THE ANALYSIS OF THE ETHNIC DIVERSITY CHANGES IN NORTH MACEDONIA

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ABSTRACT

Studying ethnic diversity and ethnic segregation is becoming increasingly important in ethnically heterogeneous societies, as ethnic diversity forms the backbone of minority policies in these countries. North Macedonia has witnessed a rise in ethnic heterogeneity evident in the growing number of ethnic groups and modalities recorded in recent censuses. This study explores the dynamics of ethnic diversity and segregation at smaller territorial levels, emphasising disparities between urban and rural areas, during the period between the 1994 and 2021 censuses. Additionally, the paper examines the impact of various socio-historical, socio-economic, and demographic factors on these dynamics. The analysis of the research will be based on the application of the entropy index, which shows the spatial variability of diversity and the interaction between different ethnic groups. The outcome of this research provides a deeper insight into dynamics of ethnic diversity at a small spatial scale and the factors that have contributed to it..

Keywords: ethnic diversity, ethnic segregation, multiethnic societies, entropy index, North Macedonia.

INTRODUCTION

Research into ethnic diversity is becoming increasingly important in developed societies especially due to the considerable increase in migration flows. This is reflected in the increasing number of studies on this topic, as the managing growing ethnic diversity requires the promotion of inclusivity, respect for diversity and the resolution of potential inter-ethnic conflicts (Mägi et al, 2016; Kauppinen, van Ham, 2018). Reviewing the literature on this topic suggests that ethnic diversity is a complex phenomenon and that the occurrence of ethnic segregation appears in different social settings. Significant changes in society can be observed in the United States of America, which today is one of the most racially and ethnically diverse environments. Around the year 2000, immigration to the USA accounted for almost a third of the total population growth in the USA. This immigration trend had a profound impact on intensifying the racial and ethnic heterogeneity of American society (Frey, 2011). Coleman (2006) considers that the process of the third demographic transition is already taking place on the territory of the USA, since population growth is achieved exclusively on the basis of a positive migration component, while in some scientific circles there is already talk of a potential fourth demographic transition (Frey, 2015). This indicates the geographical distribution of ethnic minorities, i.e. immigrants from the primary places of immigration to new destinations in other parts of the

country. It implies the final stage of ethnic transition, i.e. the possible occurrence of ethnic substitution of the population.

In addition to the USA, many European countries are also met with the process of ethnic diversification and ethnic segregation of society. Great Britain is often characterised by a marked diversity, inhabited by a considerable number of different ethnic and racial groups. This phenomenon is particularly evident in urban areas, where the proportion of ethnic communities has increased significantly in recent decades as a direct result of the ethnically diverse population migration that has impacted all major cities in the UK (Catney, 2015; Catney, 2018). As part of the project "Residential segregation in five European countries - A comparative study using individualised scalable neighbourhoods" (project ResSegr, 2015-2019), several studies have examined the stratified intersection of ethnic diversity, segregation and socio-economic inequality in Belgium, Denmark, the Netherlands, Norway and Sweden. Andersson et al. (2018) report that there are no significant differences in urban ethnic segregation patterns among non-European migrants between Belgium, Sweden, Denmark and Norway. Another conclusion of this research is that non-European migrants are not only concentrated in areas that are predominantly inhabited by migrants, but that they are dispersed across these countries.

Costa and de Valk (2018) conclude that in the urban agglomerations of Brussels, Antwerp and Liège in Belgium, there has been a spatial isolation of poor and economically disadvantaged migrant groups who inhabit these cities in greater concentrations, which is particularly pronounced in Brussels. Malmberg et al. (2018), who analysed ethnic segregation in Sweden, concluded that despite the increase in settlements inhabited only by migrants of non-European origin and mostly located in metropolitan areas, there has been no increase in the level of segregation. Kauppinen and van Ham (2018) conducted a longitudinal study of the population of Helsinki, in which they observed the different effects of various demographic factors on the occurrence of residential segregation in the ethnically very diverse capital of Finland. They conclude that intra-regional population migration played a crucial role in the emergence of segregation, and the study found that there was no general tendency towards self-segregation. Mediterranean countries such as Italy, Greece and Spain, which face a significant influx of migrants, are most likely to experience social and housing deprivation in the larger urban centres, which are the main immigration destinations. According to one study, residential segregation is a consequence of the social marginalisation of this population group (Malheiros, 2002).

