

# Roma Communities in Međimurje, Croatia: From Spatial Segregation toward Spatial Integration and Back

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## Abstract

Spatial segregation of Roma population is a dynamic category that changes its characteristics over time. This paper investigates changes in indicators of spatial segregation of the Roma national minority in Međimurje, the northernmost county of the Republic of Croatia. The spatial analysis of Roma in the researched area, based on the last three consecutive population censuses, indicates changes in the Roma distribution patterns. Through the last two inter-census periods, spatial dispersion of the Roma population is noticeable as a beginning of more intensive spatial integration process. On the other hand, quantitative indicators point to the conclusion that spatial segregation as a phenomenon and fundamental feature of Roma population is increasing.

**Keywords:** Međimurje; Roma; spatial segregation; integration; Croatia

## Introduction

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Although it is primarily an object of sociological research, segregation in its spatial manifestations occupies an important place in geography research as well. Segregation as a spatial phenomenon is a socio-ecological process that refers to the concentration of a certain population group in one space or the uneven distribution of certain population groups in the observed area (Vresk, 2002). The phenomenon of segregation reflects social inequality and, through its changes, speaks about how these inequalities are changing. Additionally, understanding segregation is important because of its impact on society and social relations (Yao et al., 2019). Understanding the degree and nature of the segregation of a certain social group in a specific area is crucial for the creation of effective policies, measures and activities aimed at achieving social equality (Johnston et al., 2014).

Roma people historically encounter “otherness” through a number of cultural, political, economic and

spatial dimensions (Powell & Lever, 2017). From the very beginning of their settlement in the Europe, the Roma have faced non-acceptance, marginalization, discrimination and various forms of segregation. The social non-acceptance of Roma in European countries had its spatial reflection consequently. Powell and Lever (2017) point out that the appearance of Roma ghettoization, in the investigated case in the form of segregated Roma settlements, is a spatial manifestation of Roma stigmatization. On the other hand, speaking about the Roma, Sibley points out that “space is an integral part of the outsider problem. The way in which space is organized affects the perception of the “other”, either as foreign and threatening or as simply different” (Sibley, 1992). The characteristics of the Roma ethnic space and the elements of their spatial segregation form a closed cause-and-effect circle with social forms of segregation, discrimination and marginalization. Although spatial segregation is often cited as

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the cause of other forms of segregation and marginalization, some studies show that significant prejudice and discrimination against Roma, despite the historically multicultural environment, exist even in the absence of spatial segregation (Creţan et al., 2023). The above contributes to the challenges of designing integration policies that are primarily aimed at reducing the spatial forms of Roma segregation.

Some forms of spatial segregation characterize the residential patterns of Roma in numerous European countries. In Slovenia, Zupančič (2007) investigates the patterns of Roma distribution and defines the term “Roma settlement” as a specific nationally concentrated form of settlement of the Roma population. The population of Roma in the wider space of the European post-socialist countries where the largest number of European Roma live is characterized by certain forms of spatial segregation. For example, that is a situation in Hungary (Virag & Varadi, 2018; Creţan et al., 2020; Zsolt Farkas et al., 2017; Pásztor et al., 2016), Slovakia (Rochovská & Rusnáková, 2018), Serbia (Vuksanović-Macura, 2020), the Czech Republic (Matoušek & Sýkora, 2011; Toušek, 2011) or Croatia (Šlezak, 2009). Romania is also an example of the emergence of Roma spatial segregation patterns (Picker, 2013; 2017). Recent research shows that only Roma have had upward values in terms of fractionalization and polarization indices compared to other ethnic groups in the Romania post-communist times due to the large traditional families of Roma communities (Rotaru et al., 2023). Spatial segregation of Roma is not reserved exclusively for post-socialist Europe. Western European and Mediterranean countries also record spatial segregation of Roma, such as Italy (Claps & Vitale, 2011; Picker, 2013; 2017), Spain

(Gay Y Blasco, 2016), France (Picker, 2017), England (Picker, 2017) or Portugal (Alves, 2017). Even Türkiye, as a Eurasian country, is not spared of the phenomenon of Roma segregation (Gültekin, 2009).

As in the wider European space, spatial segregation characterizes the Roma population settlement in Međimurje County, the northernmost county of the Republic of Croatia (Fig. 1) (Šlezak, 2009). The majority of the Roma population lives in a small number of local self-government units, and in relation to the entire county, their spatial concentration is noticeable. At the settlement level, Roma mostly live in twelve “Roma” settlements, i.e. locations populated exclusively by Roma (Šlezak, 2009). In his work, Šlezak states that the majority of Roma settlements are additionally separated from parts of the settlement with a majority Croat population by some physical barrier such as a canal, forest, or railway (Šlezak, 2009).

In Međimurje County, Roma are the most numerous national minority. It is also the county with the largest number and the largest concentration of Roma population in Croatia. According to the last census from 2021 (CBS, 2022), Roma in Međimurje reached a share of 6.61% of the total population. Roma population of Međimurje County makes up as much as 38.7% of all Roma in the Republic of Croatia. From a once nationally very homogenous area, Međimurje is becoming a county with more distinct multicultural and multi-ethnic characteristics. In 2001, the share of national minorities was 3.61% (CBS, 2002). Twenty years later, the share of national minorities members grew to 8.12% (CBS, 2022) and Roma make up 81.4% of all declared members of national minorities.

