

NEW TRENDS OF POPULATION DEVELOPMENT IN SLOVAKIA AT THE END OF THE 20TH CENTURY AND THE BEGINNING OF THE 21ST CENTURY

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Abstract: Changes of demographic behaviour in Slovakia manifest in three related spheres: reproductive behaviour, family behaviour and ageing of population. Formation of the new model of reproductive behaviour is characterised by the rapid decrease of the natural population increase, the rates of reproduction and the total fertility. Changes of family behaviour are characterised by transition from the model of early marriage to that of late marriage. The population ageing in Slovakia has been observed during the last decade. Ageing processes provoke the need to address multiple social problems (of economic and socio-medical nature). Spatial differentiation is obvious in the three spheres of demographic behaviour.

Key words: reproductive behaviour, fertility, family behaviour, ageing of population, cohabitation

1. INTRODUCTION

Changes of demographic behaviour that have been observed in the countries of the northern and western Europe in the second half of the 20th century and that have also appeared at its end, albeit modified, in the countries of southern, central and eastern Europe can be considered among the most important in the whole history of population. This is the reason why they are rightly referred to as a "revolutionary", and the period when they took place is designated the second demographic revolution or the second demographic transition (van de Kaa, D., J., 1980, 1987, Lesthage, R., 1983, 1991, Lesthage, R., van de Kaa, D., J., 1986, Birg, H., 1996). The second demographic revolution can be interpreted as a complex of changes of behaviour and the value system of population characterised by the overestimation of individualism and personal freedom, features that simultaneously weaken the functions of matrimony and family (Pastor, K., 2002).

Changes of demographic behaviour in Slovakia manifest in three related spheres: reproductive behaviour, family behaviour and ageing of population.

2. REPRODUCTIVE BEHAVIOUR OF POPULATION

Pronounced changes of reproductive behaviour of Slovakia's population since the 1990s, such as fertility and natality rate decrease, increase of the average age at childbirth and the increased share of children born out of wedlock, the negative balance of the natural population movement, are all features of the demographic behaviour typical for the second demographic transition. The distinct decrease of the nuptiality and natality in the countries of western Europe is connected with the economic growth in the 1960s or 1970s. Contrastingly, the distinct changes not only in fertility and natality but also in overall reproductive behaviour in Eastern Europe including the Slovak Republic started in the 1990s and are connected with the negative economic changes of the transition period.

2.1. The temporal aspect of the reproductive behaviour of population in Slovakia

The natural increase of population and the reproduction rates are of crucial importance for the assessment of population's reproduction and its dynamics. After the change of the political and economic system in the SR in 1989, the decrease of absolute and relative values of the natural population increase, as well as of the net reproduction rate (NRR) accelerated. In the course of the 1990s, the NRR dropped below the level of 1 what is the insufficient reproduction level (Tab. 1) for the first time (with the exception of the economic crisis in the 1930s). While the increase in 1990 still amounted to 25 thousand inhabitants i.e. almost 5 ‰, in 2000 it was only 2,427 inhabitants that equals to only 0.5 ‰. The natural increase of population in Slovakia changed into natural decrease in 2001 classifying it among the set of the European countries where the natural decrease occurred already in the 1990s (Latvia, Lithuanian, Estonia, Belarus, Bulgaria, Czech Republic, Romania, Ukraine and others). In 2003, the natural decrease was 517 persons (0.10 ‰). The decrease of natality determined the development in this period because the crude death rate stabilized at a relatively low level, or we can talk about its slow increase.

In the period following the 1990s, the accelerated decrease of the number of live-born children and the crude live birth rate (Tab. 1) are observed. From 1990 to 2003, the number of live born children decreased from almost 80 thousand to less than 52 thousand and the crude live birth rate decreased from 15.10 ‰ to 9.61 ‰. The above-quoted decrease was most pronounced in the first half of the 1990s as also demonstrated by the average annual decrease of live birth rate that was as much as 0.7 ‰ in the interval between 1990 – 1995 while it was only 0,1 ‰, in the years 1990 – 1999. It is a paradox that such an abrupt decrease occurred precisely in time when the persons born in the 1970s, that are considered strong years in terms of population, reached their reproductive age and the induced abortion also distinctly decreased.

Changes in reproductive behaviour also manifest by the accelerated decrease of the total fertility that definitely dropped below the limit of population decrease (2.1) in 1989. In the first years of the 21st century, the level of total fertility was at 1.20, that classified the SR among the countries with the lowest total fertility level in Europe. Similar development was observed in general fertility. In 1990, 60 live born children per 1,000 women were recorded while now it is only 36 (Tab. 1).

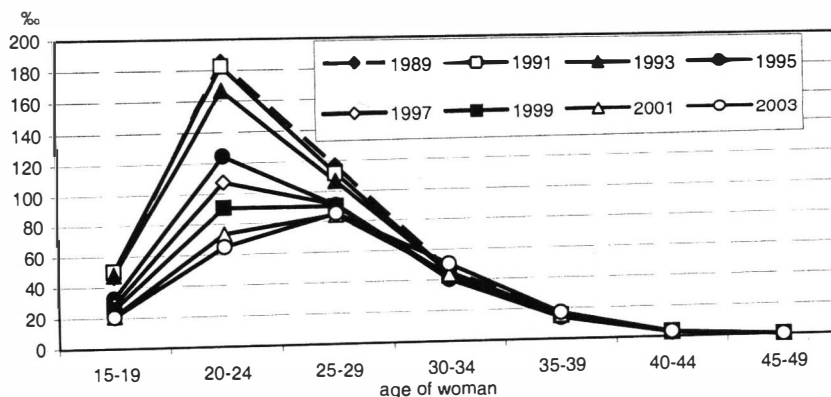
The dramatic decrease of the total fertility is connected with the decrease of the specific fertility of women in all age categories though it is not equally intensive (Graph 1). The most distinct fertility decrease is observed in the youngest categories of

Table 1 Development of the selected indicators of reproduction behaviour in Slovakia from 1989

Year	Number of live births	Crude live-birth rate (‰)	Total fertility rate	General fertility rate (%)	Average age of woman at birth	Average age of woman at first birth	Natural increase	Natural increase per 1000 inhabitants	Net reproduction rate
1989	80,116	15.18	2.08	61.06	25.27	22.73	26,214	4.97	1.00
1990	79,989	15.10	2.09	60.24	25.25	22.67	25,370	4.79	0.99
1991	78,569	14.87	2.05	58.70	25.06	22.45	23,951	4.53	0.98
1992	74,640	14.07	1.99	55.55	25.12	22.41	21,217	4.00	0.96
1993	73,256	13.76	1.93	53.87	25.16	22.45	20,549	3.86	0.92
1994	66,370	12.41	1.67	47.74	25.26	22.56	14,984	2.80	0.80
1995	61,427	11.45	1.52	43.65	25.36	22.71	8,741	1.63	0.73
1996	60,123	11.19	1.47	42.30	25.50	22.87	8,887	1.65	0.70
1997	59,111	10.98	1.43	41.29	25.67	23.08	6,987	1.30	0.69
1998	57,582	10.68	1.37	40.01	25.82	23.30	4,426	0.82	0.66
1999	56,223	10.42	1.33	38.90	25.99	23.56	3,821	0.71	0.64
2000	55,151	10.21	1.29	38.03	26.21	23.93	2,427	0.45	0.63
2001	51,136	9.51	1.20	35.37	26.46	24.14	-844	-0.16	0.57
2002	50,841	9.45	1.19	35.22	26.67	24.53	-691	-0.13	0.57
2003	51,713	9.61	1.20	35.87	26.95	24.88	-517	-0.10	0.58

Source: 1. Vaňo, B. (ed.) 2001, 2. Štatistický úrad SR. 2001, 2002, 2003, 2001(b), 2002(b), 2003(b)

women below 29, above all in the 20 – 24 year old category. It suggests the postponing of birth giving to the higher age. The specific fertility rates of the 20 – 24 year old in 2003 decreased by almost two thirds of the 1990 values (from 187.1 ‰ to 64.8 ‰). Women in higher fertile age (30 and more years) with low fertility level were also subject to the smallest fertility decrease, due to an abrupt decrease that was observed in the preceding period (Marenčáková, J., 2003, 2003b).



