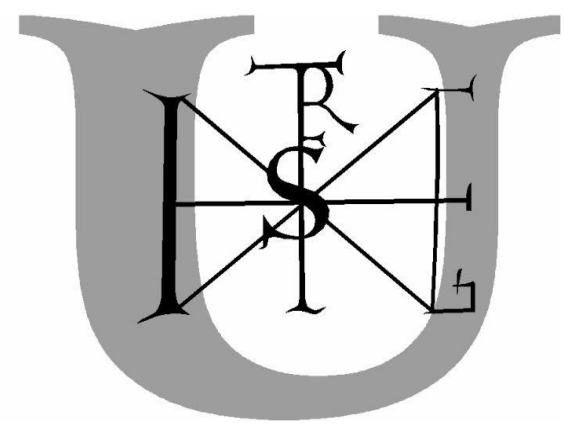

SZENT ISTVÁN UNIVERSITY

The investigation of settlements with a population number below 1000 in Hungary

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The Doctoral School's

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1. THE BACKGROUND AND AIMS OF THE DISSERTATION

The investigations of settlements in different types and sizes have a long history, which is largely influenced by the continuous change of economic, natural and human resources, but this issue is also important because of its complex effect on social and economic processes. The majority of the studies that have been carried out on this subject were aimed at exploring the problems affecting most of settlements. The subject of investigations was, in many cases, the fragile social structure, unfavourable social and demographic trends, aging population, migration, unemployment and adverse ethnic processes. In addition to causation factors, comprehensive processes based on historical features have been explored. Overall, the picture shows that the settlements with a population under 1,000 people in most parts of the country, with respect to population changes or factors describing economic processes, are at a disadvantage compared to their the rest of the settlements, and they have below the average values.

Nevertheless, based on the historical review, there are many contradictions and differences regarding to village policy, village development and the debates emerging from these. On the one hand, it is due to the fact that, when the "socialist village network"[1] was created, the small villages were not part of the "optimal settlement network model"[2].

However, there are settlements with less than 1,000 inhabitants, which, contrary to their counterparts, are in a more favorable position according to a number of factors that directly and indirectly have a positive effect on the welfare and well-being of society and the individuals. Research on these success factors can also be found, to a lesser extent (HORVÁTH 2013).

Investigating the territorial capital in settlements with a population below 1000 is a very timely research direction. The examination of territorial capital has already been implemented by some of the Hungarian cities and micro-regions (TÓTH 2013, JÓNA 2013, GRÜNHUT 2014, BODOR 2014, RECHNITZER 2015, CZAKÓ-DŐRY 2016). Then, in the second quarter of 2017, a book on territorial capital exploration was published (DOMBI et al., 2017). However, complex territorial capital research focusing on the smallest settlements has not yet been established. The significance of this topic is due to the fact that these settlements account for more than half of the population of the Hungarian settlements (in the year 2013, from the 3152 settlements of Hungary 1734 had a population number below 1000). According to 2013 data, these settlements have nearly 8% of the permanent population of the country (767 035 people).

[1, 2] BELUSZKY Pál: A kisfalvakról településtudományi megközelítésben. In: SÜKÖSD Ferenc: Az aprófalvak közélete és ifjúsága. Pécs 1988. pp. 72-91., vagy In: BELUSZKY Pál: Vég kiárusítás I. (Társadalomföldrajzi tanulmányok (1959-1992)). MTA RKK, Bp. 1992. pp. 240-250

The purpose of my dissertation is to explore the economic development challenges of these settlements and the factors that characterize them. This topic is timeless, since the promotion and development of these areas is an integral part of the past, present and future territorial policies. The fact that the new rural development program 2014-2020 in Hungary also places great emphasis on the development of the basic services of these settlements demonstrates the timelyness of this topic well.

The timeframe for research covers the programming period 2007-2013, including its initial and final stages (2007 and 2013). The degree of exploration of the cause and effect of changes occurring during the programming period is also the objective of the dissertation (GHAURI-GRONHAUG 2011, BELUSZKY et al., 1984, JONNA 2014). However, this time limitation does not coincide with the programming period alone. The data from 2007 shows the picture after our accession to the EU, when grants, developments and investments have begun. It can also be said that it indicates the situation before the effects of the global economic crisis in Hungary. 2013 is not just the closing year of the programming period - when developments and investments are already partially affecting the country, but also the reactions to the economic crisis already mentioned, along with the impacts on the settlements.

The dissertation starts with the investigation of the small villages', hamlets' and pigmy villages' territorial capital, which is based on similar studies already conducted (TÓTH 2013, JÓNA 2014) and on the investigation by BELUSZKY-SIKOS first conducted and published in 1982, and then repeated in 2007 about the village types of Hungary. During the analysis of the villages types they created (BELUSZKY-SIKOS 2011, 26pp.), it was observed that the settlements belonging to category 6 and 7 provide the main basis of my investigation, because these are the ones with a population number less than 1000.

In order to group the examined settlements according to the number of inhabitants, I used the data and names of the settlements categories used by the Hungarian Central Statistical Office (KSH) in 2014. Thus, in the examination of the settlements of less than 1000 inhabitants in Hungary, I named the ones between 500 and 999 inhabitantssmall settlements. I consider them hamlets between 200 and 499 people, and pigmy villages if their population number was less than 199.

Formulating the research hypotheses

I formulated the following hypotheses in my dissertation.

H1: My presumption is that in the case of small villages, hamlets and pigmy villages we can observe differentiation between settlements along the material dimension

H2: The main reason behind the success of settlements is their advanced tourism potential.

H3: It is impossible to determine the performance of small villages, hamlets and pigmy villages based on only hard statistical indicators; the use of soft data is also needed.

H4: The regional loss-map, after certain changes, is suitable for providing a basis for investigating small villages, hamlets and pigmy villages, and for creating a unified research method.

H5: I theorise that small villages, hamlets and pigmy villages with similar territorial capital stock bear similar characteristics.

2. MATERIAL AND METHODS

The settlements investigated during the research have a population less than 1000 people. During the analysis, I tried to determine the territorial capital of these settlements and their characteristics. My examination included the characteristics of their accumulation. The research covers the years 2007 and 2013, which coincides with the start and end of the previous programming period. By examining the extent and direction of change between the two dates, I tried to find causal relationships.

