

ROMA POPULATION IN HUNGARY – SPATIAL DISTRIBUTION AND ITS TEMPORAL CHANGES

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Abstract

The objective of the current analysis is to discover the territorial characteristics of the Hungarian Roma population and its changes during the last almost three decades. The basis of the investigation is provided by the census datasets from 1990 and 2011 – as auto-identification – and two surveys (the so-called CIKOBÍ survey from 1984–1987 and the survey of the University of Debrecen from 2010-2013), ensuring the external ethnic identification. The last census gave 315,000 Roma and the recent survey resulted in approximately 876,000 Roma people in Hungary.

The significant growth of the Roma population is obviously demonstrated and its regional disparities are also discovered. The most important regional characteristics came to light with weakening territorial backwardness by the ratio of Roma population living in towns is coming to the national value. However, the rapid growth of the Roma population is especially visible in the case of the districts with high ratio of Roma already during the 1980s (high values approximately doubled as well). This process is quite concentrated mostly in districts in the traditional backward areas of the country.

Keywords: demographic processes, ethnic categorization, ethnic decomposition, census, Roma population

INTRODUCTION

Although numerous surveys have studied the number of Roma people and the social demographic characteristics of the Roma population since the 1970s only a few were aimed to study the Roma¹⁴ population in detail (at settlement level). The last comprehensive survey (with many critics) was carried out by the Geographical Research Institute of the Hungarian Academy of Sciences with the help of the Roma Coordination Committees (CIKOBÍ – as it is referred in the current paper) between 1984 and 1987. No settlement-level survey of the population believed to be Roma has been performed in the 30 years since the above survey even though fundamental changes appeared in Hungary regarding both the number of Gypsy people and the social-economic conditions of the country (including increasing mobility and its new form, suburbanization). Based on this, it can be presumed that the geographical distribution of the

¹⁴The terms Roma and Gypsy are used as synonyms in this publication similarly to other publications.

Roma population also changed considerably. Such processes could be traced partly in census data which can be related to the Roma population of Hungary in a limited way only.

The primary aim of our paper is to study the regional distribution of the Roma population related to settlements and also to study the changes of the spatial distribution of the Roma population over the last 30 years. Results are presented not only on their own but also in comparison with the data of previous surveys (primarily that of CIKOBÍ) and to that of the last census.

The external (expert) categorization method was applied in our research for which we have to define who is regarded Gypsy. Agreeing with János Ladányi and Iván Szelényi (1997) and also with the constructivist interpretation of Gypsies (e.g. Brubaker, 2001, Feischmidt, 2010) we do not think that the Roma population or any other ethnic groups would have an accurate number meeting all criteria that could be determined objectively. As a result, the aim cannot be to give a real number to the Roma population. It can be seen, however, that identifying someone as Gypsy is subjective and context dependent. Also the boundaries of Roma people as a category are very rigid, social exclusion is strong therefore we consider it important to know how many people believed to be Gypsy live in Hungary nowadays and this will be presented in the paper.

The application of the results of territorial studies has multiple aims: the relationship between social/ethnic marginalisation and geographical peripherization can be presented as had been done earlier in the case of Northeastern Hungary (Pásztor & Pénzes, 2012). Results may also contribute to the study of the population of poor settlements with advancing ghettos (Ladányi & Virág, 2009, Váradi & Virág, 2015, Bálint, 2018). Gábor Fleck and Vera Messing (2010) calls attention to the fact that it is essential to know who are Gypsies, where they live when targeted labour market support is issued and answers may support public politics as well. Results may also supply useful information to establish future research (even representative) and also to select research sites: could identify settlements where carrying out further research would be justified following comparison with censuses and other classification systems.

THEORETICAL BACKGROUND

Methodology and results of research aimed at estimating the Roma population – a review

The determination of the number of Gypsies became a focus of social and scientific interest already from the second half of the 19th century and especially in the last half a century. The reason for this is that the number of those declaring themselves Gypsy at censuses is far from

the number of those believed to be Gypsy by their environment. The former is generally 30-40% of the latter (Kemény & Janky, 2003).¹⁵ The number of those identifying themselves Gypsy varies hectically from census to census and this results in a distrust regarding the related census data. The variation of census data (people identifying themselves with Gypsy language and ethnic categories – called as auto-identification) is influenced greatly by the fact that the majority of Roma people are heterogeneous with Hungarian being their first language (Szuhay, 1997, Durst, 2010, Orsós, 2015). The methodology and organization of the census could also be decisive especially the possibility of indicating multiple ethnic bonds which is possible since 2001 in Hungary. Most research projects also emphasize that the auto-identification of Roma people is influenced by the social conditions of the given time, the strength of discrimination, stigmatization and racist common talk (Fosztó, 1997, Csepeli & Simon, 2004, Szuhay, 2007, Ladányi & Virág, 2009, Durst, 2010, Tátrai, Pálóczi, Pásztor, & Pénez, 2017).

The above variability, uncertainty and the special social situation of the Roma population brought about such Roma research that were aimed at surveying the number and social-demographic (possibly spatial) conditions of the Roma population (surveys based on non-Roma expert and interviewer assessments called as hetero-identification). However, the results – that are considered to be much more reliable than auto-identification – are rather variable containing estimations significantly differing from each other regarding the number of Roma people. Censuses reveal not “wrong” data but important social facts (Ladányi & Szelényi, 2004). Differences can be explained not necessarily by “measurement error” but differing methodological background and also by the subjectivity in the definition of Roma people.

Different methodologies could yield significant differences in the case of hetero-identification, especially the accurate identification of the research subject (who is considered Roma by the assessor) and the interests and targets behind the number/ratio of Roma people could be very important. Such interests include majority and minority racism the interest of which is to overestimate the number of Gypsies (Ladányi & Szelényi, 1997)¹⁶ and occasionally strong settlement, institutional and political interests may be associated with the results provided by external assessors (Tátrai et al., 2017).

Considering methodology, one part of Roma research (the majority) apply the external categories defined by the experts including the Gypsy registration in 1893 (OMKSH, 1895),

¹⁵Ahmed et al. (2007) estimate this ratio to 38% in their study while Ladányi and Szelényi (2004) estimate this to one third.

