

# INTENSITY OF TOURISM IN THE MUNICIPALITIES OF TATRY TOURISM REGION AS A BASIC FACTOR FOR RECREATIONAL URBANISATION

SVORAD ANDREJ<sup>1</sup>, KROGMANN ALFRED<sup>2</sup>, CIVAN MAREK<sup>1</sup>

<sup>1</sup> Department of Ecology and Environmental Sciences

<sup>2</sup> Department of Geography and Regional Development

Constantine the Philosopher University in Nitra

Trieda Andreja Hlinku 1, 949 74 Nitra

SLOVAKIA

andrej.svorad@ukf.sk

*Abstract:* The aim of the paper is to identify particular regions in relation to the intensity of tourism as well as to point out the regions with potential for further development of recreational urbanisation in the Tatra tourism region. Just the mentioned region is the exceptional one, especially due to its natural features, which consequently indirectly affect not only the development of towns, but municipalities in their hinterland, too. This constantly increasing level of recreational urbanization of these municipalities is the impulse for further development of rural area. Taking into account that the impacts of recreational suburbanization start to show in the mentioned rural regions; that are directly linked to relatively developed tourism destinations; it is appropriate to localize and analyze them. We realized a survey using the method of spatial autocorrelation that defines the dependence of incidence of selected phenomenon in the area on its incidence in the hinterland. This spatial autocorrelation was quantified using the Moran's index, while the LISA method was applied for the purposes of data evaluation. Within the catchment area were identified various clusters of positive and negative autocorrelation.

*Key Words:* intensity of tourism, recreational urbanization, spatial autocorrelation, Tatra tourism region.

## INTRODUCTION

Tourism in its contemporary form is a relatively young industry, having a massive boom during the last decades also in Slovakia. Positive as well as negative impacts of tourism are recently visible also in rural territories linked to the developed tourism destinations. Such regions with very favourable conditions for tourism development – especially in terms of proximity to attractive sites – are characterized by gradually increasing process of recreation urbanization, what also brings a retroactive effect on the landscape. In accordance with Andexlinger (2012), a recreational urbanization is characterized by the long-term overlapping of rural structures by urban ones, what resulted under the influence of high intensity of tourism. It means a verbal expression of combination of tourism and urbanization that is appropriate for description of dynamic of changes in attractive tourism regions. Kowalczyk (2000) combines up to a certain point the tourism urbanization with the process of touristification, thus a multidimensional impact of tourism on the environment of destination, set of particular, mutually interconnected and complementary effects of tourism operating in mutual synergy. In the final consequence of these processes, it presents a functional change of areas in municipalities from original to tourism function. A mutual interaction of tourism and environment (natural and cultural) is the matter of study of various international (Shaw, Williams 1994, Pásková 2009, Fialová 2012) as well as national authors (Čuka 2010, Gajdoš 2010, Krogmann 2005, Plesník 2010). The majority of them state that the development of tourism is conditioned by presence of suitable potential with significant territorial aspect, which is connected to the local landscape system. In terms of potential – especially natural – is just the Tatra tourism region important, what underlines its international character. The town of High Tatras has an important role, because it completed the process of recreational urbanization (Čuka 2010). In the surrounding mountainous

and submontane municipalities in the Tatry tourism region is registered an increasing rise in tourism infrastructure, reflecting a permanently growth of attendance. Considering the dynamic processes running in this area, which are caused just by the long-term impact of tourism, is necessary to deal with spatial relations within the region in the light of intensity of tourism. The mentioned spatial relations provide us a comprehensive view on the areas, where the process of recreational urbanization under the influence of tourism is still more intensively. The aim of the paper is to identify regions in connection to the various intensity of tourism as well as to point out those with potential for development of recreational urbanization. Just the permanently increasing level of recreation suburbanization in rural territories is the impulse for further development of rural area in the catchment area. One of the main benefits is the function of employment that creates new jobs for local residents. An urbanization induced by tourism contributes positively to rural territories also through financial flows to municipal budgets, whether from the sale of land for construction purposes, compulsory tax payments from already built tourism facilities and recreational fees from accommodated visitors. Based on the aforementioned and other revenues can municipalities reinvest financial means to the development of own infrastructure. Finally, the intensity of tourism combined with the level of recreational urbanization may display the degree of development of rural communities under the influence of tourism.

## MATERIAL AND METHODS

The first indicator, necessary for later calculations, was the indicator of intensity of tourism, specifically the Charvat's Index that was used in studies by Krogmann (2005) or Liszewski (1991) and presented as follows:

$$I = (N/P) \times 100, \text{ while}$$

I – Charvat's index, N – number of overnight stays, P – number of inhabitants in the catchment area.

The input data were provided by the Statistical Office of the Slovak Republic for the year 2013. The Charvat's Index was chosen because a number of overnight stays affect not only positive, but also negative impacts that tourism brings along.