Before starting the research, I studied the research papers that were published on the subject, and came to the conclusion that it would be worthwhile to examine the localities, which are the focus of my investigation, with the method of territorial capital. Thus, based on the methods and indicators already used on other territorial units, I tried to create a combination that in my opinion takes the characteristics of the settlements examined into account (as much as possible), as well as reveals the shortcomings. I find it important to approach the shortcomings and "losses" because, in my view, to give space to the development and opportunities of a given territorial unit or community, we must also know the inhibitory factors of it adequately. In the light of these, removing or remedying the underlying factors - in my opinion - a much more balanced and perhaps more sustainable development (not just growth) can be achieved. To this end, I have transformed the variable structure for determining the spatial capital in accordance with the study area and transformed the already existing regional loss-map so that the relevant areas of interest for settlements are present.

3.1 The research methodology

In the first part of the methodology, I will describe the course of compiling the database; then I will go through the process of forming the factors. Then I introduce the cluster groups created based on the factors. The remarks on the transformation of the loss map will be mentioned in the „results" section.

During the study I used MS Excel and Word and IBM SPSS Statistics 22 programs. The results were displayed on the maps using QGIS 2.18.2 GIS.

I have conducted a secondary research for my dissertation, interpreting research results of others, and I have conducted primary research in order to use the results of other scholars for my research. I used village-level data to conduct my studies. With these data, we can get a more subtle picture of the situation, competitiveness and common or different features of settlements and regions.

During the compilation of the database, I used the data series collected from the interactive analysis platform of the TeIR (National Spatial Planning and Regional Planning Information System) and part of the data series provided by the Hungarian Central Statistical Office (KSH). When selecting the data, it was important to work with settlement level data with information suitable for my research. When selecting the basic data, I also took into consideration the research

on territorial capital (TÓTH 2013, JÓNA 2013b and DOMBI et al., 2017), and small settlements (HORVÁTH 2013, JÓZSA 2014), which helped to better identify variables.

During the study, I observed the first and last years of the 2007-2013 programming period. Although I have drawn up the data series for each year of the programming period, I only worked on its initial and final years for the study. The two years examined are interesting, because the 2007 data may help to find out about the state of pre-world crisis, while the data from the year 2013 may be suitable for indicating the crisis-induced reactions and impacts and consequences.

Only those settlements were included in the study group, whose constant population numbers were below 1000 in both years and remained within the established groups of settlements. I divided the group of 1612 settlements further into 3 smaller groups.

Although similar investigations have been carried out in the course of similar studies, when the use of specific indicators has been chosen by researchers, I have considered the study of the basic values of variables to be more appropriate.

Table 1: The changes in settlement categories

Population number categories	Category name	The number of settlements belonging to the categories in both 2007 and 2013
… - 199	Pigmy village	318
200 – 499	Hamlet	665
500 – 999	Small village	629
Altogether		**1612**

Source: The author's own editing based on Térport.hu (n.a.), 2017.

Thus, the total number of settlements involved in the survey is 1612. I have excluded settlements moving between groups, so that the established factors can more accurately determine the main characteristics and character traits of the different settlement groups based on the values of their respective variables.[3]. The problem of incomplete data and limited availability was well-established at the beginning of the study. Most of the data series to be included in the study are not available (and in many cases unrepresentable) at the municipal level - so I tried to change these variables to similar ones.

[3]However, in a future study, it may be worth considering the above-mentioned settlements (that were excluded from the investigation) to see the nature of the change in their population number (caused by movement from one group to another) and the effects of this change on other factors. However, due to the scope limitations of the dissertation, this could not have been done this time.

Another major problem was that a number of focus areas (such as all areas of green space, or protected natural sites, bicycle roads, etc.) that were to be investigated were either 0 or no data available. Here again, I had to consider the necessity of the examination of certain variables have arisen. (These are mainly due to the size of the settlement.)

I have further reduced the number of variables according to the main directions of the results of the previous surveys on the problems and opportunities in the settlements below 1000 inhabitants. Based on the results, I focused on examining the social and tourism dimensions, and I also looked at the variables that remain in the study. Thus, after the initial cleaning of the database with 53 variables, I performed the examination on the following 19 variables (Table 2).

In domestic and international research, material and immaterial capital factors were grouped into separate groups and subgroups were created within them. During my research, I have arranged my variables in accordance with these two main dimensions, but because I consider these factors as "social and tourism factors", I did not form subgroups.

Table 2: The variables of the material and immaterial dimensions

Material	**Immaterial**
Housing stock	The population of the settlement
Total domestic income	The number of permanent out-migrations
The number of houses connected to the water system	The number of permanent immigrations
The number of guests nights spend in rural accommodations by foreigners	The number of births
The number of guest nights in rural accommodations	The number of deaths
The number rural accommodations	The number of personal vehicles at the end of the investigated year
The number of cultural institutes	The number of people participating in cultural events
The total number of registered unemployed people	The number of people between the ages of 0 and 17
	The number of people above the age of 65

Source: The author's own editing (2017) based on the categorisation of DOMBI et al., 2017

3.2 Factor analysis

The use of factor analysis allows the researcher to discover the relationships between variables that can not be observed with the analysis of the data.

The variables shown in Table 2 were examined by various statistical methods, which showed the connection systems and relationships between them. In order to explore their effects on each other, I applied factor analysis first. This mathematical-statistical method is capable of compressing available information into a few fictive variables (factors) without significant loss of information, while revealing the internal laws referring to the underlying phenomenon (BELUSZKY et al., 1984).

The determination of the outstanding values was helped by the examination of the SPSS (Statistical Data Editor) Boxplot, which was used to define the variables that were incomplete. (This study was performed for all three groups in the two years under study, i.e. in 6 cases.) After the group of variables was cleansed from these elements, 19 variables remained, which formed the basis of factor analysis for all 3 groups of settlements. The main results of these are shown in Table 3.

