

Territorial differentiation of selected demographic indicators and peripherality

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Abstract

The territorial variation of demographic and reproductive behaviour in the setting of Slovakia is identified as a long-term phenomenon. It is influenced by very many factors: historical and especially religious influences, emigration and immigration movements, national and religious specifics. The goal of the following chapter is "to identify the territorial variation of selected demographic indicators". The selected indicators for the analysis included the age structure, natural and migratory movement of the population of municipalities. The basis was to look for a relation on the municipal level between the character of the age structure of the municipalities and their natural growth/decline or migratory growth/decline.

Introduction

Changes in reproductive and family behaviour in the context of the second demographic revolution began to show most intensively in the population development of Slovakia in the beginning of 90's. Typical features become decrease in the aggregate fertility under the maintenance level, increase in the number of childless women, increase in the number of unmarried couples, intensifying process of population ageing and many others. As a result of the transforming political, social and economic conditions, these changes radically change the character of demographic behavior of the Slovak population on the national level. Their projection into the Slovak territorial regional units applies as well, but not evenly.

The goal of the following chapter is "to identify the territorial variation of selected demographic indicators"¹. The selected indicators for the analysis included the age structure, natural and migratory movement of the population of municipalities. The basis was to look for a relation on the municipal level (possibly through size categories of municipalities) between the character of the age structure of the municipalities and their natural growth/decline or migratory growth/decline.

Our goal was not to detach a demographically peripheral territory because for such established phenomenon, we are not able to find clear and precisely defined characteristics. Our aim was, considering the settlement and historically given setting of Slovakia, to bring the information about the territorial variation of the selected indicators.

¹ The following is a portion chapter 2.1 of publications : Džupinová, E., Halás, M., Horňák, M., Hurbánek, P. Káčerová, M., Michniak, D., Ondoš, S., Rochovská, A. (2008).*Periférnosť a priestorová polarizácia na území Slovenska*. [Peripherality and spatial polarization in Slovakia].Geografika. Bratislava, s. 186.

In 2006, the Slovak Republic had 2,891 municipalities with the total of 5,393,637 inhabitants as of 31 December of that year. Of those, 138 are urban settlements with 55.4% of the population living in them. There are 2,753 rural settlements with the absolute population of 2,408,052. The character of the settlement structure of Slovakia is represented by a dense grid of small settlements. Municipalities of up 1,000 inhabitants form 67% of the total number of municipalities and 16% of all the population of Slovakia lives there (Table 1). Whereby, as stated by Hurbánek (2005)², the disintegration of the settlement structure is precisely one of the aspects of marginal regions, which made it interesting for us, in the context of our goal, to analyze the status of demographic indicators with regards to urban and rural municipalities.

Table 1 Basic characteristic of rural and urban municipalities by size categories of municipalities SR (2006)

<i>Rural municipalities</i>				<i>Urban municipalities</i>			
size categories	<i>Number of municipalities</i>	<i>Number of inhabitants</i>	%	size categories	<i>Number of municipalities</i>	<i>Number of inhabitants</i>	%
0 - 199	386	47 702	2	1 000 - 1 999	2	3 003	0,1
200 - 499	778	267 499	11,1	2 000 - 4 999	20	79 802	2,7
500 - 999	773	545 807	22,7	5 000 - 9 999	45	326 370	10,9
1 000 - 1 999	557	779 390	32,4	10 000 - 19 999	31	445 210	14,9
2 000 - 4 999	245	690 613	28,7	20 000 - 49 999	29	837 373	28
5 000 - 9 999	14	77 041	3,2	50 000 - 99 999	9	633 140	21,2
Total population	2 753	2 408 052	100	100 000 and more	2	660 687	22,1
				Total population	138	2 985 585	100

Source: ŠÚ SR (2007). Vekové zloženie obyvateľstva SR 2006. [Population age structure of Slovak Republic 2006].