Additionally, the data of the last census indicate certain changes in the distribution of Roma in

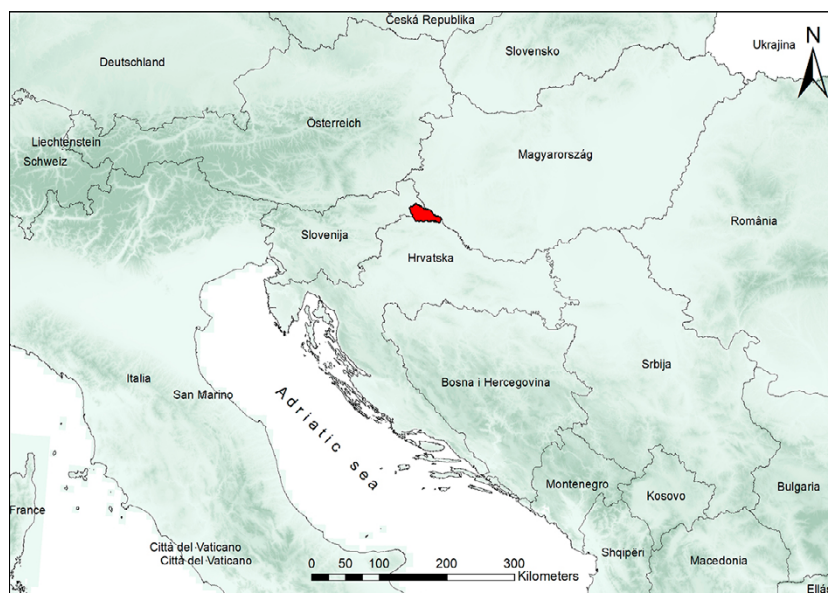


Figure 1. Geographical location of Međimurje County

Međimurje County. The presence of Roma in a larger number of local self-government units (cities and municipalities) than during previous censuses points to the spatial expansion of the Roma and thus to a possible process of reducing spatial segregation, i.e. the beginning of the process of spatial integration of the Roma population.

This paper tries to reveal changes in indicators of spatial segregation over a period of twenty years, during two most recent inter-census periods. Quantitative analysis of various indicators of spatial segregation through three consecutive population censuses (2001, 2011 and 2021) aims to reveal the direction of changes in Roma residential patterns in Međimurje County.

Spatial segregation of Roma in Međimurje has been studied in more detail by Šlezak (2009) using data from the 2001 population census. His work is an important contribution to the understanding of spatial segregation as a phenomenon related to the Roma national minority in Međimurje County and the Republic of Croatia. However, the results of his research provide only a static situation in 2001. This paper, building on the mentioned research, emphasizes the changes and directions of changes in the level of spatial segregation of the Roma in the period of twenty

years. Recognizing the direction of change in Roma residential patterns can be good indicators of the (in) correctness of certain policies and measures aimed at reducing all forms of segregation of the Roma population, including aspects of spatial segregation.

Roma distribution and concentration in very small and limited parts of Croatia “is both a consequence and a cause of social separation from the rest of Croatian society” (Šlezak, 2009). The importance of recognizing the occurrence of Roma spatial segregation and noticing changes in the value of its indicators is visible in addressing spatial segregation as an important element of the fight against Roma poverty at the level of the entire European Union. One of the measures listed in the Urban Poverty Partnership Action Plan (2018) refers to strengthening the principle of desegregation in EU urban areas. When elaborating the mentioned measure, spatial segregation of the Roma was listed as one of the important priority areas the member states should deal with. The chapter on Roma vulnerability states: “This action proposes that the desegregation principle should be strengthened and mainstreamed into the legislation on the use of EU funds at national level. Desegregation should become a priority in all housing and education programs” (Urban Poverty Partnership Action Plan, 2018).

## Spatial segregation measures used

From the very beginning of the study of spatial segregation, there have been discussions about the (un) acceptability of certain indicators of this spatial phenomenon. Simplifying the calculation of certain indicators also brings with it the problem of neglecting certain spatial relationships that are important for the quality interpretation of the obtained results. In addition, the discussion is also about defining the basic dimensions of spatial segregation. Massey and Denton (1988) propose five dimensions of segregation: evenness, isolation - exposure, concentration, centralization and clustering. Reardon and O’Sullivan (2004) indicate that the phenomenon of spatial segregation can be seen through only two basic dimensions: evenness - clustering and isolation - exposure. Two spatial-segregation dimensions are also proposed by Brown and Chung (2006): evenness - concentration and clustering - exposure.

One of the first and most commonly used indicators of spatial segregation is the Dissimilation Index (Duncan & Duncan, 1955). This indicator considers the representation of the observed groups in the territorial units of the lower order in relation to their representation in the territorial unit of the higher order. The dissimilation index  $D$  is expressed by the formula

$$D = 0,5 \sum | p_{ir} / R - p_{ih} / H |$$

where

- $p_{ir}$  is the population of Roma in a certain city or municipality  $i$ ,
- $p_{ih}$  population of the non-Roma population in city or municipality  $i$ ,
- $R$  total Roma population, and
- $H$  the total population in Međimurje County.

The value of this indicator ranges from 0 to 1. The maximum value indicates complete segregation, that is, separation of the observed groups. The value 0 indicates complete integration in the sense of equal representation of the minority community in administrative units in relation to its representation in the higher-ordered administrative unit.

Criticism of the mentioned indicator refers to its “non-spatiality”, i.e. failure to recognize the actual spatial distribution of the observed group in the larger investigated administrative spatial unit, the so-called “chessboard” problem (White, 1983). Mentioned indicator with its value very roughly indicates the level of segregation of the observed group within the higher-order administrative unit. Although a certain number

of researchers offer adapted indicators in which they have incorporated certain spatial relations (White, 1983; Morill, 1991; Wong, 2003; 2004; 2005; Reardon & O'Sullivan, 2004; Feitosa et al., 2007), the original form of the dissimilation index remains the most commonly used indicator of the spatial segregation. This is especially the case in situations of research on the mutual segregation relations of two groups that share a common space. Such an original version of the dissimilation index is proposed by Somogyi and Horvath (2018) as a research method in the support document of the Urban Poverty Partnership Action plan for the analysis of the spatial segregation of the Roma population.

