

POPULATION AGEING IN SLOVAKIA AND JAPAN

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Abstract: The population ageing process is the general rule concerning the population development in the majority of the world states. The importance of the population ageing process is also reflected in relatively extensive number of methods and set of techniques of their research. Two different approaches were applied in the study of the population ageing in Japan and Slovakia – intertemporal and interregional analysis. Population ageing processes cause needs to solve a whole range of social problems, which have recently met especially developed countries.

Key words: population ageing, ageing from top and bottom, simple and derived ageing measures, age structure typology of districts and prefectures.

1. INTRODUCTION

One of the general rules of the population development in the majority of the world states are the changes in the age structure of their population, described as the process of their ageing. From the demographical point of view, it handles about such changes, at which is increasing number, resp. the proportion of the higher age population categories (ageing from top). Similar changes concern also the decrease of the numerosness and the proportion of the children component of the population (ageing from the bottom). Apparently, simple evaluation of the younger and older age categories of the population is complicated by their mutual relation, as well as by their relation to other age categories of the evaluated population. Afterwards, the ageing process can be, as well as the formation of the population age structure, considered as a demographic phenomenon with a fairly high degree of complexity. Unlike the numerous group of phenomena which relate only to certain part of the population (marriage rate, divorce rate, fertility, population education and others), the age structure forming and her changes concern the whole population. The population age structure complexity is also manifested in its multicausal relations to many population and social phenomena. Age structure reflects the development of basic

population processes as they are expressed for example in the birth rate, mortality rate, or migration movements. On the other hand, the age structure of every population can distinctly influence the development level of many population phenomena and processes (in addition to the mentioned also the marriage rate, labour force potential and the like).

The complexity and importance of the population ageing process is also reflected in relatively extensive number of methods and set of techniques by the help of which it can be studied. In this set, there are several statistical and graphical procedures that difference each to other by different demands on the acquisition and processing of basic statistical information, as well as by different interpretation of the obtained statistical and graphical results.

Frequently in the population ageing studies, two different approaches are applied. In the first case, the effort is oriented to the comparison of several regional population structures (interregional analysis), with aim to understand differences in the population age structure. At another time, the main attention focuses at the changes in age structure time development in a case of one regional population formation (intertemporal analysis). However, for the geographical analyses it is advantageous and needed to connect both approaches. If the ageing is understood as a process, then its analysis has to be supported by studying of its development in time, considerably differentiated in the space.

2. SIMPLE MEASURES OF POPULATION AGEING EVALUATION

The first measure group represent simple, one component indexes. They characterise only one typical population age category, e.g. indexes of absolute and relative numerosness of the population in the postproductive age, postreproduction age, selected age categories (age categories 0 – 14, 60+, 65+, 70+, 80+). Their advantage is a relatively good access to the basic statistical information, as well as the simplicity of their processing. Equally, these characteristics mark themselves by a simple interpretation and at the same time, they offer a plastical information on the studied fundamental problems. Disadvantage is the absence of information concerning other population age categories. If we, for example, evaluate the representation of the postproductive age categories in a certain population, the information on the other categories are missing. At the same size of the postproductive component of the population, the distribution of other age categories can be fairly different.

While applying some of the simple measures of the population age structures analysis, there can be shown some of the specifics of the ageing process in Japan and Slovak population. From the Fig. 1 and Tab. 1 it is possible to identify the growing ratio of the older age categories (65+, 80+) in both populations, that shows the ageing from the top. Especially curves representing the Japanese population move up more intensively during last years and therefore the difference between both populations is growing significantly. The share of the 65+ inhabitants of the Slovakia was for the long period of the historical development larger and only after 1965 the situation has turned. Similarly the decrease of the children category share in the both populations is quite clear and it shows the ageing from the bottom. The children category share of the Japanese population was larger until

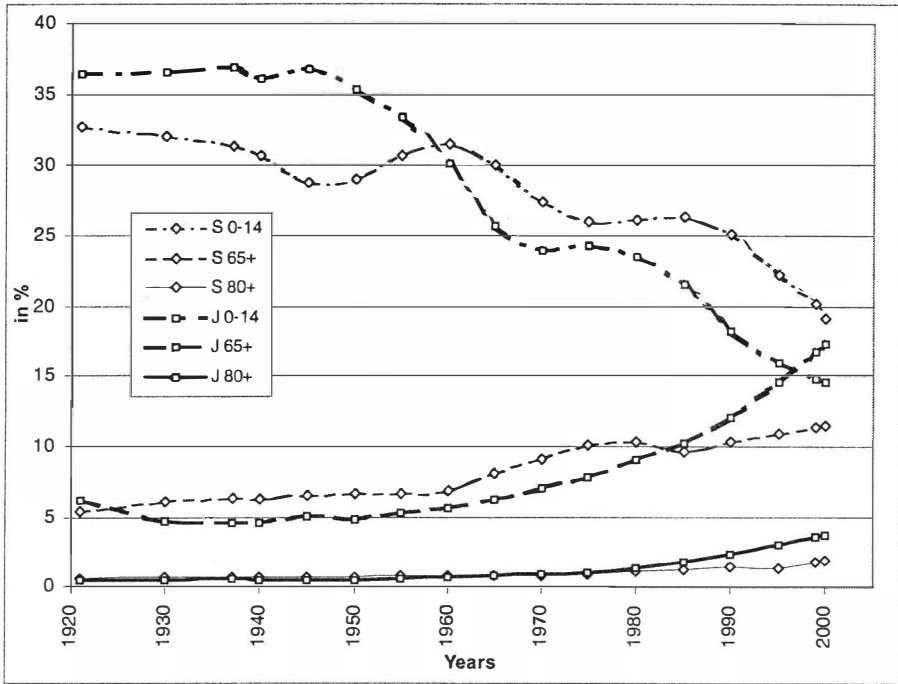


Figure 1 Development of the Age Groups in Japan and Slovakia

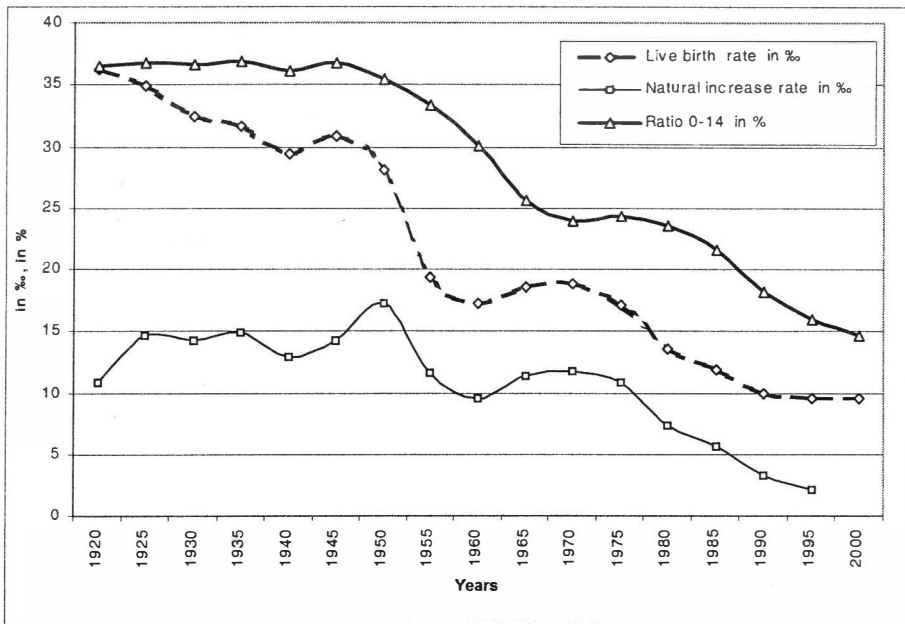


Figure 2 Development of the Population 0 – 14 Ratio and Live Birth Rate in Japan

1957. The decrease of natality in 50's and later from 80's caused the strong decrease of the children category share (Fig. 2). Both categories of Japan inhabitants (65+, 0 – 14) equated their proportions in 1997 and from this time, the older category share is greater than children category share.

Table 1 Development of the Individual Age Categories in Japan and Slovakia (Share in %)

Years	Japan					Slovakia				Years
	0-14	15-49	15-64	65+	80+	0-14	15 - 49	65+	80+	
1884	31.6	-	62.6	5.7	-	-	-	-	-	-
1888	33.7	49.5	60.8	5.5	-	-	-	-	-	-
1898	32.8	-	61.7	5.5	-	37.1	46.9	4.7	0.5	1900
1908	34.2	-	60.5	5.3	-	37.8	45.5	5.1	0.6	1910
1920	36.5	48.0	58.3	5.3	0.5	32.7	50.2	5.4	0.6	1921
1925	36.7	48.2	58.2	5.1	-	-	-	-	-	-
1930	36.6	48.2	58.7	4.8	0.5	32.0	51.1	6.1	0.7	1930
1935	36.9	47.8	58.5	4.7	0.5	31.4	51.5	6.4	0.7	1937
1940	36.1	48.7	58.5	4.7	0.5	-	-	-	-	-
1947	35.3	-	59.9	4.8	0.5	28.7	53.3	6.6	0.6	1945
1950	35.4	49.4	59.7	4.9	0.5	29.0	51.7	6.7	0.7	1950
1955	33.4	50.5	61.3	5.3	0.6	30.7	49	6.7	0.8	1955
1960	30.0	52.6	64.2	5.7	0.7	31.5	46.5	7.0	0.8	1960
1965	25.6	55.6	68.1	6.3	0.8	30.0	46.8	8.1	0.8	1965
1970	23.9	56.4	69.0	7.1	0.9	27.3	50.1	9.2	0.8	1970
1975	24.3	54.6	67.7	7.9	1.1	26.0	50.1	10.1	0.9	1975
1980	23.5	52.6	67.4	9.1	1.4	26.1	46.6	10.4	1.1	1980
1985	21.5	51.4	68.2	10.3	1.8	26.3	49.6	9.7	1.3	1985
1990	18.2	51.4	69.7	12.0	2.4	25.1	50.8	10.4	1.4	1990
1995	15.9	50.1	69.4	14.5	3.1	22.3	53.7	10.9	1.4	1995
1999	14.8	47.8	68.5	16.7	3.6	19.8	54.3	11.4	1.9	1999
2000	14.6	47.1	68.1	17.3	3.8	19.2	54.3	11.5	1.9	2000