The mentioned indicator was used as an effective variable in the process of localization of developed, respectively developing areas and other spatial relations from the viewpoint of tourism. It was realized using the method of spatial autocorrelation.

A spatial autocorrelation can be considered as a phenomenon with a significant position in the study of spatial statistics and spatial econometrics belonging to the field of spatial analysis (Getis 2008). A spatial autocorrelation is defined as a presence of spatial pattern in a mapped variable due to geographical proximity (Gregory et al. 2009). It is a specific type of correlation, where the relation of one variable in time and space is evaluated within the one observation. From geographical point of view is assessed as a relation between phenomena or events separated by particular spatial or time slots (Kusendová, Solčianska 2007). If the similar phenomena or attributes are located closer to each other in the area, there is a positive autocorrelation, while if there occurs a cluster of strongly different values, there is a negative spatial autocorrelation. If the data are in the area localized in way that close values are not in any relation, the analyzed values are statistically insignificant. In accordance with Griffith (1987), the positive spatial autocorrelation means that geographically close values of the variable have a tendency to group with similar values on the map, thus high values tend to be situated in the proximity of high values, while average values in the proximity of average ones and low values next to the low ones.

We quantified a spatial autocorrelation for our purposes via Moran's Index. It is necessary to remark that within the same set of data may be found various levels of spatial autocorrelation, while global Moran's Index cannot generally reveal these different degrees of spatial relations within the one set of data. Thus, a global statistics may state incorrectly that there is no spatial autocorrelation within the analyzed dataset, while there may be a strong positive autocorrelation in the one part of the area and a negative autocorrelation in another part of the area (Fotheringham et al. 2002). For the purposes of our calculations were therefore used indicators called "LISA" (Local Indicators of Spatial

Association) in order to identify local clusters of positive and negative autocorrelation developed by Anselin (1995). According to him may occur five different scenarios within LISA:

1. *localities with high values and similar neighbours*: (high – high), also known as “hot spots”, depicting a scenario of positive spatial autocorrelation;
2. *localities with low values and similar neighbours*: (low – low), also known as “cold spots”, depicting also a scenario of positive spatial autocorrelation;
3. *localities with high values and neighbours with low values*: (high – low), potential “spatial outliers” – potential spatially outlying values symbolizing negative spatial autocorrelation;
4. *localities with low values and neighbours with high values*: (low – high), also marked as “spatial outliers” symbolizing negative spatial autocorrelation;
5. *localities with no significant local spatial autocorrelation*.

Possibility for exploration of spatial autocorrelation from local perspective is provided by different software programs. We used for our purposes OpenGeoDa software. In the process of calculation was used the spatial matrix of neighbourhood that was constructed based on the neighbourhoods of the 1<sup>st</sup> Queen order (critical value is not specified and neighbourhood is defined also by the one common point of border of two municipalities), while the level of significance was set at  $\alpha=0.05$ .

The aforementioned method was applied within the particular municipalities belonging to the Tatry tourism region that is located in the north-western part of the Prešov Region, while it covers the area of three districts: Poprad, Kežmarok and Stará Ľubovňa. It consists of 114 municipalities, while 8 of them have the status of town (Poprad, Vysoké Tatry, Svit, Kežmarok, Spišská Belá, Spišská Stará Ves, Podolíneec, Stará Ľubovňa).

Natural conditions along with the developed infrastructure of tourism create suitable conditions for development and running of tourism. The surveyed region belongs to the tourism regions with international importance, what is also underlined by the high share of foreign visitors. Despite the fact that within the number of visitors has the leading position Bratislava, within the number of overnight stays dominates Tatry tourism region. Albeit the offer of the Tatry tourism region is not as wide as in Region of Liptov, however its natural landscape clearly dominates by its attractiveness. Among undoubtedly dominant tourism centres, which take full advantage of natural conditions combined with possibilities for walking or ski touring, belong resorts in the hinterland of the Tatra National Park, especially the Vysoké Tatry town (namely Tatranská Lomnica and Štrbské Pleso) and the municipality of Ždiar. Natural conditions are also fully used within the rural municipalities located in the hinterland of the Pieniny National Park, specifically the Dunajec River. The Tatry tourism region is also specific for the activities related to the long-term potential for cultural heritage (Ždiar, Poprad – Spišská Sobota, Červený Kláštor, Batizovce). Spa tourism is in this region linked to the Vysoké Tatry town (climatic spa) as well as Vyšné Ružbachy. Thermal baths are located in the municipality of Vrbov (Thermal Park Vrbov) and the city of Poprad (AquaCity Poprad).

The reflection of the mentioned preconditions of tourism into the spatial analysis in the Tatry tourism region will be analyzed and evaluated within the next chapter.