The spatial-segregation dimension of evenness-clustering is well represented by the location quotient (Isard, 1960). It indicates the relative representation of the minority group in the observed spatial unit in relation to the total representation in the higher ordered territorial unit. It is calculated by a formula

$$LQ_i = (r_i / p_i) / (R / P)$$

where, in the specific researched case,  $r_i$  and  $p_i$  represent the number of Roma and the total population of a certain city or municipality, and  $R$  and  $P$  the total number of Roma and the total number of inhabitants of the entire researched area of Medimurje County. Possible values range between 0 and  $\infty$ , while the value 1 indicates a situation in which the representation of the researched group in the observed territorial unit is identical to its representation in the higher ordered territorial unit.  $LQ < 1$  indicates a lower representation, and  $LQ > 1$  a higher representation of the observed group in a certain territorial unit compared to the representation in a higher-ordered territorial unit.

Global Moran's  $I$  is also common indicator in the dimension of spatial clustering. Global Moran's  $I$  is a measure of the overall clustering of the investigated spatial data, in this particular case spatial distribution of the Roma population in cities and municipalities in Medimurje County. It investigates the spatial autocorrelation based on the locational features and concrete values of the investigated phenomenon in individual administrative units of wider researched territorial area.

Quantitative indicators of spatial segregation in the exposure dimension used in this paper are the inter-

connected Isolation Index and Interaction Index. "Exposure measures the degree of potential contact or possibility of interaction, between minority and majority group members" (Massey & Denton, 1988). It points to the probability that a member of the Roma national minority shares a local self-government territorial unit with a member of the researched majority group. The interaction index expresses the exposure of the members of the Roma national minority to the members of the majority population, and the isolation index shows the extent to which the members of the Roma minority are directed to themselves in a specific investigated spatial unit.

The Interaction index is calculated by the formula:

$$I_n = \sum (p_{ir} / R) (p_{ih} / P_i)$$

where

- $p_{ir}$  is the number of members of the Roma national minority in the spatial unit  $i$
- $p_{ih}$  is the number of members of the majority population in the spatial unit  $i$
- $R$  is the total number of members of the Roma national minority in the observed area
- $P_i$  is the total number of inhabitants in spatial unit  $i$ .

The Isolation index is calculated according to the above:

$$I_z = \sum (p_{ir} / R) (p_{ir} / P_i)$$

A higher value of the Isolation index indicates the existence of spatial segregation of a certain group, while a higher value of the Interaction index indicates a reduced occurrence of spatial segregation of the researched group.

The clustering dimension can be well represented by Local Moran's  $I$ , an indicator proposed by Anselin (1995). „The value of Local Moran's  $I$  at spatial unit  $i$  reflects how the proportion of a group in  $i$  is similar to the proportions in neighboring units. A high value of local Moran's  $I$  indicates a clustering of similar proportions (either high proportions reflecting a hot spot or low proportions reflecting a cold spot) and a low value indicates a clustering of dissimilar proportions“ (Yao et al., 2019). This indicator is part of the basic functionality of the ArcGIS software, version 10.1, which was also used to create all thematic maps in this paper.

## Changes in the distribution of the Roma population

The basic change in the characteristics of the Roma population distribution in the last two inter-censal periods in Međimurje County, which can be observed at the level of cities and municipalities, is the expansion of the area in which the Roma were recorded by the census (Fig. 2, Fig. 3, Fig.4). In 2001, out of 25 local self-government units in Međimurje County, Roma were recorded in only 12 cities and municipalities, in less than half of their number. Ten years later, in 2011, Roma were present in 18 local self-government units, and in 2021 in 19 of them. Expanding the area inhabited by the Roma population is noticeable. Additionally, there is a significant increase in the share of the Roma population in certain local self-government units. In 2001, the highest recorded share of Roma was 13% in the municipality of Pribislavec. Twenty years later, already five municipalities have surpassed that value. During the last census, the highest share of Roma was in the municipality of Orehovica, 33.68%. With the aforementioned share, the municipality of Orehovica became the first municipality in Croatia where Roma, having reached a share of 1/3 of the total population, formally exercised the right to official use of the minority language in accordance with the provisions of the Constitutional Law on the Rights of National Minorities (Croatian Parliament, 2002).

The observed increase in the share of the Roma population in the cities and municipalities of Međimurje County is, on the one hand, a consequence of the signif-

icant emigration process of the majority population that has affected Croatia since joining the European Union. On the other hand, it is a consequence of the nationally differentiated demographic characteristics of the natural trends of the majority and Roma population. While the majority population records a very low fertility rate and a negative natural change, the Roma population, due to a very high fertility rate and a high positive natural change, records a significant increase in the number of members (Šlezak, 2010; 2013; Šlezak & Belić, 2019).

Cities and municipalities where Roma were recorded in 2001, except for the municipality of Belica, in their administrative boundaries have Roma settlements spatially segregated from the majority Croat population (Šlezak, 2009). There are 12 settlements inhabited exclusively by the Roma, whose population in 2001 varied from a few dozen to over a thousand inhabitants (Šlezak, 2009). As most of the municipalities in question consist of only one settlement of the same name, it can be assumed that almost the entire Roma population of the Međimurje County in observed year was settled in Roma settlements. In terms of methodology, it is important to note that during the 2001 census, the Roma settlement of Sitnice was part of the Municipality of Selnica. After the later changes in the administrative borders, the said settlement was annexed to the City of Mursko Središće.