Age structure of population of municipalities in Slovak Republic

The age structure is one of the basic characteristics, besides the gender structure, that plays a significant role with the study of demographic processes, whereby both of these structures are interconnected (especially the age structure) with the individual components of the demographic dynamics (natality, mortality and migration). This characteristic of the demographic balance is the most representing indicator of its complexity.

In terms of Slovakia as a whole, the changes in the age structure of the Slovak population show up in a long-term trend. Precisely the most recent period is characterised by ageing from the bottom (i.e. decrease in the number and portion of the population of the youngest age categories), as a result of decrease in fertility. Ageing from the top (i.e. increase

² Hurbánek, P. (2005). *Vývoj a nové prístupy v interpretáciách vidieka: priestorový aspekt, periférnosť a koncentrovanosť systému osídlenia*. In: Spišiak, Peter et al.: *Agrorurálne štruktúry Slovenska po roku 1989. Geo-grafika, Bratislava, pp. 95-114 [ISBN 80-969338-4-1] (186 p.)*

in the number and portion of the population of the oldest age categories), as a result of lifespan prolongation is also evident, although its manifestations are not so distinct. The issue to what extent the relative ageing manifested itself in the changes of the age structure was analysed by Kačerová (2005)³ on the basis of population counts.

For our purposes, the basis year was 2006 (table 2). The profile of the age structure measured according to the representation of the age groups in the total population of the rural and urban municipalities of Slovakia shows more significant ageing from the bottom with the urban population. On the contrary, in mutual comparison, ageing from the top is more significant with the rural population. A more complex view through the index of ageing induces the older population of the rural municipalities of Slovakia in the year 2006. Also the shapes of the age pyramids (graph 1, 2) clearly suggest a more regressive age structure of the rural settlements. It is still true that “the age structure of the urban settlements is the result of migration flows before the year 1989 directed from rural to urban settlements. They were represented by migration centers to which especially the people of the productive age moved together with their children” (Čermák, 1999, Uhrinová, 1996)⁴.

Table 2 Age structure population of rural and urban municipalities SR (2006)

	% z CPO	0-14 (%)	15-44 (%)	45-64 (%)	15-64 (%)	65+ (%)	80+ (%)	80+/65+ (%)	Is (%)
Rural municipalities	44,6	17,9	45,2	23,8	68,9	13,2	2,9	22,1	73,8
Urban municipalities	55,4	14,7	47,4	27,1	74,5	10,8	2,2	20,3	73,1
Slovak Republic - total	<i>x</i>	16,1	46,4	25,6	72,0	11,9	2,5	21,2	74,5

Explanatory: $Is = 065+/0\ 0-14 * 100$

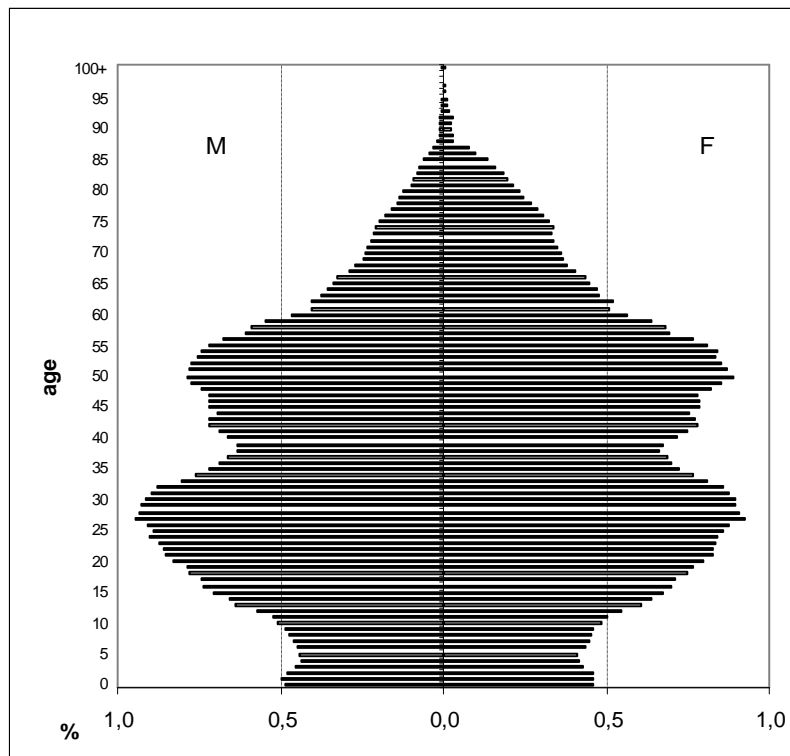
Source: ŠÚ SR (2007). Vekové zloženie obyvateľstva SR 2006. [Population age structure of Slovak Republic 2006].