Source: www.census.gov/ipc/www/idbprint.html, Historical and statistical yearbook of the ČSSR 1985, Statistical yearbook of Slovakia 1990 – 2001, Population development of Slovak Republic 1999

M. Atoh (2000, 2001) and H. Kojima (1996) consider changes of the Japanese age structure as a process of the hyper ageing. This is partly due to large decline in fertility below the replacement level. The result will be a hyper-aged society with ever-decreasing population at least during the first half of the 21st century. At the same time, it will rise the proportion of the elderly within the total population. In 1990, the proportion of the 65+ old population was 12,1 %, it rose until 2000 to 17,3% and it will rise to 25,8% till 2025. It means, that Japanese population will belong to one of the oldest all over the world. Such demographic development will be reflected in such societal areas as labour force resources, saving, consumption, economic growth, social security system, process of family formation etc. It is topical to accept the new population policies with the goal of raising fertility. The another possibility is in increase of the immigrants (replacement migration).

There was an attempt to evaluate the population ageing spatial differences at the regional level of Slovak districts and Japan prefectures.

The map of the children category population location on the Japan prefectures level gives quite a complicated picture (Fig. 3). It is possible to identify some differences in the central, especially its eastern part, of Japan, with the larger share of young population. On the other hand, the northern, western and southern part of Japan (with the exception Kyushu and Okinawa), they have smaller children category share.