Graph 1 Development of the specific fertility rate in Slovakia (1989 – 2003)

Indicators like the average age of woman at childbirth and the average age at the first birth did not change much in Slovakia in long-term. Some appreciable increase was observed in the 1990s (Tab. 1). In the years from 1990 to 2003 the average age of woman at childbirth and at the first birth increased from 25.3 to 27.0 years and from 22.7 to 24.9 years respectively. In spite of the increased average values in the recent years, their level is relatively low (lower by 2 – 4 years in average) compared to the west-European countries.

Table 2 Development of the selected indicators of natality and fertility by legitimate of births in Slovakia from 1989

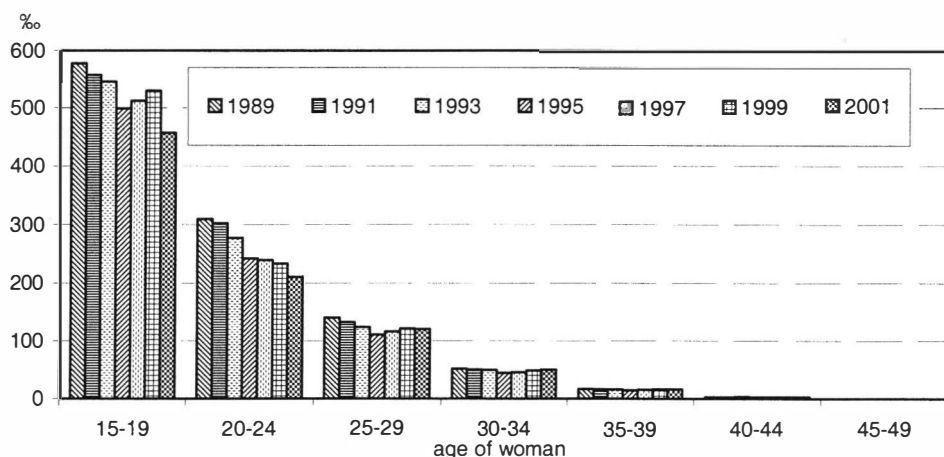
Year	Number of births out of wedlock	Share of births out of wedlock (%)	General fertility rate of married women (%)	General fertility rate of unmarried women (%)
1989	5,798	7.20	84.98	12.95
1990	6,134	7.63	84.01	13.33
1991	7,086	8.98	80.54	15.31
1992	7,346	9.80	75.86	15.32
1993	7,788	10.58	74.01	15.58
1994	7,822	11.74	66.67	14.94
1995	7,788	12.63	61.50	14.29
1996	8,486	14.06	59.75	14.97
1997	8,982	15.13	58.73	15.33
1998	8,881	15.35	57.84	14.72
1999	9,568	16.94	56.26	15.34
2000	10,132	18.30	55.21	15.93
2001	10,163	19.79	51.80	15.84
2002	11,047	21.65	–	–
2003	12,144	23.39	–	–

Note: – data not available

Source: elaborated by I. Vaňo, B. (ed.) 2000, 2. Štatistický úrad SR. 1989 – 2001, 1989 – 2001(b), 2000.

Before the end of the 1980s, the share of children born out of wedlock in the total number of children born did not exceed 8 %, while they were mostly children of single mothers (Bartoňová, D., 1984). In spite of the abolishment of "advantages" that were available for single mothers (special social benefits, prioritised access to kindergartens and nursery schools) until 1989, the share of children born out of wedlock still increased from 7.61 % in 1990 to 23.35 % in 2003 (Tab. 2). However, the share of births that take place out of wedlock in the SR is relatively low in terms of Europe.

Differences in reproductive behaviour between the married and unmarried women in the study period were significant and found their reflection in the different fertility rate. Compared to 1989, in 2001 married women gave birth to less live born children by 33,321 (according to the summarizing value index it is the decrease by almost 45 %) and unmarried women gave birth to more children by 4,341 (that is increase by 75 %). A continuous decrease of the general fertility of married women (according to the index of variable composition it is the decrease by 39 %) and fertility increase of unmarried women (increase by 22.4 %) are simultaneously observed (Tab. 2). The changes in the number of live born children depended rather on the change in age structure of the women than on the fertility level according to age (Marenčáková, J., 2004b). Fertility of married women the most decreased after 1989 (almost by about a third of values) in the 20 – 24 category as related to the postponing of having children (Graph 2). All age categories of unmarried women contributed to the increased out of wedlock fertility (Graph 3) while the most distinct was the increased fertility rate of unmarried women at the age categories 30-34 and 35-39 (by 1/4 to 1/3 of values).



Graph 2 Development of the specific fertility rate of married women in Slovakia (1989 – 2001)

Changes in natality and fertility in the SR after 1989 are connected with changes of the demographic behaviour, we can talk about the change of thinking and culture, the axis of which is adoption of new ideas, attitudes and opinions on different spheres of life and their diffusion to wider social circles followed by a progressive adaptation that leads to the origin of new behavioural patterns (Rabušic, L., 2001). Changes in the economic situation in Slovakia also play an important role. They brought about critical conditions for marriage and reproductive behaviour of the young generation. Every economic

recession, shock, reduction of real income and every increase of expenditure mean the natality decrease. On the other side, increased income seldom leads to the increased natality (Pastor, K., 2000). The development of socio-economic characteristics in the SR in the 1990 – 2002 period such as the share of university students, GDP per inhabitant, real income index, mean annual unemployment rate reveals a statistically significant linear correlation of indirect nature with the development of the crude birth rate, general and total fertility or specific fertility of 15 – 19, 20 – 24 25 – 29 year old women and contrastingly, a significant linear correlation of the direct nature with the development of the average age of women at the childbirth or at the first birth and the coefficient of extra-marital birth (Marenčáková, J., 2004).