³ Kačerová, M. (2004). *Demografické starnutie populácie Slovenska a Európy*. [Demographic Aging of the Slovak and European Population.] In: Naša demografia Súčasnosc' a perspektíva, Slovenská štatistická a demografická spoločnosť. Smolenice, s. 97 – 102.

⁴Čermák, Z. (1999). *Distinctive – features of migration in the Czech republic as part of the transformation of central European countries*. In : Hampl M. et al. Geography of societal transformation in the Czech republic. Charles University of Prague, s. 151-193.

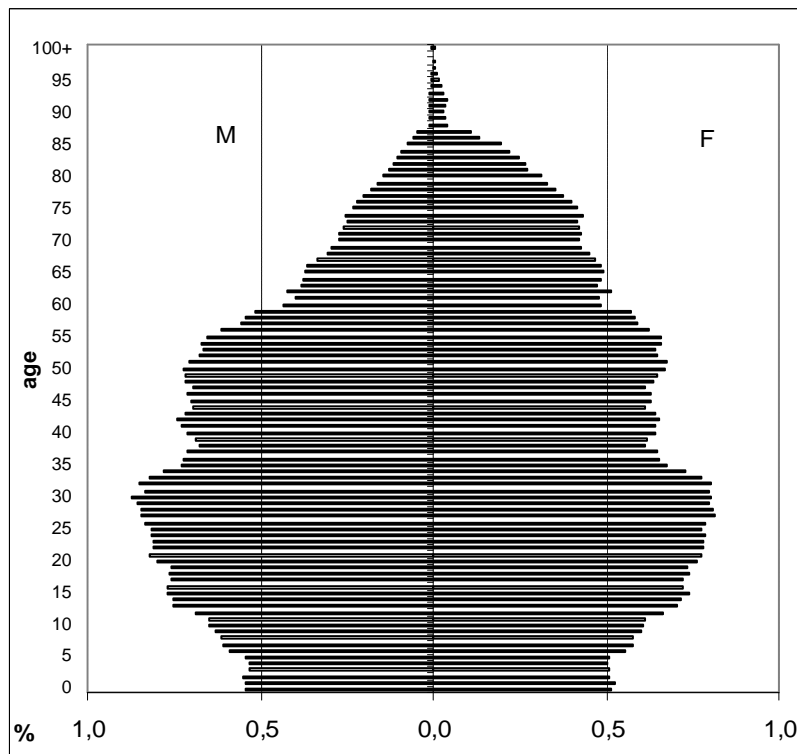
Uhrinová, D. (1996). *Proces starnutia obyvateľstva Slovenska a jeho regionálne rozdiely*. [The process of aging in Slovakia and its regional differences]. In : Geografické informácie 4 - Postavenie regionálnej geografie SR a ČR v kontexte nových podmienok rozvoja 1. časť. Nitra, s. 89-92.

Graph 1 Age structure population of urban municipalities SR (2006)



Source: ŠÚ SR (2007). Vekové zloženie obyvateľstva SR 2006. [Population age structure of Slovak Republic 2006].