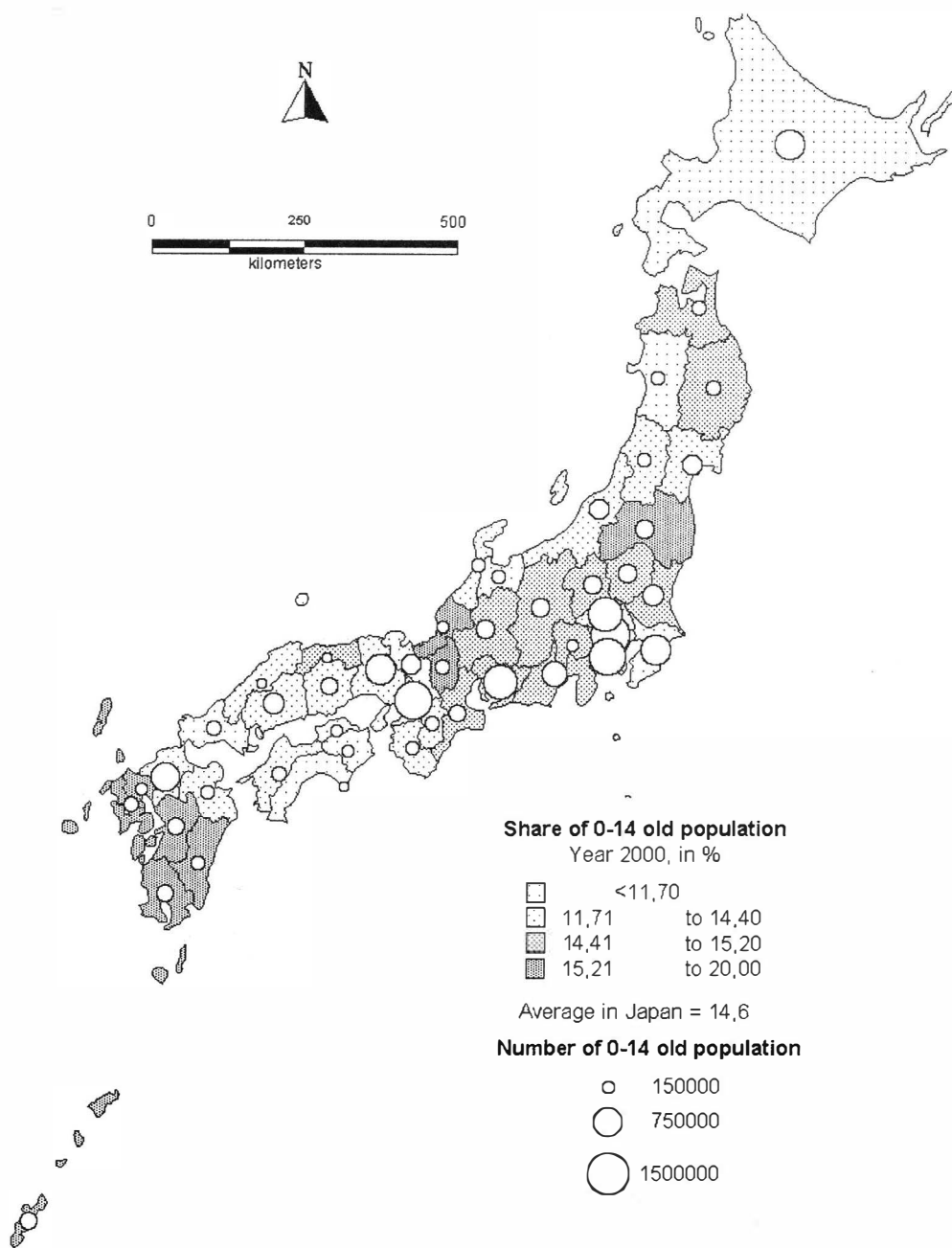


Figure 3 Age Structure of Population in Japan 1

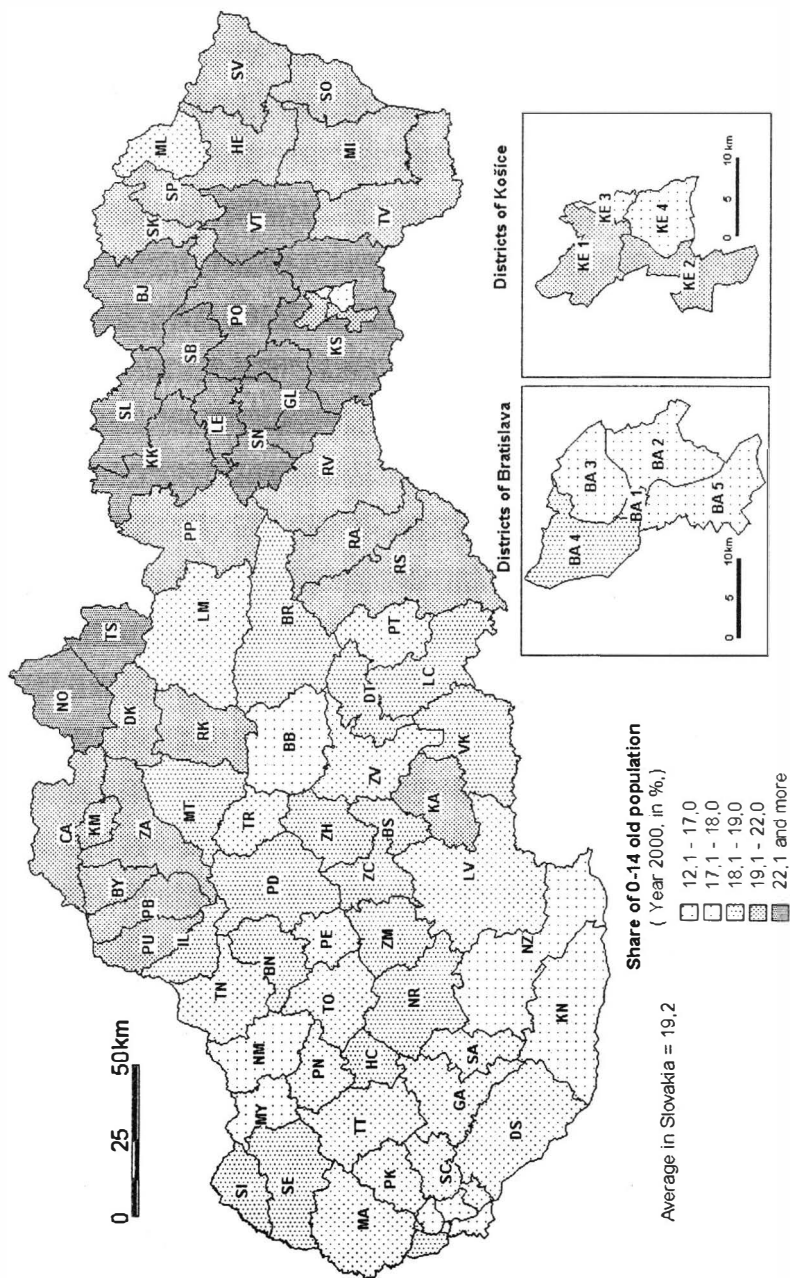


Figure 4 Age Structure of Population in Slovakia 1

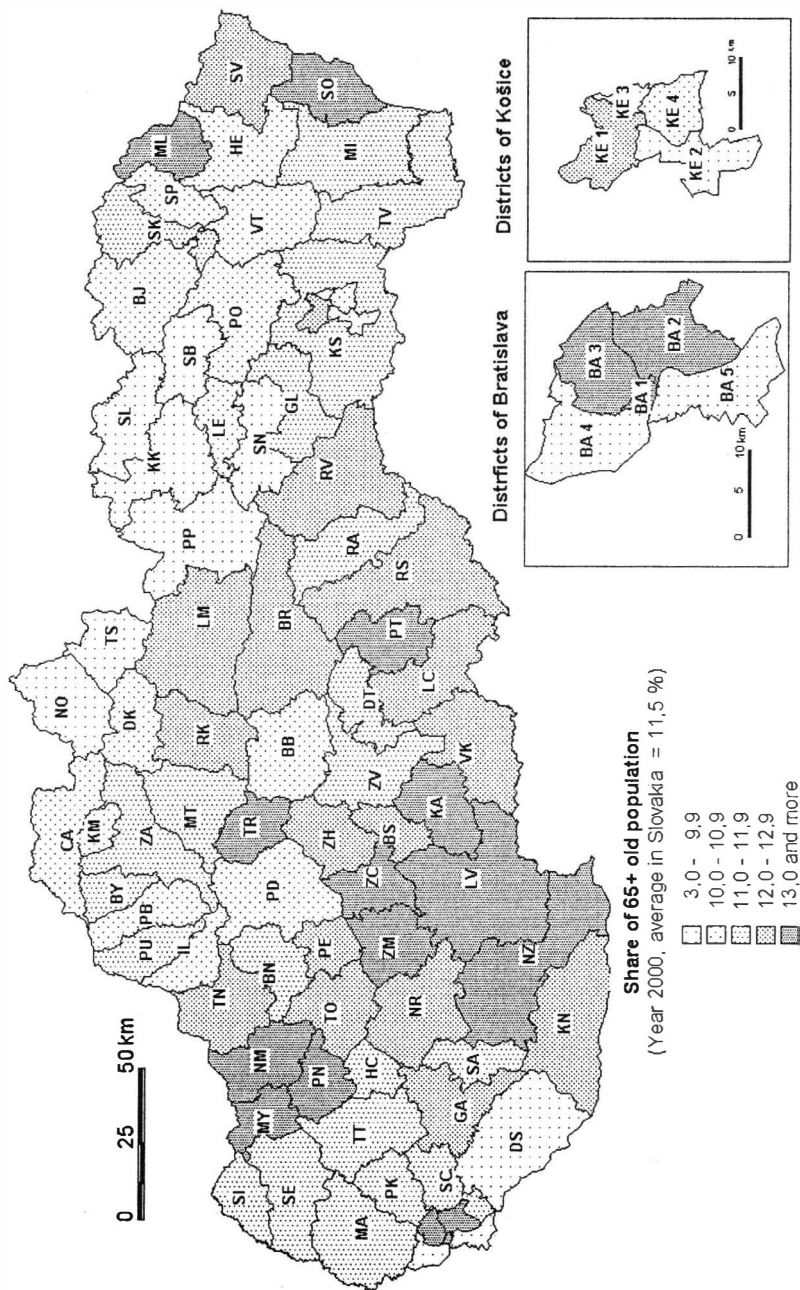


Figure 5 Age structure of Population in Slovakia 2

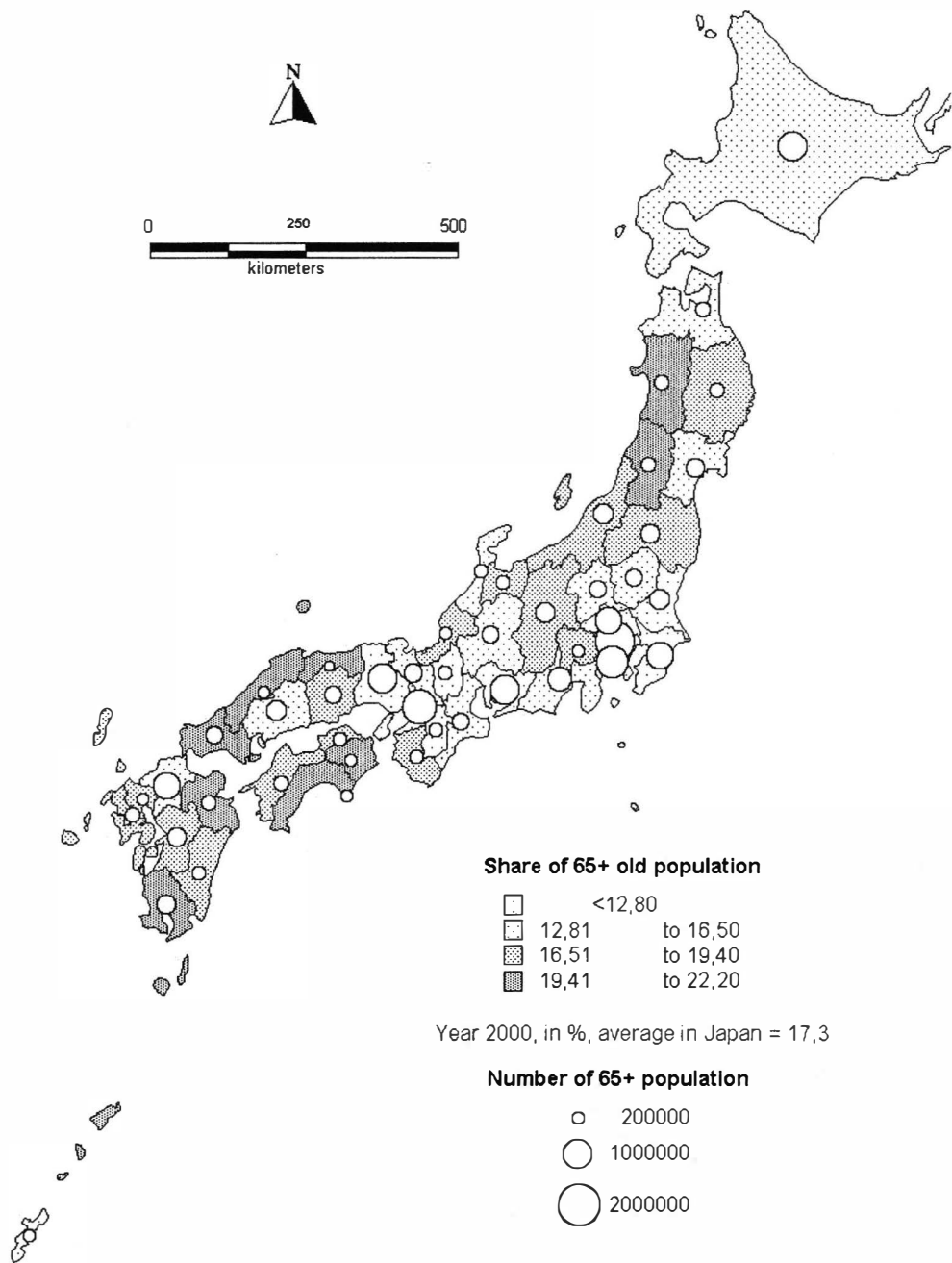


Figure 6 Age Structure of Population in Japan 2

The children population component distribution at the district level of Slovakia also has a distinct spatial differentiation. The proportion of the age category 0 – 14 reflects more long-term low fertility level, namely in the districts of West Slovakia (Fig. 4). On the other hand, the highest children component representation is in the districts of North- and East Slovakia having traditionally higher fertility.

If we analyse the representation of older age categories of the population in the districts, then the obtained picture strongly remembers a photographic negative to the preceding scheme (Fig. 5). The proportion of the older inhabitants is generally higher in West- and South Slovakia and substantially lower in the districts of North- and East Slovakia.

Similarly, the shares of the 65+ age category of population according to Japanese prefectures show on the map diverse mosaic. It is possible to observe smaller values in two great regions (Fig. 6). The first is located in the surrounding area of the great agglomerations of Tokyo and Yokohama. The second one is also situated in the surrounding area of the great agglomerations – Nagoya, Kyoto and Osaka. Except of these two regions, isolated prefectures – Hiroshima, Fukuoka, Hokkaido, Okinawa, they also have lesser share of the older population. Processes of ageing progressed mostly in the north-western prefectures of Honshu, in the southern prefectures of Kyushu and in prefectures of Shikoku.

3. DERIVED AND SYNTHETIC MEASURES OF POPULATION AGEING

The second group is formed by more complicated population ageing measures. They are statistical measures in composition of which are respected several typical population age categories, or all population age categories are taken into consideration. It is a matter of course, that their expressing ability is higher, more complicated will be their interpretation. To this group may be included the age index (ratio of the children population to the postreproduction category), ageing index (ratio of the population 65+ old category to the 0 – 14 old population), indexes of dependence (ratio of the preproductive population category or the postproductive population category to the productive population category), Billeter's index, age median, average age.

One of the measures, to which has been awarded a great weight in the population ageing studies is Billeter's index (ageing measure, Billeter, E., P., 1954). It is defined as the ratio of the difference between children population and postreproduction category to the reproductive population category. The ageing is however in this case indirectly proportional to this value, so the higher is the value of the Billeter's index, the younger is the population.

$$M_a = \frac{P_{0-14} - P_{50+}}{P_{15-49}}$$

where M_a – ageing measure, Billeter's index, P_{0-14} , P_{50+} , P_{15-49} – population number in individual age categories.

While applying the second group of measures for comparing the population ageing processes in Japan and Slovakia, it is possible to identify three development stages (Fig. 7).

During the first stage which covers the first half of 20th century and lasts till the end of 50's Slovakia had older population. Second stage covers 70's and 80's when population ageing processes in both countries were very similar. Since half of 80's the different development started again. All ageing measures document its acceleration in Japan population. It is a result of the more significant decrease of the children category share (ageing from the bottom) as well as of the faster increase of the older population category share (ageing from the top). This development presents the most eloquently Billeter's index of ageing (Fig.7). Japanese population is characterised from the year 1980 by its negative values.