¹⁶ Accordingly, both the majority and the Roma people overestimate the number of the Roma population in Hungary (Marketing Centrum, 2009).

the sociological surveys lead by István Kemény (Kemény, 1974, Kemény, 1997, Kemény, Janky, & Lengyel, 2004), the CIKOBİ surveys in the 1980s (Kocsis & Kovács, 1991, Kertesi & Kézdi, 1998), data survey of the Hungarian Central Statistical Office (HCSO) in 1993 (Mészáros et al., 1994) or the research of the National Institute for Family and Social Policy in 2010 (Koltai et al., 2011). According to the definition of the above surveys, those are considered to be Gypsies who are regarded Gypsies by their non-Gypsy neighbours based on various criteria (lifestyle, way of life, anthropological characters) and experience from living together (Kemény, 1974; Havas, Kemény, & Kertesi, 2000; Kemény et al., 2004). This approach – although received criticism (Ladányi & Szelényi, 1997, 1998, Keményfi, 2002) – is a method that can be applied simply regarding field research and questionnairing in practice and with accurate setting of research objectives and careful sampling could be used well (Havas et al., 2000). Another part of Roma research is either based on external categories applied by the interviewers or combines expert and interviewer variants (Ladányi & Szelényi, 2004).

Most of the mentioned studies dealt with the spatial distribution of Gypsies to some extent. Detailed – covering the entire population and at settlement level – regional characteristics can be detected only in the Gypsy registration in 1893 and the so-called CIKOBİ survey carried out between 1984 and 1987 (Kocsis & Kovács, 1991).¹⁷ The rest of the surveys (the most well-known, for example, were led by István Kemény in 1971, 1993 and 2003 (Kemény, 1974, Kemény, 1997, Kemény, et al. 2004) were representative at county level at the most – as a result of their methodology – and total spatial coverage was not a target. Furthermore, the survey organized by HCSO in 1993 worth mentioning that provided data on the Roma population relevant at national level that cannot be more detailed spatially (Mészáros et al., 1994).

Since 1987 no detailed data regarding the regional distribution of the Roma population have been published thus colleagues of the Department of Social Geography and Regional Development Planning, University of Debrecen (UD) performed their survey dated to 2010–

¹⁷ Data of the CIKOBİ survey were published by Kertesi–Kézdi (1998). This database has been modified by the authors of the present paper in several aspects using the original data found in the manuscript (these data were published by for example Pécsi, 1989, Kocsis–Kovács, 1991). Studying the CIKOBİ database several critical notices can be made that harmonize with distortions caused by the subjective nature of responses and therefore they are parallel to the observations discussed on the example of the survey of the University of Debrecen (UD) in 2010–2013. At the same time, the example of Tiszavasvári (Kemény et al., 2004, page 158) pointed out that there was a significant difference between the willingness and attitude of the respondents. In several cases zero Roma people were found in the CIKOBİ survey in areas where the presence of a Roma community could be seen clearly in the census of 1990. The survey of the UD in 2010–2013 showed that local governments who wished not to respond sent us to the minority (later ethnic) local governments (this was not possible before the Socialist regime change).

2013 (that have many things in parallel with the CIKOBİ survey in 1984–1987) that was one of the bases of the present study. The survey was carried out by interviewing the local governments of the settlements – partly necessarily Roma ethnic local governments – i.e. it was based on hetero-identification (Pénzes et al., 2015a, 2017, 2018). The Slovakian Roma Atlas¹⁸ was made with a similar approach. The essence of the method is that local government workers (mayor, notary, social expert) being in contact with locals on a daily basis have comprehensive information on local conditions including the number/ratio of Roma people at the settlement. In practice, this was performed so that local governments occasionally handed over the issue to the ethnic local government therefore there were Roma and non-Roma data providers as well.

The issue of who is Gypsy was approached from practice point of view by the survey of the UD in 2010–2013 using the modified version of the definition of Kemény. Those are Gypsies who are regarded Gypsy by their neighbourhood (Roma or non-Roma) on the basis of certain criteria (way of life, lifestyle and anthropological characteristics) and experience of living together. Data providers included Roma (e.g. leaders of Roma ethnic local governments or Roma mayors) and non-Roma people as well and opposite to certain experience (Keményfi, 2002) involving Roma data suppliers in the research worked well in this case.

It is important to emphasize that the research focused on Roma people but the starting point was not the Roma population but spatiality. This meant that the issue was approached not on the basis of a representative sample but from the regional level in the survey. The survey was not able to and was not aimed at studying the internal structure and social situation, conditions of Gypsies but it provided fresh information regarding the number and spatial distribution of Roma people. The approach was at the macro level considering not the individual assessment of classification systems but the overall result. This method (despite its rightful critics) drew an increasing attention in several Central European countries [e.g. Slovakia (Mušinka et al., 2014), Croatia (UNDP, 2015), Romania (SocioRoMap, 2017)] therefore its application was regarded to be justified. The survey was not aimed at identifying the basis of the categorization of the different surveys as this would not be possible anyway due to the high number of data providers.

¹⁸ The survey of the Roma Atlas in Slovakia targeted local governments using a very complex questionnaire that surveyed both the conditions of the Roma population and that of the settlements (Mušinka, Škobla, Hurrle, Matlovičová, & Kling, 2014). The Slovakian Roma Atlas published in 2013 had its history as a similar survey had been concluded already in 2004 (Matlovičová, Matlovič, Mušinka, & Židova, 2012). The study of the University of Debrecen and the Partium Christian University (UD–PCU) focusing on the settlements of two counties (Hajdú-Bihar and Szabolcs-Szatmár-Bereg) adapted the Slovakian methodology and questionnaire in 2016 (Szilágyi–Pénzes, 2016).

Despite this some conditions of the mechanism of hetero-identification could be identified based on the survey, as three phenomena influencing the classification could be observed rather well.

Firstly, uncertain cases (primarily mixed marriages and partnerships and children born in them) are generally recognized as Gypsy by the non-Roma population similarly to the “one drop of blood” view in the United States in relation to white and black people. Many exceptions have been published in Hungarian literature (Ladányi & Szelényi, 2004, Virág, 2016).

Secondly, some local leaders assessed poor people Gypsy (independent of ethnicity) and made no differentiation to the two terms (Velkey, 2014). This is practically the phenomenon of poverty ethnicism (Váradi, 2007).

Thirdly, it is an important experience that – in harmony with the results of the CIKOB survey and with those of previous research (Ladányi & Szelényi, 2004, Virág, 2010) – the smaller is a settlement the surer and more exact the hetero-identification will be as people know each other better. Estimating the number of Roma people is less certain in greater settlements and in many cases only intervals were given.

The above type of methodology can be regarded suitable for spatial studies as well despite the distortions occurring in the queries (for more detail see Pénzes et al., 2015a, 2017). This assumption is supported by the fact that the already mentioned UD-PCU survey focusing on the settlements of two counties in 2016 yielded exactly the same results as the summary of the UD survey in 2010–2013 in the case of appropriate settlements (moreover, local government and Roma ethnic local government responses gave almost the same number for the Roma population as well) (Szilágyi & Pénzes, 2016). The authors tried in several publications to compare the methods applied for studying the number of Roma people (Pénzes et al., 2015a, 2017, Tátrai et al., 2017).