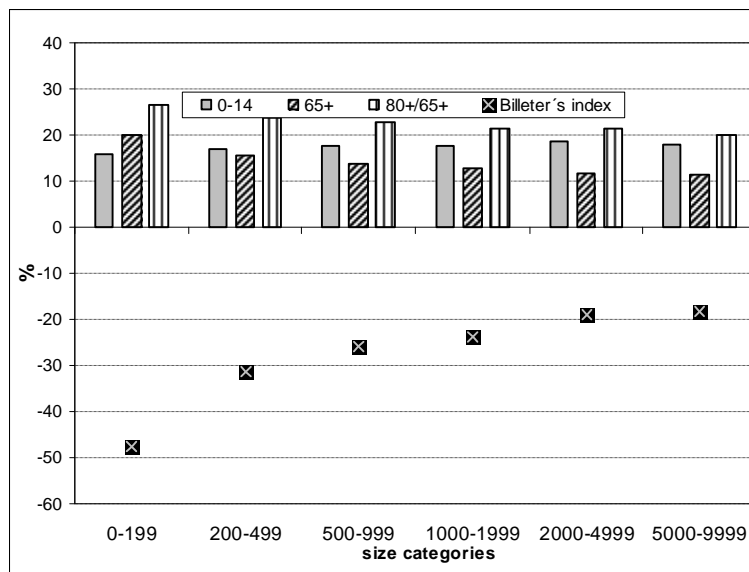
Graph 2 Age structure population of rural municipalities SR (2006)



Source: ŠÚ SR (2007). Vekové zloženie obyvateľstva SR 2006. [Population age structure of Slovak Republic 2006].

The size categories of rural and urban municipalities in 2006 show that the size category of up to 200 inhabitants is the oldest with prevalence of the number of the post-productive (65+) age group over the pre-productive age group. In the structure according to the size categories of the rural municipalities, it is true that increase in the size of the municipalities makes their age structure more progressive. On the contrary, the urban municipalities (excluding the category of 1 000 – 1 999 inhabitants) with increase in the size show a more regressive age structure. The youngest age structure is in towns and also municipalities in the size category of 2 000 – 4 999 (if we take Billeter index as the measuring instrument).

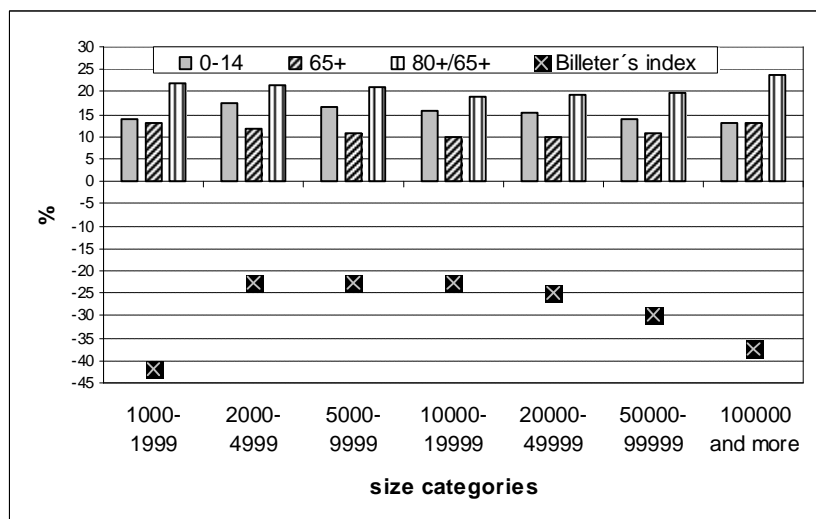
Graph 3 Age structure population of rural municipalities by size categories SR (2006)



Explanatory : Billeter's index = $\frac{O\ 0-14 - O\ 50+}{O\ 15-49} * 100$

Source: ŠÚ SR (2007). Vekové zloženie obyvateľstva SR 2006. [Population age structure of Slovak Republic 2006].

Graph 4 Age structure population of urban municipalities by size categories SR (2006)



Explanatory : Billeter's index = $\frac{O\ 0-14 - O\ 50+}{O\ 15-49} * 100$

In order to provide a complex view of territorial units, we applied a typology to the municipalities in the Slovak Republic that comprehensively characterizes each population of a territorial unit. The typology was administered by Verešík (1974)⁵, whereby he processed the main age groups; we used the productive age groups. This typology puts into correlation 3 age groups, with regards to the average for Slovakia for the individual age groups (0-14 = 16.1%, 15-64 = 72%, 65+ = 11.9%), which creates 6 types of municipalities (Figure 1).