The ethnic diversity of the Balkans, a traditionally ethnically heterogeneous region, has been little studied in the literature. Most works deal with the issue of ethnic diversity in the context of fulfilling human and minority rights, integration, interethnic relations and tensions, improving dialogue in ethnically diverse societies, etc. (Žagar, 2010; Skendaj, 2016). Other research has examined the impact of interethnic prejudice on the emergence of ethnic tensions, ethnic segregation and living in enclaves (Kunovich, Hodson, 2016). Some other authors have focussed on examining the relationship between ethnic diversity and the economic development of states (Hysa, 2020). An extremely small number of studies have focussed on the influence of demographic factors on the process of ethnic diversification and ethnic segregation of the population (Hammel et al, 2010). In the context of North Macedonia, most of the papers analysed the ethnic environment, ethnic distance and multiculturalism (Simoska, 2012) and

cultural diversity in public spaces (Mojanchevska, 2018). This study explores the dynamics of ethnic diversity and segregation at smaller territorial levels, emphasising disparities between urban and rural areas, during the period between the 1994 and 2021 censuses. Additionally, the paper examines the impact of various socio-historical, socio-economic, and demographic factors on these dynamics. The analysis of the research will be based on the application of the entropy index, which shows the spatial variability of diversity and the interaction between different ethnic groups.

DATA AND METHODS

This paper uses entropy index (diversity score) to assess the dynamics of ethnic diversity in North Macedonia for two main reasons. First, this is a multi-group metric which, unlike many other methods, assess ethnic diversity of spatial units by considering more than two ethnic groups. This is particularly suited for analysing multiethnic societies like North Macedonia, where non-dominant ethnic groups constitute nearly 40% of the population.

Second, the entropy index is a rare spatial measure, providing results on disaggregated spatial units that account for the inherent heterogeneity of ethnic geography. In contrast, most measures are aspatial, presenting aggregated results for entire regions and overlooking intraregional differences in ethnic structure, which are “the norms rather than the exceptions” in most cases (Wong, 2002). Focusing solely on regional or national levels makes it impossible to comprehend intraregional ethnic differences and changes. This is especially relevant for North Macedonia, where the geography and dynamics of ethnicities, as well as the ethnic composition of settlements, vary widely across the country.

Entropy index measures the level of ethnic diversity in each settlement based on its ethnic composition. The entropy index (E) is calculated as follows:

$$E = \sum_{m=1}^{M} (p_m) ln \left(\frac{1}{p_m}\right)$$

Where M is the total number of ethnic groups, pm represents the proportion of ethnic group m in the country, and ln denotes the natural logarithm. When all inhabitants of a settlement belong to a single ethnic group, diversity is minimal (no diversity at all), and the entropy index is 0. The diversity score is maximized when settlement inhabitants are equally distributed across ethnic groups.

The entropy score is influenced by changes in the number of ethnic groups considered in the study (Barros & Feitosa, 2018; Peach, 2009). By a rule, assuming equal distribution among groups, the more ethnic groups you take into the account, the higher entropy index you get (Hammel et al., 2010). Therefore, the choice of the (consistent) number of groups is crucial when dealing with temporal changes in ethnic diversity to ensure comparability across different years. The Macedonian Census in 1994 at the settlement level reported data for six ethnic groups and a residual group - "others", while the later censuses introduced Bosniaks as an additional group. For this analysis, the authors opted to use all six ethnic groups from the 1994

census, and six largest groups from 2021 census which led to the authors merged Vlahs from the last census with the "others" category.