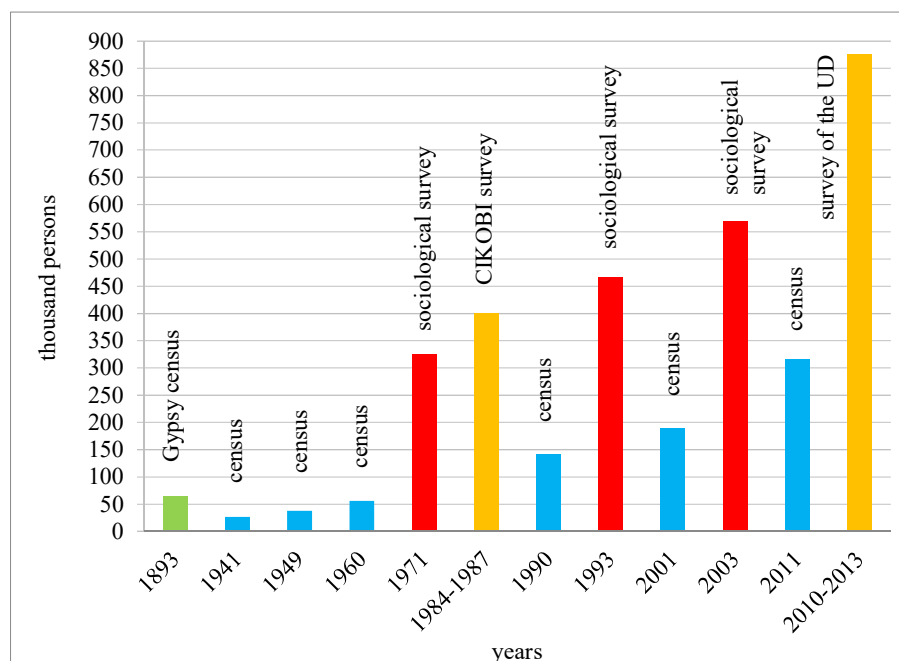
RESULTS

Number of Roma population in Hungary – different approaches and altering results

Earlier researches – using different methods in part and even the surveys carried out in more or less the same time period differed from each other significantly regarding numbers – supported the same tendency: based on data with similar methodological background the number and ratio of people believed to be Gypsy increased gradually in Hungary (Fig. 1). The increase was

significant from 65 thousand people in 1893 (OMKSH, 1895) to 570 thousand people by the representative survey in 2003 (Kemény et al., 2004).

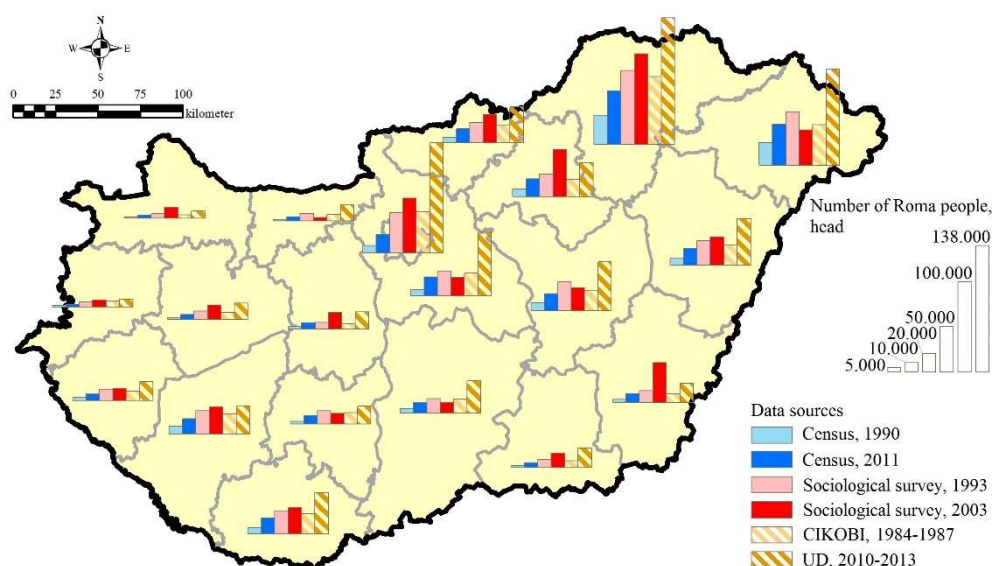
Figure 1 Estimated number of the Roma population in Hungary between 1893 and 2013, in thousands (similar methodologies are indicated by same colors)



Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Cserti Csapó (2008), Hablicsek (2008), Pénzes and Pásztor (2014)

On the basis of the data of sociological surveys, László Hablicsek performed a prediction on the number of Roma people in a regional breakdown and determined the number of Roma people to be – rounded – 658 thousand people by 2011 and 733–814 thousand people by 2021 (Hablicsek, 2007). This is also supported by the result of the TÁRKI Household Monitoring study in 2012 that estimated the number of the Roma population to 620–680 thousand people (Bernát, 2014). The survey of the UD in 2010–2013 estimated the number of Roma people to 867 thousand people (Pénzes & Pásztor, 2014) while the census in 2011 – according to the data of auto-identification – published a Roma population of 316 thousand people.

The database of Figure 2 based on three different methods shows county level comparison summarising the results of the two latest national sociological surveys, the censuses in 1990 and 2011, the CIKOB and UD surveys.

Figure 2 Distribution of the Roma population among the Hungarian counties and Budapest by different databases, in thousands

Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Kemény et al. (2004), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011

Table 1 Distribution of the Roma population among the Hungarian NUTS 2 regions (the value of Budapest is in brackets) by different databases, in thousands

NUTS-2 regions	Census, 1990	Census, 2011	Kemény and Kertesi, 1993	Kemény and Janky, 2003	CIKOB1, 1984–1987	UD, 2010–2013
Southern Great Plain	7.2	8.2	7.9	12.4	7.9	8.9
Southern Transdanubia	12.7	13.8	14.0	12.4	14.2	11.0
Northern Great Plain	29.1	26.1	25.1	16.8	22.3	23.6
Northern Hungary	32.2	29.6	27.6	32.1	28.0	24.4
Central Transdanubia	4.1	5.1	5.2	6.5	5.2	6.1
Central Hungary (BP)	10.4 (5.7)	13.0 (6.4)	15.3 (9.4)	14.1 (10.5)	17.4 (11.2)	21.8 (13.8)
Western Transdanubia	4.2	4.3	4.9	5.7	5.0	4.2
Hungary in Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011, and the total population of 1985 and 2012.