During the 2011 census, 1.27% of all Roma in Međimurje County lived in municipalities and cit-

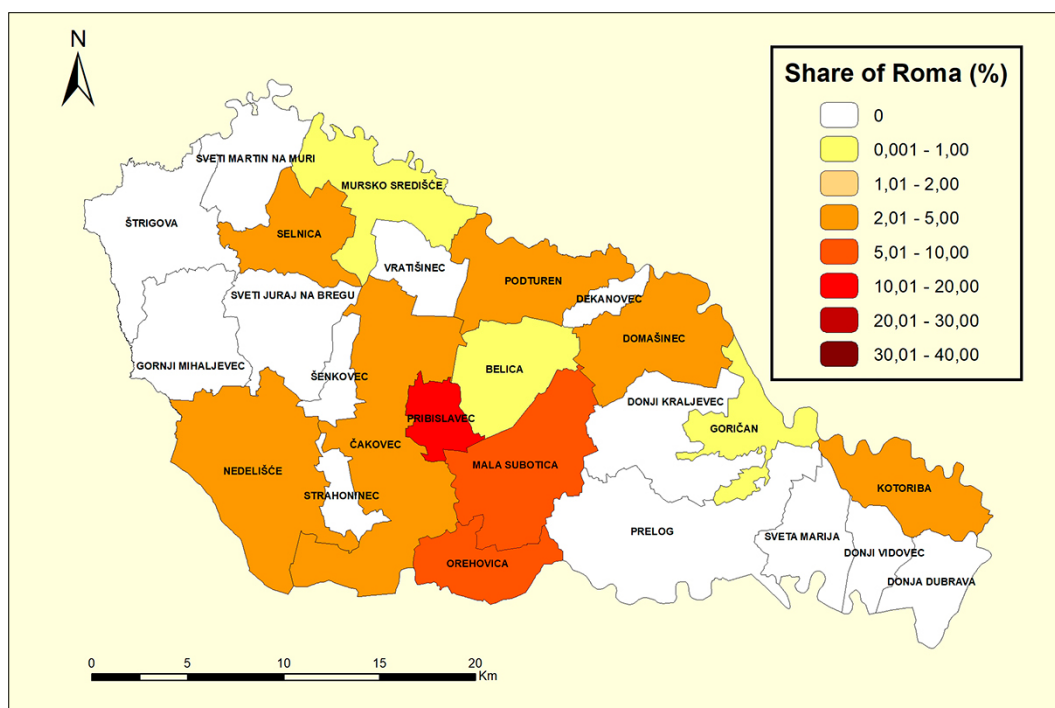


Figure 2. Share of Roma population in cities and municipalities of Međimurje County in 2001

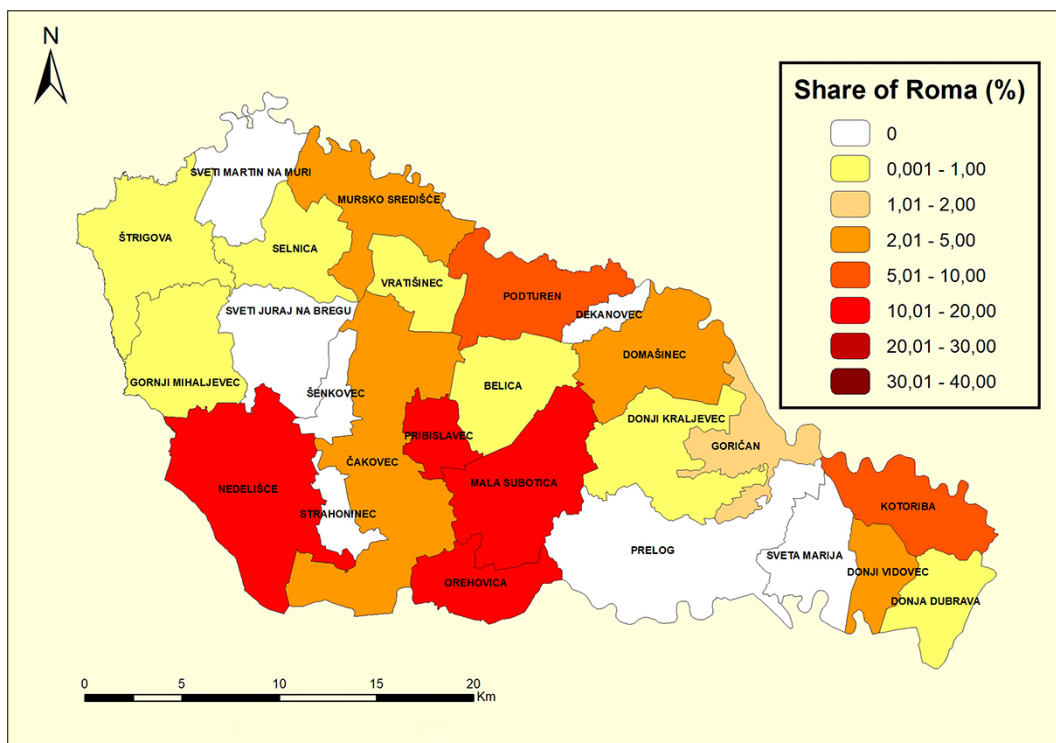


Figure 3. Share of Roma population in cities and municipalities of Međimurje County in 2011