Table 1: The main indicators and results of the main component analysis

Settlement groups	Year	Number of main components	KMO	Sig.	Explanatory %
Below 199 inhabitants PIGMY VILLAGE	2007	6	,774	0,000	74,441
	2013	5	,777	0,000	66,838
Between 200 to 499 inhabitants HAMLET	2007	5	,780	0,000	71,558
	2013	5	,741	0,000	68,285
Between 500 to 999 inhabitants SMALL VILLAGE	2007	6	,775	0,000	77,524
	2013	6	,721	0,000	72,500

Source: The author's own editing (2017)

The program offered the factor numbers in Table 3. In most cases, 6 factors were developed based on available variables, but in three cases, 5 main components were performed. Significance always had the „0" value. With the variance ratio method, it was determined how many percent of the information content remained during the analysis. It can be seen that the explanation percentage in the study narrowed to 19 is above the minimum 60% required for all factor analysis.

3.3 Cluster analysis

Based on the obtained factor-coordinates, I conducted cluster analysis to group the test elements. My primary purpose was to use this method to place observation units into homogeneous groups. So, the elements in each group are similar to their peers, but they are different from other groups. Using this multivariate method, I did a sort of categorization. However, taking into account the limitations of cluster analysis, it should be noted that the result of the test does not necessarily mean that this is the only suitable solution for determining the characteristics of settlements of less than 1000 inhabitants, since the delimitation of clusters is entirely dependent on the variables in the study. When reviewing the factor analysis, I mentioned the problems encountered in the variables - which are also reflected here.

From the factors that can be assigned to the groups, I included only those in the cluster analysis, which had the sake variable content for both the two years (2007 and 2013 respectively). In the case of pigmy settlements, this means 4 factors, while the other two settlement groups both account for 3 factors. However, I did not exclude the observations with outstanding values, but I increased the cluster (for each group of settlements I created 5 clusters). Thus, the settlements in question - which are mentioned as positive or negative examples due to their outstanding values - are also presented during the analysis, but do not influence the grouping of the other settlements.

During the analysis I have listed the settlements in 5 clusters. Due to the examination of settlements with the above mentioned values, it was necessary to do so because I also wanted to categorize and characterize them. As stated in the dissertation, the group of settlements with outstanding values is not interpreted and presented as a separate cluster, but as positive or intact negative examples. Therefore, in the 2 categories of settlements, the ones with outstanding values were placed, and the other 3 included groups formed on the basis of differences between the other settlements.

The results were presented using Microsoft Excell and QGIS 2.18.2, which will be described in the section named „results”.

4. Results

The 1612 settlements providing the basis for the research meet the following criteria (Figure 1):

- their population numbers were below 1000 in both investigated years (2007 and 2013)
- they belonged to the same settlement groups in both 2007 and 2013.

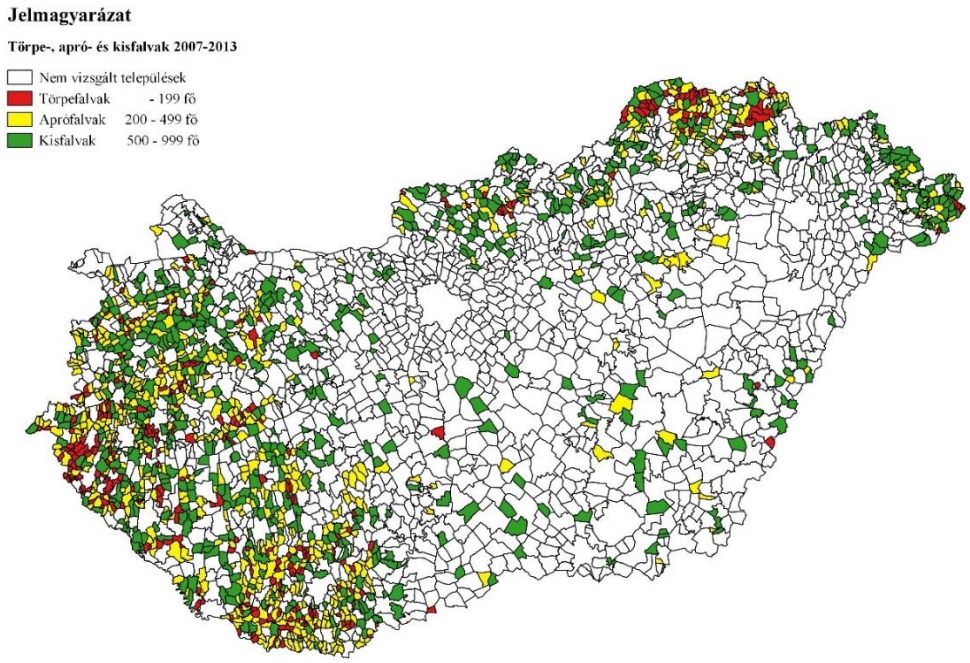

Figure 1: The 1612 settlements examined (2007 and 2013)
Source: The author's own editing, 2017.

It can be seen that settlements in this size category are situated predominatly in the northern, northeastern and in the southern regions of the country.

The data of the two years examined are almost identical, and there is no apparent change in the location and number of settlements. Figure 1 shows that the location of the pigmy villages is also point-like. These settlements typically occur along the Northern Hungarian border and in the areas of Southern and Western Transdanubia with a larger number. There are hamlets, small- and pigmy villages on the Great Plain, but in no way is it so common here than in other parts of the country. Figure 1 shows those settlements that have remained within the same settlement category in each of the two years so their population has not increased or decreased to such an extent that they would have been in another settlement category.

Following the determination of the 1612 settlements the investigation was based on, I reduced the number of variables based on professional and statistical considerations. The variables that formed the basis for the territorial capital components that were to be examined often had little information or were completely incomplete. The 53 variables collected at the start of the study had to be reduced so that the amount of information that could be handled during the research would not be significantly missed. As a result, I kept the 19 variables that were useful and relevant to the data.

4.1 Factor analysis

+In 2007 and 2013, in the case of pigmy villages, four factors had identical variables in both years. The following variables were included in the "social" factor: the total number of registered unemployed, the population number of aged 0-17 and the number of live births. The factor "tourism" includes variable called „the number of guest nights in rural accommodation", „the number of rural accommodations" and „the number of guest nights spent by foreigners in rural accommodations". The factor called "migration" contains the data of permanent migration and migration. The "cultural" factor is based on the number of participants in cultural events and the number of public cultural institutions.