2.2. The spatial aspect of the reproductive behaviour in Slovakia

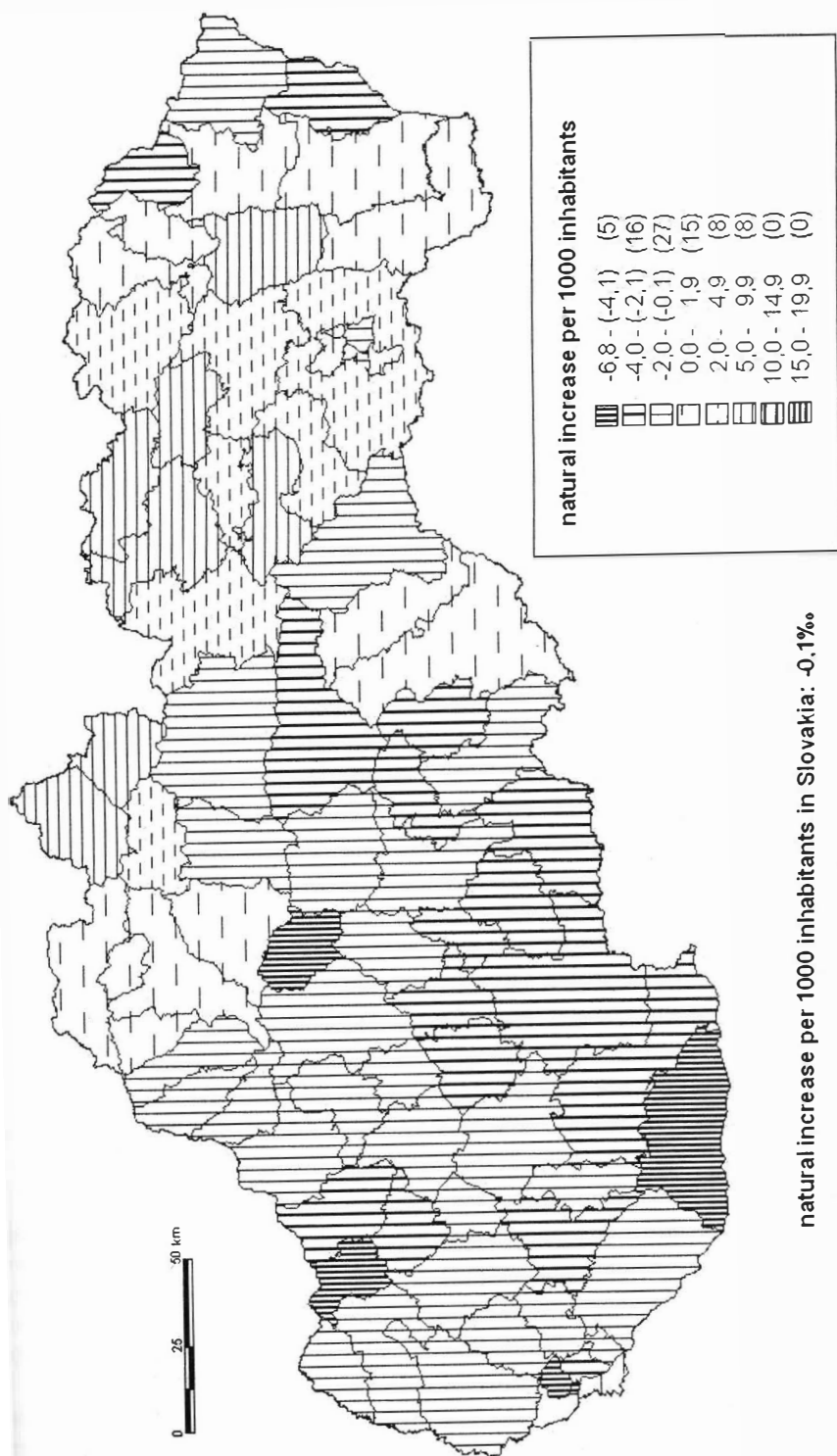
Similar developmental changes to those that affected the whole population of Slovakia took place at the level of districts. The distinct spatial differentiation of reproductive behaviour indicators exists (Chovancová, J., 1999, Marenčáková, J., 2003). Selected indicators of reproductive behaviour such as the crude live birth rate, general fertility, share of children born out of wedlock, and the natural increase per 1,000 inhabitants prove it. Although their spatial picture remained almost the same since the beginning of the 1990s (average of the years 1992 – 1994)¹ until now (average of the years 2001 – 2003), the values are clearly different in all districts in all compared periods and the variability of districts assessed by different rates of variability is different as well.

With a bit of simplification, two extreme regions are identifiable in Slovakia based on the selected indicators in both study periods (Map 1, 2). The area of the north, north-east of Slovakia forms the region with the highest natality and fertility levels and consequently the highest level of natural increase that is still positive. On the contrary, the out of wedlock natality is still the lowest in this region. The second extreme region is the area of the Slovakian west and south-west with the lowest intensity of natality and fertility, the lowest natural increase that is characterised by negative values in various districts in this region at the beginning of the 1990s. On the other side, the share of children born out of wedlock in this region is the highest.

The picture of the overall spatial differentiation at the district level according to the selected indicator remained the same from the beginning of the 1990s until now. However, the level of indicators distinctly changed in uneven rates in all districts. While the share of children born out of wedlock increased in all districts in the study period, the remaining indicators display a distinct decrease. In the case of natural increase, apart from its decrease, there are more districts with negative increase (it means natural decrease) – their number increased from 11 (14 % of all districts) in 1992 – 1994 to 48 districts (61 % of all districts) in 2001 – 2003.

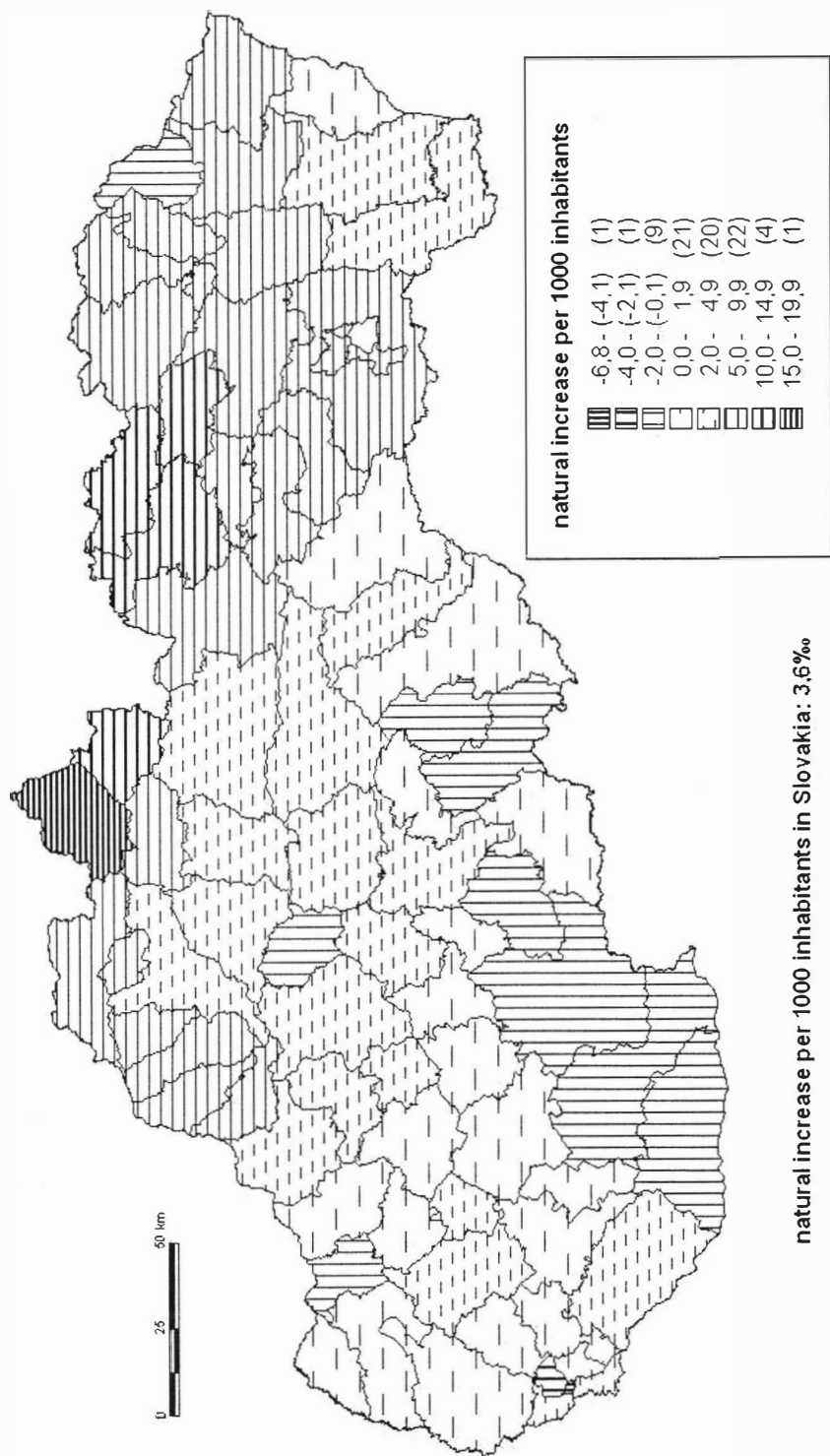
Likewise, the variability of the set of districts assessed according to the share of children born out of wedlock was considerably higher at the end of the study period, while it is now, on the basis of other indicators, distinctly lower than at the beginning of the 1990s. Characteristics such as the average, variance, standard deviation, that are

¹ For better representation of the temporal/spatial changes at the level of selected reproductive behaviour indicators for 1992 – 94, these indicators for the districts valid in 2003 were computed by aggregation of absolute data of communes into higher regional units (districts) followed by the computation of the corresponding rates.



