Stanovništvo (2015), 53(2): 87-111

UDK 314.18:364.614(439)
DOI: 10.2298/STNV1502087P
Originalni rad
Primljeno: 27.10.2015.

DEMOGRAPHIC PROCESSES OF DEVELOPMENTALLY PERIPHERAL AREAS IN HUNGARY

János PÉNZES,[*] István Zoltán PÁSZTOR, [*] Patrik TÁTRAI [▽] [♦]

The current study investigates the demographic processes and challenges of the Hungarian developmentally peripheral settlements. Demographic challenges can be regarded as important consequences of the social and economic disadvantages in spatial terms. However, the interrelating negative demographic tendencies cause even more backward situation blocking or hindering the development.

The objective of the current analysis is to discover the demographic characteristics of the peripheral settlements, to detect the spatial disparities and to point out the correlation between backwardness and the investigated demographic phenomena with the help of the census databases 1980-2011 and local datasets on Roma population. Using methods of multivariate statistical analysis, seven indicators were selected in order to achieve the goals of the paper. Backward areas are primarily characterized by population decrease with significant disparities, but there were growing communities among them as well. Some small villages in Northern and Southwestern Hungary will foreseeably face complete depopulation within few years.

Primarily small sized villages faced intense decrease in rate of natural change, but dynamic population growth was also detected. Migration loss tends to correlate with the extent of peripherality, as increasing values of migration balance accompany decreasing ratio of peripheral settlements in the area. The ratio of elderly population shows an expressively two-faced character, with the extremely aging and very juvenile settlements.

The ratios of Roma population reflect the scale of peripherality. Extended ethnic change could be predicted in Northeastern and Southwestern Hungary and near the Middle Tisza valley. Presented demographic processes will make the backwardness of most of the peripheral settlements stable.

Keywords: *aging, depopulation, Hungary, peripheral areas, Roma population*

[*] Department of Social Geography and Regional Development Planning, University of Debrecen, Hungary.

[▽] Geographical Institute, Research Centre for Astronomy and Earth Sciences, Hungarian Academy of Sciences (HAS), Hungary.

Introduction

The center-periphery pair of concepts can be interpreted in three ways (Nemes Nagy, 1996):

• positional (geographical) center and periphery, where the center means a designated, enhanced place, while the periphery means the marginalized settlements – it is more often coupled with the issue of accessibility (Tóth, 2006; Tóth, Dávid, 2010);

• developmental (economical) center and periphery, which can be identified as the economic development and underdevelopment with social consequences as well;

• authority center and periphery, in which the dependence of power and imbalance of interests appear.

In the following we refer to the concept of developmental peripherality from the listed definitions and the term ″backwardness″ is used as synonym.

Hungary – similarly to the other former socialist countries in East-Central Europe – went under a fundamental social-economic transformation as the result of the regime changes of 1989-1990. The changes were accompanied by the strong increase of regional inequalities, disparities between developed and undeveloped areas. The former more levelling spatial pattern became (much) more polarized (Gorzelak, 1996; Nemes Nagy, 2001; Sokol, 2001; Szabó, 2003; Abrhám, 2011).

The peripheral areas restructured following the alteration of the spatial structure. Several – traditional and new factors – became important components and describing variables of the peripheral situation and the dimensions of inequalities. In the current study a recent and complex delimitation of the Hungarian peripheral areas was introduced. The most relevant demographic processes – namely the depopulation and the ethnic changes – were analyzed with the help of the census data and ethnic statistics. The specific aspect of spatial peripherality was emphasized and highlighted in the study.

Demographic characteristics of backward areas

Backward (we use as synonym for developmentally peripheral) areas are characterized by interrelating and overlapping social-economic-infrastructural conditions that in most cases provide worse perspectives for the population than prosperous territories (even in the different countries). This is the main reason for *the population decrease* that can be regarded as one of the most typical demographic phenomenon of these

DOI: 10.2298/STNV1502087P

areas. However, the general trends of larger areas are typically representing significant spatial disparities, in some cases even opposite trends (Miszczuk, Wesołowska, 2012). Decrease in the population number was regarded as a basic variable for indicating economic depression during the socialist era in the Central European countries (Gawryszewski, Potrykowska, 1988; G. Fekete, 1991), but its evaluation had changed during the last decades primarily in the light of the process of suburbanization. Continuing depopulation might become a major obstacle for development and it might directly cause the conservation of the unfavorable social-economic situation or further degradation (Beluszky, 1981; Todorović, Drobnjaković, 2010).

The two major contributions to the process of depopulation are the natural decrease and the migration loss. Natural decrease is the result of the higher ratio of death rate and the moderate number of births deriving from the outmigration of reproductive age population and the fertility decline (Coleman, 1993). Migration loss can be regarded as a typical demographic symptom of backward areas since the flow of migration oriented to the core from the peripheries (Vining, Pallone, 1982; Kurek, 2008; Viñuela, Vázquez, 2012**)**. As migration is always selective, the young generations (Mkrtchyan, 2013) and skilled inhabitants are the most important participants in the internal migration flows.

The process of depopulation – partly as the result of the selective migration – is often accompanied by significant aging. The increasing ratio of elderly population is a general challenge in most developed countries and transitional economies (Fésüs et al., 2008; Lee, Mason, 2010) causing a great challenge for the public pension systems (Zdravković, Domazet, Nikitović, 2012), but the symptoms are more striking in the case of the peripheral areas as the result of the previously listed demographic processes.

Ethnic dimension of peripherality has also been emphasized in some of the studies (Lonsdale, Archer, 1999; Bottlik, Gyuris, 2010), but this issue unambiguously represents major territorial dependence relating to the minorities of a country. Certain demographic features have characteristic ethnic relationships as well (Penev, Predojević-Despić, 2012). Sharply disparate demographic behavior of the Roma population gives the reasons for highlighted emphasis in the relating studies (Rosicova et al., 2009; Nagy et al., 2015).

However, it is important to emphasize that demographic conditions themselves do not indicate the peripherality inevitably (Lonsdale, Archer, 1999), but the demographic processes are regarded as important elements of territorial development. As the result of these interdependences,

DOI: 10.2298/STNV1502087P

demographic indicators are often involved in the delimitation methods of peripheral or backward areas.

Delimitation of peripheral areas in Hungary

The identification of peripheral areas is not regarded as a simple challenge. Numerous approaches and methods came to light during the last decade even from Hungary. The multidimensional character of backwardness (the term is used as the synonym of 'peripherality') is the most important reason for the extremely broad spectrum of variables describing and explaining this issue. At the same time, different multivariate statistical methodologies are applied to create complex indicators as a kind of essence deriving from several variables. Besides of these, the dynamically transforming content and spatial pattern of peripherality makes the comparative analysis of different delimitation attempts almost impossible (see details about this issue in the cited study – Pénzes, 2013).

Stieglitz-Sen-Fitoussi Report (Stieglitz, et al, 2009) and the proposed composite indicator called *objective well-being method* provide an exceptionally complex and sensitive approach thank to its ″holistic″ view (Nagy, Koós, 2014).

After taking the available resources and studies into consideration, we decided to create an own delimitation of peripheral settlements. In order to find the most appropriate variables describing the social-economic disparities, 136 different indicators were collected on the level of microregions. Seven variables were chosen from this set after a systematic narrowing procedure requiring multiple steps. This procedure included a selection of indicators by their applicability and availability (dynamic and markedly incomplete ones were not included). Test of normality was carried out to find the indicators having normal distribution. Finally, a factor analysis with principal component method was made in order to reduce the dimensions of variables and to find the correlating ones (for more details see: Pénzes, 2014).