Ageing development in Slovakia is unambiguously documented by the intensive decrease of the measure in the 90's of the previous century and decisive is the change in 1992, since when Billeter's index got negative values. That is the time limit from when the population number of the postreproduction category surpasses the prereproduction category. If we notice, that the proportion of the postreproduction population category increased only slightly, then this proves also by this measure, that decisive was the more rapid decrease of the children population proportion.

The spatial differentiation of the Slovak population ageing is well documented by the ageing index and Billeter index (Fig. 8 and Fig. 9).

Billeter's index can also come down, to negative values while the numerousness of the postreproduction category is greater than the numerousness of the prereproduction category of the population. In the West- and South Slovakia is this measure scoring already a longer period negative values (Fig. 9). Here will be ranked several districts of Bratislava and of Košice, furthermore districts Myjava (- 26.8%), Nové Mesto nad Váhom (-25.8%), Nové Zámky (-24.3%), Piešťany (-24.3%) and in the East Slovakia Medzilaborce (-30.7%) and Sobrance (-24.3%). While the numerousness of the 0-14 years old age category is greater than that of 50 years old and older, the ageing measure comes up to positive values. There were still 20 districts with positive values of the measure in 1996. The fact that the process of ageing is advancing fairly quickly, it also documents decrease of number of these districts to 8 in year 2000. The highest ageing measures values come up in the districts Námestovo (20.8%), Kežmarok (14.2), Stará Ľubovňa (10.5), Sabinov (10.4). The average value of the ageing measure for Slovakia in year 2000 was -13.5%, whereby 44 districts, especially in the West- and South Slovakia showed a level under the average.

The indexes of dependence have besides its demographic information also significant socio-economic meaning. The first index is that of the dependence of the young population and compares the population of the preproductive category with the population in productive age. The dependence index of the old population will be determined as a relation of the population of postproductive and productive categories. Both these indexes try to characterise certain burdening of the productive population by the non-productive components of the population.

The development of these indexes is contradictory. The dependence of the young population is decreasing. It is the consequence of the decrease of the absolute and relative born numbers. In the year 1925 fell on 100 inhabitants in productive age 58 children, up to the year 2000 the burden fell to 31 children. The dependence of the old population in Slovakia is increasing from the proportion 13 persons in postproductive age on 100 inhabitants in productive age in the year 1926 to the value 28,7 in the year 2000. While the dependence of the young population in the last 10 years decreased clearly, the dependence index of the old population recorded a slight fall. However, there can be expected old

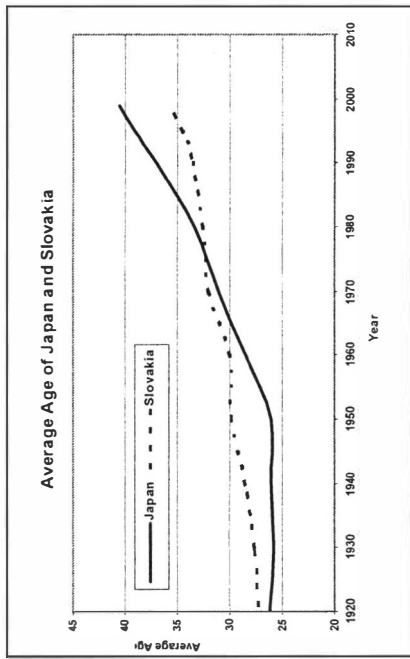
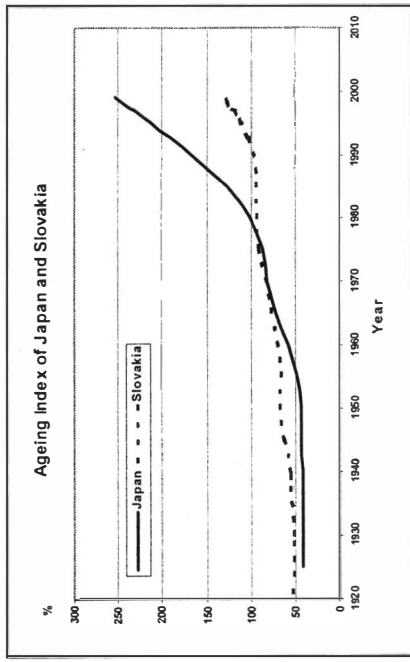
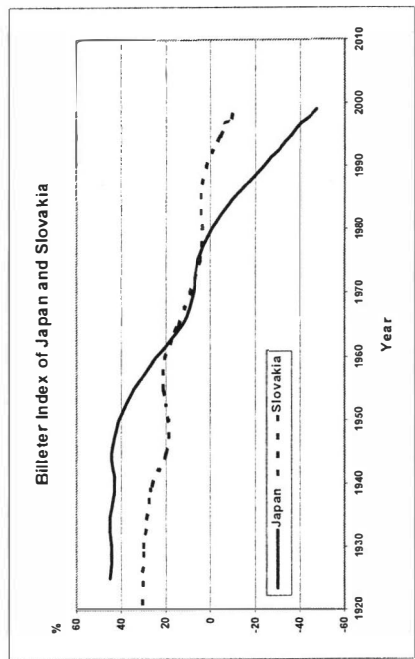
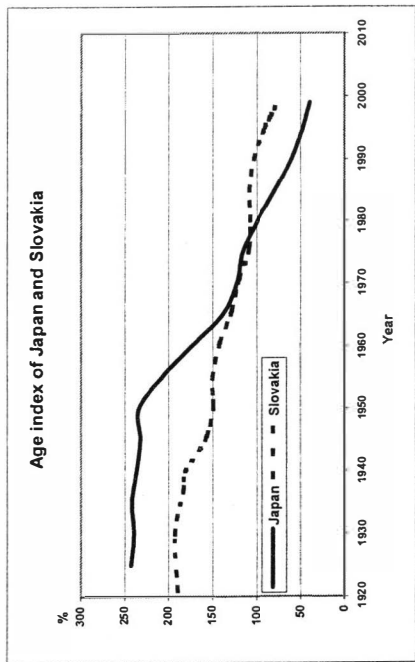