natural increase per 1000 inhabitants in Slovakia: -0,1‰

Map 1 Natural increase of population – average of 2001 – 2003, districts



natural increase per 1000 inhabitants in Slovakia: 3,6‰

Map 2 Natural increase of population – average of 1992 – 1994, districts

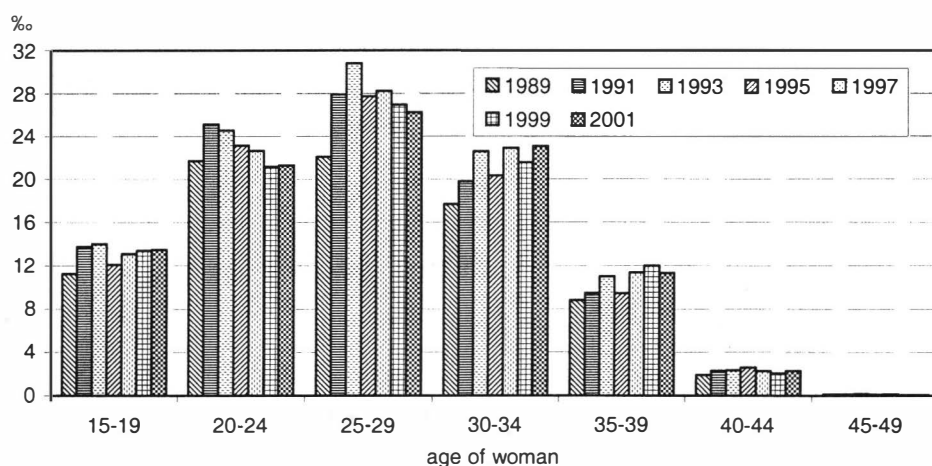
clearly higher for the share of the children born out of wedlock in 2001 – 2003 than in 1992 – 1994, and simultaneously the crude live birth rate, general fertility, and the relative natural increase now lower than at the beginning of the 1990s (Tab. 3) prove the above assertion.

Table 3 Variability of Slovak districts by selected indicators of reproduction behaviour

Indicators of variability	Crude live-birth rate (‰)		General fertility rate (‰)		Share of births out of wedlock (%)		Natural increase per 1000 inhabitants	
	1992 – 94	2001 – 03	1992 – 94	2001 – 03	1992 – 94	2001 – 03	1992 – 94	2001 – 03
Average	13.41	9.52	52.03	35.49	10.67	21.62	3.55	-0.13
Minimum	8.31	6.95	26.37	20.08	2.09	3.09	-6.25	-6.78
Maximum	23.76	16.01	99.02	63.32	22.66	43.97	16.41	8.27
Range	15.45	9.06	72.65	43.24	20.57	40.88	22.66	15.05
Standard deviation	2.76	2.07	12.47	8.59	4.45	8.77	3.97	3.2

Note: Number of Slovak districts: 79

Source: elaborated by Štatistický úrad SR. 1992 – 1994, 2001, 2002, 2003



Graph 3 Development of the specific fertility rate of unmarried women in Slovakia (1989 – 2001)

3. THE FAMILY BEHAVIOUR OF POPULATION

In spite of strong traditions surviving in Slovakia, the family behaviour of population has undergone remarkable changes. The characteristics typical of the period of the second demographic transition – individualism and personal freedom markedly contrast with the traits that dominated in the family behaviour before: certain collective, socially oriented thinking and acting. This change heavily influences formation and disintegration of family and consequently its function in the process of reproduction.

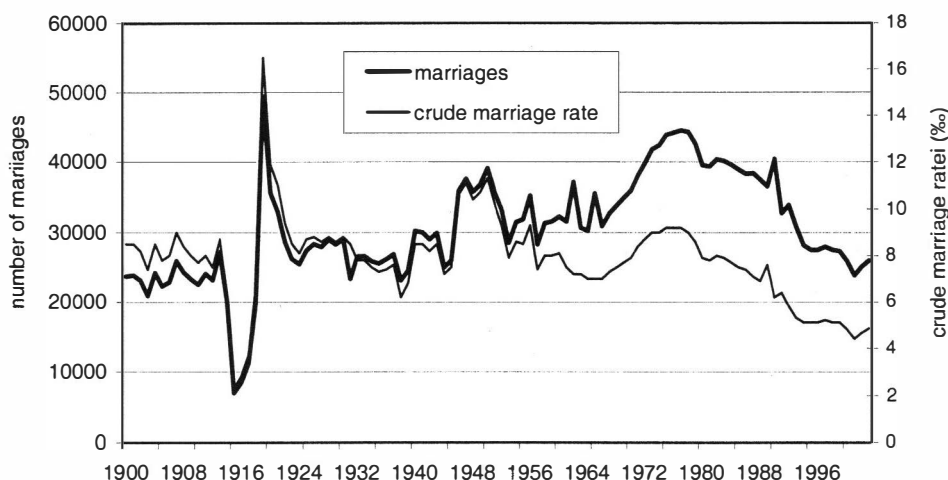
Changes of family behaviour manifest in a large set of phenomena and processes. Among them are: decrease of marriage rate, increase of marriage age, increase of cohabitations, increase of the share of single persons, decrease of the share of singles

who conclude marriage, increase of the divorce rate, application of efficient contraception, increasing number of incomplete families, etc.

3.1. The developmental trends of the marriage model of Slovakia's population and their dramatic changes

The first and quite univocal change in the process of the marriage rate that took place in its development is the decrease of number of marriages and the decrease of the marriage rate. In the years 1990 – 2003 the number of marriages dropped from 40.4 thousand to 26 thousand (Graph 4). The period starting at the mid-1990s was that of an intensive decrease of the marriage rate. In 1993, the crude marriage rate in Slovakia was 5,8 ‰, after 1996 it stabilised at relatively low values around 5.1 ‰.

The total marriage rate of both sexes also experienced a pronounced decrease from the beginning of the 1990s. In men it decreased from 0.919 in 1990 to 0.498 in 2003 and in women it was from 0.942 to 0.522. In the last two years a moderate increase of overall marriage rate of men and women caused by the strong population years was observable.

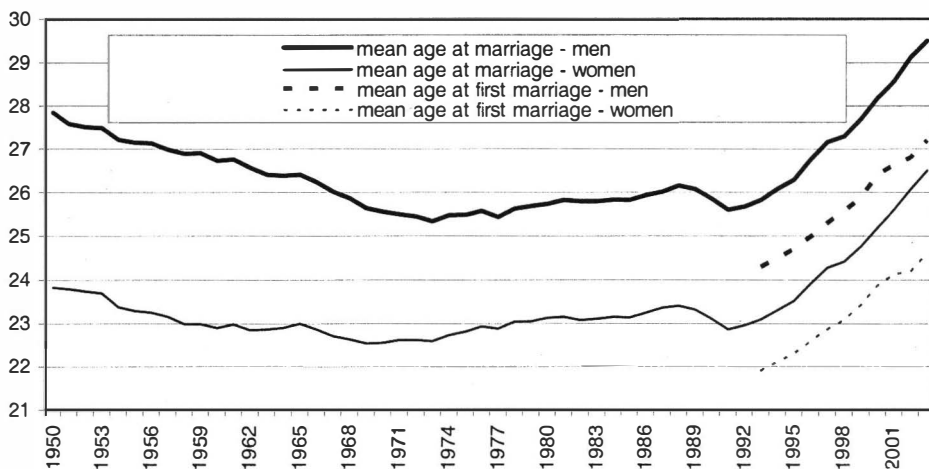


Graph 4 Development of marriages in Slovakia

After the decrease of the marriage rate, another change, that of the increasing marriage age, appeared. The group of indicators that characterised the marriage age in Slovakia was at a relatively low level and indicated the prevailing model of an early marriage. The average age of marriage has maintained at the level around 25 – 26 years of men and 22 – 23 years in women (in 1990: men 25.9, women 23.1 years). It gradually increased during the 1990s to reach 29,5 years in men and 26.4 years in women in the 2003 (Graph 5). The average age at the first marriage was subject to a remarkable development in the 20th century. Around the 1950s it reached comparatively high values (approx. 26,5 years in men a 23 years in women). Later it decreased by about a year and then it was followed by the 30-year stagnation. (Vaňo, ed., 2003).