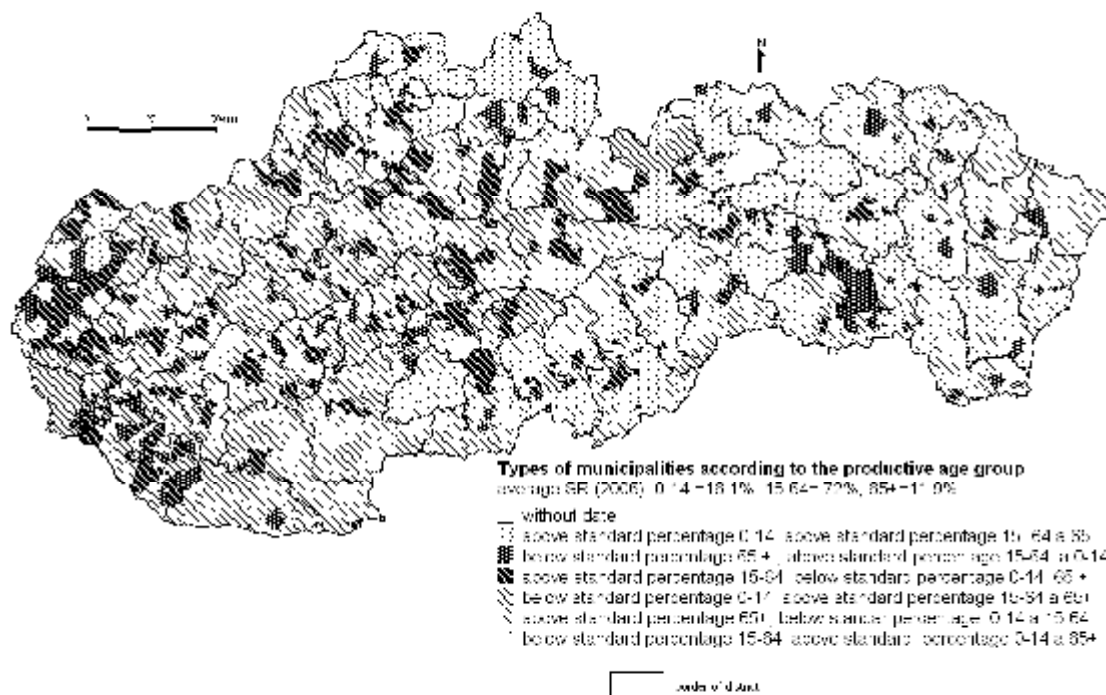
The *first type* dominates in 549 municipalities, whereby within the territory of Slovakia, two bigger concentrations of this type are being formed. It is the strip of districts from Považská Bystrica to Tvrdošín and the complex of municipalities in the middle part of eastern Slovakia. Then, it is the municipalities of the districts of Rimavská Sobota, Revúca, Lučenec. The *second type* includes 100 municipalities, whereby these municipalities do not form a more significant cluster, a greater concentration can be observed in the municipalities around the capital city. The *sixth type* of municipalities (820 municipalities) occurs in all of Slovakia, but their most intensive presence is in eastern Slovakia and municipalities of the Southern Slovak Basin. The common characteristic of these (1,2,6) types is an above-average portion of the pre-productive age group, whereby this characteristic is true for almost 51 % of all the municipalities. We can consider them as types that have a relatively young age structure.