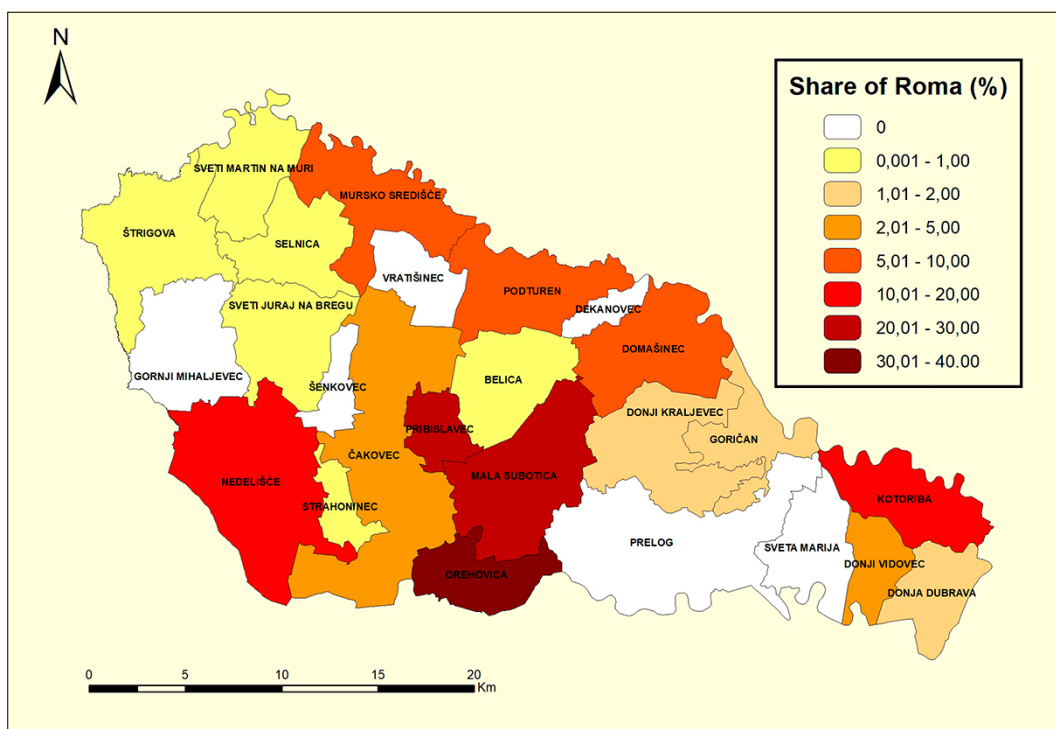


Figure 4. Share of Roma population in cities and municipalities of Međimurje County in 2021

ies that do not have a Roma settlement within their borders. Ten years later, 2.26% of Roma lived in cities and municipalities without a spatially segregated Roma settlement in their composition. From the initial distribution connected exclusively to the concentrated localities of Roma settlements, in the period of the last 20 years, Roma have slowly settled in the sur-

rounding area of the neighboring towns and municipalities of Međimurje County. Although we are not talking about large numbers, it is important to recognize the beginning of a process of change in the Roma population distribution. In terms of spatial segregation, the observed process reflects a decrease in concentration as one of the dimensions of spatial

segregation. The departure of Roma from Roma settlements (Šlezak, 2022) as concentrated locations of population and their settlement in the surrounding

cities and municipalities represents the beginning of the process of the Roma population spatial integration.

## Spatial segregation measures of the Roma population

The basic quantitative indicator of spatial segregation in the dimension of evenness, the Dissimilation Index, at the level of Međimurje County records the values listed in tab. 1. Through the last three censuses, the index of dissimilation (D) recorded constant growth. The 2001 values indicate that more than 43% of the Roma population had to move to achieve an even distribution of the Roma population in Međimurje County. In 2011, it was hypothetically necessary for more than 45%, and in 2021, more than 48% of the Roma population to change their place of residence within Međimurje County to reflect an even distribution, i.e. not to reflect spatial segregation.

**Table 1.** Dissimilation index of the Roma population in Međimurje County in 2001, 2011 and 2021

Year	2001	2011	2021
D	0,43684511	0,454347688	0,480280971

The increase of the Dissimilation index is constant despite the expanded area of the Roma population compared to the initial researched year. Obviously, significant increase in the number and share of the Roma population in the few Roma settlements not only nullified, but also surpassed the impact of the

spatial expansion of the Roma population throughout the researched period.

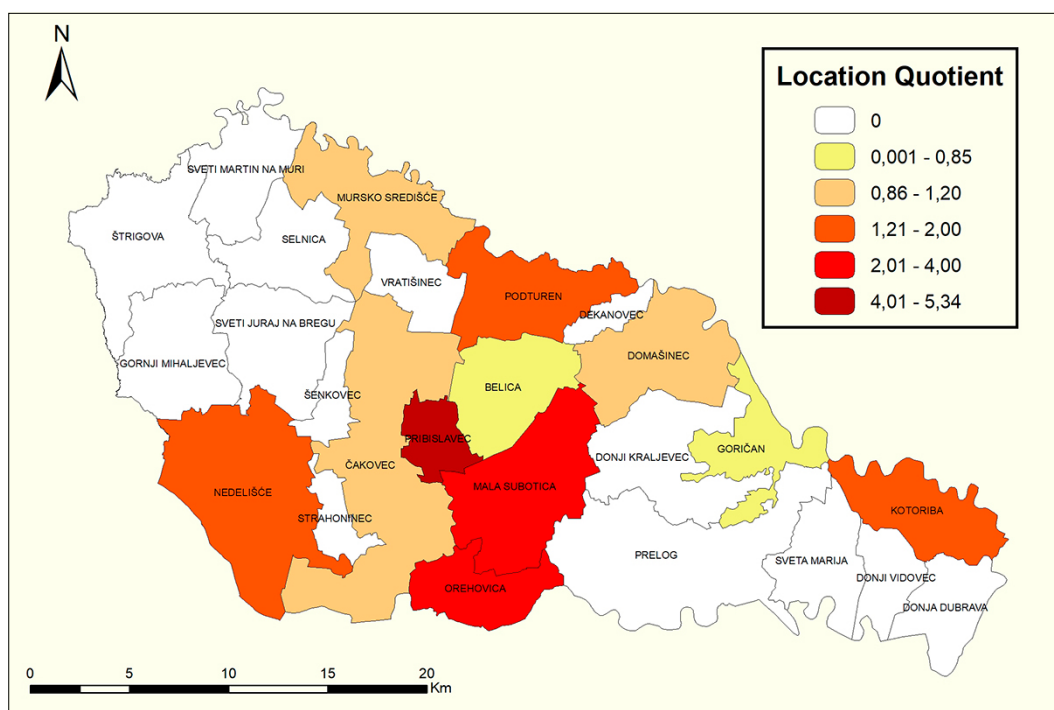
In the exposure dimension, Interaction and Isolation indexes indicate an increase in the spatial segregation of the Roma population (tab. 2). Throughout the researched period, the interaction index recorded a constant decline, and analogously, the isolation index recorded a constant increase.

