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SELECTED DETERMINANTS OF REGIONAL DIFFERENTIATION OF LIFE EXPECTANCY AT BIRTH IN SLOVAKIA

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From the demographic point of view, Slovakia is a European country with a relatively young population. The process of population ageing has already begun in Slovakia as well. Although under the influence of different factors the acceleration of population ageing in Slovakia is evident, life expectancy at birth is growing only slowly. Retrospective analysis of life expectancy at birth data showed unfavourable development during the past regime and present backwardness in comparison with economically developed countries. In comparison with the healthiest European populations Slovakia is characterized by significantly lower values of life expectancy at birth, particularly of men. The goal of the paper is to identify some of the main possible reasons for this situation and to outline probable influence and nature of the most important factors. From many social influences of a different kind mainly the level of education, quality of housing and economic inequalities are examined in relation to regional differences in life expectancy at birth. The paper also deals with the main characteristics and possible reasons of regional differentiation of this situation, that shows significantly different values in different regions of the country.

Key words: life expectancy at birth, mortality, population of Slovakia, regional differentiation

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INTRODUCTION

From the demographic point of view, Slovakia is one of the European countries with a relatively young population. The process of population ageing has already begun in Slovakia as well, but in comparison with the neighbouring countries of Central Europe the population is relatively younger with the lowest share of older age groups. Although under the influence of different factors the acceleration of population ageing in Slovakia is evident, life expectancy at birth is growing only slowly. Retrospective analysis of life expectancy at birth data shows unfavourable development during the past regime and present backwardness in comparison with economically developed countries.

In comparison with the healthiest European populations, Slovakia is characterized by significantly lower values of life expectancy at birth, particularly for men. The goal of the paper is to identify some of the main possible reasons for this situation and to outline the probable influence and nature of the most important factors. From many social influences of different kinds mainly level of education, quality of housing and economic inequalities are examined in relation to regional differences in life expectancy at birth. The paper also deals with the main characteristics and possible reasons for regional differentiation in this situation, which shows significantly different values in different regions of the country.

DEMOGRAPHIC AND SOCIO-ECONOMIC DETERMINANTS AND LIFE EXPECTANCY

More than eighteen years after the "velvet revolution" of 1989 and fifteen years after the origin of the independent Slovak Republic (January 1st 1993) significant changes find their reflections in political and all spheres of economic life, including the social situation and demographic behaviour of population, its cultural and value preferences. The Slovak Republic joined democratic countries with a functioning system of parliamentary democracy, freedom of expression and open frontiers, full respect for human rights and freedoms and a market economy as a member of the European Union.

In spite of these and other positive features, some problems have emerged above all in socio-economic sphere, the depth of which was not expected and which concern a significant part of the inhabitants of this country in their everyday life. The transformation and diversification of the socio-economic situation is accompanied by mutations of demographic behaviour in dependence on education, social status, economic solvency and subjective values. Gradual diversification of the socio-economic situation in Slovakia causes not only distinct changes in stratification of society but also increasing regional disparities. These facts find reflection in factors that in some way or other determine quality of life and its most representative indicator, the value of life expectancy at birth. There are regions in Slovakia, where life expectancy at birth is higher than the Slovak average and on the other side regions, where the value of this indicator is significantly below the Slovak average. This fact, beside other, indicates certain problems of some regions not only with regards to life expectancy at birth but also health conditions and the life quality of their populations. In general, unequal socio-economic conditions and their effect on the physical and psycho-