The *third type* with 156 municipalities does not have a more significantly concentrated territorial occurrence. The *fourth type* appears in 244 municipalities with a significant concentration in the western part of the Slovak territory (from Komárno through Topoľčany to Martin). In middle Slovakia, it is Banská Bystrica, Zvolen and Banská Štiavnica (districts). The most frequent type on the level of municipality is the *fifth type* with below-average values of 0-14 year-old, productive population and above-average numbers of the post-productive age group. This type includes 1020 municipalities; they are disseminated in all of western, middle and southern Slovakia. It also includes municipalities in the districts from Bardejov through Trebišov. We can consider these three types, with regards to their common characteristic of above-average representation of 65 and more year-old population, as relatively old. In the structure according to the size categories of municipalities (Table 3), the

⁵ Verešík, J. (1974). *Štruktúra obyvateľstva podľa pohlavia a veku. [Population Sex and Age Structure.]*. In: Slovensko – Ľud I. Obzor Bratislava, s. 372 –382.

rural municipalities belong to the types with above-average representation of pre-production population (with the exception of the smallest municipalities). On the contrary, the urban municipalities, according to the methodology of average values of age groups, are mostly associated with the types with above-average representation of the 65 and more year-old population.

Figure 1 Types of municipalities according to the productive age group SR



Source: ŠÚ SR (2007), Veková štruktúra obyvateľstva SR 2006. Population age structure of Slovak Republic 2006.

Natural and migratory movement of population of municipalities in Slovak Republic

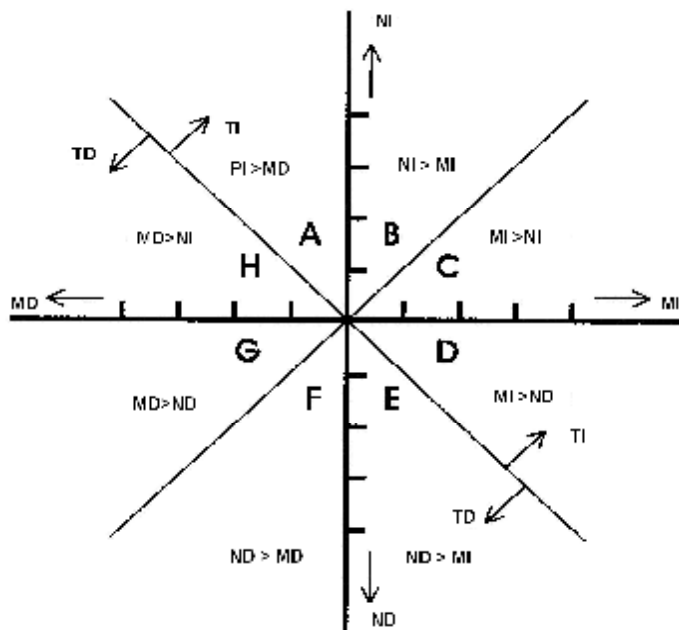
Until the end of 90's, the population development of Slovakia was clearly determined by the natural movement factors. Foreign migration was negligible in terms of the size or structure of the Slovak population. In the years 2001-2003, for the first time in the 50-year history, we record a natural decrease in the population, as stated by Vaňo (2007)⁶, as a result of natural decrease in the male population. Natural decrease in the female population has not arrived yet. In 2004, the natural growth regained positive values, whereby the total population growth was partially caused by migration. Out of the factors of the natural movement, the level of natality was subject to more significant changes. The gross level of natality recorded two significant peaks in the years 1950-56 and 1974-79. The process of mortality expressed

⁶ Vaňo, B. ed. (2007). *Populačný vývoj v Slovenskej republike 2006* [Population Development in the Slovak Republic 2006]. Bratislava: Infostat. s.80

by gross mortality is stable among the Slovak population, from the 70's, it oscillates around 9-10%.

The territorial view of the gross rate of the total growth and its individual components is characterised by an average indicator for the years 2004-2006. It implies certain demographic behaviour on the municipal level. For expression, we used the methodology of assembly of the Webb diagram (graph 5). The essence lies in the datum on the gross rate of the natural growth/decline per each regional unit, in our case municipalities. Based on the individual increases or decreases, migratory and natural, and their mutual size, eight types of municipalities were created. In the sectors A, B, C, D, there are the types characterised by the total population growth. They vary by the mutual relation of the natural and migratory factor of movement. In the sectors E, F, G, H, there are the types of regional units with the total population decline.