*Without the data of Somogy county.

Differences between the databases can be observed despite the fact that no significant difference can be detected in the regional distribution of the Roma population (Tab. 1) (mostly the survey of Kemény and Janky in 2003 differs from the others).¹⁹

¹⁹ The methodology of the sociological survey in 2003 could provide only 1% representativity and uncertainty was increased by the lack of the formerly used school statistics resulting in a survey less accurate compared to previous ones (Kemény et al. 2004, page 11). In Figure 2 the values of Békés and Heves are especially striking together with the low value of Szabolcs-Szatmár-Bereg county compared to the other data charts and the values of the sociological survey of Kemény-Kertesi in 1993. The latter was completed by correctional further calculations published by László Hablicsek (2007, page 28). Of course, the results of the sociological survey are not debated, only the comparison of the detailed county data are considered to be limited (partly taking into account the earlier results of István Kemény and colleagues).

Apart from national research numerous studies were also performed that focused on one or two settlements primarily in the time period after the Socialist regime change. Most of these studied regions with higher ratio of Roma (Cserehát, Ormánság, Szatmár) supplying detailed data with full regional coverage (Baranyi et al., 2003, Filepné, 2005, Kovács, 2001, Virág, 2006, Fónai & Vitál, 2008, Tátrai, 2010, Radics et al., 2013, Süli-Zakar, Pálóczi, & Szabó, 2013, Demeter & Bagdi, 2016, Siptár et al., 2016). Unfortunately, these are not enough to compose the conditions of the settlements of continuous regions (or counties) but valuable data can be obtained about certain settlements including segregation and ghetto forming processes.

Based on the surveyed databases, – in the opinion of the authors – no single, objective and scientific definition exists regarding the Roma population or those who are believed to be Roma in Hungary. Therefore, subjective databases can be used that are based on estimations. The databases providing the basis for the rest of this paper were selected because they enable detailed regional and dynamical studies.

Spatial-settlement conditions of the Roma population

In the following two-two databases are analysed the data of which can be broken down to settlement level and on the basis of which the regional conditions and changes in the spatial distribution of Gypsies could be studied. Despite the significant differences that were revealed between the databases that were based on auto-identification and hetero-identification (censuses belong to the former and the CIKOBİ and UD surveys belong to the latter), the most important tendencies can be seen and the reasons for the differences will be discussed below as well. For comparability the settlement structure of 2015 was used in the calculations made applying the available data²⁰. CIKOBİ data of 1984–1987 were compared to the population of 1985 while data related to Gypsies in the UD survey of 2010–2013 were compared to the population of 2012.

Specifics of settlement hierarchy and structure in the spatial distribution of the Roma population

One specifics of the spatial distribution of the Roma population is a higher concentration at small settlements, villages (Havas, 1999) and rural areas (Tagai, Bernard, Šimon, & Koós,

²⁰ Regarding the CIKOBİ survey, data are available only in aggregated form for settlements with joint councils in Somogy county therefore the data of the county were removed – to avoid distortions – in the course of settlement level calculations.

2018) that also means a significant spatial disadvantage (Kertesi, 2005, Nemes Nagy & Németh, 2005).

Table 2 Distribution of the Roma and the total population among the administrative categories of the settlements in Hungary*, %

Administrative category of settlements	Roma population census in 1990	Total population 1990	Roma population census in 2011	Total population 2011	CIKOBİ 1984–1987	Total population 1985 (1st Jan.)	UD 2010–2013	Total population 2012 (1st Jan.)
Village, major village	51.2	27.6	50.4	29.0	41.5	27.4	37.8	29.1
Town	34.0	31.8	33.2	32.7	33.8	31.9	32.7	32.7
County centre, town with county rights	8.7	20.5	9.6	20.4	12.8	20.5	15.1	20.1
Budapest	6.1	20.1	6.8	18.0	11.9	20.2	14.3	18.1
Hungary in total	100.0	100.0	100.0	100.1	100.0	100.0	99.9	100.0

*Without data of Somogy county.

Source: Own construction based on own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011, and the total population of 1985 and 2012

Based on the CIKOBİ data, 41% of the Roma population lived in villages and major villages (as mentioned before in the settlement structure of 2015) but by the time of the UD survey its ratio decreased to 38% (Tab. 2). Regarding the entire population of Hungary, the ratio of those living in villages and major villages slightly increased in the last almost three decades but remained below 30% according to the data of 2012. It is worth noting that the increasing ratio of the population of the above settlement categories – regarding the entire population – is caused primarily by the increase of the population of such settlements in the Budapest agglomeration and the suburbs of county centres (Bajmócy, 2014), while settlements located in rural areas, especially in underdeveloped regions are characterised by dynamic population decrease (Pénzes et al., 2015b). The decrease of the ratio of the Roma population is again small between the censuses in 1990 and 2011 but the 50% share of villages and major villages compared to the previous databases is even more striking.

The ratio of the Roma population decreased only slightly in the case of towns as well considering databases based on both auto- and hetero-identification. At the same time, the share of both Budapest and the cities with county rights of the Roma population increased. The rate of increase of the greatest cities and Budapest exceeded 2 percentage points based on the data

of the CIKOBİ and UD surveys, while it remained below 1 percentage point based on the data of the census. The total ratio of Gypsies within the settlement groups shows a shift towards towns (primarily towards county centres and Budapest). It is important to emphasize that the absolute number of Roma people increased up to at least double the former number in all categories (in the case of both databases).