GENERAL DEMOGRAPHIC TRENDS IN NORTH MACEDONIA

After a slight increase in the number of inhabitants in the 1994-2002 census period, when the country recorded over 2 million inhabitants, there followed a significant decline in the number of inhabitants to 1,836,713 in 2021. North Macedonia has faced severe demographic erosion in recent decades due to declining natural growth rates and lower fertility rates in the country's regions (Madjevikj et al, 2016). The total fertility rate has changed significantly, falling from 2.2 to 1.59 children per woman between 1994 and 2002 (Dragović, 2009). The recent period has been characterised by a further decline in the birth rate, and the TFR dropped to 1.44 children per woman around the 2021 census (Eurostat, 2024). If we also observe the migration processes that took place at the end of the 20th and beginning of the 21st century, it can be concluded that they reflect a turbulent time, especially after North Macedonia gained independence. Political instability and tensions in the Balkan region initiated massive migration flows in and out of North Macedonia. During this time, a large proportion of immigrants (and refugees) came to North Macedonia from the former Yugoslav republics, particularly from Serbia (especially from Kosovo and Metohija), Croatia, Bosnia and Herzegovina and Montenegro. Immigrants from Albania and Turkey were also notable. These migration flows have influenced the deepening of ethnic heterogeneity in certain parts of the country (Apostolovska Toshevska et al, 2018). Recent migration processes indicate a significant emigration of the population from Macedonia mainly due to economic instability of the country (Apostolovska Toshevska et al, 2017).

Table 1. Population characteristics and changes in the settlements of North Macedonia

Population size	Settlements				Share of total population		Population change (1994-2021) (No)		
	No		%						
	1994	2021	1994	2021	1994	2021	Growth	No changes	Decline
>100000	1	1	0,06	0,06	22.10	25.60	1	-	-
50001-100000	4	4	0,23	0,23	13.66	14.78	1	-	3
20001-50000	8	8	0,46	0,46	14.21	14.34	1	-	7
5001-20000	25	19	1,43	1,09	11.27	10.03	6	-	13
1001-5000	214	174	12,26	9,97	21.60	20.36	57	-	117
501-1000	231	173	13,23	9,91	8.67	7.13	43	-	130
101-500	567	466	32,47	26,69	7.31	6.68	54	1	411
21-100	375	307	21,48	17,58	1.09	0.89	13	-	294
< 20	201	378	11,51	21,65	0.10	0.18	32	5	341
Uninhabited	120	216	6,87	12,37	0.00	0.00	-	108	108
Total	1746	1746	100,00	100,00	100.00	100.00	208	114	1424

Source: Author's calculation based on data from the Census of Population, Households and Dwellings in the Republic of North Macedonia, 2021

In terms of population, the settlement network of North Macedonia is dominated by Skopje (with 25.6% of the total population of North Macedonia), which is the only settlement with more than 100,000 inhabitants and more than six times the size of the second largest settlement,

Kumanovo. Kumanovo, Bitola, Tetovo and Prilep belong to the group of settlements with more than 50,000 inhabitants, followed by 8 settlements between 20,000 and 50,000 inhabitants (Štip, Veles, Ohrid, Gostivar, Kavadarci, Strumica, Kočani and Kičevo). These settlement groups comprise almost 55% of the total population of North Macedonia and were the only ones that remained constant in terms of associated settlements during the observed period (1994-2021) and the only ones whose share of the total population increased during this period (Table 1). However, population growth was not evenly distributed among them. While Skopje, Tetovo and Kvadraci experienced population growth, the number of inhabitants in the remaining 10 settlements with more than 20,000 inhabitants decreased (Figure 1). In the following four groups, comprising settlements with between 100 and 20,000 inhabitants, a decline in the number of settlements and the number of inhabitants was observed. In the group with fewer than 20 inhabitants and in the group of uninhabited settlements, on the other hand, the number of settlements increased significantly (Table 1). All this points to the widespread process of population decline in the settlements, which has already affected 82% of the settlements. Population growth was observed in 208 settlements, most of which are located in the Skopje region, which further emphasises the existing regional imbalances (Table 1; Fig. 1).

