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

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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
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, Domazel, 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,
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;
• 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
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>
<thead>
<tr>
<th>Categories</th>
<th>Number of settlements</th>
<th>Number of population</th>
<th>Average population size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly peripheral</td>
<td>781</td>
<td>796,248</td>
<td>8.04</td>
</tr>
<tr>
<td>Definitely peripheral</td>
<td>217</td>
<td>242,234</td>
<td>2.45</td>
</tr>
<tr>
<td>Moderately peripheral</td>
<td>116</td>
<td>141,195</td>
<td>1.43</td>
</tr>
<tr>
<td>Slightly peripheral</td>
<td>385</td>
<td>653,559</td>
<td>6.60</td>
</tr>
<tr>
<td>Non-peripheral</td>
<td>1,655</td>
<td>8,075,562</td>
<td>81.50</td>
</tr>
<tr>
<td>Total</td>
<td>3,154</td>
<td>9,908,798</td>
<td>100.00</td>
</tr>
</tbody>
</table>

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).
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)

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

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.

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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 Örség 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...
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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

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,
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
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.

![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.

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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

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.

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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, Pálóczy, 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
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

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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 outmigration 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 ghettification 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
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>
<thead>
<tr>
<th>Categories of settlements</th>
<th>Census data</th>
<th>Estimations by the local authorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly peripheral</td>
<td>6.82</td>
<td>14.68</td>
</tr>
<tr>
<td>Definitely peripheral</td>
<td>2.97</td>
<td>7.69</td>
</tr>
<tr>
<td>Moderately peripheral</td>
<td>3.11</td>
<td>7.98</td>
</tr>
<tr>
<td>Slightly peripheral</td>
<td>2.26</td>
<td>5.23</td>
</tr>
<tr>
<td>Non-peripheral</td>
<td>0.67</td>
<td>1.68</td>
</tr>
<tr>
<td>National average</td>
<td>1.38</td>
<td>3.17</td>
</tr>
</tbody>
</table>

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

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References


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Summary

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.
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

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**Demografski procesi u razvojno perifernim oblastima u Mađarskoj**

*Rezime*

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.


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% starih od 60 godina). Najkarakterističnija i najprostranija područja u pogledu starenja stanovništva nalaze se u oblasti Zemplén, tj. u Severnom Cserhát-u u županiji Boršod-Abaúj-Zemplén, u Zapadnom Podunavlju (u županiji Zala) i u vidu mosaične strukture na mađarskom Alfeldu.

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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