After EDITIONS DU CONSEIL DE L'EUROPE 2003, the values of this indicator for women were 22.1 years (1960), 22.0 years (1970), 21.9 years (1980), and 21.9 years (1990) what meant that Slovakia ranked at the last positions on the European scale.

Foundation of family just like having a child was motivated and stimulated by numerous social measures (advantageous credits for newlywed couples, mother benefits after mother leave, preferential access of young families to new flats, and the like). Factors like low level of sexual education, ignorance and limited access to contraceptives and the related unwanted pregnancies and precociously concluded marriages also contributed. The average age at the first marriage moderately increased after 1990 (Graph 5) reaching 27.2 years in men and 24.6 years in women in 2003, values still somewhat lower than in the west European populations.



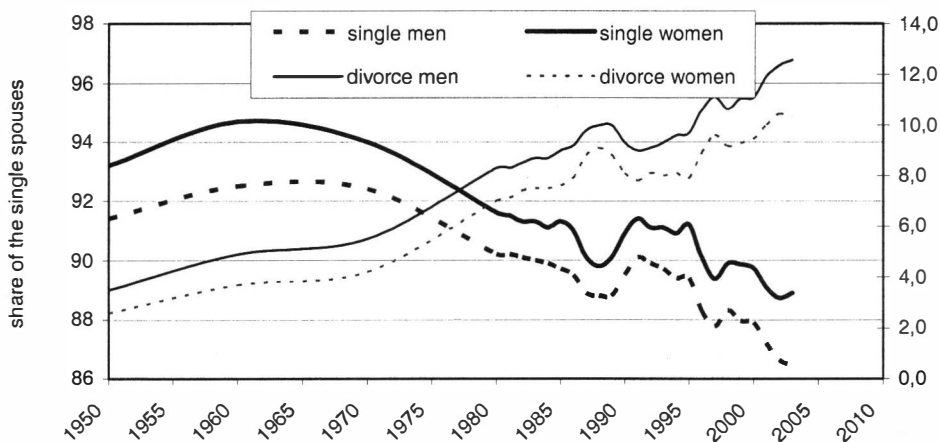
Graph 5 Development of marriage of spouses in Slovakia

The decreased share of the first marriages and the slight increase of the share of second marriages of men and women on the other side are important features that have appeared in the recent period. The decrease of first marriages is due to either postponing or refusing the marriage (2003: men 86.4 %, women 88.9 %). The most intensive decrease of single fiancées is observed since the 1990s and it is connected with the decrease of the overall marriage rate. The increased share of separated fiancées is an interesting feature. This increase is connected with the increasing divorce rate and the increasing marriage at a higher age rate (Graph 6).

Presumably, Slovakia will go on approximating the model of late marriage, when a certain part of population will stay single (will not conclude marriage) and the marriage age of men and women will increase.

The Census of inhabitants, houses and flats points to another changes that are immediately connected with the marriage rate and family behaviour of population; it is the increased incidence of cohabitations. According to the 1991 Census 20,864 cohabitations existed in Slovakia. Their increase to 30,466 in 2001 testifies to the fact that the informal forms of partnership are becoming more popular. Comparison of numbers of inhabitants living in cohabitations with those of married couples reveals that the rate of cohabitations is not high. There were 1.65 cohabitants for 100 married persons in 1991. This value increased to 2.68 cohabitants in 2001. Research points to the increasing tendency of couples to informal cohabitation. The results of the research into the demographic behaviour of university students in Slovakia carried out by J. Maren-

Čáková, J. Širočková, J. Mládek, 2005 show, "that more than a half of respondents (56,5 %) consider cohabitation of unmarried couples a convenient trial before concluding the marriage. As many as 16.8 % respondents even think cohabitation is a better partnership than a formal marriage." This fact confirms the increasing preference of cohabitations. One of indicators of the hypothetic assertion about the increase of cohabitations in Slovakia is the increasing marriage age accompanied by the decreasing number of concluded marriages.



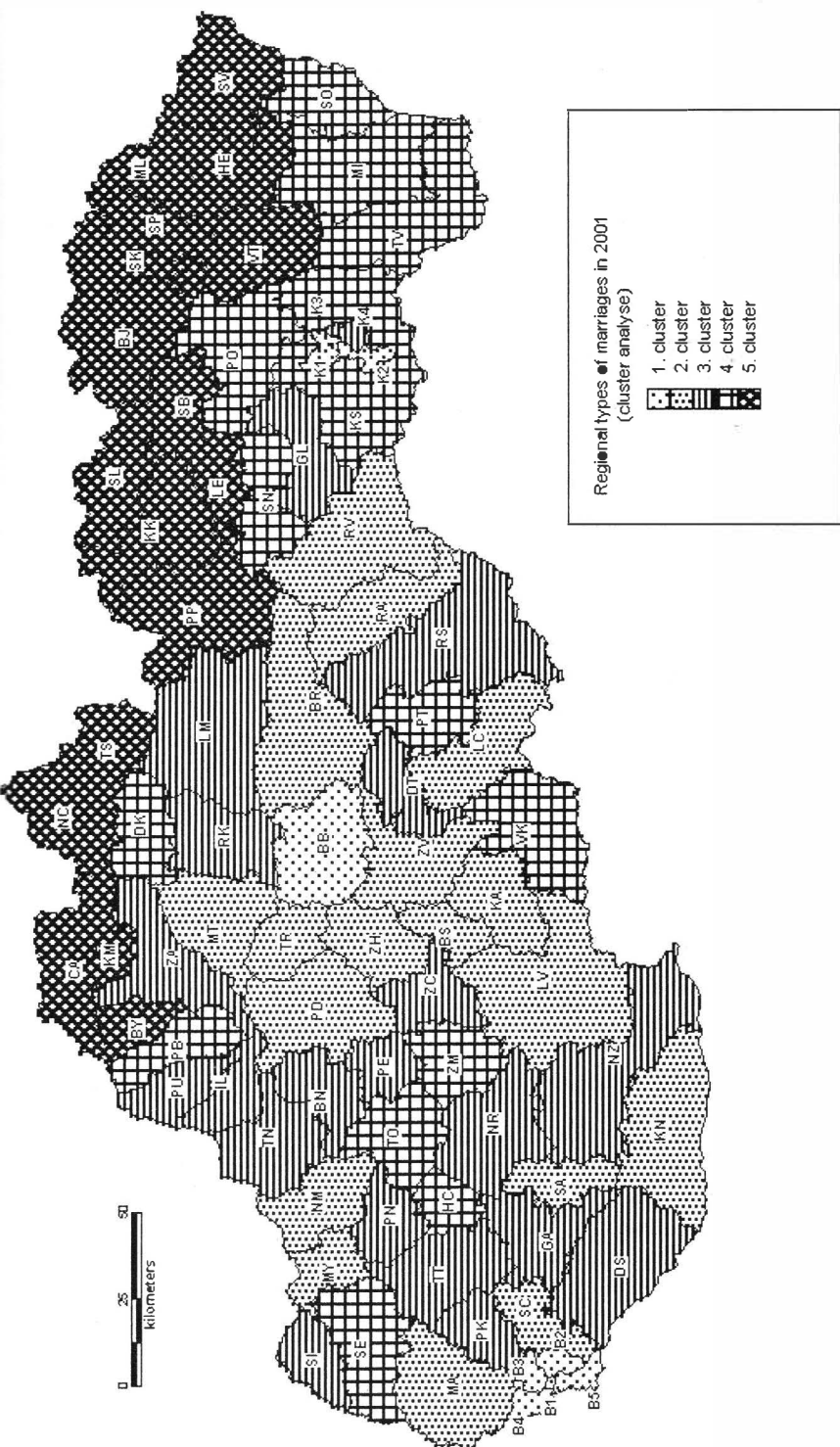
Graph 6 Development of the share of single and divorce spouses

3.2. Spatial differentiation of the marriage rate

The present nature of the marriage rate in Slovakia displays some specific features determined by cultural, historical and socio-economic context in our territory. Analysis of spatial differentiation of the marriage rate is, regarding the complicated relationships inherent to this process, rather complex. There are many factors that more or less affect the marriage rate. One of the most important is the age structure of population – particularly the number and share of population at the marriage age, followed by the share of urban population, level of religiousness of population, educational level or socio-economic situation.