In the case of hamlets, the variable content of the factors was different. There are 3 factors in this settlement category with a constant variable content. The "Social" group includes the migration, live births, the population aged 0-17 and the number of registered unemployed. The "Tourism" group contains typically variables linked to tourism, "Number of guest nights in rural accommodation", "Number of rural accommodations" and "Number of guest nights spent by foreigners in rural accommodation". The factor named "Culture" contained the variables "Number of Cultural Institutions" and "Number of Participants in Cultural Events".

In the case of small villages forming the third study group, there were 3 matching groups. Although all three groups have been included in at least one of the settlement categories presented so far, they have not yet appeared in that combination. The "Tourism" factor was formed with the same variable content in this case as well; it contained the "Number of guest nights in rural accommodation", "Number of rural accommodations" and "Number of guest nights spent by foreigners in rural accommodation". Another was the "Migration", which contains the data of incoming and outgoing migrations, and the "Culture" factor, which includes "the number of participants in cultural events" and "the number of Cultural Institutions".

4.2 Cluster analysis

With the factor co-ordinates created during the factor analysis, I prepared the cluster analysis for each of the three groups of settlements. The number of clusters was determined uniformly for each settlement group and for both years. I did this because I noticed some outstanding results during the clustering. These special cases were classified into a separate cluster according to factor weights by SPSS. Even though I did outline the outstanding data even before the factor analysis, cluster analysis showed significant differences. After examining settlements with outstanding values in different areas, I decided to increase the initial cluster (which was originally 3) to 5, so that I can show the characteristics of the outstanding settlements more accurately. In several cases, positive examples have been presented. The names of the clusters received were solved with two words (2 members). The first member is a generic name that is generated based on the

evolution of all the parameters contained in the cluster. The second member was determined on the basis of the most important factor determining the deviation, based on the best that characterizes the settlements belonging to the cluster. This could have been the case, for example, as an outstanding cultural life or a sleeping environment.

4.3 Hamlets – settlements with a population number between 200 and 499 - excerpt

The name of hamlets is used for settlements with a population number between 200 and 499. The basis of this part of the survey is also given by the municipalities that belonged to this settlement group in both 2007 and 2013. This is a total of 665 hamlets. As in the case of pigmy villages, hamlets were also grouped into five clusters. Settlements with outstanding values form 2 separate groups, the main features of which are listed in Table 3.

In 2007, two clusters had small settlement numbers due to the outstanding values they represented. One of them is the "Outstanding Cultural Life". These include the following 4 settlements: Kiskutas, Öcs, Pula and Závod. Öcs and Pula settlements are some of the places where the Valley of Arts festival is held and there are many other tourist attractions attracting visitors there (PULA 2017, ÖCS 2017). Although the village of Závod, located in the south-western part of Tolna County, has three times the average number of participants in cultural events, it does not exceed other settlements regarding to other cultural or even tourism factors. In this case I do not consider the the statistical result supported (ZÁVOD 2017).

This is also the case with Kiskutas. The main attraction of the settlement is due to the number of participants in outstanding cultural events. However, for all the other variables, we can not speak of deviation from the average.

The group, "Outstanding Tourist Potential", includes three settlements, Lovas, Hollókő and Kapolcs. Lovas settlement lies in the Balatonfüred-Csopak wine region. In addition to the beautiful natural surroundings, it is famous for its world-famous and unique paint mines, which operated 30-40 thousand years ago (LOVAS 2017). In the case of each of the examined tourism elements, the settlement had significantly higher values than the average in 2007. The number of guest nights spent by foreigners in rural accommodations is 167 times the average value, while the number of guest nights in rural accommodation is 32 times higher. As a consequence of this, the number of rural accommodation is also considerably higher than the average, in this case, 25 times. Since the town has such high values along the tourist capital elements, I have also examined the other groups of capital. The town of Kapolcs was already mentioned, as it is one of the main venues of the Valley of Arts festival. In addition, there are many natural and architectural attractions that are attractive for the tourists.

In the case of Hollókő, it was rather understandable what kind of characteristics put the settlement in this cluster. In the case of Hollókő, in addition to high tourist potential, cultural life is characterized by high activity. However, based on the

values of the variables of the "tourism" factor, it is so prominent, similarly to the other two settlements, that it "suppresses" the otherwise significant cultural activity.
In the year 2013, two cluster groups were also defined; their settlements took quite different values from the average than some of the capital factors. The first such group is the cluster "Outstanding tourist life", containing 1 settlement, Szalafő. Szalafő is a small village in the Őrség, which, in addition to the dazzling natural environment, has many tourist attraction programs for visitors. In addition to the several days of gastronomic festivals, there are tourist routes and educational trails beside the programs offered by the settlement. However, the peaceful, rural life of the settlement also attracts a lot of visitors.
Velem belongs to the settlement cluster "Outstanding tourist and cultural life", which lies at the foot of the Kőszeg Mountains at the western edge. It is part of the Írottkő Natural Park, which has many natural and historical attractions. Based on the demands for permanent programs, adventure tours and walking paths, the development started along the tourist group of the settlement (VELEM 2017). It is proven by the number of guest nights in rural accommodations and in the number rural accommodations (35 to 45 times the average). All of these have an impact on the metrics of cultural assets mapping. The number of participants in cultural events is forty times the average.
After finishing the review of hamlets I continue with the other clusters. After the presentation of the clusters defined in 2007, the next topic is the established groups of settlements in 2013 (Figures 2 and 3). After presenting the results, I present the similarities and differences between the two years.
Based on the 2007 data, the following 3 settlement clusters were defined for hamlets.
The first cluster "changing society" includes 172 settlements. Their common characteristic is that they take up higher values than the average of hamlets for migration - both in the case of in- and outmigration. The number of registered unemployed is more than one and a half times higher than the average number of hamlets. Regarding the proportion of Roma people living in settlements, however, they take up nearly three times higher values. In part, they support the results of BABUSIK (2007) that "a significant proportion of Hungarian Gypsies live not only in poor circumstances, but also in regions and settlements that preserve poverty and prevent improvement. Hungarian Gypsies, therefore, have been basically living in rural, agricultural regions or in areas where the high level of unemployment after the collapse of the socialist industrial sector. In these areas unemployment was not solved by future industrial-service-oriented or agricultural development .... the majority of the small villages inhabited by the Gypsies are "disadvantaged", i.e., where the operation of the local social welfare system is also seriously affected "(BABUSIK, 2007, p. 7). It can be concluded, therefore, that the small village structure, the ratio of the high unemployed and the high Gypsy population are related to structural deficiencies and disadvantages.