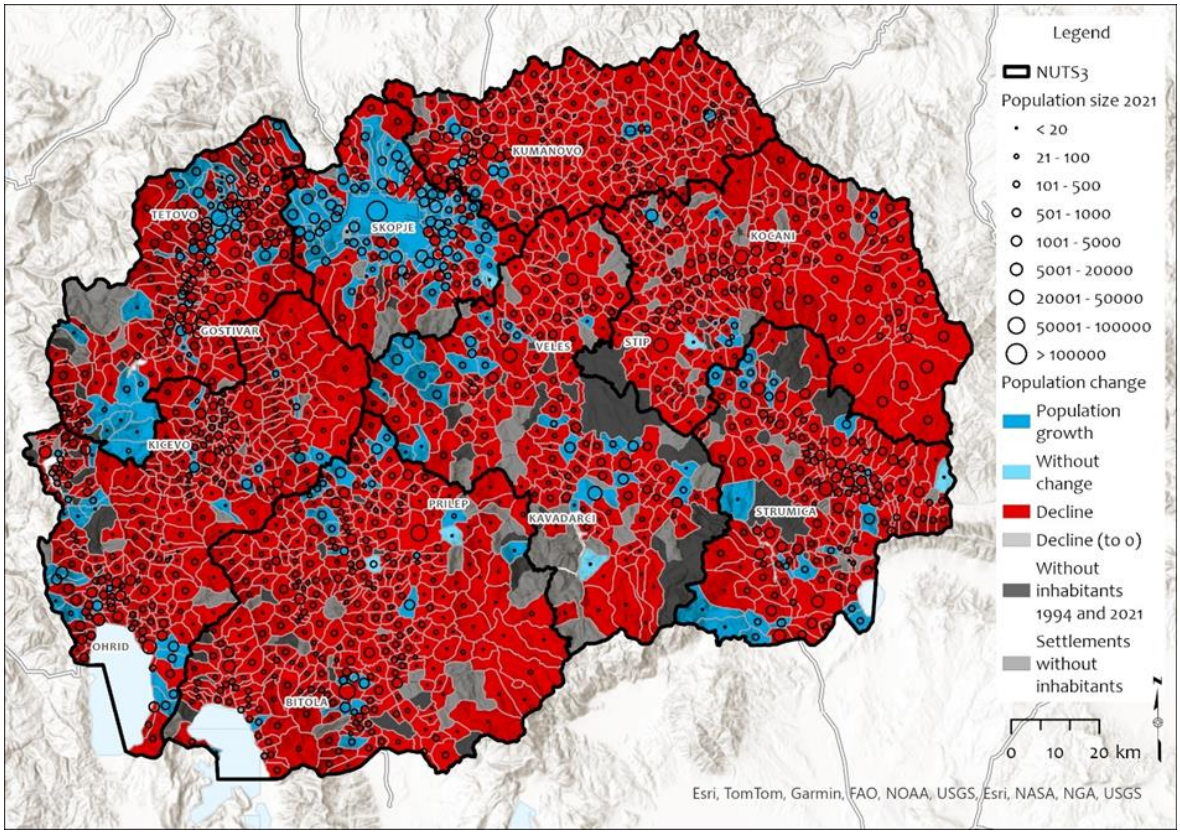

Figure 1. Population size and changes in the settlements of North Macedonia
Source: Created by the authors.

RESULTS AND DISCUSSION

Ethnic diversity analysis at the settlement level for the 2021 census reveals substantial regional disparities (Figure 2; Table 2). Regions with high diversity are concentrated in the densely populated northern parts of North Macedonia, particularly between the capital city Skopje and

Kumanovo, and to a lesser degree, in the upper Vardar River valley between Tetovo and Gostivar. Additionally, areas with higher diversity include the Vardar River valley (Gradsko – Negotino – Demir Kapija) a major transportational artery, the Western border regions near Crni Drim and Radika valley and around Lake Prespa and Bitola, an area historically inhabited with different ethnic minorities. "Islands" of higher ethnic diversity are found around some larger urban settlements such as Kicevo, Stip, and Strumica. However, North Macedonia also has a high number of monoethnic settlements (settlements with 0 entropy) and settlements with higher shares of just one ethnicity. These are predominantly situated in rural, higher altitude and less populated areas on both sides of the Vardar valley.

Table 2. Ethnic diversity of settlements in North Macedonia by size; Source: Created by the authors.