The selected indicators were the following:

- Elderly dependency ratio (ratio of population over 65 years in the percentage of the population between 15-64 years), percentage, 2011;
- Taxable income per capita, Ft, 2012;
- Ratio of children supported by regular child protection aid, percentage, 2011;
- Number of inhabitants per dwelling, 2012;
- Average housing price, million Ft/dwelling, 2011;

DOI: 10.2298/STNV1502087P

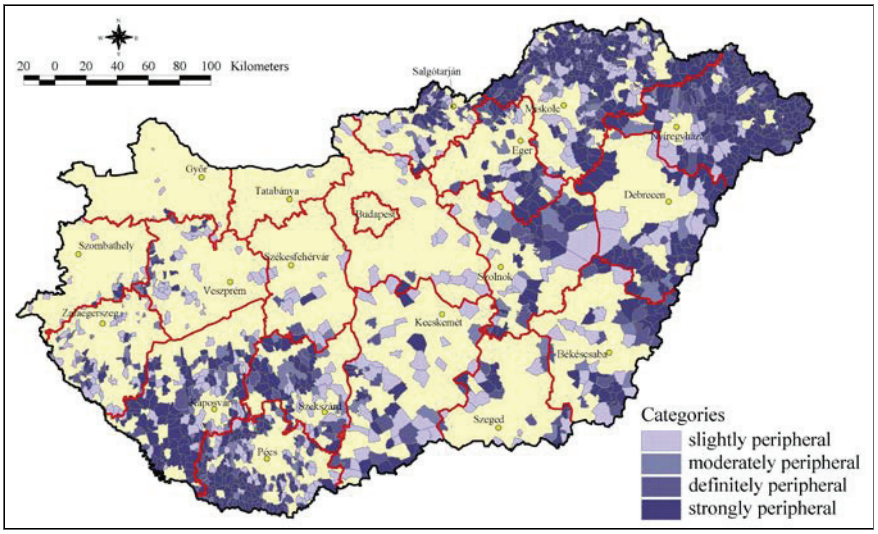
• Number of respiratory diseases cases per capita (compared to the population over 60 years), 2012;

• Ratio of newly built dwellings (newly built dwellings between 2003 and 2012 in the percentage of the dwellings), percentage, 2012.

The selected indicators were not available for the same year on the level of settlements. The methodology of the complex indicator calculation was fairly combined. Eight different procedures were tested and evaluated in the cited study (Pénzes, 2014). The followings were taken into consideration in the case of the seven chosen variables:

• ranking;
• scoring;
• Bennett-method (transformation into the ratio of maximum value);
• normalization;
• standardization;
• factor analysis with principal component method;
• cluster analysis with hierarchical clustering;
• discriminant analysis.

Figure 1
Peripheral settlements in Hungary categorised by the extent of their peripheral situation, 2012



Source: Edited by the results from HCSO databases.

The listed calculations drew the attention to the different spatial characteristics of peripheral situation expressed by the seven indicators. During the procedures, approximately one third of the Hungarian

DOI: 10.2298/STNV1502087P

settlements were regarded as peripheral. On the basis of these multivariate methods a specific delimitation was carried out. All of these methods were included, instead of choosing one of them, and the extent of peripherality is reflected by the number of methods classified the settlements as peripheral. Four categories were separated by the extent of peripheral situation. The more the calculations put a given settlement into the delimited category, the more clearly the backwardness was identified. Slightly peripheral category collected the settlements that were delimited by one or two methods; moderately peripheral was titled as backward by three or four methods. Definitely peripheral settlements were classified as backward by five or six methods and finally strongly peripheral settlements were unambiguously delimited by at least seven methods.

Table 1
Some characteristics of the categories of peripheral areas, 2013

Categories	Number	Ratio (%)	Number	Ratio (%)	Average population size
	of settlements		of population		
Strongly peripheral	781	24.76	796,248	8.04	1,020
Definitely peripheral	217	6.88	242,234	2.45	1,116
Moderately peripheral	116	3.68	141,195	1.43	1,217
Slightly peripheral	385	12.21	653,559	6.60	1,698
Non-peripheral	1,655	52.47	8,075,562	81.50	4,879
Total	3,154	100.00	9,908,798	100.00	3,142

Source: Calculated by the census data from HCSO.

The results remarkably illustrate the spatial pattern of Hungary after the millennium. The following calculations analyzing the demographic processes are based on this territorial categorization. The average population size of settlements is definitely low among the peripheral categories. Rest part of the territories with micro and small villages became part of the backward areas according to the current delimitation. It is important to emphasize that most of the recent Hungarian analyses gave more or less similar results (Tóth, 2013).

DOI: 10.2298/STNV1502087P

Demographic processes of peripheral areas

Decreasing population size

The total population in Hungary has been continuously decreasing since 1980 (Kovács, 2004). Some peripheral settlements were characterised by even more pronounced decrease of population size unlike other backward areas. In general, the most significant drop in the population number was dominant among the peripheral group of settlements and especially in the case of the most backward category (Table 2). Moderate decrease is typical among the group of non-peripheral settlements.

Table 2
Change in the number of population in the categories of peripheral areas, in the percentage of the population number in 1980 (in percentage)

Categories	1990	2001	2011	Change since 1980
Strongly peripheral	88.40	84.91	76.96	–23.04
Definitely peripheral	93.54	93.54	89.17	–10.83
Moderately peripheral	93.07	91.86	84.95	–15.05
Slightly peripheral	93.86	95.02	89.67	–10.33
Non-peripheral	98.39	96.45	94.99	–5.01
Total	96.88	95.23	92.79	–7.21

Source: Calculated by the census data from HCSO.

In order to detect the most important tendencies in the number of population, the data for 2011 was expressed in the percentage of the value in 1980 (the emblematic year in the turn of demographic tendencies). Five categories were created with special regard to the extreme values. Category of "stagnating" included the settlements with 90–110 percent, "increasing" contained those settlements with 110–200 percent and it was reasonable to form the category of "dynamically increasing" number of population for the even higher values. In contrast, settlements with 50–90 percent values were labelled as "decreasing" and those settlements where the number of population were less than 50 percent of the value in 1980 became part of the "dynamically decreasing" category.

Prospering and dynamic areas of Hungary can be predominantly found in the agglomeration of Budapest, in Northern Fejér, in Northern Győr-Moson-Sopron and on Eastern basin of the Lake Balaton. Suburban zones in the surroundings of the largest towns can also be detected.

DOI: 10.2298/STNV1502087P

However, backward areas are primarily characterised by decreasing and dynamically decreasing population number, with striking disparities. The Northern Cserehát area (Northern Borsod-Abaúj-Zemplén County) and the ethnographic subregion of Őrség and Göcsej in Zala County concentrate those settlements, where the number of population at least halved during the last three decades. 197 settlements have dynamically decreasing number of population in Hungary of which 23.8 percent were strongly peripheral, and one third – due to their better social and economic conditions – were not. At the same time, groups of settlements are characterized by dominantly stagnating values in the Central and Western part of Szabolcs-Szatmár-Bereg County and in the South Western territory of Baranya County. These differing characteristics are having close relation to the demographic attitude of the Roma population (Havas 1999; Kovács, 2004; Pásztor, Pénzes, Bántó, 2012; Balogh 2014).

The described pattern is in close relation to the traditional structure of the Hungarian settlement network. The population loss was enormous in the case of settlements located in territories with the mosaic of small-tiny villages far from the great urban centres (Bajmócy, Balogh, 2002; Beluszky, Sikos, 2007). This process is tinged by the growing number of Roma communities (see later). Some small villages in Northern and Southwestern Hungary with enormous population decrease will foreseeably face complete depopulation within few years.