The second cluster, which has the name "sleeping society", has 179 settlements. Its main feature is that the factor containing the cultural elements has values below the average of hamlets. This is reflected in the number of participants in cultural events. The average value of that variable does not reach the value of cluster 2 as well. In terms of the number of public cultural institutions, this difference is somewhat lower, one third of the average value of hamlets. Considering the social and migration values, it can be said that the cluster average is smaller than the average value of small settlements for permanent migration and migration, so there is no large movement or fluctuation in the cluster-forming societies. The proportion of people above the age of 65 is slightly above average, while the number of live births is slightly below the average. However, the number of deaths is also lower than the average of small settlements. On the other hand, there is little activity in the case of tourism-describing factors.

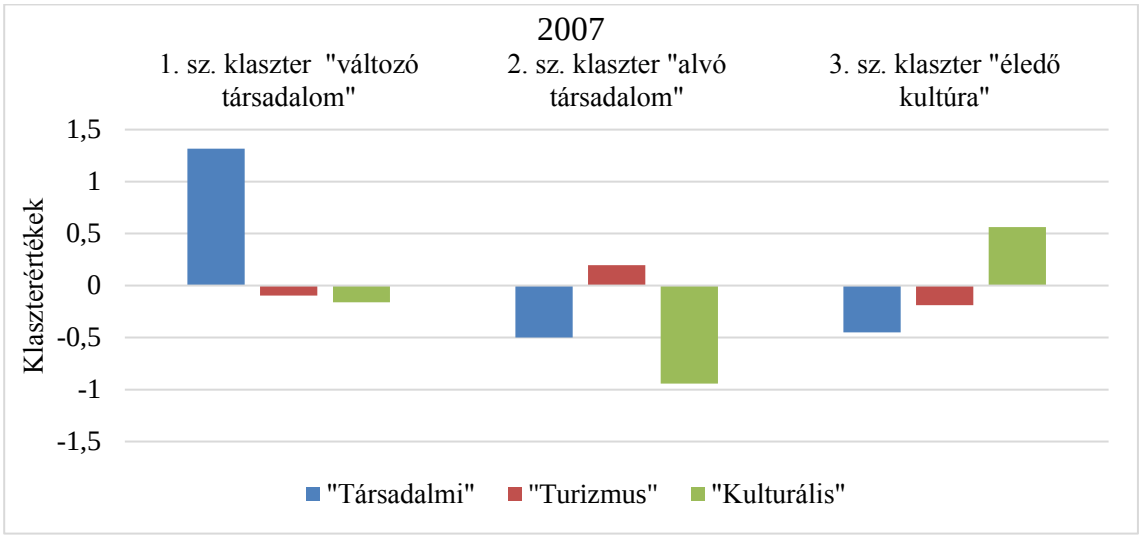

Figure 1: The main features of territorial capital groups of hamlets (based on 2007 data)

Source: The author's own editing 2017.

This is only because of the average number of guest nights in rural accommodations, which is 1.5 times the average value of hamlets, since neither the number of guest nights spent by foreigners in rural accommodations nor the number of rural accommodations are significantly different from the average.

The third cluster is characterized by the fact that the variables in the "social" factor take on lower values than the average of hamlets. There is no such movement in the case of in- and outmigration, which is similar to the average of hamlets and the proportion of registered unemployed, is below the high average. Thus, in my opinion, although local society is not characterized by renewal, more favorable unemployment data may still provide confidence in the settlements of these clusters. Although the proportion of live births is low, it is below the average as well as the values of the 0-17 age group. Considering the ratio of the Roma

population within the minority composition, the settlements of the cluster are also below average.
While the average number of hamlets is 5.8%, the average of cluster 3 is 3.3%. Nevertheless, this cluster is the most populous of all, as it includes 307 settlements, which is nearly the same as half of the hamlets surveyed. The values of the variables of the "tourism" factor are slightly lower than the average values, but this is not significant for any of the differences. However, the difference between the mean values is more significant along the cultural factor. For both of these variables, an increase of ¼ is observed. Based on these, I gave this cluster the name "improving culture". In my opinion, besides the real activity, the good administration also helped these settlements to have such values, so they could get into this category.
In the study year 2013, three other clusters of clusters were set up in addition to the two clusters with outstanding values. The main features of these are shown in Figure 3.
Cluster 1 carries the features of cluster 3, as analyzed above, with the difference that the cultural dimension is not significant, but merely average. Thus, it can be said from this cluster that there is no such movement in the case of in- and outmigration, as the average of hamlets and the proportion of registered unemployed is below the high average. The proportion of live births is low, it is below the average as well as the values of the 0-17 age group. Considering the ratio of the Roma population within the minority composition, the settlements of the cluster are also below average. While the mean value of hamlets is 5.8%, the average of cluster 1 is 3.5%. Nevertheless, this cluster is the most populous of all, as it includes 403 settlements, which exceeds half of the hamlets surveyed. Based on these, I have named this cluster "sleeping society". Of the 307 settlements of the 3rd cluster of 2007, 250 were put in the cluster 1 by the year 2013.