Population size	Monoethnic settlements (No)		Entropy index in 2021 (% settlements)					Median for entropy index	
	1994	2021	< 0.05	0.05-0.15	0.15-0.25	0.25-0.4	>0.4	1994	2021
> 20000	0	0	-	-	7,7	30,8	23,1	0,241	0,3
5001-20000	0	0	-	5,3	42,1	15,8	10,5	0,146	0,152
1001-5000	28	20	11,5	43,7	15,5	6,3	14,4	0,027	0,037
501-1000	59	31	17,9	39,3	16,2	5,8	10,4	0,019	0,03
101-500	261	132	28,3	33,7	17,0	5,6	8,6	0,011	0,031
21-100	267	189	61,6	7,2	17,3	4,2	7,8	0	0
< 20	177	332	87,8	-	3,7	4,2	3,2	0	0
Total (No)	792	704	324	210	83	124	85	0	0

Source: Author's calculation based on data from the Census of Population, Households and Dwellings in the Republic of North Macedonia, 1994-2021

This paper analysed ethnic diversity changes based on data from the 1994 and 2021 censuses (Table 3; Figure 3 and 4). The findings suggest a slight overall increase in ethnic diversity (from 0.515 to 0.536) during the study period. This increase can be primarily attributed to a significant decrease in the ethnic Macedonian population, which accounted for around 90% of the total decline in North Macedonia, alongside stagnation or modest growth among certain ethnic minority groups (e.g., Albanians and Roma). However, the changes in diversity at the settlement level were much more complex. A decrease in entropy was observed in 426 settlements (190 of which became monoethnic), while entropy increased in 590 settlements. In 2021, there were 704 monoethnic settlements, slightly fewer than in 1994 (792 settlements).

The changes in ethnic diversity manifest more complexity when examining settlements through their demographic characteristics. Generally, ethnic diversity increased more in settlements that experienced population growth, compared to a larger number of smaller and depopulating settlements. This indicates that in the settlements with positive demographic changes, population increase tended to have a more heterogeneous than the population structure of the settlement.

However, a more nuanced understanding occurs when comparing population dynamics with ethnic diversity changes. We identified four different groups of settlements based on population and diversity dynamics. The first group comprises settlements with positive demo-

graphic and entropy changes, which are spatially and demographically diverse. These settlements, mostly ranging from 100 to 5000 inhabitants, include the capital city of Skopje and exhibit dispersed spatial patterns, with an exception of few settlements adjoining Skopje.