social condition of population, different levels of education, different historically and culturally determined life style, genetic properties, but also different level of damage to the environment, and the like, are the facts that can be considered important for their effect on the health condition and life expectancy at birth of the population. These, but also other factors such as other environmental components, human relationships, stance to life, etc. predetermine the physical and mental health of population and consequently different life expectancy at birth in regions (Marmot 1989, Volná 1991, Ginter 2000 and 2001, Barondess 2001 and others). The relationship between life expectancy at birth and the overall political and social climates in countries is also well known. Earlier studies (Rodgers 1979) showed that the relationship between income inequality and health of population differs based on the level of socio-economic development of different countries. In period of the 1990s several possible explanations have been offered for how social inequalities, most of all distribution of income, might affect individual and population health. One hypothesis is that social inequalities have a psychosocial impact on individuals which results in poorer health of the population. Chronic stress and poor social support are related to health complications and have a greater effect mainly on those at the bottom of social hierarchies (Marmot 1996, Wilkinson 1992 and 1999). The macro-level correlate of the psychosocial hypothesis is that social inequalities can disrupt macro-level social relations and that this disruption is unfavorable to population health. Social inequalities, such as the maldistribution of income, are thought to precipitate changes in society by creating a climate of mistrust, reduced cooperation, decreased social bonds, and reduced membership in voluntary organizations. There is evidence that such inequalities are associated with unfavourable social conditions such as violent crime (Chiu and Madden 1998, Walberg 1998, Musselman et al. 1998). In spite of difficulties with the definitions and measurement of these concepts (Woolcock 1998), the authors suggest a social mechanism that is related to psychological stress associated with the status and power differentials between groups. Another group of authors points out that social inequality implies the existence of groups of individuals who suffer from poor living conditions and these factors lead to poor health (Lynch et al. 2000).

In conditions of transforming Slovakia the functioning democracy increases and identifies an individual with the state, increases his/her assertiveness, which in turn positively influences his/her health condition and increases the resistance of his/her organism. The deteriorating mental health of population associated with the long lasting totalitarian Government and the political turbulence which came after 1989 resulting in rapid growth of incidence of stressed, depressed, anxious and hostile people, is known in Slovakia. The above-mentioned symptoms concentrate in regions with high unemployment and poverty rates and some other areas of Slovakia. Mental factors along with "classic" ones have determined higher occurrence of chronic rather than infectious diseases (Šebej 1989), which reduce life expectancy at birth of population in some regions of Slovakia.

Studies accomplished at the beginning of the 1990s with a general character (Volná 1991) or with regional differentiation (Príkazský Jr. and Príkazský Sr. 1992) appeared in the Slovak specialized literature involved with life expec-

tancy at birth. Additional regional comparisons were hindered by the change of administrative division of the country in 1996 so that compilation of mortality tables based on new districts was only achieved after 2000. Approximately at the turn of the millennia, another wave of interest in the issue has risen. It was probably also motivated by the problematic situation associated with transformation of the health care system and the unsatisfactory health condition of the population (Ginter 2002, 2004a and 2004b, Ira et al. 2005, Mészáros 2001 and 2005, Michálek 2001, Tirpák et al. 2000).

PRINCIPAL STAGES OF AFTER-WAR DEVELOPMENT IN THE LIFE EXPECTANCY AT BIRTH IN SLOVAKIA

The ageing process in Slovakia is accelerating but the difference in representation of older age groups compared with the surrounding countries does not drop. Representation of the population older than 65 was still at the level lower by about 0.5 to 3.7 points in 2005 compared with the Czech Republic, Poland, Hungary or Slovenia (Council of Europe Publishing 2005).

Life expectancy at birth, as one of the basic demographic indicators synthesizes the living conditions of population and its mortality rate. The development of life expectancy at birth in Slovakia after World War II can be divided into three main stages of development. The first period (between the end of the War and the 1960s) is characterized by the highest increase of the life expectancy at birth values. The reasons for increased life expectancy at birth in that period were reduction of overall mortality, infant mortality, reduction of mortality from infectious parasitical diseases, increased hygienic standards and the like. Industrialization intensified and improved the living standards and situation of the majority of population. Apart from it, at the beginning of the 1950s, the state availed itself of huge finances obtained by nationalization and used part of it for increasing the educational level, social and health care not only in towns and cities but also in rural areas. Positive changes in the social security system in the form of accessible health care, obligatory vaccination against infectious diseases, application of treatment with sulphonamides and antibiotics, application of the most recent knowledge of biological and medical sciences in practical life were the principal causes of prolonged life expectancy at birth. While the life expectancy at birth of men in 1950 was about 59 years, it increased significantly to 68 years in 1965, in case of women from 63 years in 1950 to 73 years in 1965. At this time, the Slovak population reached the same level of life expectancy at birth as that of the democratic European countries.

