After computing the average year-on-year growth rates, these values are standardized to facilitate meaningful comparisons across different localities and counties. Standardization ensures that very large variations in the magnitudes of growth rates do not influence subsequent analyses, allowing for a more accurate evaluation of spatial patterns and correlations. The method employed is robust standardization, centered around the median value in the data set.

The formula used to standardize the data is the following:

$$x' = \frac{x - \text{med}(x)}{\text{IQR}(x)}$$

where,  $x'$  is the standardized value,  $x$  are individual growth rates,  $\text{med}(x)$  is the median of the dataset and  $\text{IQR}(x)$  is the interquartile range (Alfons, 2021).

Subsequently, spatial correlation analysis is conducted using two primary techniques: Global Moran's I and Local Moran's I (Gordan et al., 2024).

Global Moran's I examines the overall spatial autocorrelation present within the dataset, indicating whether similar values tend to cluster together or exhibit spatial dispersion across the study area. The values of this coefficient range from  $-1$  to  $+1$ . A value closer to  $-1$  corresponds to spatial dispersion, whereas a value closer to  $+1$  corresponds to spatial clustering of the data points (Gordan et al., 2024; Sarrión-Gavilán et al., 2015).

The formula for calculating Global Moran's I is:

$$I = \frac{N \sum_{i=1}^N \sum_{j=1}^N w_{ij} (x_i - \bar{x})(x_j - \bar{x})}{W \sum_{i=1}^N (x_i - \bar{x})^2}$$

where:  $N$  is the number of spatial units,  $x$  is the variable for which the spatial clustering is assessed,  $\bar{x}$  is the mean of  $x$ ,  $w_{ij}$  are elements in a matrix of spatial weights and  $W$  is the sum of  $w_{ij}$ .

If the Moran's I coefficient is not significant, it indicates that there is no statistically significant spatial autocorrelation present in the dataset. In other words, the values of the variable being analyzed do not exhibit a spatial pattern of clustering or dispersion that deviates from what would be expected by random chance alone.

Local Moran's I, on the other hand, offers a more local view on spatial patterns by identifying specific clusters of high or low values (i.e., hotspots and coldspots, marked as High-High and Low-Low, respectively) within the region. This technique allows for the identification of localized spatial trends and helps pinpoint areas of interest for further investigation. Furthermore, regions of local dispersion are also highlighted (High-Low and Low-High) (Yang & Wong, 2013).

## RESULTS AND DISCUSSIONS

The descriptive part of the results is shown in Figures 1-3, where the geographical distribution of the regularised year-on-year average variation in arrivals, stays, and accommodation capacity, respectively, are shown. It should be noted that large variations are most identified with locations with relatively small absolute values. This is one of the reasons for utilizing the robust standardization method, as it is not influenced as much by extreme values in the dataset. This step was undertaken as Moran's I formula shown above utilizes average values, which are not as robust to outliers.

Some of the highest values for average percentage change in arrivals were reported in Petriș, Arad; Pișchia, Timiș; Moldova-Nouă, Caraș-Severin; Șandra, Timiș and Ineu, Arad. The

same overall trend is reported for stays too, with the addition of Socol, Caras-Severin.

In the case of tourism capacity, the highest values were reported for Zam, Hunedoara; Totesti, Hunedoara; Ilia, Caras-Severin, Pischia, Timiș and Zimandu Nou, Arad. This shows that there might be a disconnection between the touristic offer and touristic demand.

Following this, we calculated the global Moran's I coefficient for the three variables. We utilized distance band parameters, as the dataset contains discontinuous data points. This allowed us to observe if there are some interactions between localities that are in the same vicinity

and not necessarily direct neighbors. We set the distance band to 30km, to compensate for spatial discontinuity. The results of the Global Moran's I show that overall, the spatial distribution of year-on-year changes in arrivals, stays and touristic capacity are not dissimilar to a random distribution (-0,006, 0,004 and 0,02, respectively, which are close to 0).

However, on the local level, some statistically significant patterns emerged, as shown in figures 4, 5 and 6. For all three variables, the results show that statistically significant clusters occur in the northern part of the studied area.

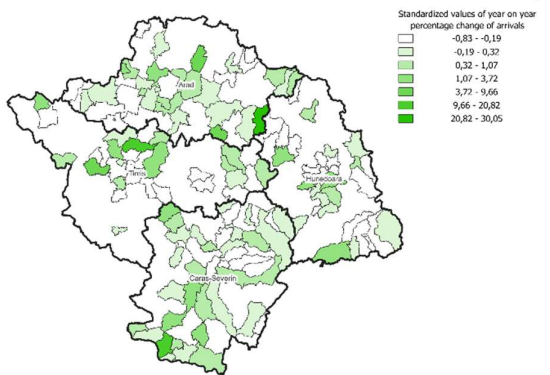


Figure 1 Standardized values of year-on-year percentage change in arrivals for the West Region