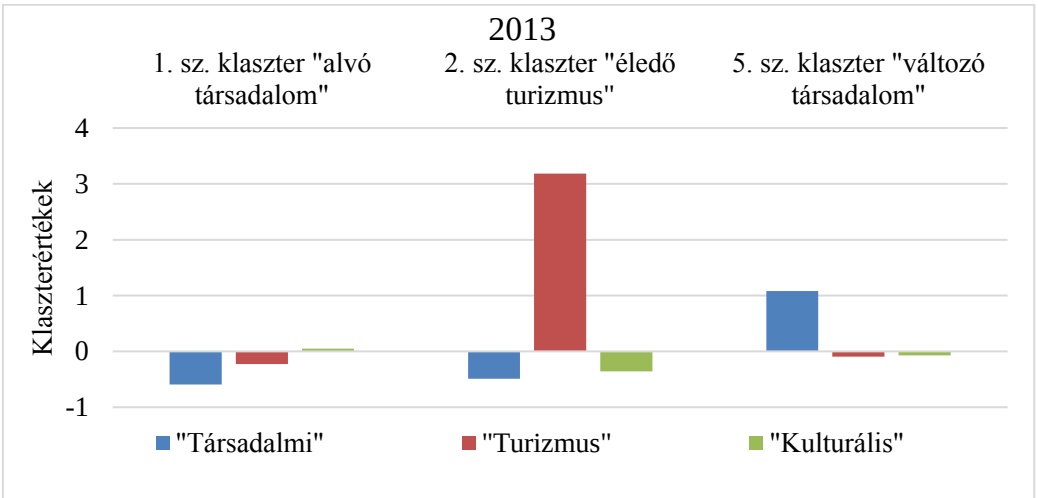

Figure 2: The main features of territorial capital groups of hamlets (based on 2013 data)
Source: The author's own editing 2017.

Cluster 2 is called "improving tourism". This cluster has 28 settlements, most of which came from clusters 2 and 3 of 2007. The characteristic of the group is that the average values of the factors of the tourism are the multiple of the average value of hamlets, and that the proportion of the Roma population is the lowest with 0.8%. The mean values of the variables of the society's variables are lower than the average of hamlets, and this is in this case partly positive as the proportion of registered unemployed and the proportion of in- and outmigration have been ranked in this factor. The average value of the settlements of the cluster reaches half of the average value of hamletss, but with almost twice the number of cultural events. Thus, the settlements of this cluster are subtly below the average regarding to the "cultural" factor.

The last cluster of 2013 is cluster 5, which is called the "changing society". The cluster contains 232 settlements. Figure 3 shows that the factors linked to tourism and culture are along the average values of hamlets, but there is a significant shift along the "social" factor. By examining the average values of the variables included, the average of the settlements of the cluster exceeds the average values of hamlets (with 40% to 60%, but in many cases almost doubling) the average values of hamlets, such as the number of permanent in- and outmigrations, number of live births and the total number of registered jobseekers. The proportion of Roma population in these settlements is also higher, instead of 5.8%, it reaches 12.8%. By examining the settlements in the cluster, it can be said that in the case of 50 settlements the proportion of Romas is above 20%, above 30% in 31 settlements, in 17 cases over 40% and in 11 cases it is over 50%. These values are based on the data of the Roma Population data of the 2011 census and the data of the settlements of 2013. This data is not fresh; however, the tendency in my opinion is well illustrated. The settlements of the cluster 5 of the year 2013 were found in 2007 mostly in cluster number 1 (148 settlements), while 37 were in cluster 2 and 47 settlements were in cluster 3.

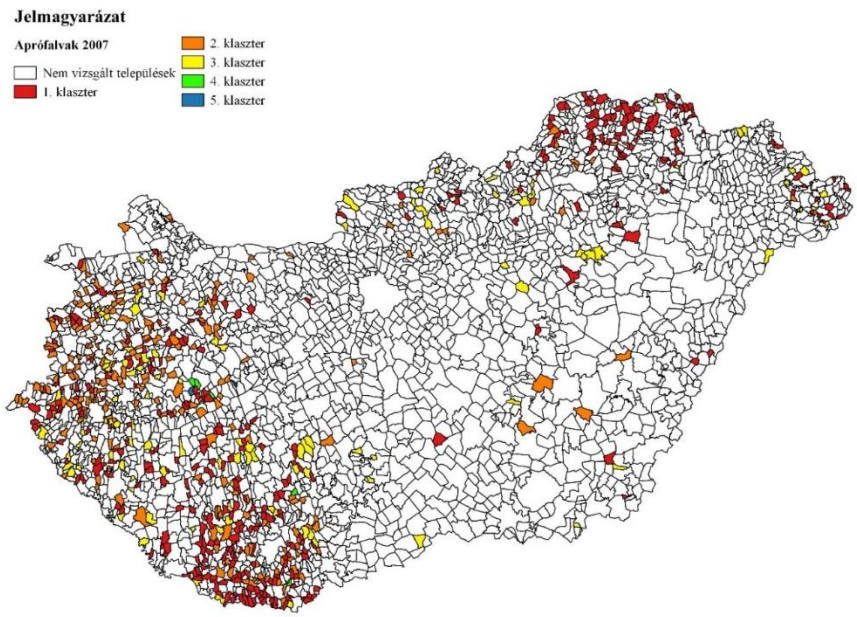

Figure 3: Cluster groups of hamlets, 2007
Source: The author's own editing, 2017.

The map of the hamlets is illustrated in Figures 4 and 5. Figure 4 shows the clusters defined in the 2007 data, which show that settlements of cluster 1 can be observed in 2 major points of interest, one in Northern Hungary and the other in Southern Transdanubia. They are scattered even more in Western Transdanubia and elsewhere in the country. In 2007, settlements of cluster 1 were organized into the following clusters in 2013. Most of them - 148 - remained in cluster, but a significant part of them were found in cluster 5. Their common characteristics, as MOLNÁR (2011) also mentioned, hamlets react more sensitively to changes in migration or natural growth than settlements with a larger population.

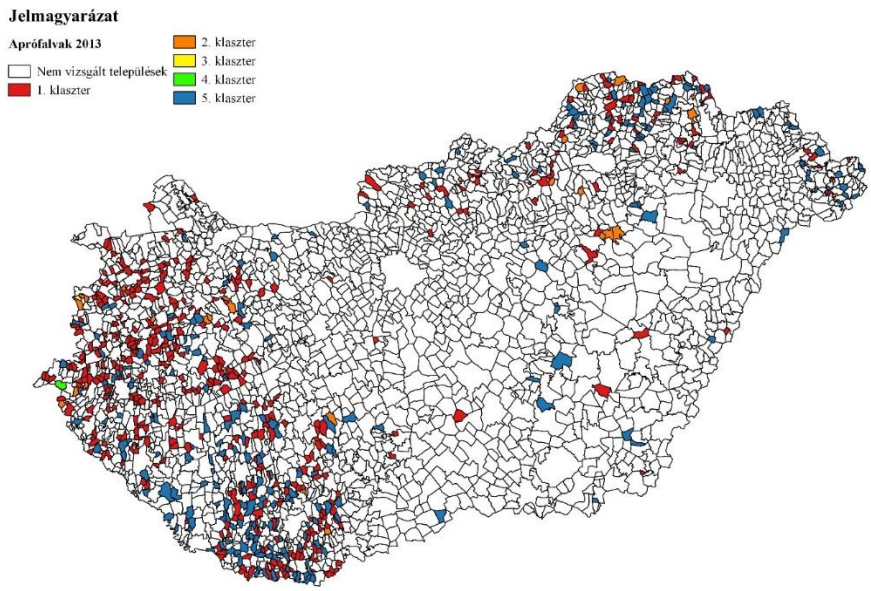

Figure 4: Cluster groups of hamlets, 2013
Source: The author's own editing, 2017.