The process of depopulation means a significant challenge problem in the case of the peripheral settlements so that this issue was illustrated on the summarizing map (see Figure 9) – its components were not detailed. Enormous population decrease categorised the settlements where the number of population halved since 1980. Significant decrease meant at least 25 percent shrinking between 1980 and 2011.

Decreasing level of natural change

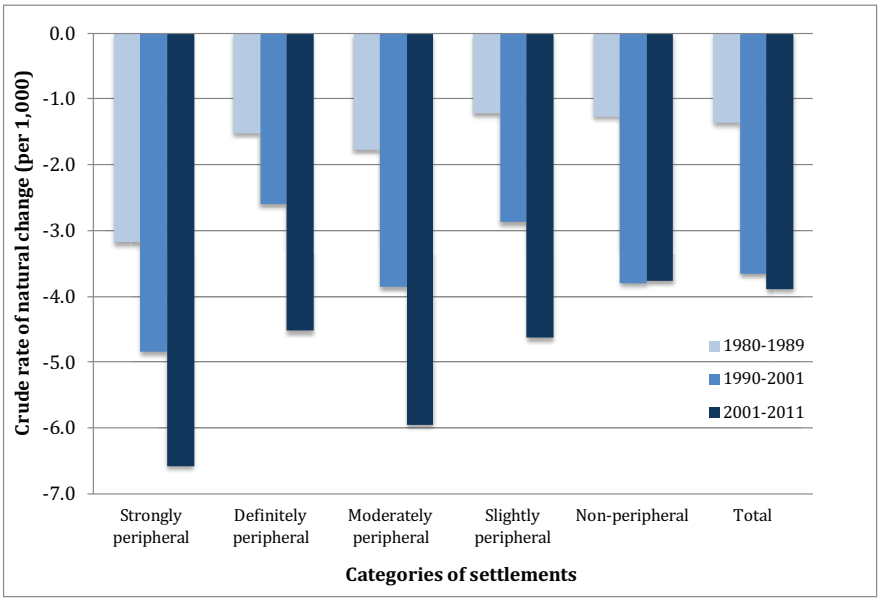
The change in the population number has been resulted by its components, the natural change and the migration balance. (The issues of the crude number of live births or mortality rates are not separately investigated within this study.)

As it was previously described, decreasing level of natural change results from the outmigration of reproductive age population and the fertility decline. This process is even more dominant in the case of the peripheral settlements in Hungary depicted by the Figure 2. The decreasing level of fertility directly resulted in decrease in natural change during the 1980s in the country. Dynamic falling of the values continued during the mid-1990s and a low level fluctuation has become characteristic until nowadays. Spatial disparities within the country reflect cultural (traditions

DOI: 10.2298/STNV1502087P

of large family in Eastern Hungary) and ethnic factors (Kovács, 2004). The categories of peripheral settlements reflect different trajectory, especially the strongly peripheral ones, since the tendency of relative natural decrease has not slowed down since the millennium.

Figure 2
Average crude rate of natural change across the last three decades by the categories of settlements



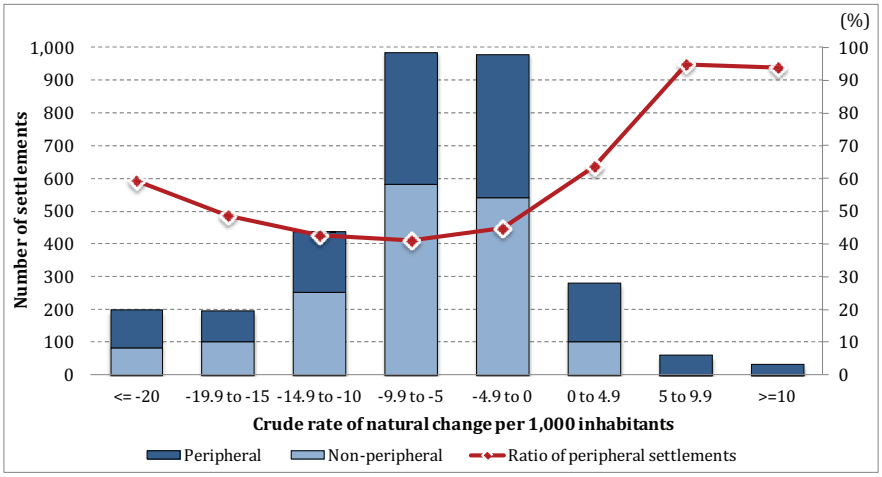
Source: Calculated by the census data from HCSO.

Primarily small sized villages faced strong decrease in rate of natural change. At the same time, the change of population number indicated that some of the peripheral settlements have dynamic population growth principally, which is caused by natural increase. The outstanding fertility rate and high level of natural increase could be detected in the case of settlements having significant ratio of Roma population. This two-faced character has been depicted by the ratio of peripheral settlements within the categories created according to the values of rate of natural change per 1000 inhabitants (Figure 3). It can be clearly seen that their share forms a U-shape curve with the highest ratios at the extreme categories. More than 17.5 percent of peripheral settlements (263) experienced natural increase between the census years of 2002 and 2011, which represents about 70 percent of all the settlements with positive natural change during the same period. Extreme natural increase was typical almost in every peripheral settlement with Roma majority (e.g. Csenyéte, Gadna, Tornanádaska,

DOI: 10.2298/STNV1502087P

Tiszabő), besides some juvenile developed settlements in the agglomeration of Budapest (e.g Telki, Pilisjászfalu, Üröm).

Figure 3
Number of settlements and the ratio of peripheral ones (in percentage) by crude rate of natural change between 2001 and 2011



Source: Calculated by the census data from HCSO.

The Roma communities represent significant differences that make the question of reproduction more complex, thus the settlements with Roma majority should not be generalized. The fertility might depend upon the education, the employment and the traditions that are modified by the social networks and connections (Durst, 2007). Some case studies confirmed the greater effect of social segregation (lack of access to different ways of lifestyle) on the demographic (fertility) characteristics in spite of the residential segregation. There are considerable disparities amongst the different Roma ethnic groups as well (Janky, 2007).

Migration loss

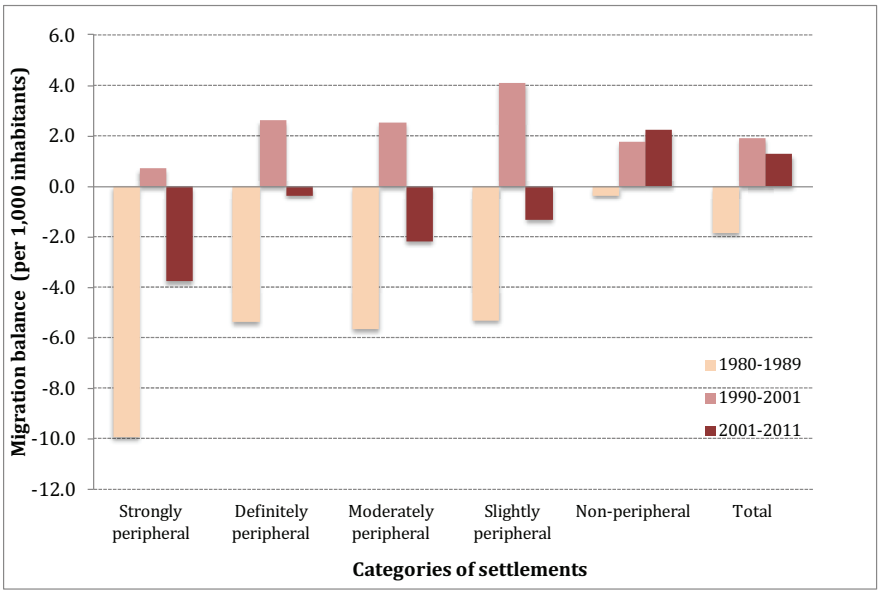
Migration balance has an important contribution to the territorial development because the mobility of the population and the economic prosperity are in relation with each other (but their correlation cannot be regarded as regular). This is the reason why migration balance was part of each official delimitations of the backward areas in Hungary.