## RESULTS AND DISCUSSION

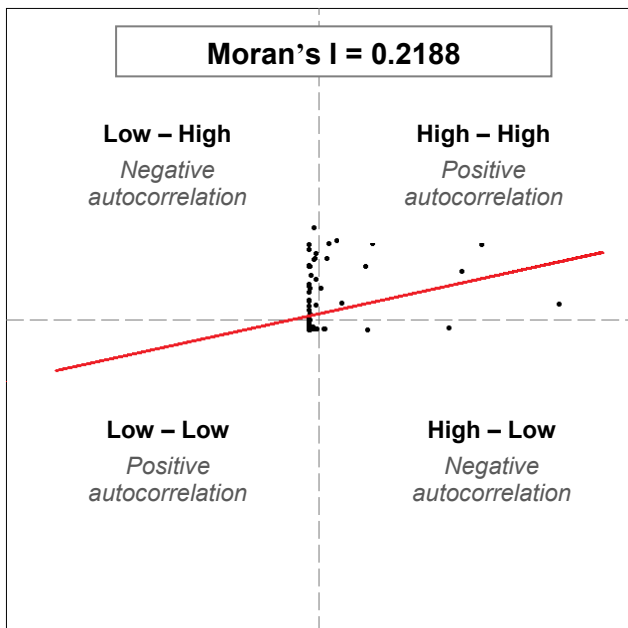
Within this section of the paper will be identified regions in relation to the different intensity of tourism and highlighted especially those with the potential for development of recreational urbanization. Moran’s diagram for the indicator of intensity of tourism (Charvat’s index) at the municipal level in 2013 (see Figure 1) reached value 0.2188 reflecting a slight positive spatial autocorrelation.

The mentioned value induces clustering of similar values of intensity of tourism (high with high, low and low). However, as stated before, a global Moran’s Index generally does not reveal different degrees of spatial relations within the one set of data.

In this case, a global statistics indicates that there exists just a slight positive spatial autocorrelation within the analysed dataset although there is really a strongly positive autocorrelation

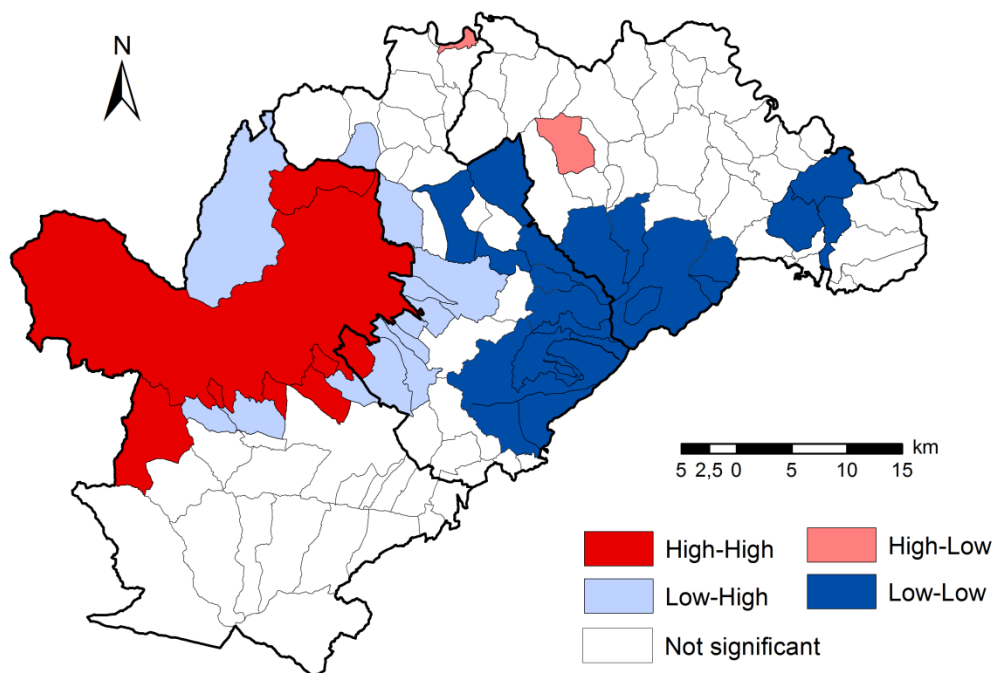
in the first part of the tourism region as well as a strongly negative autocorrelation across other parts of the region. In order to detect these local clusters of positive and negative autocorrelation were applied “LISA” indicators.

Figure 1 Moran’s diagram for indicator of intensity of tourism in Tatry tourism region in 2013



In the process of exploration of dependence of incidence of intensity of tourism using a local Moran’s statistics (see Figure 2) at the municipal level in the catchment area was in some areas recognized positive as well as negative spatial autocorrelation. The given level of significance ( $\alpha=0.05$ ) under using the spatial scales of the 1<sup>st</sup> degree Queen standardized based on the number of neighbours – in case of Moran’s local statistics – created two larger and one smaller cluster of positive autocorrelation.