4.4 New scientific results

Based on the literature review and the results of my research, the following scientific results have been formulated.

1. For the settlements of Hungary under 1000 inhabitants, I was the first to conduct territorial capital examination, in a unique way.
   At such a territorial level, the methodology I use has not yet been used. In my view, it takes into account the characteristics of the settlements investigated and sufficiently reveals the shortcomings. It also points out the fact that, in the field of territorial capital research, it is also essential to measure and collect immaterial and symbolic capital elements in addition to material ones.

2. During the territorial capital audit, the capital groups that have information content for small villages, hamlets and pigmy villages have been formed.
   As a result, I have delimitated capital groups. I have been able to reveal the variables which, although on other territorial levels, are included as constituents of certain capital groups, they do not provide relevant information on this territorial unit. Some examples are the size of all green areas belonging to the settlement or the length of the footpath and pavement. In the case of the missing variables, not only the statistical difficulties stemming from the incomplete data supply are the causes, but in some cases the relevance of the variable is not high at this territorial level.

For example, the length of the pedestrian and sidewalks or cycling paths mentioned above. This example also points out that these settlements can not be examined without any conversion on the methods of analysis used so far.

3. I reviewed and processed the literature on settlements with a population number below 1000 inhabitants, coupled with the concept of territorial capital and territorial competitiveness.
   During the synthesis of the literature and the examination of the previous results, I felt the need to tighten these topics closer together. In my view, the complexity of the subject makes it necessary to re-interpret literature on settlements in a form that it emphasizes local attributes. Since each settlement has unique features, no settlement group can contain all of their characteristics, these groups are designed along key features and characteristics. However, in order to get a more subtle picture of settlement groups, it is necessary to create a uniform measurement of immaterial and symbolic capital factors.

4. I have created a regional loss map adapted to settlements with a population number below 1000, which highlights all components that act as inhibitory factors for the development of a settlement. So by this method, beyond the definition of immaterial capital, the root problems that inhibit or hinter the development of a settlement can be explored so that they rank according to their severity. Not only the list of vulnerable and priority areas can be compared, but also their severity ranking and network of relationships. The transformed loss mapping method is used to reveal and measure the territorial capital of settlements of less than 1000 inhabitants. For creating the loss map, it is advised to complete a focus group interview with local key people and is moderated by an internal expert planner. The function ranges or their individual elements can be omitted or expanded upon request. Thus, basically, a single structure can be used to collect data and explore the capital factors, but this can be supplemented according to local conditions and specialties.

5. I have systematized and developed settlement types for all 3 settlement sizes. For this I have applied different statistical methods that I have created with the help of SPSS. The results were developed through the combination of multivariate mathematical and statistical methods. First I applied factor analysis and then cluster analysis for villages of the three settlement groups. For the 2007-2013 period, I have created the cluster groups, as shown in Table 4.
   Based on the results we can say that I have managed to define clusters that can be interpreted for several settlement groups – in both of the two test

years. Two examples are the "sleeping society" or the "awakening tourism" group.

Table 4: The cluster groups and their names based on their territorial capital

Number of clusters	Pigmy villages – the group of settlements with less than 200 inhabitants	Hamlets – the group of settlements with a population number between 201 and 500	Small villages - the group of settlements with a population number between 501 and 1000
Based on 2007 data			
1	„Increasing migration”	„Changing society”	„Outstanding touristic potential””
2	„Outstanding touristic potential”	„ Sleeping society”	„Awakening tourism”
3	„Awakening tourism”	„Awakening culture”	„Improving culture”
4	„Outstanding cultural life”	„Outstanding cultural life”	„Active migration”
5	„Sleeping settlement”	„Outstanding touristic potential”	„ Sleeping environment”
Based on 2013 data			
1	„Outstanding cultural life”	„ Sleeping society”	„Outstanding cultural potential”
2	„Sleeping settlement”	„Awakening tourism”	„ Sleeping environment”
3	„Outstanding touristic potential”	„Outstanding cultural and touristic life”	„Outstanding touristic potential”
4	„Awakening tourism”	„Outstanding touristic life”	„Changing society”
5	„Social – migration activation”	„Changing society”	„Serving settlement”

Source: The author’s own editing, 2017.

6. In the years under review, there are overlaps that can be traced back to the stable and outstanding tourism potential of a settlement in the studied years. So I consider this result as a new scientific result.

5. CONCLUSIONS AND RECOMMENDATIONS

The importance of local spaces is partly due to the fact that all parts of the space have different characteristics and features - whether it is from parts of the country, counties, districts, cities or villages or some of them. The challenge or problem inherent in it can also mean value. We just need to find out how to solve the specific problems that can be solved (TÓTH 2016). In my opinion, it may be interesting to examine our country from this approach. For this very reason, in my

dissertation, I was studying small villages, hamlets and pimgy villages to reveal the factors that can be grouped together. For this reason, the logical curves of my dissertation start from the examination of small, small and fragile settlements, which I combined with the results of the Hungarian village research. Based on the results of the investigations, I created the clusters of the individual cluster groups that I characterized. I compared the results obtained in 2007 with the data for the year 2013, on which I deduced conclusions. In the conclusions I did not only outline the main characteristics of the settlements belonging to each cluster, but I also formulated my observations and experiences with the method and method itself. The conclusions and suggestions are summarized below.