Figure 7 Comparison of the Ageing Processes in Japan and Slovakia

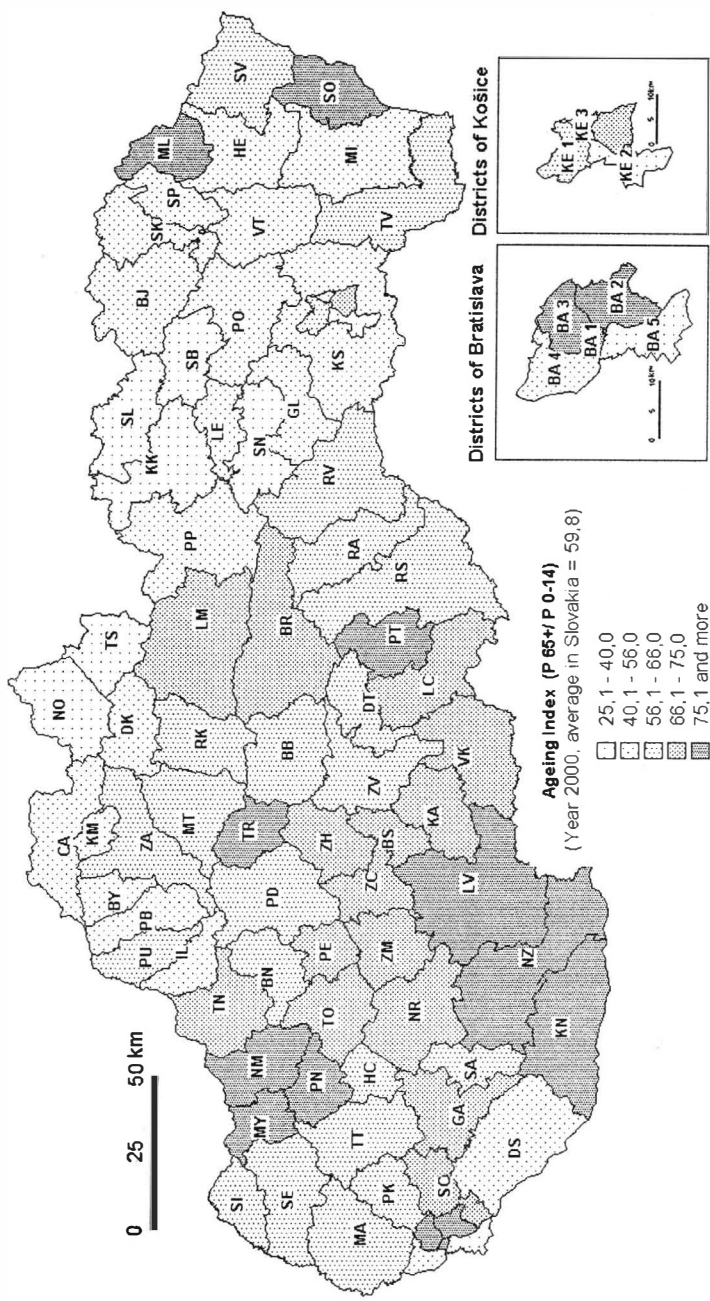


Figure 8 Age structure of Population in Slovakia 3

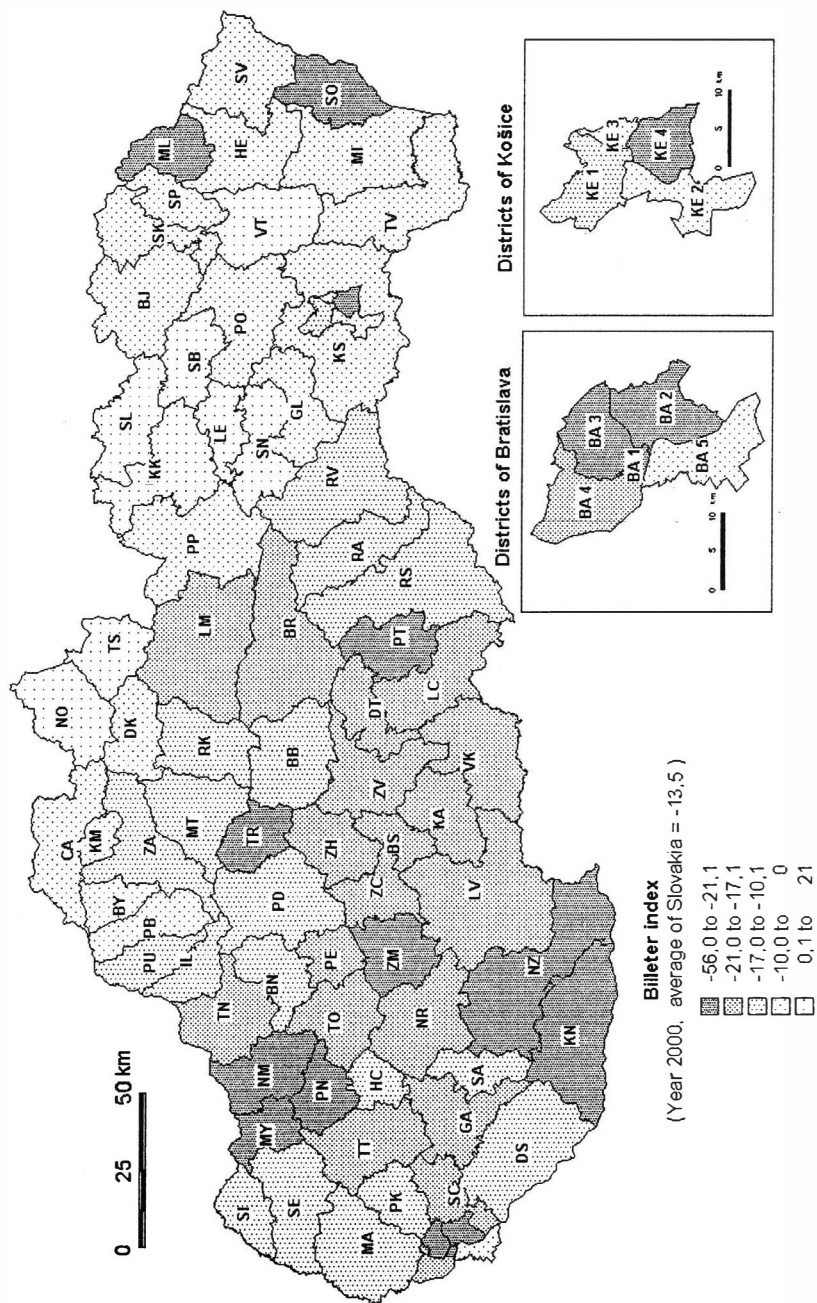


Figure 9 Age structure of Population in Slovakia 4

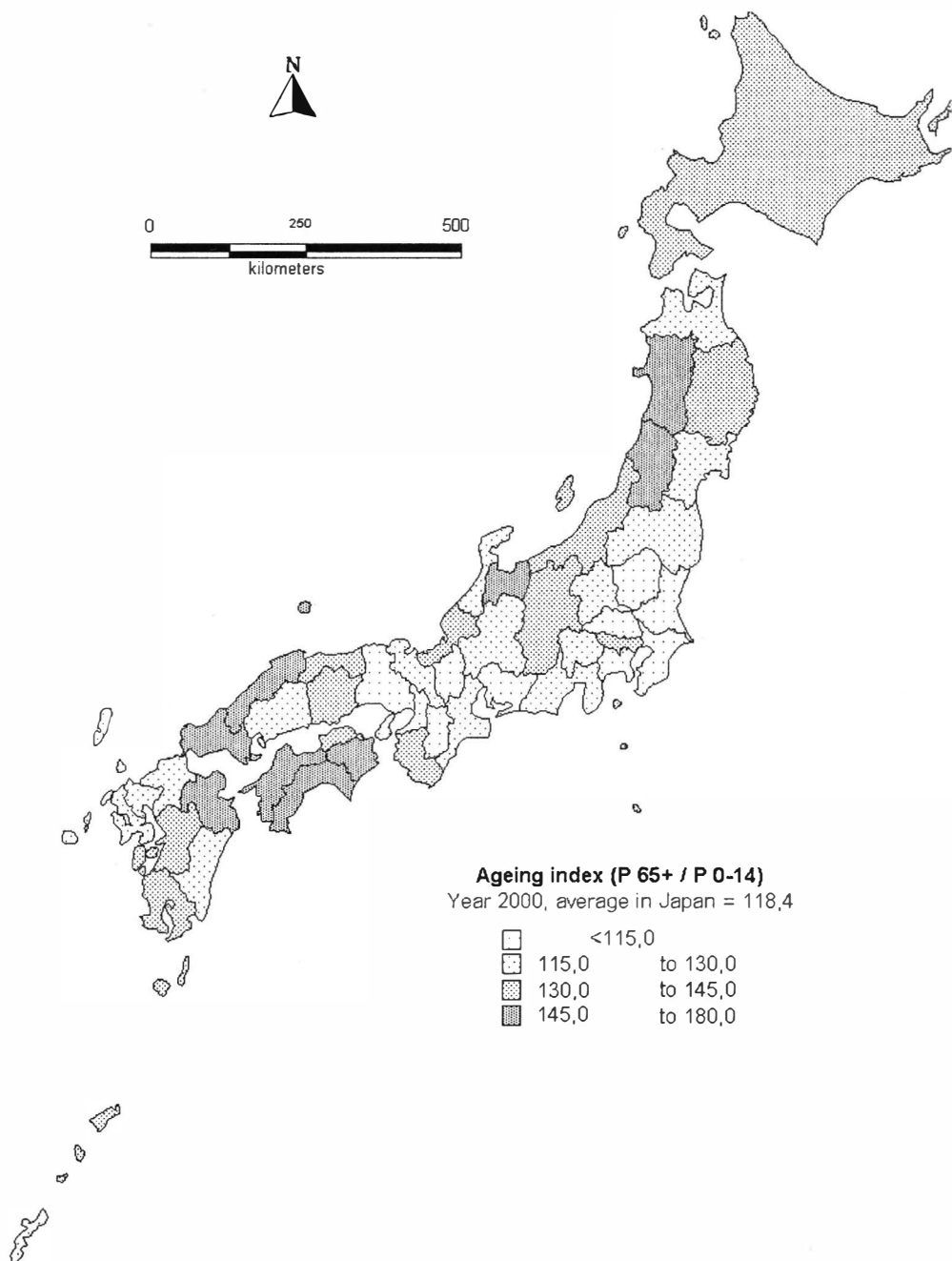


Figure 10 Age Structure of Population in Japan 3

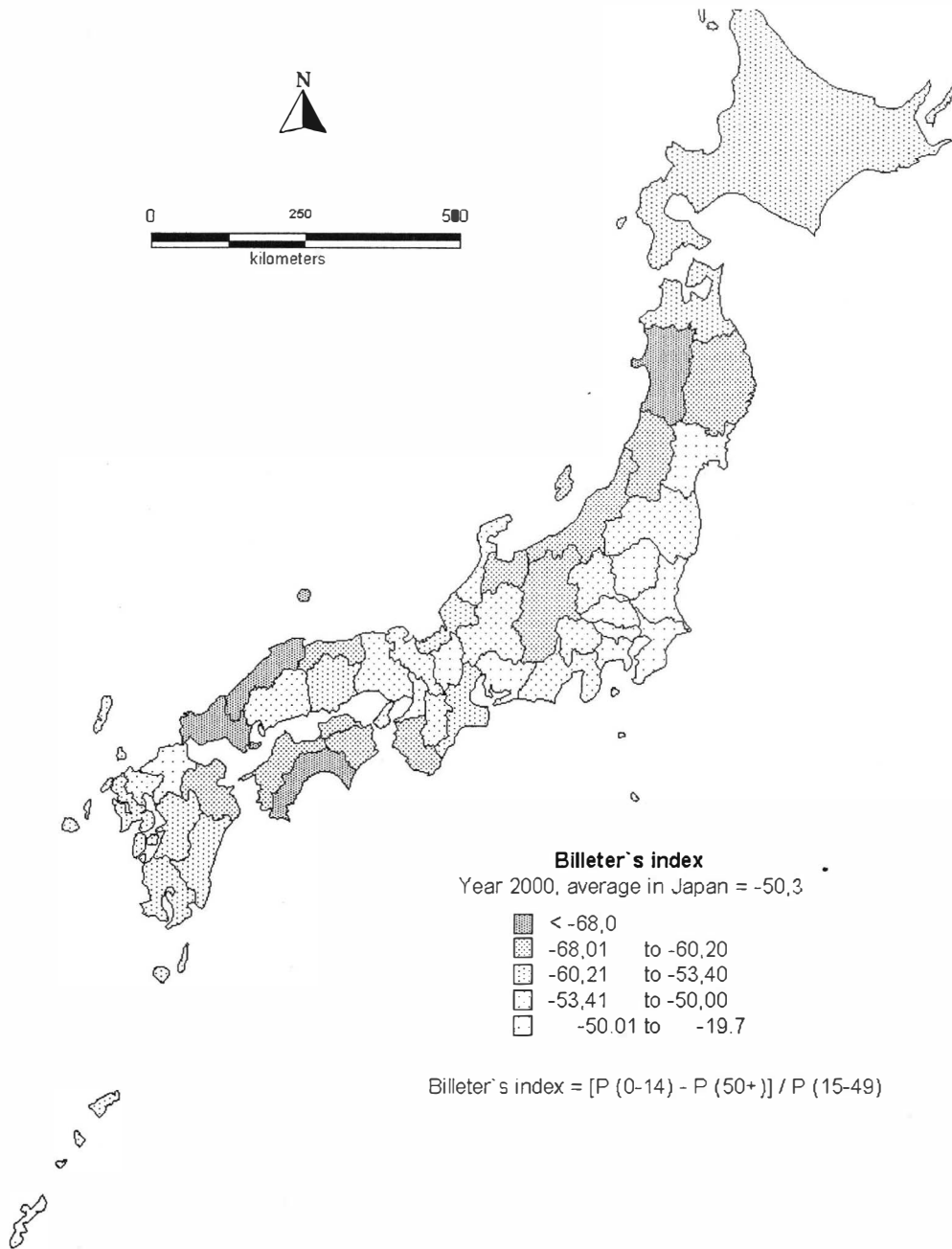


Figure 11 Age Structure of Population in Japan 4

population dependence increase, because to the postproductive category will be moved numerously stronger generations in future development.

Similar development has Japanese population, where the index of the young population dependency decreased from 62,6 in 1920 to 22,4 in 2000 (there are some differences in the index calculating). Index of old population dependency dramatically increased from 9,0 in 1920 to 25,1 in 2000.

The significant difference of the population age structures is shown while comparing the ageing degree by means of ageing indexes and Billeter's index on the regional level of districts and prefectures. The value of ageing indexes (Fig. 8 and 10) are approximately 2 – 3 times higher in Japan prefectures than in Slovak districts (Slovak average is 59,8 and Japanese 118,4). The value of Billeter's index in Japan is approximately 4 times lower (–50,3) than in Slovakia (–13,5). This fact is apparent also at the regional level. Japan prefectures have reached without any exceptions negative values of this index (Fig. 11) just in the year 2000. Even in four of them has Billeter's index decreased under the value –70 (Yamaguchi –74,2, Akita –75,6, Kochi –76,1, Shimane –77,1). Next 19 prefectures also have the value of this index lower (in the interval –69 –56) than the oldest Slovak district (Bratislava – 55,3).

The ability to document the demographic ageing of the population also has some average values as average age and median age. In Slovakia, the median age increased within the period 1925–2000 by 11 years and achieved the value 32.4 for men and 35.9 for women (average value in 2000 is 34,1). The average age increased in the same period by 8.7 years and in 2000 was 36,0 years. Both these indexes came up to higher values with women (approximately 3 years) as with men, with a trend of increasing this difference. The median age of Japan population increased by 15,5 years from 22,2 in 1920 to 37,7 in 1990 and to 41,0 in 2000.

On the basis of the analytical study of the population ageing much knowledge concerning the processes of change in age structure and its scored ageing grade have been obtained. Every of the used ways has certain abilities to characterise the ageing process, whereby to some features of this process will be given more attention or they will be preferred. Frequently, for example, will be preferred some age categories and their ability to express the achieved population ageing grade. Evaluations of the ageing process on the basis of these analytical indexes can be therefore in certain dissonance.

Because of mentioned reasons, the effort to obtain more complex image on the population ageing process is quite justified. Such aiming can be realised by construction and application of some synthetical index. Synthetical index should comprise certain functions, which offer some partial characteristics. On the basis of such index, we came up to the expression of the achieved ageing grade on the district level in Slovakia and on the prefecture level in Japan.

Attempts to construct a synthetical index on the basis of statistical techniques were not successful. On the district's level of Slovakia had been for example applied the technique of cluster analysis. Several analytical indexes of age structures show however a strong dependence grade and therefore is the application of the cluster analysis problematic.

One of the possibilities to use several partial characteristics to the construction of a synthetic index represents the method of the ball scale. The role of such ball scale is to unify different indexes of the phenomenon and subsequently to form an integrated synthetic measure.

At the ageing processes study of the population of Slovakia and Japan, in assesment of reached level were used some analytical indexes: proportions of the population of the characteristic age categories (0 – 14, 50+, 65+, 80+, population of the postproductive age), age index, ageing index, Billeter's index, dependence indexes of the young and old population, average age. Each of these partial indexes represented in the set of 79 districts of Slovakia and 47 prefectures of Japan, it defines certain population ageing level. The sets of districts and prefectures had been ordered according to the achieved level of the appropriate index. Therefore, each district and prefecture got such value of the ball scale, which corresponded to its order, achieved in the appropriate partial index. Having new values, it was possible to perform common statistical operations.