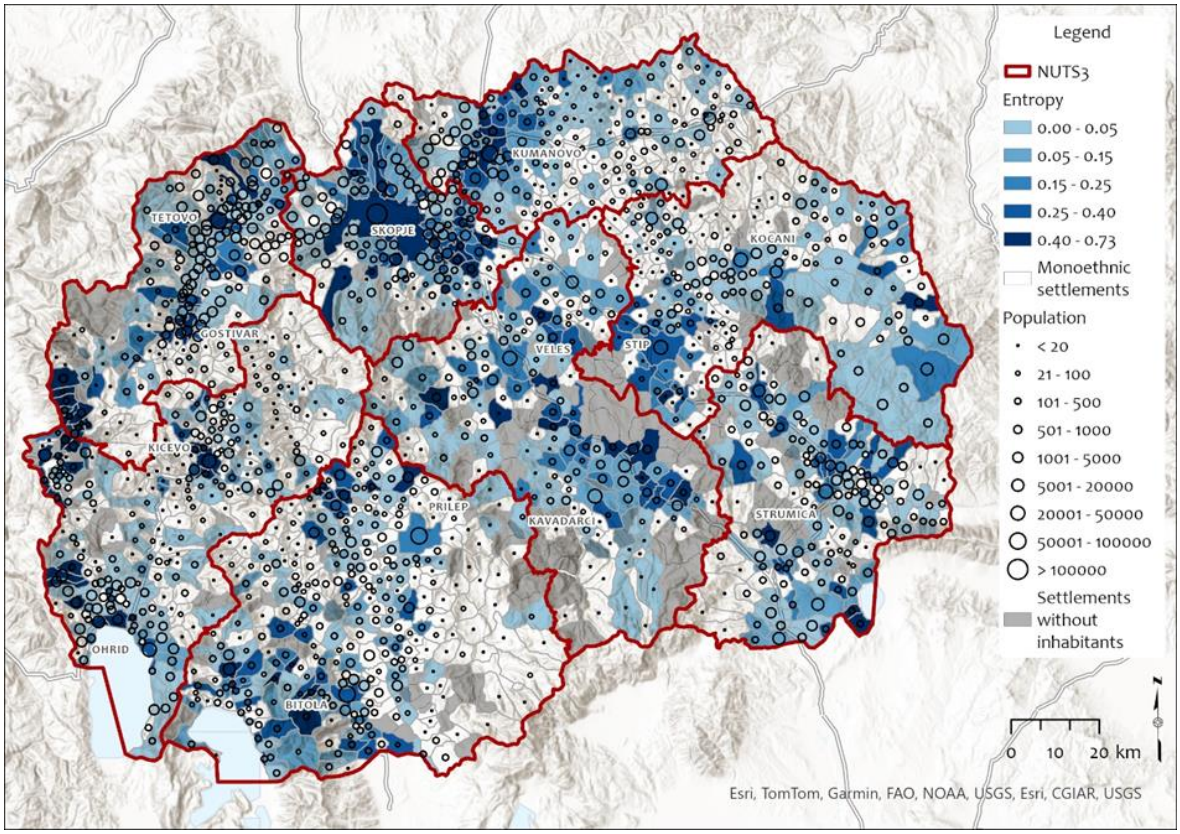

Figure 2. Ethnic diversity and size of settlements in North Macedonia, 2021
Source: Created by the authors

Table 3. Ethnic diversity and population changes in North Macedonia (1994-2021)

Population size	Entropy growth - Population growth		Entropy growth - Population decline		Entropy decline - Population growth		Entropy decline - Population decline		Monoethnic		Total
	No	%	No	%	No	%	No	%	No	%	No
>100000	1	100,0	-	-	-	-	-	-	-	-	1
50001-100000	-	-	3	75,0	1	25,0	-	-	-	-	4
20001-50000	1	12,5	7	87,5	-	-	-	-	-	-	8
5001-20000	3	15,8	10	52,6	3	15,8	3	15,8	-	-	19
1001-5000	25	14,4	64	36,8	24	13,8	41	23,6	20	11,5	174
501-1000	23	13,3	74	42,8	10	5,8	35	20,2	31	17,9	173
101-500	29	6,2	209	44,8	15	3,2	81	17,4	132	28,3	466
21-100	8	2,6	93	30,3	-	-	17	5,5	189	61,6	307
< 20	7	1,9	33	8,7	1	0,3	5	1,3	332	87,8	378
Uninhabited	-	-	-	-	-	-	-	-	-	-	216
Total	97	5,6	493	28,2	54	3,1	182	10,4	704	40,3	1746

Source: Author's calculation based on data from the Census of Population, Households and Dwellings in the Republic of North Macedonia, 1994-2021

Population and diversity growth in these settlements are primarily driven by ethnic minorities. In the second group, entropy increased while the population declined. This group is

the most numerous, encompassing almost one-third of all inhabited settlements in North Macedonia. These settlements are mostly located in regions where Macedonians constitute the majority of the population, notably in the Eastern and South-eastern regions. The increase in diversity is mainly attributed to negative demographic trends, particularly among the Macedonian population. These settlements comprise primarily smaller settlements (with populations ranging from 100 to 500 inhabitants) but also include larger urban centers such as Kumanovo, Bitola, Prilep, Stip, Veles, Ohrid, and Gostivar, among others.

The third group consists of a few settlements with positive population change but declining diversity. Here, the dominant ethnic group grew more than the rest, resulting in a reduction of ethnic diversity. These settlements, above average in size (with Tetovo being the only larger settlement), are mostly located next to larger urban areas. Lastly, the fourth group comprises settlements with negative changes in both population and diversity during the study period. In most cases, all ethnic groups experienced population decline, with minorities declining more than the dominant ethnicity. These settlements, characterized by a dispersed spatial pattern, exhibit some "spatial affinity" towards the Skopje region and upper Vardar valley.