The second period from the 1960s to the beginning of the 1990s is characterized by the decrease in life expectancy at birth compared with the economically advanced European countries. The main cause was the premature mortality caused by the cardiovascular diseases especially of men. Exhaustion of finances from nationalization, poor efficiency of the centrally managed economy, and the overall decay of the system – "normalization" with its economic, social and psychological consequences and the long lasting totalitarian system have probably created conditions (unfavourable psycho-social climate, unilaterally oriented educational system, poor transfer of information, degradation of the environment, especially the effect of emissions and penetration of pollutants into

water, soil and air from preferred heavy industry, etc.) for a pronounced increase of incidence of diseases. Cardiovascular diseases along with cancers have caused stagnation and even a slight decrease in the life expectancy at birth of men (Krajčír 1980, Demeš et al. 1999).

In the recent period (since the 1990s), the opposite trend is observable with the values of the life expectancy at birth increasing again (for both men and women) probably as a consequence of progress attained in cardiology, better accessibility of quality medicines and prompter diagnosis of serious ailments by means of the most recent equipment (Zajac and Pažitný 2000). Consequently, the decrease of overall mortality (mortality of men associated with their increased concern for proper health and improved composition of nutrition) but also mortality of new-borns and infants accompanied by other favourable factors caused prolongation of life expectancy at birth after 1990.

Relatively distinct increase of life expectancy at birth has been observed in 1998-2000. In 2006, the life expectancy at birth of men exceeded 70 years (70.2). Females exceeded the limit of 78 years (78.2). It reflects the continuing trend of improving mortality since 1998. It slowed down only in 2002 and 2003. A diminishing difference between the value of this indicator for males and females has also been proved. This diminishing suggests a more rapid decrease of male mortality compared to female (Vaňo et al. 2005). The increase of life expectancy at birth of men was caused mainly by the decreased mortality rate in the 35-64 age group which included the mortality rate decrease caused by circulatory deseases and neoplasms. In turn, the life expectancy at birth of men was negatively influenced by increased mortality from digestive diseases. The situation in females is slightly different. Increase of life expectancy at birth of women was most influenced by the decreased mortality rate in the age group of 65-year old and older due to the decrease of mortality caused by circulatory diseases. On the other side, like in males, the mortality caused by digestive diseases has increased.

Although the life expectancy values of both men and women are improving and the difference, which was observable compared to the most advanced European countries, has started to diminish, Slovakia still distinctly lags behind them. Compared with the "healthiest" EU countries, Slovak males and females live shorter lives by 8-9 and 5-6 years respectively. For instance in 2004, among the countries with the highest values of life expectancy at birth of men in Europe were Iceland (79.3), Liechtenstein (78.7) Switzerland (78.5), Sweden (78.4), and life expectancy at birth of women Spain (83.8), Iceland and Switzerland (83.6). Meanwhile, the situation in Slovakia is much better than in the countries of the former Soviet Union or some Balkan countries (Council of Europe Publishing 2005, p.117).