To some of the used indexes was awarded a higher explanatory ability and therefore they were in the case of indexes weighted the district and the prefectures orders twice, and in the case of the Billeter's index and of average age up to 3 times. Slovak districts and Japan prefectures were evaluated altogether 21 times in this way, respectively there were used 21 ball scales. As the next step, there has been simply determined the average order of district and prefecture, which is considered as the achieved level in the ageing processes of its population.

After these ranking of districts and prefectures it is possible to identify the „youngest“ or the „oldest“ districts and prefectures (Tab. 2 and 3).

Table 2 Average Ageing Rank of the Slovak Districts in 2000

„Youngest“ Districts			„Oldest“ Districts		
Name	Average Rank	Rank	Name	Average Rank	Rank
Námestovo	1.76	1.	Zlaté Moravce	62.24	65.
Kežmarok	3.43	2.	Trenčín	62.86	66.
Tvrdošín	4.67	3.	Levice	64.33	67.
Sabinov	5.95	4.	Sobrance	64.62	68.
Stará Ľubovňa	5.95	5.	Komárno	67.1	69.
Spišská Nová Ves	7.10	6.	Piešťany	67.9	70.
Vranov nad Top.	9.67	7.	Poltár	68.57	71.
Levoča	10.52	8.	Nové Zámky	70.05	72.
Bardejov	12.67	9.	Medzilaborce	70.95	73.
Dolný Kubín	13.43	10.	Nové Mesto nad Váhom	71.19	74.
Poprad	13.48	11.	Turčianske Teplice	72.1	75.
Košice II	13.48	12.	Myjava	73	76.
Prešov	14.29	13.	Bratislava II	75.67	77.
Čadca	14.57	14.	Bratislava III	77.71	78.
Košice III	14.67	15.	Bratislava I	78.81	79.

From the spatial point of view, there have been formed two larger regional units with different population ageing grade in Slovakia (Fig 12). Large region in the south and south-west of Slovakia is characterised by a higher ageing grade. Majority of districts of this unit reached in the synthetic evaluation average order in the interval 46 – 79, respectively the order from the interval 31 – 45, which can be considered as definite middle level of population ageing. Exception in this region is only one of the Bratislava districts, which obtained a substandard order. The second unit, spreading in the north and east of Slovakia is the region with relatively lower ageing grade and with younger population. Districts of this region reached the average order in the interval 1 – 30, respectively from

the middle interval 31 – 45. Exceptions are districts Medzilaborce, Sobrance and one of the districts of Košice.

Table 3 Average Ageing Rank of the Japan Prefectures in 2000

„Youngest“ Prefectures				„Oldest“ Prefectures			
Number	Name	Average Rank	Rank	Number	Name	Average Rank	Rank
47	Okinawa-ken	2.18	1	20	Nagano-ken	31.09	33
25	Shiga-ken	5.45	2	3	Iwate-ken	31.36	34
23	Aichi-ken	7.18	3	15	Niigata-ken	32.73	35
11	Saitama-ken	8.36	4	31	Tottori-ken	32.73	36
8	Ibaraki-ken	11.09	5	30	Wakayama-ken	32.91	37
14	Kanagawa-ken	11.09	6	37	Kagawa-ken	35	38
9	Tochigi-ken	12.55	7	38	Ehime-ken	36	39
12	Chiba-ken	12.64	8	6	Yamagata-ken	36.91	40
4	Miyagi-ken	12.82	9	44	Oita-ken	37.27	41
27	Osaka-fu	15.09	10	16	Toyama-ken	38.36	42
28	Hyogo-ken	15.18	11	36	Tokushima-ken	39.73	43
29	Nara-ken	16.91	12	32	Shimane-ken	41.82	44
40	Fukuoka-ken	16.91	13	35	Yamaguchi-ken	42.64	45
19	Yamanashi-ken	17.91	14	5	Akita-ken	43.55	46
22	Shizuoka-ken	18.09	15	39	Kochi-ken	44.91	47

The synthetical picture of the location of „young“ and „old“ population in Japanese prefectures is rather complicated (Fig. 13). The half of prefectures with the youngest population is located in the surroundings of Tokyo and Yokohama agglomerations. Among the first ten prefectures with the youngest population belong Saitama, Ibaraki, Kanagawa, Tochigi, Chiba a Miyagi. Also the next prefectures of this area, they have the young population. Therefore, clear and compact region was created. It is paradox that Tokyo prefecture is the exception in this region and reaches the middle level of the population ageing (it is ranked 20th among the young prefectures). The second less significant region of young population presents the group of prefectures in surroundings of Osaka, Nagoya, and Kobe. There are 5 prefectures in this region with very young population Shiga, Aichi, Osaka, Hyogo, Nara, but there also are the prefectures with older population in this region – Wakayama, Mie and Kyoto. Except of these two regions, it is possible to observe the young population in two Kyushu prefectures – Fukuoka and Saga, and in Okinawa (the youngest population of all prefectures). Population ageing processes run over more quickly in more areas. One of them represents 6 prefectures that border „Tokyo region“ of the young population on the west – Akita, Yamagata, Iwate, Nagano, Niigata a Toyama. The second is the region in the south part of Honshu – prefectures Shimane, Tottori and Yamaguchi, while the next two prefectures have older population – Okayama and Hiroshima. Four prefectures of Shikoku have old population too – Tokushima, Kagawa, Ehime and Kochi, which shows the oldest population at all. Prefectures on the Kyushu island have older population – Oita, Kagoshima, Kumamoto, Miyazaki, Nagasaki, Saga. The exceptions represent two mentioned prefectures in the north–western part of island.