Migration tendencies provide a less pronounced character in the light of the trajectories calculated by the census migration data. Massive migration loss was dominant during the 1980s, which completely altered after the political transition of Hungary. The country became attractive for foreigners (non-Hungarian citizens but mainly ethnic Hungarians from the

DOI: 10.2298/STNV1502087P

neighboring countries) (Kincses, 2015) and for people who emigrated during the previous decades. Latter one meant the immigration (or counter-flow) of elderly population (Illés, 2010). Current flow of Hungarian migrants towards Western Europe or the recent crisis of international mass immigration – due to the presently missing datasets – is not included in this analysis.

Figure 4
Average migration balance across the last three decades by the categories of settlements



Source: Calculated by the census data from HCSO.

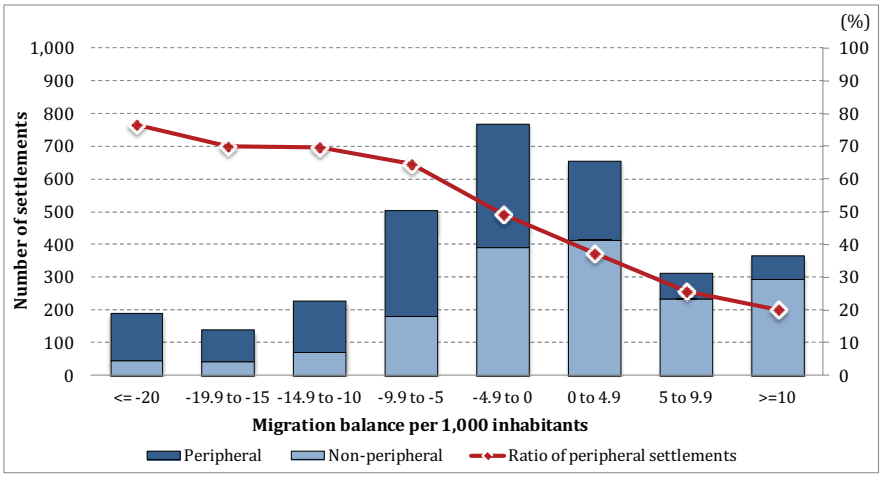
Different characteristics of the peripheral areas can be seen on the basis of the census data from the 1980s. Enormous migration loss was dominant in the case of the strongly peripheral group of settlements that turned to migration gain during the 1990s after the political transition. On the one hand this change fitted into the national trend while on the other hand, it was the result of the urban-rural migration caused by the post-socialist transformation crisis. As a part of this process, significant number of citizens had to move out from the larger towns to villages after losing their jobs and having increasing costs of living (Baros, Pénzes, Tóth, 2007). The partly declassed population had completely different orientations than the participants of suburbanization.

The phenomenon of suburbanization became a remarkable demographic (and economic as well) component of the spatial pattern of Hungary

DOI: 10.2298/STNV1502087P

(Dövényi, Kovács, 1999; Timár, 1999; Bajmócy, 2003; Koós, 2008). Suburbanization became the most characteristic spatial demographic process in the Hungarian migration trends (Dövényi, 2009). However, suburbanization is primarily the demographic phenomenon of non-peripheral areas, but the attraction of suburban zones is significant for the peripheral settlements in Hungary.

Figure 5
Number of settlements and the ratio of peripheral ones (in percentage) by the migration balance between 2001 and 2011



Source: Calculated by the census data from HCSO.

Migration loss tends to correlate with the extent of peripherality, as increasing values of migration balance accompany decreasing ratio of peripheral settlements in the groups of settlements (Figure 5).

The out-migration of the population from the peripheral settlements and the loosing of the skilled workforce and the young reproductive age groups lead to more or less irreversible demographic processes affecting radically the future development perspectives.

Aging

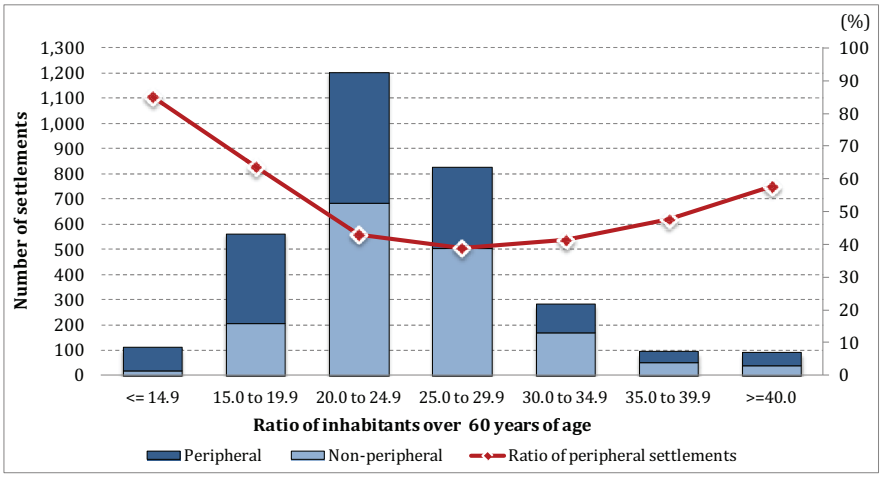
The dynamic population aging of Hungary could be detected since the 1980s. In 1996, the first time in Hungary's history, the number of people above 60 years surpassed the number of people under the age of 14 (Kovács, 2004). The most striking aging process is detectable in the case of the small settlements affected by long-term drastic migration loss.

In the current study only a static view of aging is analyzed, based on the last census data.

DOI: 10.2298/STNV1502087P

The ratio of the elderly population (in the age over 60 years) was 23.46 percent at the national level by the 2011 census. The distribution of settlements reflects this average (Figure 6). The ratio of peripheral settlements represents one peak in the case of the group of settlements with more than 40 percent of elderly population. Old age population was in majority in 20 villages. Remarkably higher ratio of peripheral settlements could be detected in the juvenile groups of settlements where the ratio of peripheral settlements exceeded 80 percent.

Figure 6
Number of settlements and the ratio of peripheral ones (in percentage) by the ratio of inhabitants aged 60 years and over (in percentage) in 2011



Source: Calculated by the census data from HCSO.