Comparison of the health condition and life expectancy at birth trends for the population of the two countries, that have been so close to each other for long years, Slovakia and the Czech Republic (Ginter 2001), is also interesting. While the levels of life expectancy at birth of men were equal for a certain period in their common state (1980-86), the value of this indicator in Slovakia was lower by 2 years than in the Czech Republic in 2004 (Council of Europe 2005). Although life expectancy at birth of men increased in both countries after the onset

of the democratic process, the trend in the Czech Republic was far more favourable. While it has consistently risen in the Czech Republic since 1990 and is accompanied by a decrease of premature deaths from cardiovascular diseases and cancers, life expectancy at birth of men in the SR stagnated in the years 1993-1998 while the mortality from the above-quoted diseases either stagnated or it decreased only slightly. These different trends, unfavourable for the Slovak male population are determined by numerous factors and are associated with different ways of life in the two countries. The worse economic situation and the asso-ciated phenomena, such as unhealthy eating habits (higher consumption of animal fat, distillates, etc.) stress, unsatisfactory human relationships, lower educational level affecting the life style, etc. characterize the situation in Slovakia. However, not all causes are known and they require further relevant analyses.

Tab. 1. Life expectancy at birth in Slovakia (1950-2006)

Year	Men	Women
1950	58.9	62.8
1955	65.3	69.8
1960	67.6	72.1
1965	67.9	72.8
1970	66.7	72.9
1975	66.8	73.8
1980	66.8	74.2
1985	66.9	74.7
1990	66.7	75.4
1995	68.3	76.3
2000	69.1	77.2
2001	69.5	77.5
2002	69.8	77.6
2003	69.8	77.6
2004	70.3	77.8
2005	70.1	77.9
2006	70.2	78.2

Source: Vaňo, B. (2001, 2002), www.infostat.sk/slovakpopin

SELECTED DETERMINANTS OF REGIONAL DIFFERENTIATION

Life expectancy at birth for the years 1999-2003 computed from mortality tables for 79 districts of Slovakia became the basic indicator for observation of regional differences in life expectancy at birth of Slovakia's population. From observation of the life expectancy at birth of men significant regional differences are obvious. The difference between the district with the lowest value of life expectancy at birth of men and that with the highest was 7.5 years for the observed period.

The map of life expectancy at birth of men shows the situation in the administrative districts of Slovakia in the years 1999-2003 (Fig. 1). There are 8 districts in Slovakia where life expectancy at birth is more than 71 years. However, there also are 6 districts where it is below 67 years (in one of them, particularly Krupina, it is even only 65 years). Men are better off in the districts of big cities like Bratislava and Košice, in the compact region formed by the districts of Piešťany, Partizánske, Bánovce nad Bebravou, Prievidza, Martin and the districts of Prešov, Poprad, Bardejov, Humenné and Levoča. In turn, the lowest life expectancy at birth of men is observed in southern districts, which form a continuous strip starting with the district of Levice and ending with that of Sobrance. The worst situation is in the districts of Banská Štiavnica, Krupina, Detva, Rimavská Sobota, Trebišov and Sobrance. Situation in these along with the district of Čadca is adverse from the point of view of life expectancy at birth of men.