Table 3 The ratio of Roma population within the total population in the administrative categories of the settlements in Hungary*, %

Administrative category of settlements	Census, 1990	Census, 2011	CIKOBİ, 1984–1987	UD, 2010–2013
Village, major village	2.48	5.40	5.56	11.47
Town	1.43	3.16	3.90	8.82
County centre, town with county rights	0.57	1.45	2.29	6.65
Budapest	0.40	1.17	2.17	6.96
Hungary in total	1.34	3.10	3.68	8.82

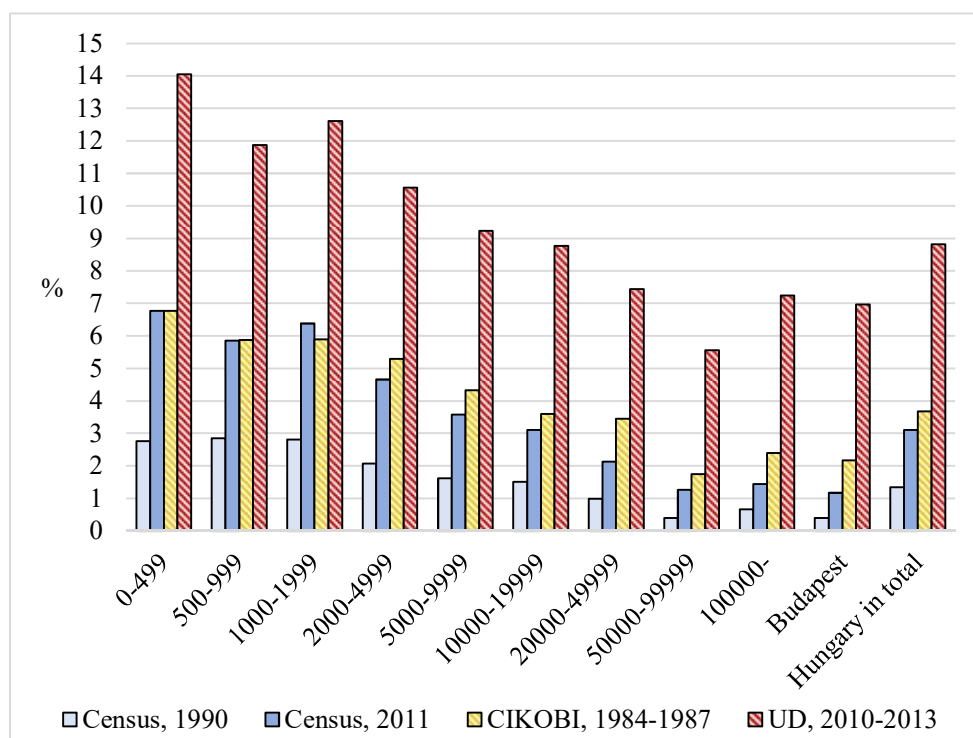
*Without data of Somogy county.

Source: Own construction based on own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011, and the total population of 1985 and 2012

The difference of population changes among the administrative categories of settlements and the dynamic increase of the Roma population resulted in that the ratio of Gypsies increased significantly at the lower levels of settlements (Tab. 3). In the case of villages and major villages, values are higher than the national average for the CIKOBİ, UD and the census data as well.

Based on the results, the distribution of the Roma population among the administrative categories of settlements came closer to that of the total population in the last decades, however, differences are still present, proving the higher ratio of Roma in villages. The ratio of Roma people was highest in villages and major villages, 11% based on the UD survey. Census data show that the higher is the settlement hierarchy level the smaller the increase of the ratio of Roma people – measured in percentage points – will be. However, comparing the CIKOBİ and UD data this relationship is not so clear. The reason of the difference between the two types of database – in our opinion – could be found in the possibility of the distortion of estimated data depending on settlement size.

Figure 3 The ratio of Roma population in the group of settlements categorised by the number of population in Hungary calculated from different databases, %



Source: own construction based on Kocsis and Kovács (1991), Péntzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011

Further spatial disadvantage of the Roma population is indicated by that their ratio, based on all databases, is highest in settlements with a total population smaller than 2000 people. Furthermore, their ratio within the total population increased at highest rate in these types of settlements (settlement categories were formed based on the population number of the given year) (Fig. 3). This process is shaped primarily that migration from settlements is greatest in the case of the mentioned settlements (mainly that of the young, non-Roma population) and natural population decrease is also significant. With an ageing population, the young age distribution and high reproduction rate of the Roma population the increase of its ratio is even more spectacular.

Data based on auto-identification indicate correlation with population size. Practically, the greater is the population size of the given settlement the smaller the ratio of the Roma population will be. Based on the CIKOBİ and UD data series, this relationship is less clear as increasing rates occur in the case of towns with greater population. This could be explained by, on the one hand, “hiding” appearing in auto-identification data, and on the other hand, “overestimation” by external assessors in the case of greater settlements, i.e. – in our opinion – both approaches could distort the results.

The ratio of Budapest is especially striking as uncertainty appears in both the CIKOBI (Kertesi & Kézdi, 1998) and the UD (Pénzes et al., 2015a) surveys. Apparently not natural population increase is in the background of the increase rate of the Roma population in Budapest (2.69-fold) exceeding the national rate (2.19-fold between 1984–1987 and 2010–2013) calculated on the basis of the two databases (this difference cannot be explained either by the distortion of external assessment alone – in our opinion) – see the data of Tab. 2. Based on the data of the survey – not representative – in 2016 mentioned before several times, focusing on Hajdú-Bihar and Szabolcs-Szatmár-Bereg counties, Budapest seems to be a migration target therefore significant migration gain can be presumed in the capital (Szilágyi & Pénez, 2016).

Changes in the number of the Roma population, its spatial differences

Databases were analyzed in more detail than regional and county breakdown in order to expose more spatial correlations. Districts defined in 2015 (the districts of Budapest are fused) were used because in the case of settlements, anomalies had occurred in the CIKOBI database of 1984–1987 due to its methodology (mentioned before). Aggregation reduces outstanding values occurring in the surveys based on estimations. Besides, with the further fusion of aggregated council data available for Somogy county, all counties were involved in the study.

Values of the ratio of Roma people within the total population calculated for 174 districts and for Budapest showed rather high correlation coefficients revealing that the values of the data series based on concepts different from each other could be significantly different and still their spatial pattern could be similar (Tab. 4).

Table 4 Coefficients of Pearson correlation calculated by the ratio of Roma population within the Hungarian districts

Database	Census, 1990	Census, 2011	CIKOBI, 1984–1987	UD, 2010–2013
Census, 1990	+1.000	+0.901	+0.868	+0.868
Census, 2011	+0.901	+1.000	+0.918	+0.921
CIKOBI, 1984–1987	+0.868	+0.918	+1.000	+0.931
UD, 2010–2013	+0.868	+0.921	+0.931	+1.000

Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénez and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011

Closest statistical correlation is shown by the data series of the CIKOBÍ and the UD surveys primarily due to their similar methodology. However, correlation is less close in the case of the two censuses (but still quite strong). The correlation coefficient of the two databases with different methodology – those of the CIKOBÍ survey of 1984–1987 and the census in 1990 and those of the UD survey and the census in 2011– became stronger by the 2010s. This was influenced by the fact that in the last weeks of the UD survey the ethnic data of the census in 2011 became accessible and those were supplied by the respondents at several settlements. At the same time, the two databases could become closer due to an increasing trend of Gypsies admitting their identity (presumed by László Hablicsek (2007) among others) (the development of the methodology of censuses could have an effect as well with the possibility of selecting multiple ethnicities as well).