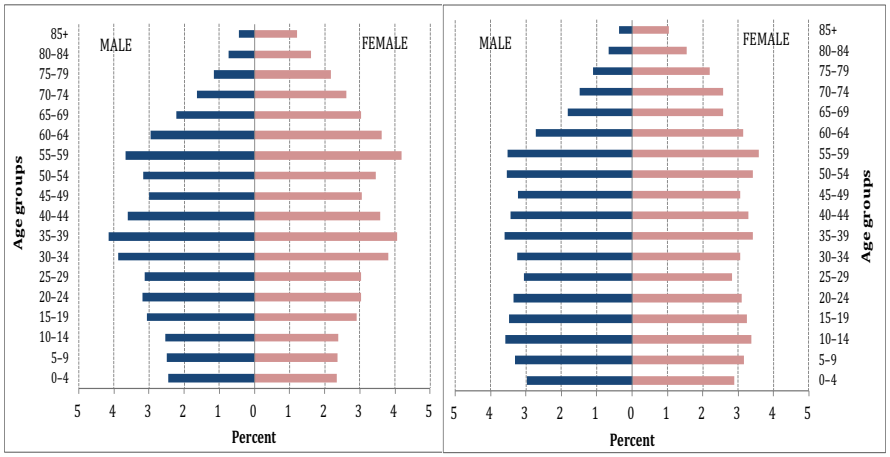
The age pyramid of Hungary represents the age structure of a typical shrinking population. At the same time, the group of settlements in the strongly peripheral category provides an example for a stagnating population (Figure 7). Even more extreme pyramid of age structure could be found among the Hungarian villages (Baros, Pénzes, Tóth, 2007; Süli-Zakar, Pálóczi, Szabó, 2013). This fact draws the attention to the different population "mass" of the settlements. The extremely aged small villages have less weight and decreasing role among the peripheral settlements regarding their population number, but the backward settlements with juvenile character have larger and increasing importance. From this point of view, it can be stated that peripherality reproduces itself.

Population aging represents one of the greatest challenges for the peripheral settlements and for this reason it was highlighted on the concluding map (see Figure 9). Outstanding aging was indicated where the ratio of elderly population presented 150 percent of the national

DOI: 10.2298/STNV1502087P

average, while significant aging was denoted where this ratio was at least 125 percent according to the 2011 census.

Figure 7
Age pyramid of total population (left) and strongly peripheral settlements (right) in Hungary in 2011



Source: Calculated by the census data from HCSO.

Ethnic change

Peripheral areas can be investigated from a special viewpoint, mainly the issue of ethnicity as well – as it was previously mentioned several times. At the beginning of this part of the overview it is important to emphasize that only one ethnic group is in the focus of the current research, namely the Roma population. In the relating Hungarian literature the expression "Gypsy" is often used as synonym without pejorative meaning.

The outstanding attention is justified by the significant overlapping between the location of backward areas and the territorial pattern of Roma population. In other words, high ratio of the Roma population has been traditionally dominant in the most underdeveloped areas.

Southwestern (Baranya, Somogy and Tolna Counties) and Northeastern Hungary (Borsod-Abaúj-Zemplén, Hajdú-Bihar, Heves, Jász-Nagykun-Szolnok, Nógrád and Szabolcs-Szatmár-Bereg Counties) are the traditional living areas of the Roma population (Kocsis, Kovács, 1991). Most of the studies investigating the territorial features of the Roma minority remarked their dominant concentration in these regions (approximately two-thirds of the community). Roma inhabitants represented a large concentration in the small villages – according to the sociological survey made in 1993, a greater dominance of villages (60.5

DOI: 10.2298/STNV1502087P

percent) was detected in the geographical distribution of the Roma population (Havas, 1999).

The employment situation of the Roma population did not differ significantly from the other groups of the society during the socialist era (Janky, 2004); however, the political and economic changes caused a radical alteration and worsened the position of Roma communities (Ladányi, 2012). As a consequence of cumulative problems, the employment of the Roma population became one of the most challenging issues of the labour markets all over Central Europe (O'Higgins, Ivanov, 2006).

The societies of the traditionally backward regions became degraded resulting from the young labour force migrating elsewhere in the hope of better opportunities. The economic situation of the areas hit by out-migration and backwardness further deteriorated after the transition. The declining real estate prices and the deserted homes attracted the population with a lower status – typically Roma – crowded out from the cities (as it was previously illustrated). Moreover, the ratio of the Roma population in these peripheral regions has been higher originally as well. The process resulted in regional level ghettofication in the above described extended territories (Kőszeghy, 2007). The summarized processes lead to the current situation with cumulative problems on those settlements where large Roma communities live.

Relating studies proved the existence of ongoing ethnic change in extended part of Northeastern and Southwestern Hungary with territorial concentration causing the formation of continuous backward areas (Pásztor, Pénzes, Bántó, 2012; Virág, 2006).

In order to analyze the issue of Roma population, two types of the available datasets must be introduced. At first, the census dataset is one of the most frequently used and official resource to investigate minorities (Tátrai, 2014). Its characteristic feature is that its results on ethnic structure significantly depend on the self-declaration of respondents and for this reason it is regarded uncertain and must be used in the light of this fact.

On the other hand, the questioning of the local governments and municipal councils means an alternative way to collect data about the Roma population. The objective of this procedure is to receive information from representatives who have – in an ideal case – complex overview about the settlement. These kinds of data collections provided the basis to investigate in the case of smaller territories (Baranyi, G. Fekete, Koncz, 2003) or even whole countries (Mušinka et al., 2014). The most frequently cited and well-known data resource in Hungary is the so-called CIKOBI database (Committees for the Coordination of Roma Affairs – former unit of the county councils during the socialist era). It was collected between

DOI: 10.2298/STNV1502087P

1984 and 1987 by the questioning of local councils (Kocsis, Kovács, 1991). In order to receive a similar database about the number of Roma population, the University of Debrecen made an extended survey by personal and electronic questioning of local self-governments of every Hungarian settlement. This database from the years of 2010–2013 was appropriate to make a comparison with the CIKOBI dataset.

The ratios of Roma population reflect the scale of peripherality independently from the type of dataset (Table 3). The strongly peripheral group of settlements has at least threefold higher values than the national average. Both components of population change the natural increase and migration enabled such dynamism in this group in the last decades. Both the census datasets (from 1990 and from 2011) and the estimations collected from the local authorities (from 1984-1987 and from 2010-2013) indicated outstanding growth of the Roma population in the case of the settlements having Roma majority.

Table 3
The ratio of the Roma population and its change in the categories of settlements calculated by different data sources (in percentage)

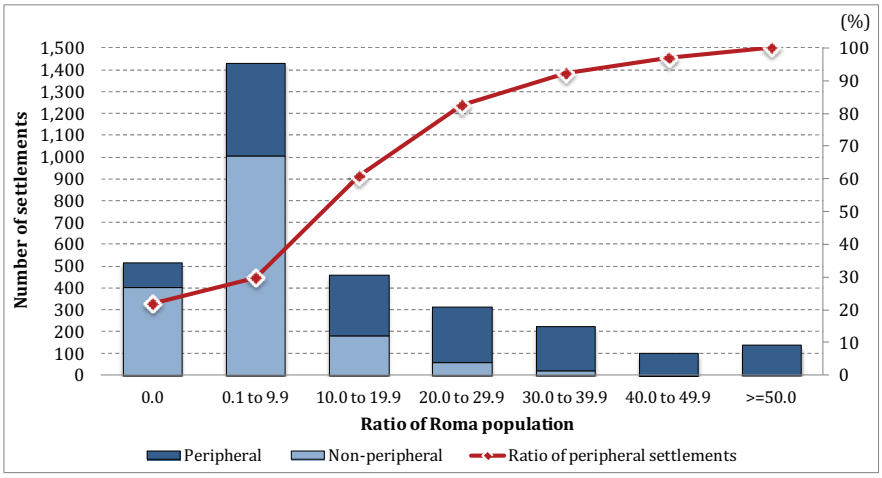
Categories of settlements	Census data			Estimations by the local authorities		
	1990	2011	Change	1984-1987	2010-2013	Change
Strongly peripheral	6.82	14.68	7.86	13.34	28.84	15.49
Definitely peripheral	2.97	7.69	4.72	7.75	17.17	9.42
Moderately peripheral	3.11	7.98	4.87	7.36	15.46	8.10
Slightly peripheral	2.26	5.23	2.97	5.90	12.89	6.99
Non-peripheral	0.67	1.68	1.01	2.43	6.18	3.75
National average	1.38	3.17	1.79	3.77	8.85	5.08

Source: Calculated by the census data from HCSO.