**Table 2.** Interaction index and Isolation index of the Roma population in Međimurje County in 2001, 2011 and 2021

Year	2001	2011	2021
Interaction Index	0,942245	0,896705	0,839602
Isolation Index	0,057755	0,103295	0,160398

Over time, members of the Roma national minority are less directed towards potential contact with the majority population, that is, they are increasingly directed towards members of their own minority community.

Location quotient quantitatively represents the dimension of concentration. It indicates the relative representation of the minority group in the observed spa-



**Figure 5.** Location quotient of the Roma population in Međimurje County in 2001

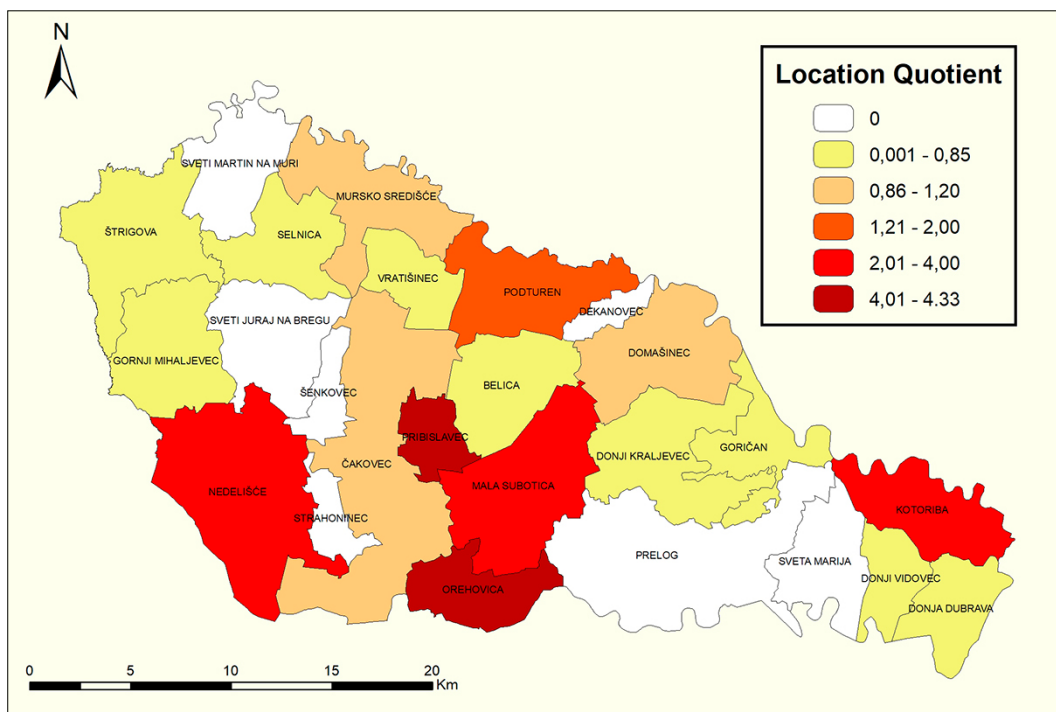


Figure 6. Location quotient of the Roma population in Međimurje County in 2011

tial unit in relation to the total representation in the higher ordered territorial unit. The values of LQ are significantly higher than 1 in some territorial units or significantly less than 1 in some other administrative-territorial units. It proves the significant concentration of the researched group, and thus of its spatial segregation.

Comparative cartograms (Fig. 5, Fig. 6, Fig. 7) graphically present Roma population location quotient in Međimurje County through the three observed pop-

ulation censuses. With the aim to observe the change in the level of Roma spatial distribution, the value classes on all three views are set in identical limits. A big change can be noticed between 2001 and 2011, while in the last inter-census period (2011 - 2021) the observed trend of change has slowed down considerably.

In the first observed inter-census period (2001 - 2011), the expansion of the area inhabited by Roma is noticeable. In self-government units of previously