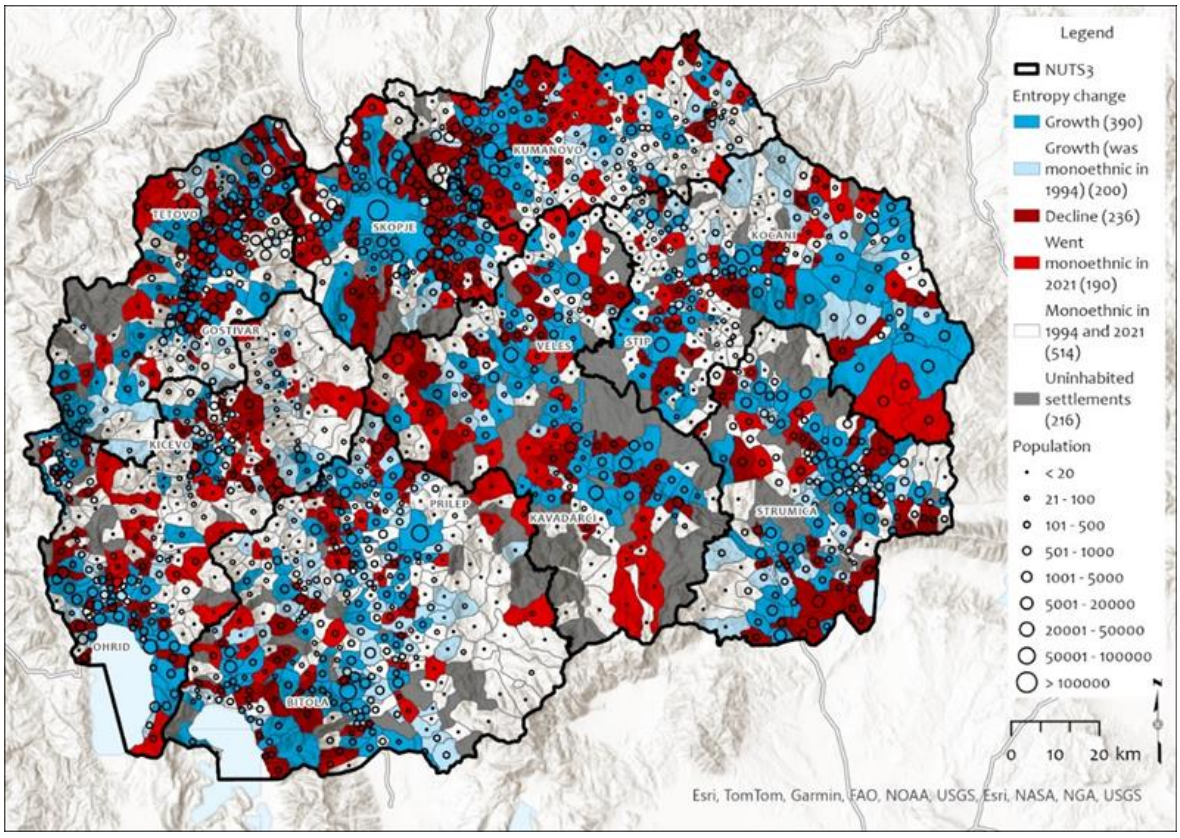

Figure 3. Ethnic diversity changes in North Macedonia (1994-2021);
Source: Created by the authors