The correlation is quite similar from other point of view. The ratio of peripheral settlements monotonously grows with the increasing proportion of Roma population (Figure 8). Every settlement having Roma majority (more than 130 villages) was in the peripheral (and mainly in the strongly or definitely peripheral) categories.

DOI: 10.2298/STNV1502087P

Figure 8
Number of settlements and the ratio of peripheral ones (in percentage) by the ratio of Roma population (in percentage) in 2010-2013



Source: Calculated by the dataset of the University of Debrecen.

This phenomenon can be regarded as so crucial that the territorial pattern of ethnic change became an important layer on the summarizing map (Figure 9). The category of 'ongoing ethnic change' included the settlements where at least one third of the population was regarded as Roma by the local authorities.

Conclusion

The delimited developmentally peripheral settlements illustrated the Hungarian spatial pattern as markedly characteristic. As the result of the multivariate procedures, approximately one third of the Hungarian settlements were regarded as peripheral. Approximately one fourth of the Hungarian settlements comprising 8 percent of the total population were categorized as strongly peripheral. This group of settlements primarily contains small villages; their average size is about 1000 inhabitants.

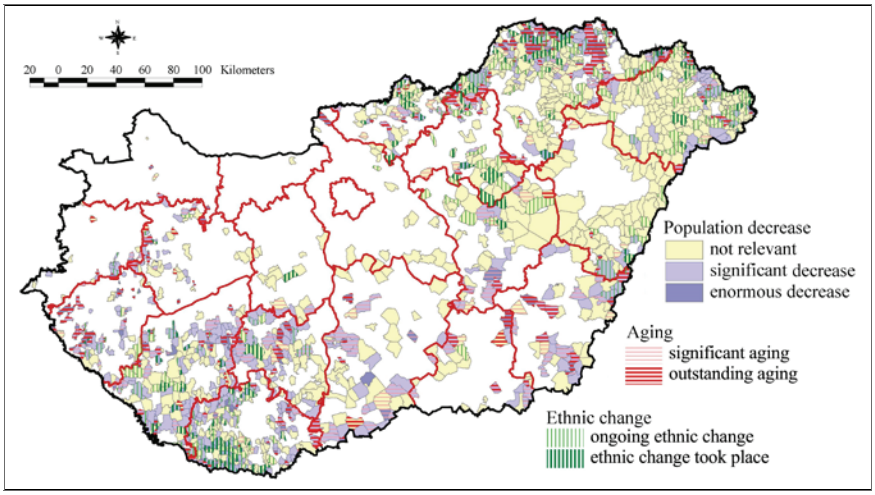
In our study the demographic characteristics of the peripheral settlements and their spatial disparities were discovered. Figure 9 summarizes the most important findings.

Population decrease can be regarded as one of the most typical demographic phenomenon of backward areas in the light of the literature. The Hungarian backward areas are primarily characterised by decreasing and dynamically decreasing population number, with striking disparities. Extended and continuous areas are located in Northern and South Western

DOI: 10.2298/STNV1502087P

Hungary, where the number of population at least halved during the last three decades. At the same time, other groups of peripheral settlements are illustrated with stagnating population number (in contrast to the national trends) due to the demographic attitude of the Roma population.

Figure 9
Demographic challenges of peripheral settlements after 2010



Source: Calculated by the census data from HCSO and the dataset of the University of Debrecen.

Some of the studies about peripheral areas drew the attention to the relevant ethnic issues. As the previous findings pointed out, demographic processes sharply disparate in the case of those settlements with significant ratio of the Roma population. As the result of the demographic behavior of the Roma population, their ratio is dynamically increasing and major growth could be detected among the strongly peripheral settlements. Every settlement having Roma majority (more than 130 villages) was in the peripheral (and mainly in the strongly or definitely peripheral) categories. On the basis of the survey of the University of Debrecen and other datasets rapid growth in the ratio of Roma population is expected with significant territorial concentration.

The current analysis discovered the most significant demographic tendencies of the Hungarian peripheral areas. In the light of the findings, it is clearly seen that the peripheral settlements do not create a homogenous set and differing trajectories can be detected. However, the illustrated tendencies unambiguously confirm the importance of demographic processes in the conservation of the backward situation. The Hungarian

DOI: 10.2298/STNV1502087P

settlements tend to become even more polarized as the result of the demographic tendencies with sharp territorial disparities.

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

References

ABRHÁM, J. (2011). Rural development and regional disparities of the new EU Member States. *Agricultural Economics* 57(6): 288–296.

BAJMÓCY, P. (2003). Az elővárosi fejlődés migrációs vonatkozásai az Alföldön. *Alföldi Tanulmányok* 19: 84–98.

BAJMÓCY, P., & BALOGH, A. (2002). Aprófalvas településállományunk differenciálódási folyamatai. *Földrajzi Értesítő* 51(3–4): 385–405.

BALOGH, A. (2014). A hazai aprófalvasodás új irányai. *Földrajzi Közlemények* 138(2): 134–149.

BARANYI, B., FEKETE, É. G. & KONCZ, G. (2003). A roma-szegregáció kutatásának területi szempontjai a halmozottan hátrányos helyzetû encsi és sellyei-siklósi kistérségekben. *Kisebbségkutatás* 12(2): 344–362.

BAROS, Z., PÉNZES, J. & TÓTH, T. (2007). Demográfiai folyamatok a Csereháton a XX. század folyamán. In G. Demeter & R. Bagdi (eds.), *Migráció és asszimiláció Északkelet-Magyarországon és a Partiumban (1715-1992). Studia Historico-Demographica Debrecina I.* Debrecen: Kossuth Egyetemi Kiadó.

BELUSZKY, P. (1981). Két hátrányos helyzetű terület az Alföldön: a Közép-Tiszavidék és a Berettyó-Körösvidék. *Alföldi Tanulmányok* 5: 131–160.

BELUSZKY, P. & SIKOS, T. T. (2007). *Változó falvaink.* Budapest: MTA.

BOTTLIK, Z., & GYURIS, F. (2010). The connection between the Muslim population and regional disparities of economic development in the Balkan region. *Geographia Polonica* 83(2): 5–22.

COLEMAN, D. A. (1993). Contrasting age structures of Western Europe and of Eastern Europe and the Former Soviet Union: Demographic Curiosity or Labor Resource? *Population and Development Review* 19(3): 523–555.

DÖVÉNYI, Z. (2009). A belső vándormozgalom Magyarországon: folyamatok és struktúrák. *Statisztikai Szemle* 87(7–8): 748–762.

DOI: 10.2298/STNV1502087P

DÖVÉNYI, Z., & KOVÁCS, Z. (1999). A szuburbanizáció térbeni-társadalmi jellemzői Budapest környékén. *Földrajzi Értesítő* 48(1–2): 33–57.

DURST, J. (2007). Több a kára, mint a haszna: születésszabályozás a "gettóban". *Demográfia* 50(1): 74–103.

FÉSÜS, G., RILLAERS, A., POELMAN, H. & GÁKOVÁ, Z. (2008). Regions 2020. Demographic challenges for European regions. Brussels: Background document to Commission Staff Working Document Sec. 2008.

GAWRYSZEWSKI, A. & POTRYKOWSKA, A. (1988). Rural depopulation areas in Poland. *Geographia Polonica* 54: 81–100.