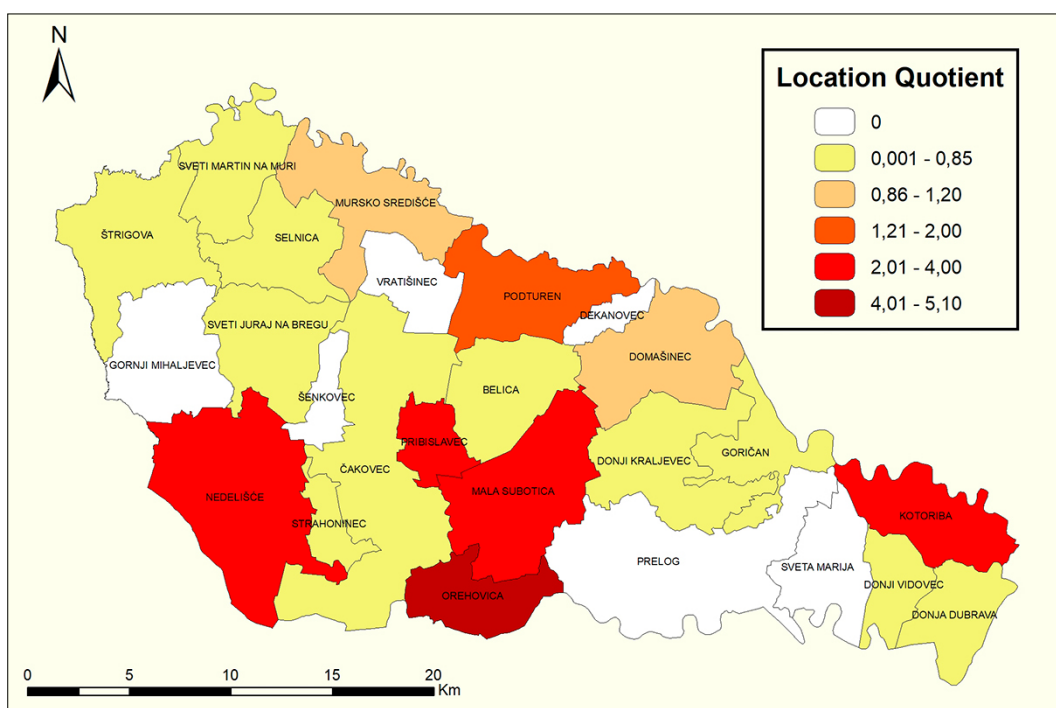


Figure 7. Location quotient of the Roma population in Međimurje County in 2021



high concentration, concentration of Roma remains constantly high. In the second period (2011 – 2021), the changes are very small. Roma are represented for the first time in two new municipalities (Strahoninec and Sv. Martin na Muri), but there are no longer any Roma in the municipality of Vratišinec. At the same time, the concentration of Roma in the municipality of Pribislavec was lowered where LQ value dropped below 4, as well as in the city of Čakovec, where the LQ value fell below the level of 0.85.

In all three census moments, there were the same six municipalities that recorded an above-average representation of the Roma population with a value of LQ >1.2. The biggest difference is in the increase of the number of municipalities in which the phenomenon of below-average representation is recorded, which is a consequence of the previously mentioned expansion of the area inhabited by Roma.

Global Moran's I can represent the segregation dimension of clustering (tab. 3). According to its values, it is possible to see a decrease of spatial segregation in the period 2001-2011, which can be attributed to the fact that in 2011, Roma were recorded in a significantly larger number of municipalities than ten years earlier. As the used indicator in the matrix of spatial relations takes into account the mutual relations of neighboring investigated spatial units, a larger number of Roma in previously unrecorded local self-government units influenced the reduction of this indicator in 2011. Nevertheless, in the following inter-census period, the mentioned indicator increased,

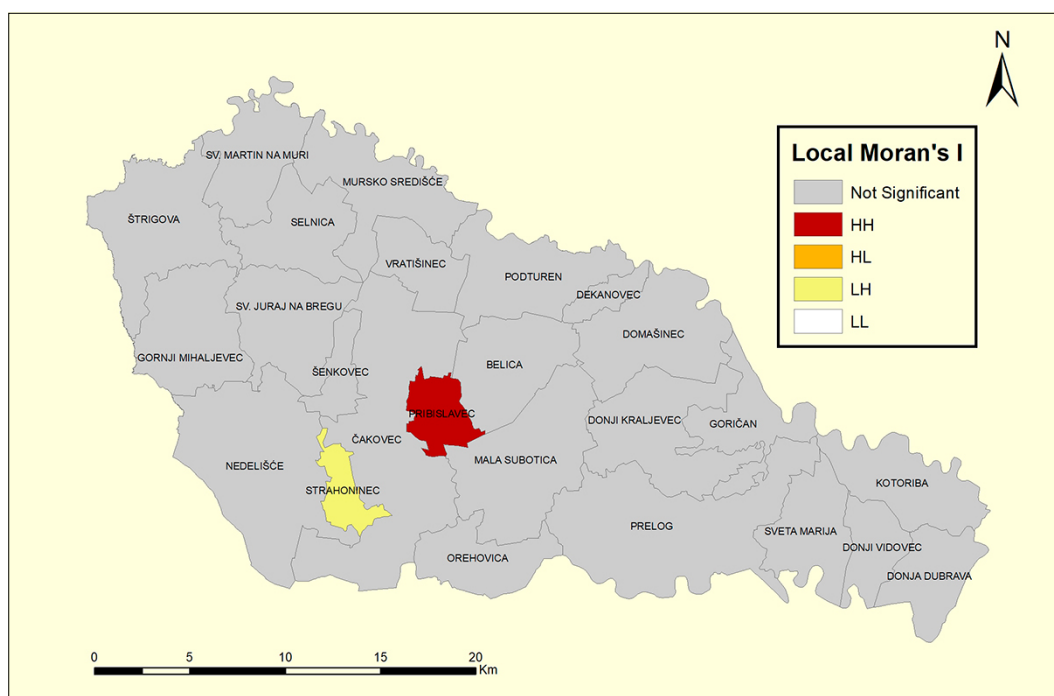
which indicates an increase in the spatial segregation of the Roma population in the investigated dimension of clustering.

**Table 3.** Global Moran's I of the Roma population in Međimurje County in 2001, 2011 and 2021.

Year	2001	2011	2021
Global Moran's I	0,121463	0,076421	0,092573
p-value	0,337493	0,487439	0,438303
z-score	0,959131	0,694388	0,775062

The occurrence of statistically significant clusters in the researched area can represent Local Moran's I. The value of the indicator was calculated for each individual self-governing unit and visually displayed as hot spots and cold spots in the observed area. The mark HH refers to a statistically significant cluster of high values and LL for a statistically significant cluster of low values. Spatial units with a high number of Roma surrounded by spatial units with low Roma numbers are marked HL. Spatial unit of low number of Roma surrounded by spatial unit with high Roma number is marked LH.

One hot spot and one cold spot are distinguished in Međimurje County in 2001 and 2011 (Fig. 8). Municipality of Pribislavec represents the hot spot and Strahoninec represents the cold spot. In 2021, the mentioned municipalities remained hot and cold spots, but the municipality of Orehovica joined Pribislavec as a new hot spot (Fig. 9).