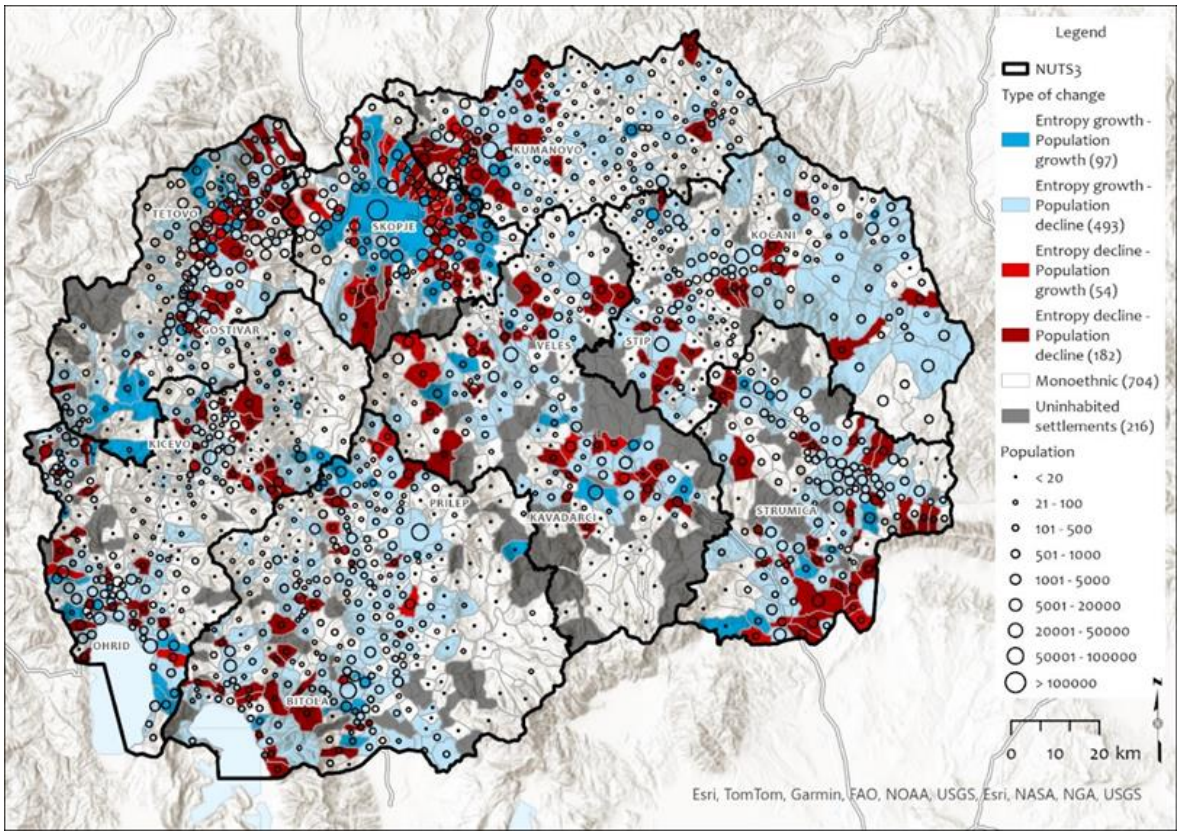

Figure 4. Ethnic diversity and population changes in North Macedonia (1994-2021)
Source: Created by the authors

CONCLUSION

This study departs from the typical research focus on ethnic diversity, which often centres on economically developed regions characterised by high levels of international immigration. Instead, our attention is directed towards North Macedonia, a developing multiethnic country marked by depopulation and emigration. Our analysis covers period from 1994 to 2021 and operates at a lower geographical scale – settlements.

The study findings reveal important regional disparities in ethnic diversity within North Macedonia. Much of the country's territory is dominated by settlements with low levels of diversity, nearly half of all inhabited settlements are monoethnic, primarily located in rural, higher altitude, and sparsely inhabited areas. While "pockets" of ethnic heterogeneity are evident around larger urban centres and some historically diverse, particularly border regions. In terms of diversity dynamics, our results indicate that demographic trends have been crucial in shaping ethnic diversity, particularly declining fertility rates and emigration. An important finding in particular is the relationship between ethnic diversity changes and uneven depopulation across different ethnic groups. The decline in the number of Macedonians, who constitute the majority population in most settlements, accompanied by the slower decline and stagnation of some other ethnicities, has led to an increase in ethnic diversity and a decline in ethnic segregation. Regional disparities in ethnic diversity further emphasise this relationship, with increases primarily observed in settlements with a majority Macedonian population, par-

ticularly in the Eastern and South-eastern regions. We can point out that migration is a contributing factor to ethnic diversity, particularly evident in the immigration of individuals from diverse ethnic backgrounds to urban centres like Skopje and its metropolitan region.

Overall, our analysis highlights the significant impact of demographic erosion, especially among the majority population, on ethnic diversity in North Macedonia. While some settlements have experienced population growth and increased ethnic diversity, a larger number have faced population decline and increased entropy, emphasising the complex interplay between demographic dynamics and ethnic diversity. These findings offer valuable insights into the socio-cultural and demographic landscape of the country, providing a foundation for understanding the various factors influencing changes in ethnic diversity and informing measures to promote social cohesion and integration. These findings have implications for understanding the socio-cultural and demographic landscape of the country and can serve as a basis for a better comprehension of the various factors influencing changes in ethnic diversity and help to develop appropriate measures to promote social cohesion and integration amidst evolving demographic landscapes.

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