The synthetic evaluation of the population ageing processes level based on the sets of regional units is valid only separately for Slovak districts and separately for Japanese prefectures. It presents a very valuable information concerning the ageing of population and especially of its regional differentiation. It is more advantageous to use analytical measures

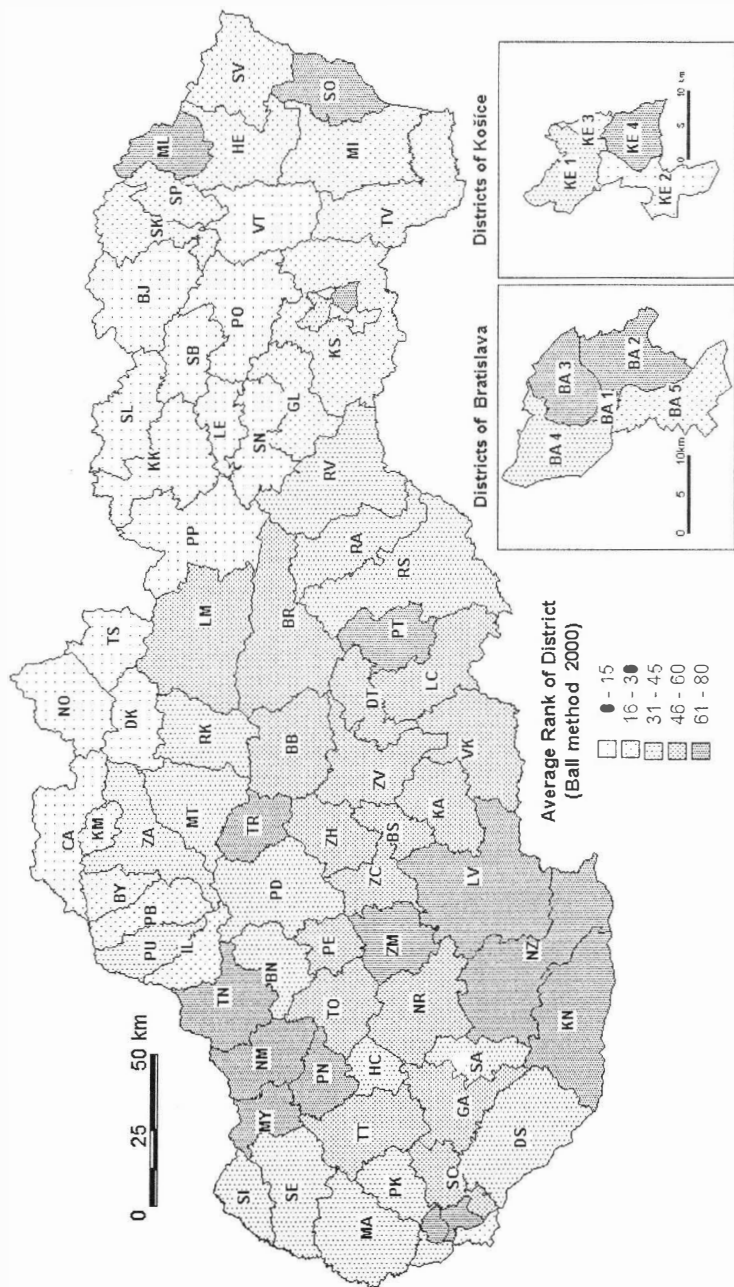


Figure 12 Age structure – Ageing of Population in Slovakia 5

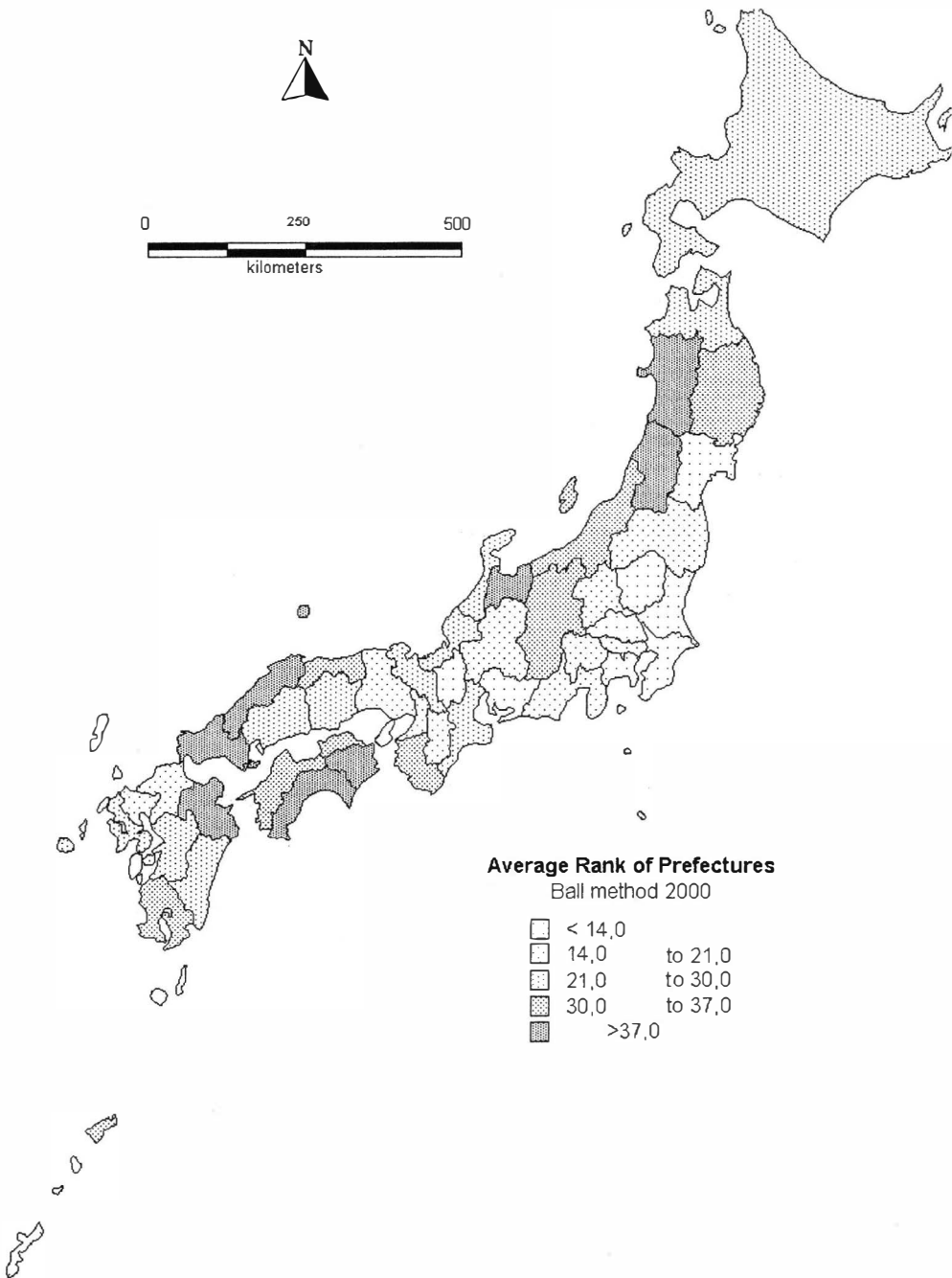


Figure 13 Age structure – Ageing of Population in Japan 5

of the different age categories or derived measures of population ageing for the mutual comparison of the ageing processes level between the sets of regional units of Japan and Slovakia.

4. CONCLUSION

Studying the population ageing processes generate a lot of knowledge. The application the set of the age structure measures enables to choose those, which have potential to express the most important features of these processes. After that, it was possible to use certain techniques for analyses of population ageing processes in Japan and Slovakia.

Comparison of the population ageing processes of Japan and Slovakia led to identification of three development stages. In the first development stage, which includes the first half of the 20th century and lasts till 50's, Slovakia had older population. During the second stage, which covers 70's and 80's, population ageing processes of both countries are very similar. From the half of 80's, the differentiated development begins again. All ageing measures document its significant acceleration in Japanese population. It is the result of the faster decrease of the children category share and the significantly faster increase of the older population category share as well.

The ageing of population also has regional differences. There are two great regions in Japan with the young population, in which ageing is progressing slowly. The first one is the surrounding area of the great agglomeration Tokyo and Yokohama. The second is similar surrounding area of the agglomerations Nagoya, Kyoto, Kobe, and Osaka. Apart from these, young populations also have some other individual prefectures – Hiroshima, Fukuoka, Hokkaido and Okinawa. More progressing ageing processes show the north-west prefectures on Honshu, in the south prefectures of Kyushu and prefectures of Shikoku.

In Slovakia have been formed two greater regional units with different population ageing grade. The great region in the south and south–west of Slovakia is characterised by higher ageing grade. The second unit, spreading in the north and east of Slovakia, is the region with relatively lower ageing grade and with younger population.