G. FEKETE, É. (1991). Dinamikus, depressziós és stagnáló területek Borsod-Abaúj-Zemplén megyében 1869-1987 között. *Földrajzi Értesítő* 40(3–4): 317–332.

GORZELAK, G. (1996). *The Regional Dimension of Transformation in Central Europe. Regional Policy and Development 10*. London: Regional Studies Association, Jessica Kingsley Publishers.

HAVAS, G. (1999). A kistelepülések és a romák. In F. Glatz (ed.), *A cigányok Magyarországon. Magyarország az ezredfordulón.* Budapest: MTA.

ILLÉS, S. (2010). International retirement movements in Hungary. In A. Glavanovics, & B. Szele (eds.), *Európai kultúra, narratívák, diskurzusok: a Budapest Fórum tanulmánykötete.* Székesfehérvár: Alba Polisz Tudományos Park Egyesüle).

JANKY, B. (2004). The income situation of Gypsy families. In T. Kolosi, G. Vukovich & I. G. Tóth (eds.), *Social Report 2004*. Budapest: TÁRKI.

JANKY, B. (2007). A korai gyermekvállalást meghatározó tényezők a cigány nők körében. *Demográfia* 50(1): 55–73.

KINCSES, Á. (2015). A nemzetközi migráció Magyarországon és a Kárpát-medence magyar migrációs hálózatai a 21. század elején. Budapest: KSH.

KOCSIS, K. (2000). The Roma (Gypsy) question in the Carpatho-Pannonian region. In Z. Kovács (ed.), *Hungary Towards the 21st Century. The Human Geography of Transition. Studies in Geography in Hungary* 31. Budapest: Geographical Research Institute, Hungarian Academy of Sciences.

KOCSIS, K. & KOVÁCS, Z. (1991). A magyarországi cigánynépesség társadalomföldrajza. In Á. Utasi, & Á. Mészáros (eds.), *Cigánylét.* Budapest: MTA Politikai Tudományok Intézete.

KOÓS, B. (2008). A gazdasági szuburbanizáció vállalatdemográfiai megközelítésben egy magyarországi példán keresztül. PhD dissertation Budapest: Corvinus University.

KOVÁCS, Z. (2004). Socio-economic transition and regional differentiation in Hungary. *Geographical Bulletin* 53(1–2): 33–49.

KUREK, S. (2008). Spatial disparities in the changes in the population age structure of Poland in the context of the second demographic transition. *Zeitschrift für Bevölkerungswissenschaft* 33(3–4): 271–292.

LADÁNYI, J. (2012). *Leselejtezettek.* Budapest: L'Harmattan.

DOI: 10.2298/STNV1502087P

LEE, R. & MASON, A. (2010). Some macroeconomic aspects of global population aging. *Demography* 47 (supplement): 151–172.

LONSDALE, R. E. & ARCHER, C. (1999). Demographic factors in characterizing and delimiting marginal lands. In H. Jussila, R. Majoral, & C. C. Mutambirwa (eds.), *Marginality in space – past, present and future*. Ashgate Aldershot: IGU.

MISZCZUK, A. & WESOŁOWSKA, M. (2012). Demographic and settlement transformations in peripheral regions (based on the example of eastern Poland). *Annales UMCS, Geographia, Geologia, Mineralogia et Petrographia* 67(1): 141–151.

MKRTCHYAN, N. V. (2013). Migration of Young People to Regional Centers of Russia at the End of the 20th and the Beginning of the 21st Centuries. *Regional Research of Russia* 3(4): 19–32.

MUŠINKA, A., ŠKOBLA, D., HURRLE, J., MATLOVIČOVÁ, K. & KLING, J. (2014). *Atlas rómskych komunít na Slovensku 2013*. Bratislava: UNDP.

NAGY, E., TIMÁR, J., NAGY, G. & VELKEY, G. (2015). The Everyday Practices of the Reproduction of Peripherality and Marginality in Hungary. In T. Lang, S. Henn, W. Sgibnev & K. Ehrlich (eds.), *Understanding Geographies of Polarization and Peripheralization: Perspectives from Central and Eastern Europe and Beyond.* New Geographies of Europe series. Palgrave Macillan.

NAGY, G. & KOÓS, B. (2014). First results in modelling objective well-being in Hungary at lower territorial level. *Regional Statistics* 4(2): 71–86.

NEMES NAGY, J. (1996). Centrumok és perifériák a piacgazdasági átmenetben (Centers and peripheries during the transition to market economy). *Földrajzi Közlemények* 120(1): 31–48.

NEMES NAGY, J. (2001). New regional patterns in Hungary. In P. Meusburger, & H. Jöns (eds.), *Transformation in Hungary.* Heidelberg: Physica-Verlag.

O'HIGGINS, N. A. & IVANOV, A. (2006). Education and employment opportunities for the Roma. *Comparative Economic Studies* 48: 6–19.

PÁSZTOR, I. Z., PÉNZES, J. & BÁNTÓ, Z. N. (2012). Investigation of peripherization in Northeastern-Hungary by spatial demographic and income tendencies with special attention to the Roma population. *Eurolimes* 13: 149–165.

PENEV, G. & PREDOJEVIĆ-DESPIĆ, J. (2012). Prostorni aspekti emigracije iz Srbije. Tri "vruce" emigracione zone (Spatial Aspects of Emigration out of Serbia. Three "Hot" Emigration Zones). *Stanovništvo* 50(2): 35–64.

PÉNZES, J. (2013). The dimensions of peripheral areas and their restructuring in Central Europe. *Hungarian Geographical Bulletin* 62(4): 373–386.

PÉNZES, J. (2014). *Perifériikus térségek lehatárolása – dilemmák és lehetőségek.* Debrecen: Didakt.

ROSICOVA, K., MADARASOVA GECKOVA, A., VAN DIJK, J. P., ROSIC, M., ZEZULA, I. & GROOTHOFF, J. W. (2009). Socioeconomic indicators

DOI: 10.2298/STNV1502087P

and ethnicity as determinants of regional mortality rates in Slovakia. *International Journal of Public Health* 54: 274–282.

SOKOL, M. (2001). Central and Eastern Europe a Decade after the Fall of State Socialism: regional dimensions of transition processes. *Regional Studies* 35(7): 645–655.

STIEGLITZ, J. E., SEN, A. & FITOUSSI, J-P. (2009). Report by the Commission on the Measurement of Economic Performance and Social Progress. Commission on the Measurement of Economic Performance and Social Progress. http://www.stiglitz-sen-fitoussi.fr/documents/rapport_anglais.pdf. Accessed 29.06.2014.

SÜLI-ZAKAR, I., PÁLÓCZI, Á. & SZABÓ, D. A. (2013). Társadalomföldrajzi vizsgálatok Északkelet-Magyarországi cigány lakossága körében. In G. Kozma (ed.), *Emberközpontú társadalomföldrajz.* Debrecen: Didakt.

SZABÓ, P. (2003). Regional Development Disparities in the European Union. In Á. Jakobi (ed.), *Frontiers of Geography*. Budapest-Heidelberg: Eötvös Loránd University.

TÁTRAI, P. (2014). Etnikai folyamatok Magyarországon az ezredforduló után. *Területi Statisztika* 54(5): 506–523.

TIMÁR, J. (1999). Elméleti kérdések a szuburbanizációról. *Földrajzi Értesítő* 48(1–2.): 7–31.

TODOROVIĆ, M., & DROBNJAKOVIĆ, M. (2010). Peripheral rural areas in Serbia – the result of unbalanced regional development. *Geographica Timisiensis* 19(2): 207–219.