Graph 5 Graph of Webb



Source: Mládek, J. a kol.(2006). *Demogeografická analýza Slovenska*. [Demogeography analyse of Slovakia.] Univerzita Komenského Bratislava. S. 222.

The application of the above-described method resulted in dividing of the 2889 evaluated municipalities of Slovakia (+2 municipalities are without population) into three groups. The first one includes 1583 (55%) of the municipalities with the total population growth, in which 45% of the population of Slovakia lives. The second one includes 1244 (43%) of the municipalities with the total population decline. The third one includes 62 (2%) of the municipalities that have neither growth nor decline.

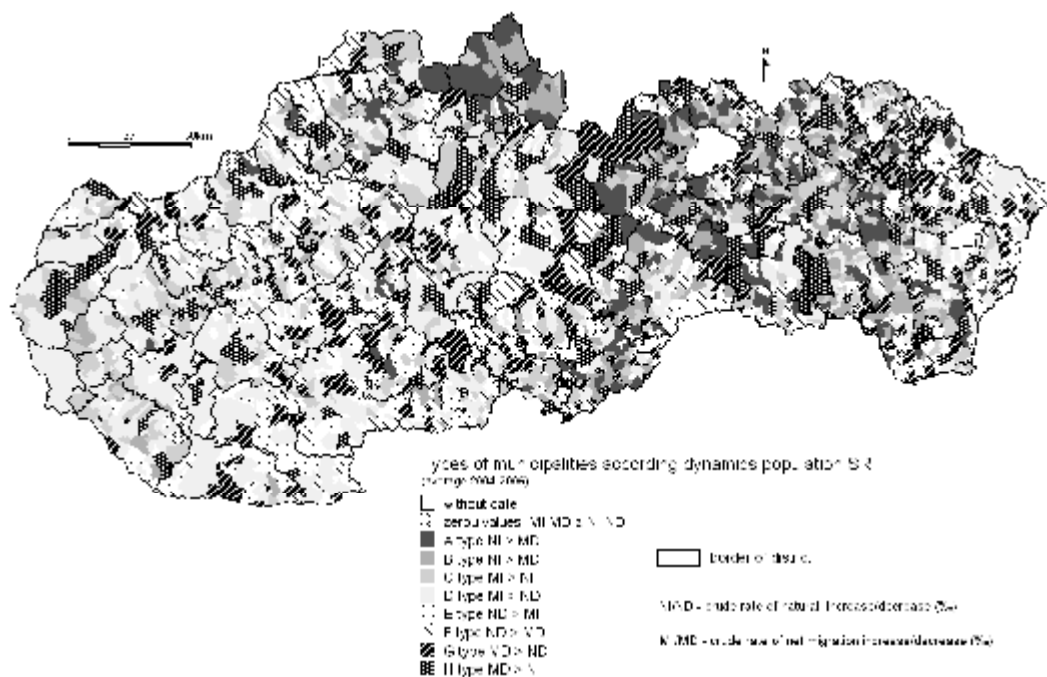
The types of municipalities based on the dynamics of the natural and migratory movement from the year 2006 are illustrated by figure 2. The types A through D are characterised by the total population growth. The municipalities of type A and B with predominant influence of the natural change are located in the north and east of Slovakia and form at least 24% of all the municipalities with the total growth. The municipalities of type C and D are spread in all of Slovakia, mostly in the western part of the territory, especially in Trnava and Bratislava region. The presence of municipalities with the migration growth higher than the natural decline (type D) is more frequent. From the territorial perspective, municipalities with the total population decline do not form more compact areas with the occurrence of only one of the types (E-H). They form a mosaic that spreads all over Slovakia. The municipalities with a natural decline rate higher than the migratory growth or decline include almost 60% of all the decline rate municipalities. Their occurrence is more frequent in the western part of the territory. From the perspective of time progression, as stated by Mládek, Bleha (2001)⁷, decrease of the growth rate into negative values began in the 80's in the districts of Bratislava I, Levice and Lučenec and in the 90's, the number of districts with natural population decline was gradually increasing. First districts with natural decline appeared in eastern Slovakia. The rest, i.e. 40 %, of the municipalities have migratory decline rate higher than natural growth or decline. The area with migratory gains on the municipal level forms in the background of Bratislava.