Population ageing processes cause needs to solve a whole set of social problems, which recently have met especially developed countries. They can be ordered into two groups, even if they overlap each other.

The first group represents the problems of economic character. In the first place, it handles about the forming of such economic conditions, that all basic and specific needs of not working pensioners will be satisfied. Under the condition of growing proportion of this population, it will be more complicated to create options for additional exploitation of the abilities and knowledge of the elderly population.

The second group represents problems of social-medical character. Reduction of incomes of this population should not radically limit its needs. Extraordinary important it is in the catering sphere and personal services. Extensive health care should include the qualitative as well as the quantitative side. It will be desirable to provide widened network of specialised facilities for treatment of old people and chronically ill people. It is needed to expand the geriatric departments, to prepare the physicians and health workers for treatment of this group of people, including psychological workplaces, to extend the preventive

activity. Special are the requirements for dwelling of the old population. It is necessary to respect need for alternative solutions – constructing of old people's homes of different types, conditions for the existence of multigenerational families, providing for the nursing service.

References

- ATOH, M. (2000): The Coming of a Hyper-aged and Depopulating Society and Population Policies, the case of Japan. Expert group meeting on policy responses to population ageing and population decline. UN/POP/PRA/2000/9. New York. p. 2-12.
- ATOH, M. (2001): Policy Responses to the Coming of a Hyper-aged and Depopulating Society: Pro-natalist or Immigration Policies? Lecture in National Institute of Population and Social Security Research. Tokyo.
- BILLETER, E. P., (1954): Emine Masszahl zur Beurteilung der Altersverteilung einer Bevölkerung. Schweizerische Zeitschrift für Volkswirtschaft und Statistik. 90, p. 496-505.
- BIRG, H. (1997): Die Eigendynamik des Weltbevölkerungswachstums. In: Antropo-geographie. Hrsg. Meusburger, P. Spektrum, AV. Heidelberg. Berlin, p. 46-55.
- Federal statistical office: Historical Statistical Yearbook of the CSSR. SNTL, Alfa, Praha. 1985.
- CHOVANCOVÁ, J. (1998): Živorodenosť obyvateľstva Slovenska – priestorová diferencovanosť na úrovni krajov, okresov a obcí. (Live-Birth Rate of the Slovak Population-Spatial Differentiation on the Level of Regions, Districts and Communes). Acta Facultatis Studiorum Humanitatis et Naturae Universitatis Prešovensis. Folia Geographica 2.
- Infostat, research demographic centre: Population Development of the Slovak Republic. Bratislava. 2000.
- KATSUMATA, Y. (2000): The Impact of Population Decline and Population Ageing in Japan from the Perspectives of Social and Labour Policy. Expert group meeting on policy responses to population ageing and population decline. UN/POP/PRA/2000/9. New York. P. 2-13.
- KEYFITZ, N. (1997): Probleme des Bevölkerungswachstums. In: Antropo-geographie. Hrsg. Meusburger, P. Spektrum, AV. Heidelberg. Berlin, p. 12-21.
- KOBAYASHI, T., KOBAYASHI, K., TOEPFER, H., MIZUTANI, H. (2001): Regional Disparities in an Aged Society. Annual Report of the Faculty of Education. Gifu University. Vol. 49. No. 2. p. 31-65.
- KOJIMA, H. (1996): Aging in Japan: Population Policy Implications. Korea Journal of Population and Development. Vol. 24. p. 197-213.
- KONO, S. (1993): Population Structure. Population Bulletin of the United Nations, No. 27, United Nations. New York. P. 108-124.
- MLÁDEK, J. 1992: Základy geografie obyvateľstva (*The basics of population geography*). SPN Bratislava, p. 230.
- MLÁDEK, J. (1998): Druhý demografický prechod a Slovensko (*Second demographic Transition and Slovakia*). ACTA FSHN Universitatis Prešovensis Folia Geographica 2. roč. XXX. Prešov. 42-52.
- MLÁDEK, J., MARENČÁKOVÁ, J. (2002): The Demographic Development of Slovakia in the European context. In: Kobayashi, K. (Ed.): Changing Regional Structure and Way of Life in Central Europe: the Case of Poland, the Czech Republic, the Slovak Republic and Hungary. Gifu University. 243-283.

Statistical office of the Slovak republic: Balance of the movement of the Slovak Republic's population by districts in the years 1991 – 1995.

Statistical office of the Slovak republic: Statistical Yearbook of the Slovak Republic. Veda. Bratislava 1993 – 2001.

www.census.gov/ipc/www/idbprint.html

Resume

Starnutie obyvateľstva Slovenska a Japonska

Jednou zo všeobecných zákonitostí vývoja väčšiny štátov sveta sú zmeny vekovej štruktúry ich obyvateľstva, ktoré sa označujú ako procesy jeho starnutia. Formovanie vekovej štruktúry a jej zmeny sa týkajú celého obyvateľstva. Komplexnosť vekovej štruktúry sa prejavuje v jej multikauzálnych väzbách s mnohými demografickými a ekonomickými javmi. Vo vekovej štruktúre sa odráža vývoj základných populačných procesov ako sú napr. pôrodnosť, úmrtnosť, migračné pohyby. Na druhej strane veková štruktúra každej populácie silne ovplyvňuje vývoj mnohých populačných javov a procesov.

Komplexnosť a význam procesov starnutia obyvateľstva sa odráža i v relatívne početnom súbore metód a techník, pomocou ktorých sa študuje.

Pri použití intertemporálnej analýzy možno v procese starnutia obyvateľstva Japonska a Slovenska identifikovať určité špecifická (3 vývojové štádiá). Slovensko vykazuje staršie obyvateľstvo v prvej vývojovej etape (do 50. rokov 20. storočia). V druhom období (70. a 80. roky) boli obe vekové štruktúry dosť podobné. Výrazná akcelerácia starnutia obyvateľstva Japonska začína koncom 80. rokov. Je to výsledok poklesu úrovne natality (starnutie zdola) a zároveň prudkého nárastu obyvateľstva starších vekových kategórií.

Starnutie obyvateľstva má i výraznú regionálnu diferencovanosť. V Japonsku možno identifikovať dva veľké regióny s pomalším procesom starnutia obyvateľstva. Prvým je územie obklopujúce veľkú aglomeráciu Tokyo, Yokohama. Druhým je územie v okolí aglomerácie Nagoya, Kyoto, Kobe, Osaka. Okrem toho majú niektoré samostatné prefektúry mladé obyvateľstvo – Hiroshima, Fukuoka, Hokkaido, Okinawa. Pokročilejšie procesy starnutia obyvateľstva ukazujú severo-východné prefektúry na Honshu, južné prefektúry na Kjusju a prefektúry Shikoku.

Na Slovensku sa sformovali dva veľké regionálne útvary s rozdielnym stupňom starnutia. Veľký región ja juhu a juhozápade Slovenska charakterizuje vyšší stupeň starnutia. Druhý región, nachádzajúci sa na severnom a východnom Slovensku má nižší stupeň starnutia a mladšie obyvateľstvo.

S procesmi starnutia obyvateľstva sa spája celý rad sociálnych problémov s ktorými sa stretávajú predovšetkým rozvinuté krajiny. Možno ich rozdeliť do dvoch skupín i keď navzájom spolu súvisia: problémy ekonomického charakteru a problémy sociálno-zdravotného charakteru.

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スロバキアと日本における人口高齢化

ヨゼフ・ムラーデク

国の発展に関わる一般的な法則の1つとして、多くの国々では、人口の年齢構造の変化が起きるが、その変化はとくに高齢化という形で表れる。年齢構造の形成とその変化は、人口全体に関わる問題である。人口の年齢構造が抱える複雑さは、多くの人口・社会現象に対し、年齢構造が多面的な因果関係を有していることから明らかである。年齢構造には、出生率、死亡率、移動傾向などといった基本的な人口現象の変化が反映される。他方、年齢構造は、人口現象とその変化に明確な影響を及ぼしうる。

人口高齢化のプロセスが複雑かつ重要であることは、人口高齢化を分析する手法やテクニクが比較的広範なことからも分かる。

時系列で分析すると、スロバキアと日本における高齢化プロセスに、いくつかの特徴（3つの発展段階）を見いだすことができる。第一期（20世紀前半まで）には、スロバキアのほうが、より高齢化がすすんでいた。第二期（1970～80年代）には、両国の年齢構造はかなり似ていた。1980年代の終わりからは、日本で高齢化が急激に加速しはじめた。これは、出生が減少した（下からの高齢化）と同時に、高齢層で人口がより急速に増加した結果、起きたことである。

人口の高齢化には、地域差も存在する。日本には人口構造の若い二大地域があり、そこでは高齢化の進展はゆるやかである。第一の地域は、東京・横浜を中心とした人口集積地域の周辺部である。第二の地域は、同様に、名古屋、京都、神戸、大阪を核とする人口集積地域の周辺部である。これらの地域以外でも、広島、福岡、北海道、沖縄など、いくつかの県では人口構造が若い。高齢化のより進展した地域は、本州北東部、九州南部、四国の諸県である。

スロバキアでは、人口高齢化の程度の異なる二大地域が形成されている。スロバキアの南部、南西部では、高齢化のすすんでいることが特徴である。北部、東部にひろがる地域では、高齢化の程度が比較的lowく、より若い人口をかかえている。

人口高齢化のプロセスにより、多様な社会問題を解決する必要があるわけだが、こうした問題は、近年、とくに先進諸国で起きているものである。高齢化がもたらす問題は、互いに重複する部分もあるが、2つの分野に分けられる。すなわち、経済に関する問題と、社会・医療に関わる問題である。