Higher values of data series aggregated for districts also drew attention to that significant differences could hide behind the correlation coefficients. For example, Ózdi district ranked second in the UD survey was not found in the top ten of the census in 2011 (it was ranked 15th). In the case of Szikszói district the opposite was observed (it was ranked 16th by the UD survey).

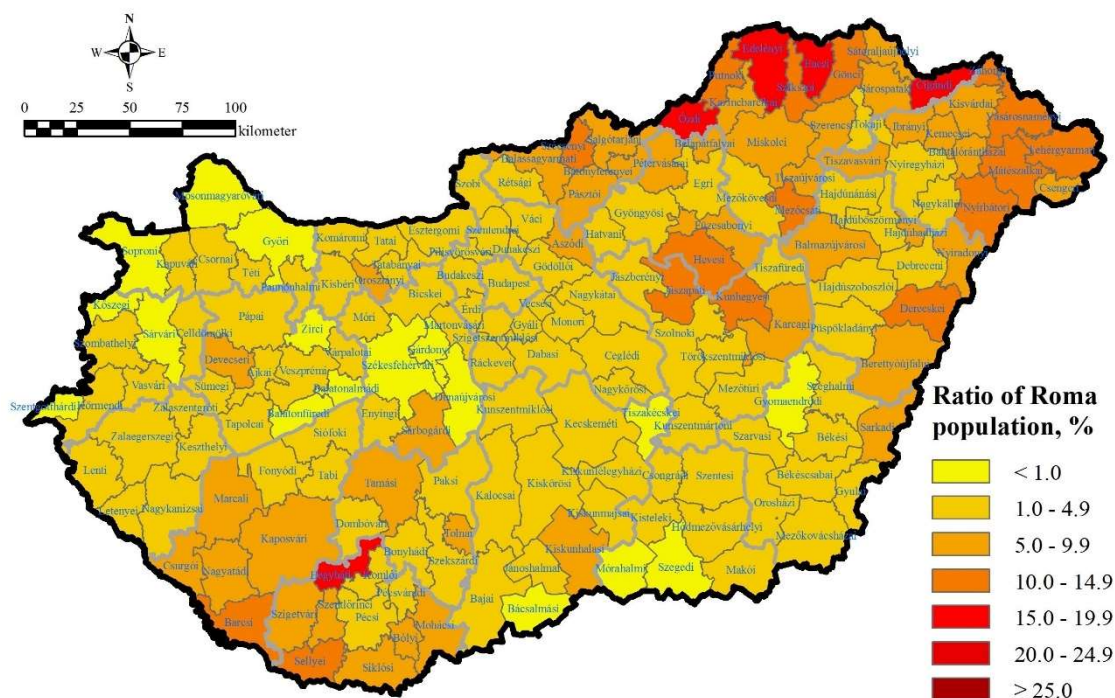
Table 5 Districts with the largest ratio of Roma population and their values, %

Rank	Census,1990		Census,2011		CIKOBÍ, 1984–1987		UD, 2010–2013	
	district	ratio, %	district	ratio, %	district	ratio, %	district	ratio, %
1.	Encsi	11.1	Edelényi	17.2	Edelényi	17.2	Encsi	39.0
2.	Kunhegyesi	10.0	Ózdi	17.0	Ózdi	17.0	Ózdi	37.8
3.	Záhonyi	9.3	Encsi	16.6	Encsi	16.6	Sellyei	35.1
4.	Vásárosnaményi	9.2	Cigándi	15.1	Cigándi	15.1	Hevesi	34.7
5.	Edelényi	9.0	Hegyháti	15.0	Sásdi	15.0	Edelényi	33.7
6.	Nyírbátori	8.3	Sellyei	14.9	Sellyei	14.9	Bátonyterenyi	32.5
7.	Ózdi	8.0	Fehérgyarmat	13.3	Fehérgyarmati	13.3	Cigándi	32.4
8.	Fehérgyarmati	7.5	Kunhegyes	13.3	Kunhegyesi	13.3	Mezőcsáti	30.3
9.	Gönci	7.4	Mátészalka	13.3	Mátészalkai	13.3	Nyírbátori	29.0
10.	Szerencsi	7.3	Szécsény	13.2	Szécsényi	13.2	Sásdi	27.9

Source: own construction based on Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014), and the HCSO data of the censuses in 1990 and 2011

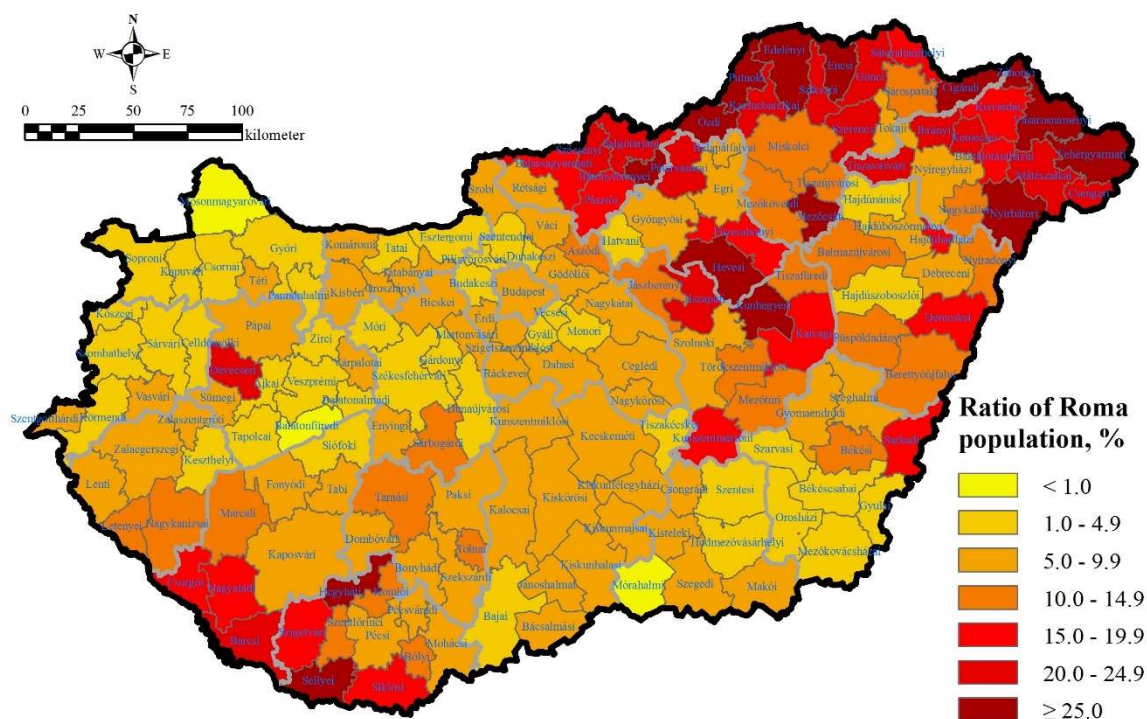
According to the UD survey highest Roma ratios were found in the Encsi, Ózdi, Sellyei, Hevesi and Edelényi districts (Tab. 5) in which the ratio of Roma people exceeded one third of the total population.