Figure 2 LISA analysis for indicator of intensity of tourism in the Tatry tourism region in 2013



The first “high – high” cluster consists of the Vysoké Tatry town and adjacent municipalities of Štrba, Gerlachov, Štôla, Veľký Slavkov, Nová Lesná, Stará Lesná and Ždiar. It is a cluster with dominant position of the Vysoké Tatry town and we can state that it creates the core of this cluster. From the viewpoint of intensity reaches Charvat’s Index undoubtedly the highest score of all municipalities in the catchment area. Just the long-term intensity of tourism has contributed to the strengthening of status of town. Gradually, the status of town was in 1990 extended by the status of spa town. Hereby, the Vysoké Tatry town formally became a town – as we stated before – and completed the process of “formal recreational urbanization” in Slovakia. Čuka (2010) adds that accompanying features in the region are represented by the gradual disappearing of indigenous population, allocation of capital of large investment groups (J&T, Penta) into projects in Vysoké Tatry town, massive development of tourism infrastructure and superstructure associated with the high concentration of business, trade and services.

The Vysoké Tatry town affects also surrounding municipalities, what was proved through spatial autocorrelation. These municipalities belonging to the “high – high” cluster greatly benefit just from the relatively short distance to the most known parts of Vysoké Tatry (Štrbské Pleso, Starý Smokovec, Tatranská Lomnica). In the hinterland of Štrbské Pleso (on September 9, 2007; a part of its area segued into cadastral area and authority of the Štrba municipality) represented by the municipalities of Štrba and Štôla, while the municipalities of Gerlachov, Nová Lesná, Veľký Slavkov belong to Starý Smokovec and the municipality of Stará Lesná has the closest distance to the Tatranská Lomnica. The municipality of Ždiar also profits from its location, but especially due to the most appropriate access to the Belianske Tatras as well as – contrary to the aforementioned municipalities – its legend of typical odd Tatra village with specific architecture. Besides the location to the main tourism centres is also very important the accessibility of transport infrastructure in order to further tourism development. In this case is important to underline the “Way of Freedom” that is created by the roads II/537 and I/66 and mostly the Tatra electric railway or rack railway. All the mentioned rural municipalities move during their stages more towards even higher level of urbanization, right under the influence of tourism. In their cases are the accompanying features of recreational urbanization typologically comparable to the Vysoké Tatry town, but at the lower intensity.

Besides the mentioned cluster were identified two “low – low” clusters of positive spatial autocorrelation. There are localities typical for low values of intensity of tourism with similar neighbours. The first one is created by the municipalities, which territories belonged to the Javorina military district in the past. Naturally, this area is characterized by almost any intensity of tourism. Excluding the former municipalities of Javorina military district, this cluster includes also the municipalities of Toporec, Slovenská Ves and Bušovce. The second cluster of this type was recognized in the western part of the Stará Ľubovňa district. The municipalities of Ľubotín, Orlov and Plaveč along with their neighbours are characterized by low or any intensity of tourism, too.

Within the Tatry tourism region were also identified localities with high values neighbouring to those with low values (“low – low”), what symbolizes a negative spatial autocorrelation. In this way were selected two municipalities (Vyšné Ružbachy and Červený Kláštor). The first one profits from the mineral springs with therapeutical function, while the municipality of Červený Kláštor benefits from the natural sites such as the Dunajec River or Pieniny National Park. In the region was identified also “low – high” cluster consisting of municipalities with direct connection to the Vysoké Tatry town and in the one case to the municipality of Ždiar.

## CONCLUSION

Within the tourism centres in Slovakia occur specific development processes that may be classified as recreational urbanization. Just the Tatry tourism region is a model area with the noticeable incidence of this phenomenon. Within the results were identified regions in relation to the different intensity of tourism as well as regions with potential from the viewpoint of recreational urbanization in the catchment area. Through LISA method was distinguished the cluster of municipalities in immediate proximity to the Vysoké Tatry town, particularly in the most known urban areas. There are rural municipalities that are as if wedged into cadastral area of the town, what



results in possibilities of their further development. The municipalities of Vyšné Ružbachy and Červený Kláštor also display the cores of clusters, where is a potential for further aggrandizement of recreational urbanization as well as tourism. Spatial relations that were formed through the chosen method showed us various types of rural territories. Firstly, there are regions with possibility of gradually increase of the level of recreational urbanization, but on the other hand, there are ones that nowadays does not have potential for development of urbanization caused by tourism. Therefore that accompanying phenomena of urbanization powered by tourism bring along at higher stages not only positive but also negative reflections across the landscape, it is necessary to explore them also in the future.

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