- In my opinion, examining the presence and distribution of territorial capital at settlement level, as well as the peculiarities of its accumulation can be more precisely outlined by the most significant features that characterize settlements with a population number below 1000 inhabitants. However, it is important to point out that there are no two identical settlements. So if one should try to categorise them by any sort of grouping method, there is always a certain loss during the process. Therefore, if possible, it is worth considering the settlements by themselves and their contexts.
- In my opinion, smaller scale categorization is more appropriate for settlements in our country. In my view, it is very necessary to examine the pimgy villages and hamlets, as these settlements have unique characteristics.
- Territorial capital can be interpreted as a determinant of endogenous development, since it basically builds on the inner resources of a region - which can be partly indicated by the examination of territorial capital.
- Before conducting the research, I came to the conclusion that for the settlements that are the focus of my research, it would be necessary to expand the range of methods and techniques used so far. Therefore, based on the methods and indicators used in existing and other territorial units I tried to create this novel method.
- There are groups of settlements that can not be clearly defined in the space - they are far apart and scattered in space. This is experienced in many settlement groups. It is possible to find spatial concentration based on the cluster groups, but their location cannot be clearly justified. For some clusters (such as "sleeping environment"), I consider it worthwhile for territorial delimitation. A similar phenomenon can also be observed in settlements belonging to the "changing society" group. It is not possible, however, to state clearly from other cluster groups that they would create spatial groups.
- As a conclusion, I would point out that, in my opinion, more detailed studies would require more dimensions to be examined (eg education, work, social, commuting, infrastructure, institutional provision), but in most cases they are either inaccessible or they do not correspond to the reality. The high level measurement of immaterial capital factors has not been

solved either at this territorial level. In my view, in most cases it would be easier to approach the factors from the deficit side, whereby typical problems could be explored, which would actually inhibit the activation of existing resources.

- In the light of the abovementioned details, I would like to emphasize that, in my opinion, the uniform and widespread use of loss maps transformed to these territorial levels would greatly facilitate the widespread exploration of the characteristics of settlements. It would not only allow a more thorough exploration of material territorial capital components, but also the degree of immaterial and symbolic capital could be more definable.

After conducting the examination, based on the results, the hypotheses formulated at the beginning of the dissertation are evaluated as follows:

H1: **My presumption is that in the case of small villages, hamlets and pigmy villages we can observe differentiation between settlements along the material dimension**

This hypothesis is only partially justified because, although variables along the material dimension were able to define the factors that formed the basis of settlement clusters (such as the "tourism" factor), I could not observe differentiation along the material dimension alone. Therefore, this hypothesis is only **partially proven**.

H2: The main reason behind the success of settlements is their advanced tourism potential.

The **results** of the research - **in my opinion** - **have partially proved this hypothesis**. For more successful settlements of all three types of the investigated settlements, more detailed exploration has shown that real tourism activity can be observed. Based on the results, it can be seen that even in some of Hungary's pigmy villages, tourism can be a breakthrough (both domestically and internationally). The settlements with developed tourism are mainly located in the border areas of the country, or along major tourist centers (such as Lake Balaton or Aggtelek). Positive examples demonstrate that a new idea, based on satisfying market needs, or just making good use of the opportunities, can create the presence and future of a pigmy village and its inhabitants. The same phenomenon can be observed in small settlements and hamlets. In the observed settlements, changes can be observed, suggesting that either the existing potential is not focused on as much as it would be needed - and consequently the settlement changed its place and became part of another cluster - or that they have discovered it and found an appropriate method to exploit it.

H3: It is impossible to determine the performance of small villages, hamlets and pigmy villages based on only hard statistical indicators; the use of soft data is also needed.

As it has been mentioned, each region has different territorial capital and it differs in each area. Therefore, similar investments has different returns at different points of the space, as these investments can be utilised more

efficiently in a more suited areas (OECD 2001 15-16, EC 2005 1, CAMAGNI 2008a, 36). More practical results support (ROTA 2010; VENERI 2011) that the processes of the regional economy can be more clearly defined if immaterial capital factors are included in the study. The method of territorial capital helps to analyze these elements collectively and comprehensively. However, in the case of territorial units that are investigated in this dissertation, there is no commonly used method for the uniform measurement of immaterial capital, which would provide a secure and realistic data set. The reasons can be traced back to a number of factors, such as: the definition of these goods is difficult on their own, there is no unified metric, the specificity at this territorial level does not reflect the real picture, it takes a lot of time and effort and it takes appropriate internal and external human resources to be conducted. While in the case of studies at other territorial levels, there are several variables that characterize relevant content, this number is very limited for small villages, hamlets and pigmy villages. However, at the beginning of the investigation, my hypothesis also proved that the extensive measurement of immaterial capital is unclear and not very grasping with the tools used so far, and there is very little data available that would be comparable. Based on these, **I consider this hypothesis as proven.**

H4: The regional loss-map, after certain changes, is suitable for providing a basis for investigating small villages, hamlets and pigmy villages, and for creating a unified research method.

The transformed regional loss map points to all the things (or the absence of those) that act as inhibitory factors for the development of a settlement or region. So by this method, beyond the determination of immaterial capital, the root problems that can inhibit or hinder the development of a settlement or region are also explored. Not only the list of vulnerable and priority areas can be compared, but also their severity ranking and network of relationships. After the practical application of the method, hopefully it will be proven, but at the moment I consider this hypothesis only **partially proven**, because although the method is workable on the basis of accumulated theories and experiences, it has not been tested in practice.

H5: I theorise that small villages, hamlets and pigmy villages with similar territorial capital stock bear similar characteristics.

I systematized and based on the territorial capital I established settlements types for each of the 3 settlement sizes. For this I have applied different statistical methods that I have created using the SPSS program. The results were developed through the combination of multivariate mathematical and statistical methods. First I applied factor analysis and then cluster analysis for the villages with 3 settlements. For the 2007 to 2013 period, I created the cluster groups, which are included in Table 4. Based on the results, I have managed to define clusters that can be interpreted for several settlement groups - in both of the two test years. Such examples are the sleeping

environment or the waking economy. Therefore, I consider this hypothesis **proven**.

6. A LIST OF PUBLICATION RELATED TO THE DISSERTATION

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