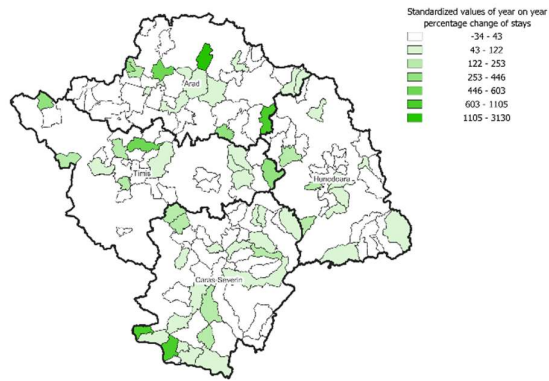


Figure 2 Standardized values of year-on-year percentage change for stays in the West Region

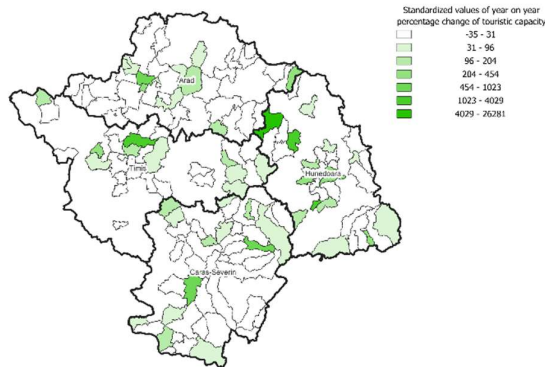


Figure 3 Standardized values of year-on-year percentage change in tourism capacity for the West Region

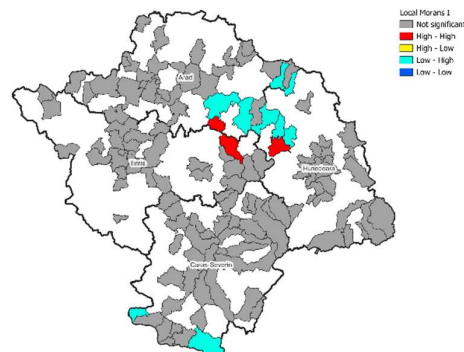


Figure 4 Local Moran's I values for year-on-year percentage change in arrivals for the West Region

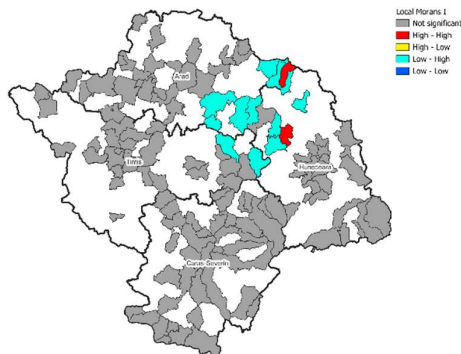


Figure 5 Local Moran's I values for year-on-year percentage change in arrivals for the West Region

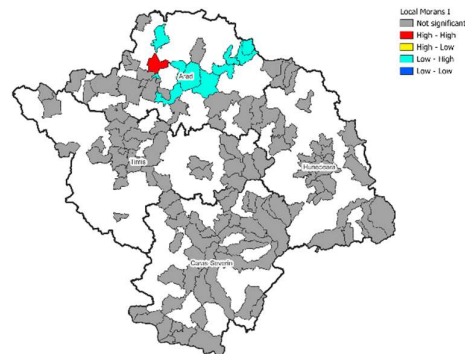


Figure 6 Local Moran's I values for year-on-year percentage change in tourism capacity for the West Region

In the case of arrivals and stays, the clusters are mostly located between the Arad and Hunedoara counties, showing significant spatial spillover effects. Since the clusters there are mostly classified as Low-High, we can conclude that a negative spatial spillover effect is taking place in the aforementioned areas, with high growth in neighboring localities negatively affecting growth in the target localities. Conversely, High-High clusters are areas where high growth in neighbors is associated with high growth in the localities that compose the cluster.

A similar situation occurs with tourism capacity, however, the cluster is located solely within the Arad county. In the case of this cluster, the spatial effect is mostly negative, with low-growth localities neighboring high-growth ones.

### CONCLUSIONS

Tourism stands as a pivotal driver for socioeconomic development globally, underpinning economic growth, employment opportunities, and cultural exchange. Romania, with its diverse natural landscapes, rich historical and cultural heritage, has recognized tourism as a potent sector for regional advancement, as highlighted in the introductory section of the paper.

While global Moran's I indicates no significant spatial clustering at the overall regional level, local Moran's I unveils clusters, particularly in the northern part of the region. These clusters denote spatial spillover effects, illustrating the complex dynamics of tourism growth, where neighboring localities' performances influence each other. In our case, the results show that the results are mostly consistent with negative autocorrelations, where high growths in some localities negatively affect their neighbors.

Ultimately, as a policy implication of our research, we consider that the local authorities should improve the collaborative aspect of tourism development and attempt to foster sustainable development for tourism in those areas, and in turn convert the negative relationships shown into positive ones, where

growth in one locality does not compromise the growth of other areas.

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