Results of factor and cluster analysis provide the synthesizing view of the present family behaviour, in particular, the process of marriage rate in individual regions of Slovakia (at the level of districts in 2001). The input data consisted of 9 marriage characteristics that were clustered by factor analysis into two factors. The first is the marriage age factor and it reflects the mean age at the first marriage, mean marriage age, and share of the first marriages for men and women. The second is the factor of level (intensity) of the marriage rate and it reflects the gross marriage rate, overall marriage rate of men and women.

Scores of these two factors were entered into the cluster analysis. Five clusters express spatial differentiation of the marital behaviour. Regions with a typically higher or lower level of marriage rate or the marriage age characteristics of men and women can be delimited in Slovakia (Map 3).



Map 3 Regional types of marriages in Slovakia

1st cluster – The very late marriage type – characterizes 8 districts with higher urbanisation, and the way of life different from rural areas. It includes all districts of Bratislava, Košice I., Košice II. and the district Banská Bystrica.

This small cluster contains the highest factor of marriage age, the highest average age at the first marriage, the highest marriage age accompanied by the lowest share of the first marriages.

The low rate of marriage is presumably the result of the typically urban environment. On the other side, due to its younger age structure, there is a higher marriage potential in this category.

2nd cluster – The late marriage type – is prevailingly formed by the districts of central, southern Slovakia and several districts in western Slovakia.

The typical feature of this type is the lowest representation of the factor marriage rate. It was found out that many of these districts display the lower marriage potential of population in the consequence of the ageing population processes. The factor of marriage age reaches average levels and it tends to rather low numbers compared with districts of the first cluster.

3rd cluster – The transitory type – contains, the highest number of districts – 22. Large part of western Slovakia, central and upper parts of Považie and several districts of eastern Slovakia are included.

The level of marriage rate is average. Characteristics of marriage are average to low compared with districts of the first cluster.

4th cluster – The early marriage type – is formed by 14 districts of the Slovak Republic and it includes above all districts of eastern Slovakia and the dispersed districts in the west of the country. Marriage rate values are low and the share of first marriages is higher, marriage rate is considerably higher, but it has been decreasing recently. The traditional values and standards firmly linked with cultural and religious traditions.

5th cluster – The very early marriage type – formed by 17 districts of northern Slovakia: areas of Orava, Kysuce, Spiš, and Šariš.

This cluster is the direct opposite of the first cluster. The lowest marriage age, the lowest age at the first marriage and the highest share of first marriages are typical for these districts. These have been rather backward and neglected areas in the past and they also are among the less developed ones at present. Favourable conditions for survival of traditional standards concerning marriage with great support of religion and the social background that maintains the type of large families with many children still exist here.

3.3. Developmental trends of divorce

The divorce, as the process that in the majority of cases negatively influences the population reproduction, that is moreover generally considered the negative demographic phenomenon in terms of family formation, is increasing. In 1990 the crude divorce rate in Slovakia was 1.67 ‰ and it increased to 1.99 ‰ until 2003. The total divorce rate – a more objective indicator – increased from 0.229 in 1990 to 0.326 in 2003. If the index of divorce is used to express it, then while in 1990 there were 22 divorces to 100 concluded marriages, this index increased until 2003 to 41.2 %. It is due to the abrupt decrease of number of marriages in that period.

Another accompanying feature of divorce rate is the increase of the average divorce age. The average age of divorcing men and women in 2003 was 38.9 and 36.2 years respectively. Compared to 1990, the age of men and women increased by 3.1 and 2.8

years respectively. The increase of the average divorce age is connected with the marriage rate decrease above all at lower ages and with the increase of divorce rate at higher ages.

4. THE PROCESS OF THE DEMOGRAPHIC AGEING

One of the general laws of the population development in the majority of states is represented by changes of the age structure of their populations. From the demographic point of view, they are changes that lead to the increased number or share of population in higher age categories (ageing from the top) and the share of the child component (ageing from the bottom).

The ageing process just like formation of the population age structure can be considered the demographic phenomenon with a high degree of complexity. The age structure reflects the development of many basic population processes such as natality, mortality or migration movements. On the other side, the age structure of any population can potentially regulate the development of many population phenomena and processes (marriage rate, potential of labour etc.).

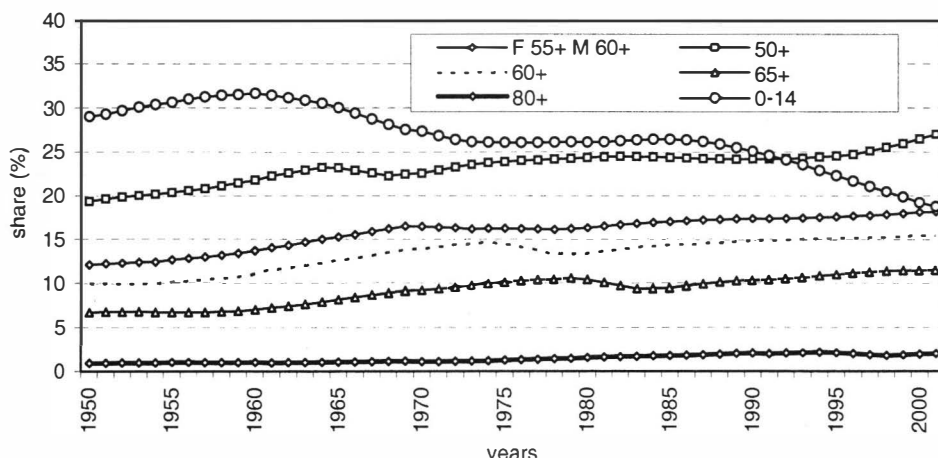
Two different approaches are applied in the study of ageing. Firstly, the efforts are focused on comparison of several population structures (interregional analysis) and cognition of differences in age structure of their inhabitants. Secondly, the principal attention is given to temporal changes of age structure of one regional population formation (intertemporal analysis). If ageing is interpreted as the process, then its analysis must lean on its temporal development that is spatially highly differentiated.

4.1. Intertemporal analysis of the population ageing

Slovakia in the context of the European countries is among the ten youngest ones. The quickest population ageing processes now take place in countries of eastern and central Europe as the impact of transition manifests in the dramatic decrease of the natality and natural increase. The Slovak population is no exemption. Some substantial changes in the structure according to ages were found in the simplest assessment of the ageing process by means of selected age groups in the course of the last more than hundred years (Graph 7, Tab. 4).

Representation of children (0-14 year old) decreased from 37.0 % (1900) to 19.0 % (2001). As Graph 7 shows, there are two periods of a distinct increase of the child component – the first following the end of the Second World War when representation of the 0 – 14 year age category culminated at 31.6 % in 1960. The second less conspicuous peak was observed in the years 1976 to 1985 when it moved from 26.0 % to 26.4 %. The 1990s were the most important years for changes in structure depending on age if the ageing process is evaluated. The child component decreases steadily from 1986; it represented more than a quarter of the total population until 1990, then it decreased by 22 % (almost 290,000 children) in the years 1991 – 2001.