Figure 4 The ratio of Roma population in the Hungarian districts by the CIKOBÍ survey (1984-1987), %



Source: own construction based on the data of Kocsis and Kovács (1991) and Kertesi and Kézdi (1998)

Figure 5 The ratio of Roma population in the Hungarian districts by the survey of the University of Debrecen (2010-2013), %



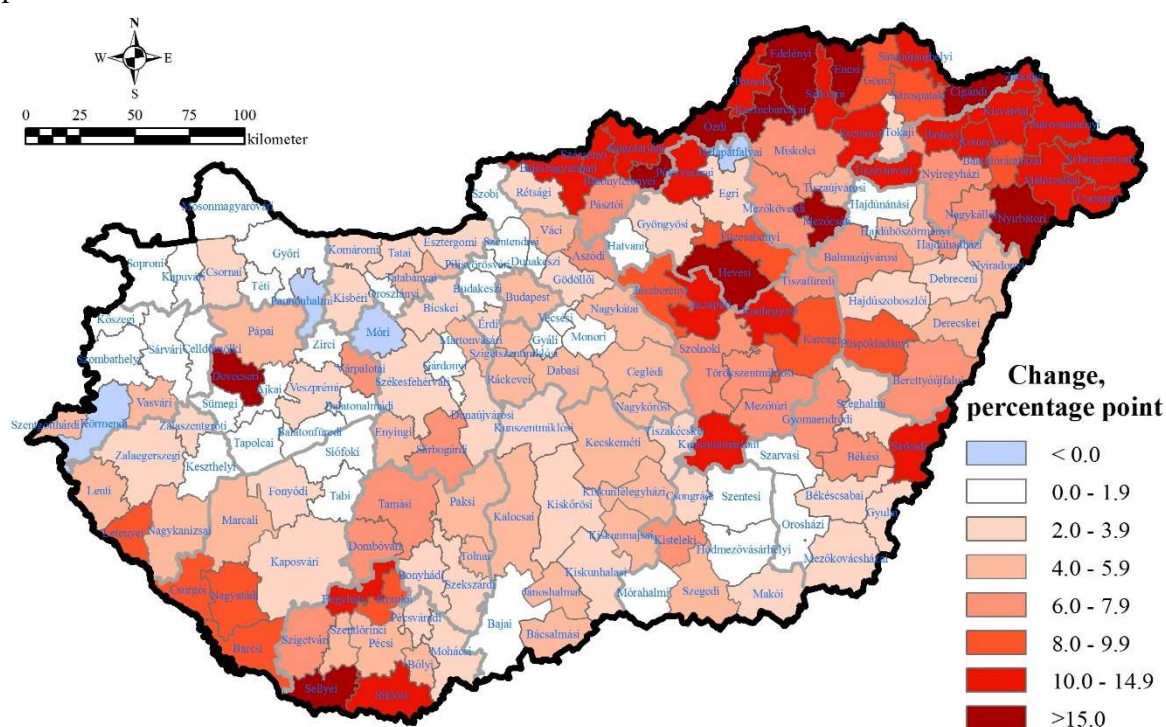
Source: own construction based on the data of Pénzes and Pásztor (2014) and the UD survey in 2010–2013

Similar regional ranking was obtained when the ratio of Roma pupils in primary school were estimated with typically higher rates (Papp Z., 2012). In 2010–2013 only a few districts were

found where the estimated ratio of Gypsies was less than 1% (Mórahalmi, Balatonfüredi and Mosonmagyaróvári districts). District ratios showed a significant increase between the surveys in the two time periods (Fig. 4 and 5).

It can also be detected that the ratio of the Roma population increased at greatest rate where it had high ratios already at the time of the CIKOBİ survey (the ratio of Roma people within the total population increased by over 20 percentage points in the Bátorfyerenyi, Enesi, Hevesi, Ózdi and Sellyei districts) (Fig. 6). Estimated data showed a slight decrease in some districts.

Figure 6 Changes in the ratio of Roma population in the Hungarian districts between the surveys of the CIKOBİ (1984-1987) and the University of Debrecen (2010-2013), percentage point



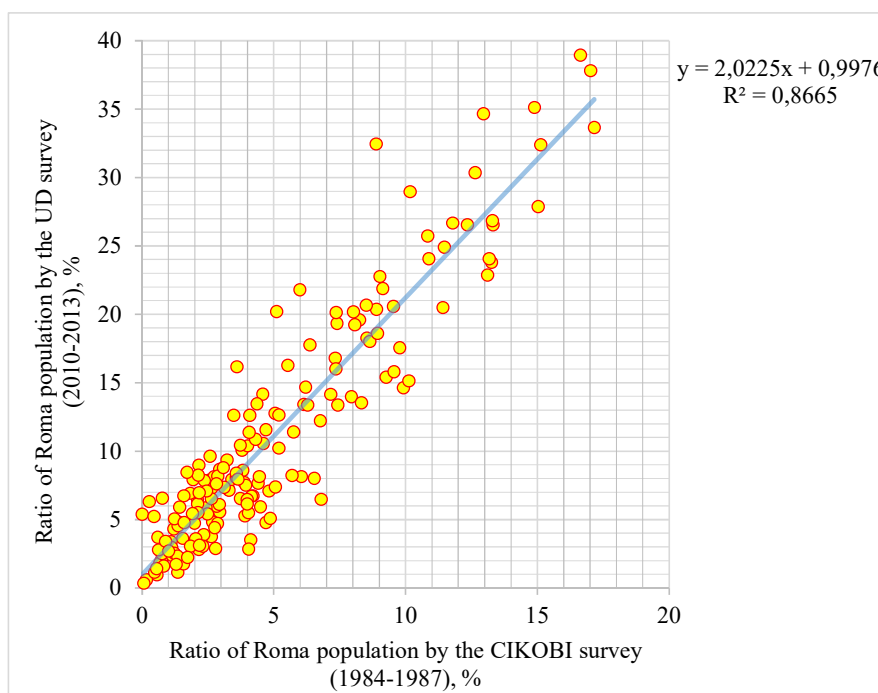
Source: own construction based on the data of Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014) and the UD survey in 2010–2013

The regional differences of the 6 percentage points increase on average are especially spectacular but the linear regression line fitted on the district values of the two surveys indicate the trend of the increase (Fig. 7). The close fit of the regression line ($R^2=0.867$) indicates the significant covariance of the two data series. The equation shows that the values of the district data were doubled (the national data also suggested this). As a result of doubling rates, the ratio of Roma population (calculated in percentage points) increased at a higher rate than the national average in the districts with higher base values. This also indicates the faster shifting of the

ethnic ratios that took place in a spatially concentrated way (this is not demonstrated at settlement level in this paper).