**Figure 8.** Hot and cold spots of Roma population in Međimurje County defined by Local Moran's I in 2001 and 2011

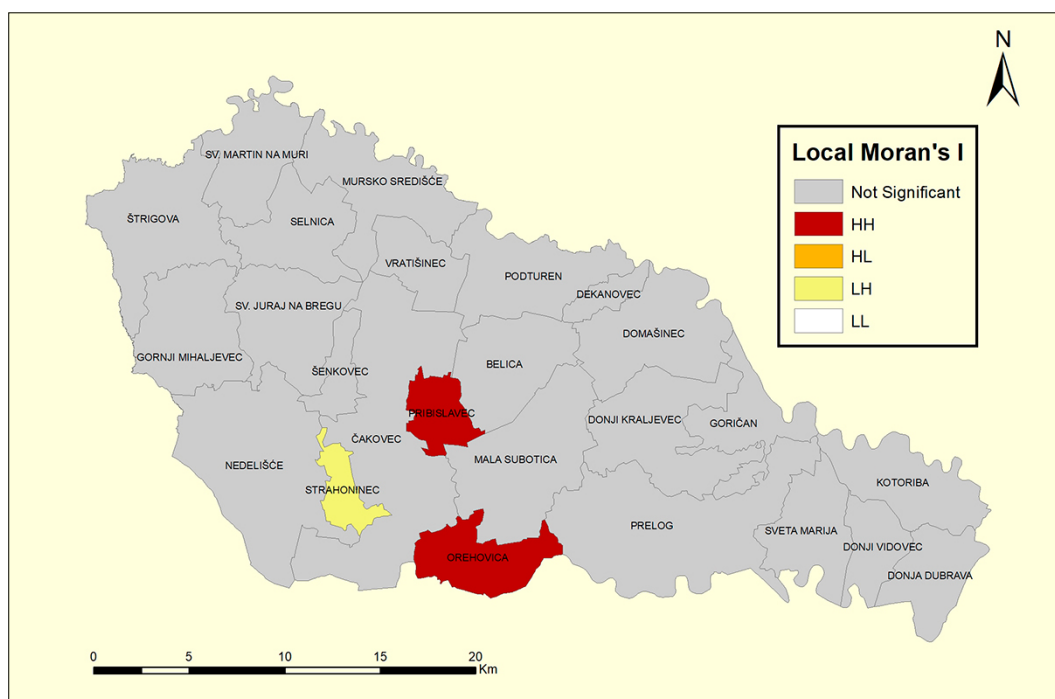


Figure 9. Hot and cold spots of Roma population in Međimurje County defined by Local Moran's  $I$  in 2021

## Conclusion

Spatial segregation of Roma population is both a state and a process. If observed at one point in time, the above phenomenon represents a state. In this sense, Šlezak (2009) correctly points to the appearance of spatial segregation of Roma in Međimurje County based on the 2001 population census. Nevertheless, spatial segregation should also be seen as a process, as a dynamic category that changes its characteristics over time. It is not only important to detect segregation, but also to discover the directions of its change. The results of the conducted research look at segregation precisely from the perspective of a dynamic process, taking into account the data of three consecutive censuses twenty years apart.

The results of the conducted research indicate the simultaneity of two mutually opposite processes. On the one hand, the members of the Roma national minority in Međimurje County are expanding the area of their population. While in 2001 they were present in less than half of the cities and municipalities of Međimurje, today they are present in 76% of them. The expansion of the area inhabited by Roma in the absolute sense represents a spatial integration process. Their appearance in areas where they were previously absent indicates the beginning of the spatial integration process of Roma national minority. The appearance of Roma in previously nationally homogenous local self-government units points to the departure of Roma individuals from the previous areas of concen-

tration and marked spatial segregation (Šlezak, 2022). Their settlement in municipalities and cities where they were not recorded during previous censuses is an indicator of the Roma spatial integration process.

On the other hand, on the contrary, quantitative indicators of spatial segregation in all observed dimensions indicate the increase of Roma spatial segregation in Međimurje County. In the dimension of evenness, the dissimilation index recorded constant growth. In the dimension of exposure and isolation, the Interaction Index recorded a constant decline, while the Isolation Index recorded a constant increase in its values in the researched period. In the dimension of clustering, the Global Moran's Index was lowered in the first inter-census period (2001-2011), which points to a decrease in spatial segregation in the mentioned dimension. Nevertheless, in the second intercensal period (2011-2021), the mentioned indicator in the presented dimension records growth and indicates the intensification of the further spatial segregation process of the Roma. Through the three time points of the research (2001, 2011 and 2021), the number of local self-government units (cities and municipalities) that record a below-average representation of the Roma population in relation to the entire investigated area of Međimurje County is increasing. This is a consequence of the aforementioned phenomenon of the expansion of the Roma population in municipalities and cities where there was none before. At the same time, the number

of municipalities and cities that record an above-average population of Roma in relation to their representation in Međimurje County is also increasing. The increase in the number of administrative units with significantly higher values of LQ and the enlargement of the value of the mentioned indicator in units where it has already been high so far indicates an increase in the concentration of the Roma population. This allows us to conclude that spatial segregation is growing in the mentioned dimension as well.

Despite the recorded occurrence of the spatial expansion of the Roma as a self-initiated process of spatial integration, the presented results indicate that the Roma as a very vulnerable group in Međimurje County are increasingly spatially segregated. The lack

of interest of local authorities in this spatial aspect of Roma segregation and leaving spatial processes to inertia can have considerable negative consequences. The integration of Roma, both in the social and spatial sense, must be institutionally supported. The results of this work must be an invitation to the local authorities to urgently start discussions on measures and activities with the aim of reducing the spatial segregation of the Roma and encouraging the process of their spatial integration. Otherwise, given that the social perception of Roma depends on the area of their settlement (Šlezak, 2021), further social stratification and difficulties in terms of social integration of members of the Roma national minority in Međimurje County are to be expected.

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