The number of 65 year old and older persons increased by 484,881, it means from 4.7 % (1900) to 11.5 % (2001). The number of the oldest inhabitants (80 years and more) that was only 14,984 in 1900 increased to 102,940 in 2001; expressed in percentages it was from 0.5 % (1900) to 2.0 % (2001).



Graph 7 The development of selected age categories of population in SR (1950 – 2001)

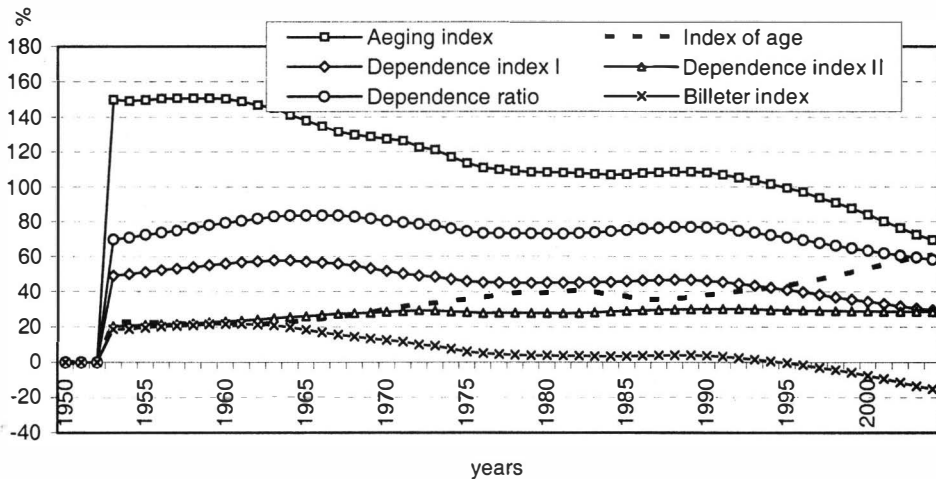
Table 4 Selected age categories of the population in Slovakia

Year	Number of inhab. thous.	0 – 14		15 – 49		65+		80+	
		Number thous.	share %	Number thous.	share %	Number thous.	share %	Number thous.	share %
1900	2,787	1,033	37.0	1,306	46.8	131	4.7	15	0.5
1910	2,921	1,104	37.8	1,330	45.6	148	5.1	16	0.5
1921	3,001	980	32.7	1,503	50.1	160	5.3	16	0.5
1930	3,330	1,062	31.9	1,695	50.9	200	6.0	21	0.6
1950	3,442	1,010	29.3	1,783	51.8	230	6.7	30	0.9
1961	4,170	1,315	31.5	1,938	46.4	292	7.0	39	0.9
1970	4,540	1,240	27.3	2,276	50.1	416	9.2	52	1.2
1980	4,996	1,304	26.1	2,476	49.6	518	10.4	76	1.5
1990	5,311	1,331	25.1	2,695	50.7	551	10.4	110	2.1
2000	5,403	1,036	19.2	2,935	54.3	620	11.5	104	1.9
2000/1900	193.9	100.3		224.7		471.5		698.6	
\bar{x} 1900 – 2000	1.01	1.00		1.01		1.01		1.02	
\bar{x} 1990 – 2000	1.00	0.98		1.01		1.01		0.99	

Changes of the ageing level in Slovakia indicate more complex rates of ageing and mean values. More complex indicators express the ratio of several age groups. They include the age index, dependence index of the young and old population, index of the economic load, ageing index, Billeter's index, mean age, age median and the mean life expectancy (Graph 8).

The age index² is inversely proportional to the ageing process. In 1900 the value of age index was 230.3 % and since then the progressive decrease of values to 71.1 % in 2001 is observed. Based on this indicator in the years 1990 – 1993 the age structure of the Slovak population with age index values of 95 – 105 % was stationary. At present we talk about the regression type of age structure.

² Age index $I_v = O0-14 / O 50+ \cdot 100$



Graph 8 The development of indexes of population ageing in SR (1950 – 2001)

The Billeter's index³ decreased during the whole study period and it means that the numbers of non-reproductive age group members decrease with regard to the size of reproductive age group. On the other side, since 1992, the ageing rate has been negative (-0,3 %) and this state reflects the changes in numerator where the post-reproductive population outnumbers the pre-reproductive one.

Another group of indicators is that of indicators operating with productive age groups-dependence indexes. The dependence index of young population (Iz I)⁴ tends to decrease regarding the decrease in numbers of the child component. Contrastingly, the trend of the dependence index of old population (Iz II)⁵ is increasing. The dependence index I was always higher during the observed 100-year period. It indicates the prevalence of the pre-productive age group over the post-productive one. In relation to the development of these two age groups, the difference of indexes diminishes while the difference in percent points in the years 1950 and 2001 was 28.7 and 0.9 respectively.

The ageing index defined as the percentage of the 65-year and older and the 0 – 14 year-old records the increase of values that are directly proportional to the ageing process. While in 1900 there were 13 persons at the age of 65 and more to 100 children below 15, in 2001 it was as much as 60.

Regarding the temporal aspect of the age structure change in Slovakia, the demographic ageing process is determined by the components of the natural movement, particularly the dramatic decrease of natality and a slow improvement of mortality. Its deepening is observed above all in the last decades. The only time when migration affected the age structure of the SR perceptibly was the first decade of the 20th century.

4.2. Interregional analysis of ageing

The presence of different population structures in the individual regions of any larger territorial unit is typical. The differentiation of demographic behaviour existing in

³ Billeter's index (rate of ageing) $M_s = ((P_{0-14} - P_{50+}) / O_{15-49}) * 100$

⁴ Dependence index of young population Iz I = $(P_{0-14} / P_{15-54F, 15-59M}) * 100$

⁵ Dependence index of old population Iz II = $(P_{55+F, 60+M} / P_{15-54F, 15-59M}) * 100$

the territorial units (districts) of the SR manifests by the age structure changes and the different level of ageing.

Regarding the large number of age structure indexes and their different values, efforts have been made to unify them. Applying the factor and cluster analysis to districts of the SR, the authors delimited the regional type of districts, that is to say, groups of districts with similar character of age structure or similar ageing level were formed. As the districts of Košice and Bratislava were evaluated as a whole, in total 72 spatial units entered the evaluation. The following indexes of age structure for 2001: population 0 – 14 (%), population 65+ (%), mean age, ageing index, age index, the dependence index of young (Iz I) and old population (Iz II) and Billeter's index were the entry data. As the mutual dependency of data was confirmed, the compulsory condition was their entry into the factor analysis. Subsequently, two factors entered the cluster analysis. Clustering was stopped at four clusters, as they seemed most feasible for interpretation.

Cluster A consists of eight districts of northern and northeastern Slovakia. These districts can be classified as the "youngest". Their mean age did not exceed the limit of 34 years, the share of children is more than 23 % and its age structure is progressive (age index higher than 100 %). The distinct prevalence of the child component over the population at the retirement age is simultaneously observed – Map 4.

Cluster B is formed by 19 districts in part of the northern and almost the whole of eastern Slovakia. They are considered relatively young districts. The average age in all districts is below 36 years, the child component share in all districts except for Ilava a Košice – city is above average (over 19 %). The pre-productive age group prevails over the post-productive in all districts.

Cluster C is formed of 35 districts situated all over the territory of the west and central Slovakia. They can be designated the relatively old districts. The average age moves between almost 36 years and 37.6 years. The C cluster is the most numerous one. The child component values are below average with the exception of districts Krupina, Rimavská Sobota, Rožňava, Púchov, Ružomberok and Žilina. These districts including Senec and excluding Žilina are characterized by higher dependence index I values compared with dependence index II.