According to municipality size categories, we observe the tendency that with growing size of a rural municipality, the natural decline rate falls. Migratory behaviour on the level of the size categories does not have such clear-cut characteristics. Rural municipalities with the exception of the category of up to 200 inhabitants record the total population growth thanks to significant migratory gains. Urban municipalities have the total population growth only up to 10,000 inhabitants. Urban municipalities over 10,000 inhabitants are losing their population as far as migration. "The migratory flow analysis in the 90's shows a significant change in net migration of big and medium cities; on the contrary, small municipalities are emerging with migratory gains (Mládek et al., 2006)⁸.

⁷ Mládek, J., Bleha B., (2001). *Priestorová diferencovanosť prirodzeného prírastku obyvateľstva Slovenska*. [Natural Increase Spatial Differentiation of the Population of Slovakia.]In: *Súčasný populačný vývoj na Slovensku v európskom kontexte*. Zborník príspevkov z 8. slovenskej demografickej konferencie. Slovenská štatistika a demografická spoločnosť, Bratislava, 144-150.

⁸ Mládek, J. a kol.(2006). *Demogeografická analýza Slovenska*. [Demography analyse of Slovakia.] Univerzita Komenského Bratislava. S. 222.

Figure 2 Dynamics of population SR



Source: ŠÚ SR (2012). Demografická situácia v Slovenskej republike SR 2014-2015. Population trends by municipality of Slovak Republic 2009-2010.

Conclusion

Long-term trends of economic, social and cultural development of the Slovak territory significantly manifested themselves in a group of municipalities with significant changes in the characteristics of their demographic structures, natural and migratory dynamics, which have led to the formation of regressive population types. This development is also due to the character of the settlement structure of Slovakia, especially a relatively high number of municipalities with a small number of inhabitants.

As we have stated in the beginning, to exactly define the demographic periphery is very difficult task. If we, however, needed to define it, pursuant to our analysis and for practical reasons, it could involve the territories or municipalities with the mentioned characteristics of regression population types. Such municipalities are those in which: a/ there is an extreme degree of population ageing, b/ there are extremely high migratory losses of the population, c/ there is an extremely high natural decline of the population.

If we evaluate two groups of municipalities from the perspective of their belonging to the “demographic periphery”, then these evaluations are valid especially within the group of rural municipalities. Towns in most cases just have central functions, they influence the development of their background and in spite of some demographic characteristics of “peripherality”, it is not possible to consider them as periphery. Perhaps only some small

towns can be assigned to the more extensive peripheral area which is formed by the rural municipalities.

In the long-term, the population of rural municipalities of Slovakia has a higher degree of ageing than the urban population. It is a consequence of concentration and urbanisation tendencies of the population before the year 1990. Currently however, there is "a renaissance of living in rural municipalities and de-concentration tendencies" Podolák (1999)⁹. The process of ageing of the rural municipalities is slowing down and the migratory population growth represents a dominant portion of the total population growth of rural municipalities. With the growing size of urban settlements, the population grows older and loses its population through migration. De-contraction tendencies of the population of urban areas over 10,000 inhabitants, in terms of demography, have a revitalisation effect on the rural settlements in their background. This phenomenon is most significant in the background of Bratislava and Košice, but also in the surrounding municipalities of the other big cities. In spite of these characteristics, it is quite problematic to assign these urban municipalities to peripheral regions.

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⁹ Podolák, P. (1999). *Populačný vývoj vidieckych sídiel Slovenska*. [Population Development in Rural Settlements of Slovakia.] Acta facultatis studiorum humanitatis et naturae universitatis Prešovensis, Prírodné vedy, Folia geographica, 3, 67-72