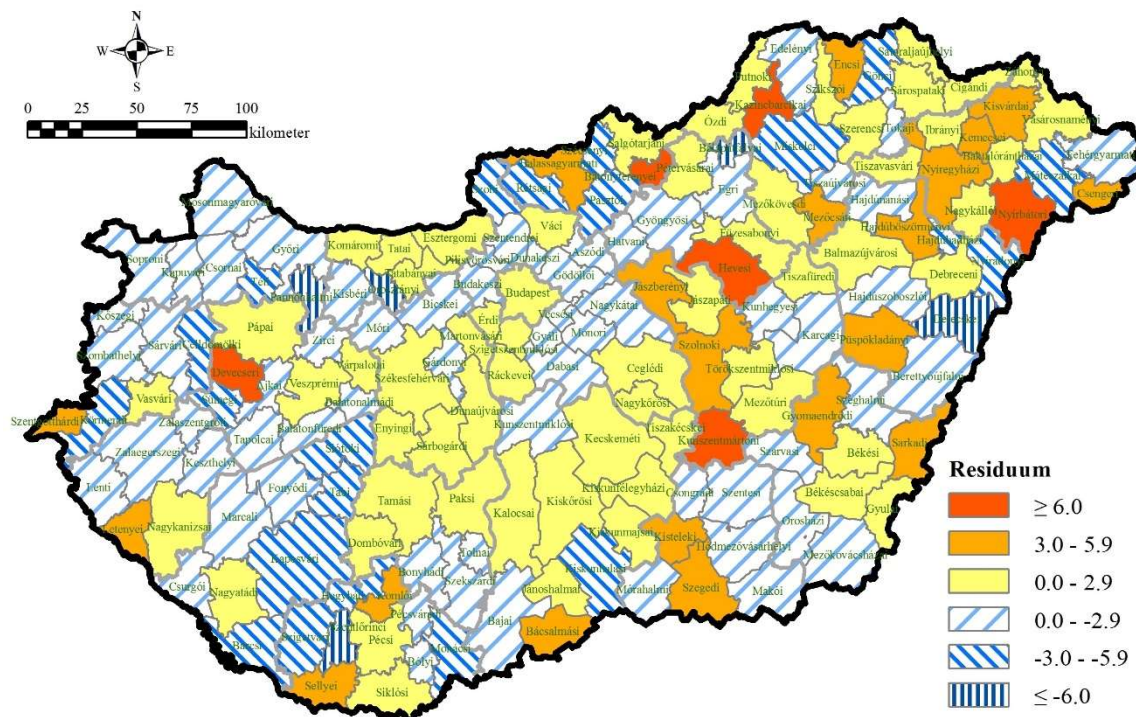
Naturally, greater-or-smaller differences from the regression line can be observed – partly because of uncertainties due to estimations and aggregations – that can be studied on the basis of the spatial distribution of the residua (Fig. 8). Greater differences (either with negative or positive sign) – in our opinion point beyond estimation uncertainties and differences in natural reproduction – indicate the migration of the Roma population (it is important to note, however, that the present database has limited suitability for studying the migration of the Roma population therefore this is not analysed in this paper).

Figure 7 Regression line fitted to the ratio of Roma population of the districts calculated by the surveys of the CIKOBİ (1984–1987) and the University of Debrecen (2010–2013)



Source: own construction based on the data of Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014) and the UD survey in 2010–2013

Figure 8 Regional distribution of the residuum values of the regression formula fitted to the ratio of Roma population of the districts calculated by the surveys of the CIKOBİ (1984-87) and the University of Debrecen (2010-13), %



Source: own construction based on the data of Kocsis and Kovács (1991), Kertesi and Kézdi (1998), Pénzes and Pásztor (2014) and the UD survey in 2010–2013

CONCLUSIONS

The primary aim of the present paper is to show the changes in the regional distribution of the Roma population over the last 30 years. No study has been performed to give a comprehensive picture about the spatial distribution of Gypsies since the CIKOBİ survey in 1984–1987 (except for the census using self. This was targeted by the survey carried out by the colleagues of the University of Debrecen in 2010–2013 made with hetero-identification that covered all settlements of the country.

Comparing the results of the two mentioned surveys at national level, the number of the Roma population increased 2.2-fold from 400 thousand to 876 thousand people, while the ratio of Roma people within the total population increased from 3.7% to 8.8% (for comparison, the number of those declaring themselves Gypsy in the course of the 2011 census was almost 316 thousand people). Studying the geographical specifics, the regional pattern of the Roma population has not changed essentially. Most Roma people live today and the highest ratio of Roma people can be still found in the regions where the settlement/district ratio of the Roma population was highest in the 1980s. Such regions are found mostly in Northeast and Southwest Hungary, primarily cross-border, periphery areas.

While the spatial pattern of the Roma population hardly changed, significant changes can be found in the village-town relation causing a significant increase of the urbanization of Gypsies over the last 30 years. An increasing ratio of the population believed to be Roma live in Budapest and in towns with a population greater than 50 thousand people while their ratio in villages decreased. 62% of Gypsies live in towns and this is quite close to the average of the total population (71%). The phenomenon can be explained primarily – apart from identification issues – by internal migration.

Despite its increasing urbanization the ratio of the Roma population is still highest in small settlements. This settlement disadvantage is accompanied with a regional disadvantage as well. In the last 30 years the ratio of the Roma population within the total population increased with highest rate in periphery districts with disadvantageous location where the ratio of the Roma population was high already at the time of the CIKOBÍ survey. All these support the process – that was known mostly from case studies so far – that the Roma population has an increasing ratio in certain regions due to selective migration and the high fertility of Gypsies and as a result, these areas increasingly resemble ghettos. The mentioned processes are present in Hungary simultaneously and result in the increasing disparity of Roma ethnic ratios within the country.

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