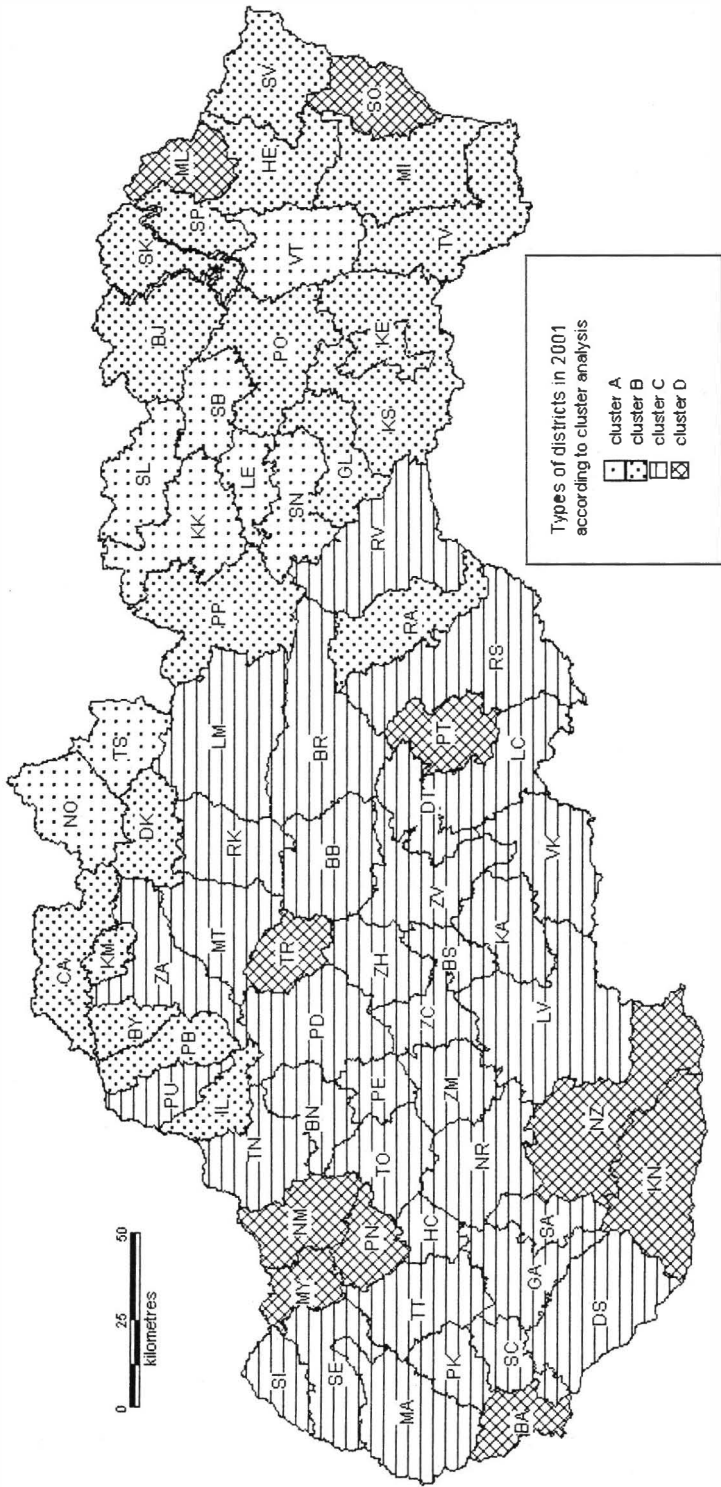
Cluster D contains ten districts with more or less dispersed location. The average age of cluster D districts is higher than 37.5 years and on the contrary, the share of children is lower than 18 % (except for district Sobrance). These are the oldest districts.

Map 4 brings the spatial picture of these four regional types of districts. As regards the age structure or the ageing rate, the Slovak Republic is divided into two large regional wholes. In the sense of typology, the borderline from the districts of o Púchov, Žilina Ružomberok, Liptovský Mikuláš over Brezno as far as Rožňava can be drawn. North of this borderline is the regional type of young age structure that is facing the region of old age structure in the south (including these districts).

The migration indicator points to the paradox that young regions lose and old region gain the positive migration increase.

5. CONCLUSION

The demographic behaviour of population in Slovakia at the end of the 20th century and the beginning of the 21st century was determined by two basic developmental factors. The first consists of the long-term development of population processes and formation of



Map 4 Ageing of population – typology of districts

population structures. Normally these trends first appear in the most advanced countries and gradually they also pass to the developing countries. In the 1990s, the additional effect of transformation negatively affected the demographic and above all reproductive behaviour of population in central and eastern Europe. The intensity of both factors is comparatively difficult to quantify and it became the subject of scientific discussions.

Both factors also afflicted Slovakia. Their effects resulted in very intensive changes of multiple population phenomena and processes. This is how the extreme intensity decrease of nuptiality, fertility, and abortion in a relatively short span of time can be explained. The ageing population process is the result.

If the effect of the changed socio-economic conditions on the development of population processes, above all those involved with population's reproduction is accepted, then the question rises how long will such destructive phase last. It seems that the decrease of some rates slows down or stops since 2001 (the last year of a pronounced decrease). The number of newborn, the total fertility rate, the net reproduction rate, the number and rate of marriage increase (Tab. 1). Such characteristics of population development can be considered the beginning of the stabilizing period. Originally they were expected already at the end of the 1990s. With the slow onset of the positive changes in the socio-economic development the stabilisation of the population development also slowed down. Supposedly the stabilizing period will not be too long and it will be replaced by the compensating phase with a moderate increase of fertility and reproduction of population.

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Nové trendy populačného vývoja Slovenska na konci 20. a začiatku 21. storočia

Resume

Zmeny demografického správania, ktoré v druhej polovici 20. storočia zaznamenali krajiny severnej a západnej Európy a ktoré sa ku koncu storočia objavujú v určitých modifikáciách i v krajinách južnej, strednej i východnej Európy možno považovať za jedny z najvýznamnejších v celej populačnej histórii. Z tohto dôvodu sa im právom dostalo označenie „revolučné“ a obdobie, v ktorom sa tieto charakteristické zmeny odohrávajú sa označuje ako druhá demografická revolúcia alebo druhý demografický prechod. Zjednodušene možno pod druhou demografickou revolúciou rozumieť komplex zmien v správaní a hodnotovom systéme populácie, ktoré nadhodnocujú individualizmus a osobnú slobodu a zároveň oslabujú funkciu manželstva a rodiny.

Na Slovensku sa zmeny demografického správania prejavujú v troch navzájom súvisiacich oblastiach – reprodukčné správanie, rodinné správanie a starnutie obyvateľstva.

Formovanie nového modelu reprodukčného správania charakterizuje rýchly pokles prirodzeného prírastku obyvateľstva a mier reprodukcie (na úroveň nezaručujúcu sebareprodukciu populácie). Rýchlo klesá i úhrnná plodnosť, pričom najmladšie vekové kategórie žien zaznamenali najvýraznejší pokles, zvyšuje sa priemerný vek ženy pri pô-

rode, čo možno hodnotiť ako dôsledok odkladania narodenia detí do vyšších vekových kategórií.

Zmeny rodinného správania charakterizuje prechod od modelu skorej sobášnosti k modelu neskorej sobášnosti. Okrem poklesu intenzity sobášnosti sa prejavuje rastom sobášneho veku, rozširovaním kohabitácií a rastom mimomanželskej plodnosti. Rozvo-
dovosť vykazuje mierny nárast.

Starnutie obyvateľstva Slovenska sa prejavuje ako v dlhodobom trende, tak i v období posledných 10 rokov. Práve posledné obdobie charakterizuje starnutie zdola, zásluhou poklesu fertility. Starnutie zhora je tiež evidentné, i keď jeho prejavy nie sú také výrazné. Procesy starnutia obyvateľstva vyvolávajú potrebu riešiť celý rad závažných sociálnych problémov (ekonomického a socio-medicínskeho charakteru).

Vo všetkých troch oblastiach demografického správania sa prejavuje dosť výrazná priestorová diferencovanosť. Na úrovni okresov Slovenska sa najčastejšie odlišuje správanie v severných a východných okresoch a na druhej strane okresov južného a západného Slovenska. Osobitný typ spravidla predstavujú mestské okresy Bratislavy a Košíc.