TÓTH, B. I. (2013). Időszerű áttekintés: területi fejlettségi vizsgálatok Magyarországon az ezredforduló után. *E-conom* 2(1): 76–89.

TÓTH, G. (2006). Centrum-periféria viszonyok vizsgálata a hazai közúthálózaton (Analysis of center-periphery relations on the Hungarian road network). *Területi Statisztika* 46(5): 476–493.

TÓTH, G., & DÁVID, L. (2010). Tourism and Accessibility: An Integrated Approach. *Applied Geography* 30(4): 666–677.

VINING, D. R., & PALLONE, R. (1982). Migration between core and peripheral regions: a description and tentative explanation of the patterns in 22 countries. *Geoforum* 13(4): 339-410.

VIÑUELA, A. & VÁZQUEZ, E. F. (2012). From the periphery to the core: direct and indirect effects of the migration of labour. *Jahrbuch für Regionalwissenschaft* 32(1): 1-18.

VIRÁG, T. (2006). A gettósodó térség. *Szociológiai Szemle* 15(1): 60-76.

ZDRAVKOVIĆ, A., DOMAZET, I. & NIKITOVIĆ, V. (2012). Demografsko starenje i održivost javnih finansija u Srbiji (Impact of Demographic Ageing on Sustainability of Public Finance in Serbia). *Stanovništvo* 50(1): 19-44.

DOI: 10.2298/STNV1502087P

János Pénzes, István Zoltán Pásztor, Patrik Tátrai

Demographic Processes of Developmentally Peripheral Areas in Hungary

S u m m a r y

The current study investigates the demographic processes and challenges of the Hungarian peripheral settlements. Demographic challenges can be regarded as important consequences of the social and economic disadvantages in spatial terms. However, the interrelating negative demographic tendencies cause even more backward situation blocking or hindering the development.

As a part of the analysis the peripheral settlements were delimited according to a previous complex and detailed study. Seven variables were chosen from this set after a systematic narrowing procedure requiring multiple steps. Eight different multivariate statistical methodologies were applied to create complex indicators as a kind of essence and to make spatial categories by the extent of peripherality.

The objective of the current analysis is to discover the demographic characteristics of the peripheral settlements and to detect the spatial disparities. Additional important objective is to point out the correlation between backwardness and the investigated demographic phenomena.

In order to detect the tendencies, the census databases between 1980 and 2011 were used and local datasets on Roma population were applied. Data aggregations and manipulations were used instead of difficult multivariate statistical methods.

Depopulation is one of the greatest challenges in Hungary. Backward areas are primarily characterized by decreasing and dynamically decreasing population number, with striking disparities, but there were growing communities among them as well. In general, strong depopulation could be detected among these settlements (approximately 23 percent decrease between 1980 and 2011). Some small villages in Northern and Southwestern Hungary with enormous population decrease will foreseeably face complete depopulation within few years.

The strongly peripheral group of settlements, primarily small sized villages, faced intense decrease in rate of natural change. But dynamic population growth was also detected, which is caused by natural increase that was typical almost in every peripheral settlement with Roma majority.

Migration loss tends to correlate with the extent of peripherality, as increasing values of migration balance are accompanied by decreasing ratio of peripheral settlements in the area.

The dynamic population aging of Hungary could be detected since the 1980s. The ratio of peripheral settlements represents one peak in the case of the group of settlements with more than 40 percent of elderly population. Even more prominent ratio of peripheral settlements could be detected in the juvenile groups of settlements. The most characteristic and extended areas with aging population could be found in the Zemplén area, in the Northern-Cserehát in Borsod-Abaúj-Zemplén County, in the Western Transdanubia (in Zala County) and in the Hungarian Great Plain – in mosaic-like pattern.

The ratios of Roma population reflect the scale of peripherality. Every settlement having Roma majority (more than 130 villages) was in the peripheral categories.

DOI: 10.2298/STNV1502087P

Extended ethnic change could be predicted in Northeastern and Southwestern Hungary and near the Middle Tisza valley.

Presented demographic processes - in our opinion - will make the backwardness of most of the peripheral settlements stable

Keywords: *aging, depopulation, Hungary, peripheral areas, Roma population*

János Pénzes, István Zoltán Pásztor, Patrik Tátrai

Demografski procesi u razvojno perifernim oblastima u Mađarskoj

R e z i m e

Ova studija je ispitivala demografske procese i izazove u oblastima Mađarske koje se označavaju perifernim u razvojnom smislu. Demografski izazovi se mogu smatrati važnim posledicama društvenih i ekonomskih nepovoljnosti koje imaju svoj odraz u prostornom domenu. Međutim, međusobno povezane negativne demografske tendencije još više doprinose nazadovanju kočenjem ili usporavanjem razvoja.

Cilj ove analize je da otkrije demografske karakteristike perifernih naselja, detektuje prostorne razlike i ukaže na korelaciju između zaostalosti i istraživanih demografskih fenomena uz pomoć podataka popisa u periodu 1980-2011. i lokalnih baza podataka o etničkom romskom stanovništvu. U tu svrhu, izabrano je sedam indikatora primenom metoda multivarijantne statističke analize.

Depopulacija je jedan od najvećih izazova u Mađarskoj. Pasivne krajeve, pre svega, karakteriše smanjenje i intenzivno smanjenje broja stanovnika, sa upadljivim međusobnim razlikama; no, ima i zajednica u kojima se beleži populacioni rast. Generalno, izražena depopulacija je odlika ovog tipa naselja, imajući u vidu pad broja stanovnika od oko 23 odsto između 1980. i 2011. godine. Pojedina manja sela u severnoj i jugozapadnoj Mađarskoj će se, predvidivo, suočiti sa potpunim gubitkom stanovništva u roku od nekoliko godina. Izrazito periferna grupa, od četiri izdvojene kategorije perifernih naselja, doživljava sve veći pad već odavno negativne stope prirodnog priraštaja. Ipak, dinamičan porast stanovništva je zapažen skoro u svakom perifernom naselju sa romskom većinom, što je uzrokovano pozitivnim prirodnim priraštajem. Detektovani migracioni gubici skloni su korelaciji sa stepenom perifernosti naselja, budući da je povećanje vrednosti migracionog salda praćeno smanjenjem udela perifernih naselja u određenoj oblasti.

Populaciono starenje u Mađarskoj može se uočiti od 1980. godine. Udeo perifernih naselja dominira u dve kategorije – u grupi naselja sa više od 40% starije populacije, a naročito u grupi populaciono mladih naselja (sa manje od 15% starijih od 60 godina). Najkarakterističnija i najprostranija područja u pogledu starenja stanovništva nalaze se u oblasti Zemplén, tj. u Severnom Cserehát-u u županiji Boršod-Abaúj-Zemplén, u Zapadnom Podunavlju (u županiji Zala) i u vidu mozaične strukture na mađarskom Alfeldu.

DOI: 10.2298/STNV1502087P

Udeo romske populacije u naseljima odražava stepen njihove perifernosti. Svako naselje sa romskom većinom (više od 130 sela) spada u periferne kategorije. Promena etničke strukture u ovom pravcu može se predvideti u severoistočnoj i jugozapadnoj Mađarskoj i pored doline srednjeg toka Tise.

Prikazani demografski procesi – po našem mišljenju – produbljuju periferni položaj većine perifernih naselja, te će njihova zaostalost biti stabilna.

Ključne reči: *starenje, depopulacija, Mađarska, periferne oblasti, Romi*

DOI: 10.2298/STNV1502087P