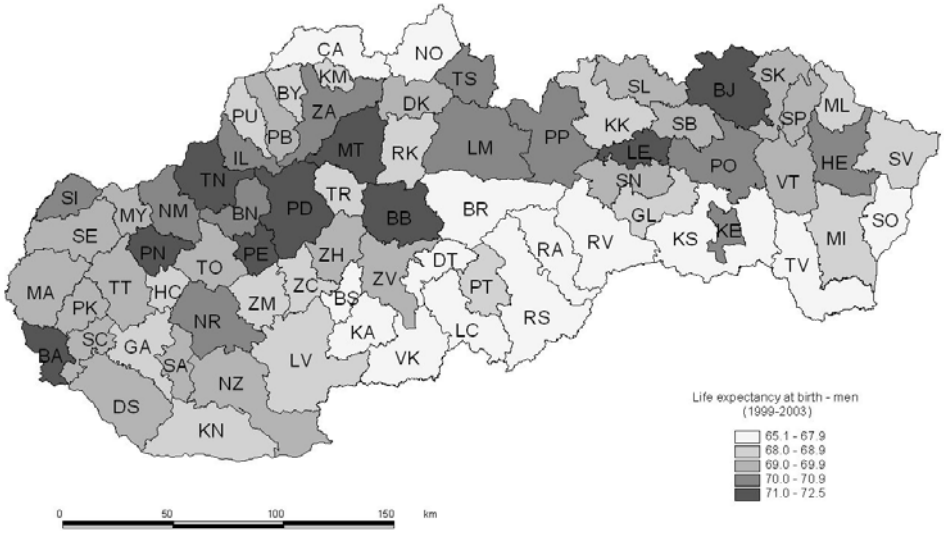

Fig. 1. Life expectancy at birth of men in districts of Slovakia

The map of life expectancy at birth of women, displays more favourable situation (Fig. 2). The life expectancy at birth of women is much higher and also less differentiated between districts (the difference between the most positive and negative regions is 4.2 years). Life expectancy at birth of women is highest in the districts of Trenčín, Bánovce nad Bebravou, Liptovský Mikuláš and Žilina, where it reaches more than 79 years. It is lower than 76 years only in 4 districts. Like in the case of men, the lowest life expectancy at birth of women is in Krupina (75.3 years). The unfavourable life expectancy at birth of women is in south-Slovakian districts. The worst situation in Krupina, Revúca, Trebišov, along with Turčianske Teplice is similar to that of men.

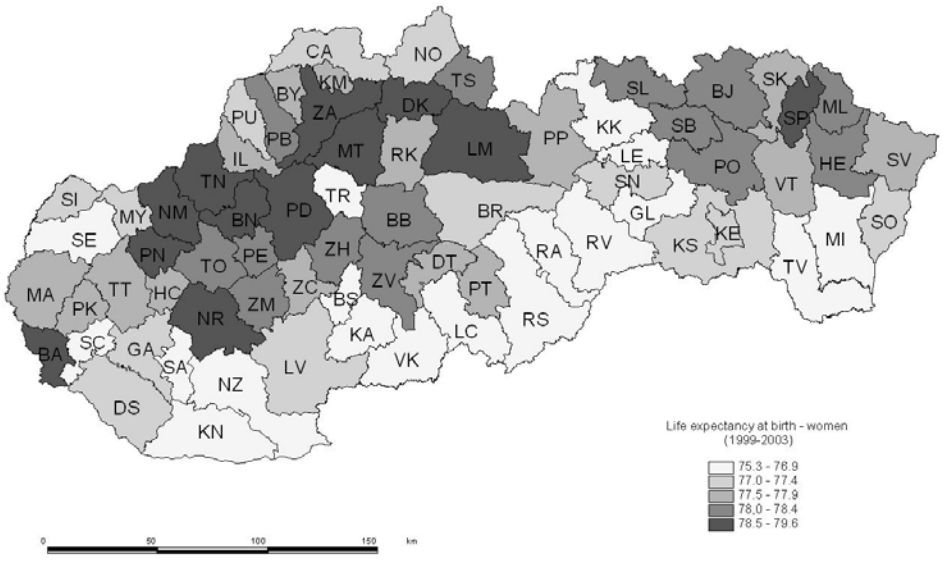

Fig. 2. Life expectancy at birth of women in districts of Slovakia

The level of mortality and consequently of life expectancy at birth is determined by numerous factors of diverse nature. Among them are selected factors of a socio-economic nature that greatly determine the health characteristics of the population in different parts of the country. The causes of premature mortality of the population in the studied districts are not altogether clear. It is supposed that low life expectancy at birth of both sexes is caused by several common factors with additional specific features associated with the overall situation in the individual regions. The unfavourable situation in south-Slovakian and in some east-Slovakian districts seems to be determined above all by unfavourable social and economic factors (unemployment and the associated financial problems, even poverty of large portion of population) which often cause family and health problems, deteriorate human relationships, co-existence, etc. Obviously, unemployment in this region is the factor that distinctly affects the mental state of the population, its frustration and hopelessness with consequences in the form of health problems in younger age population groups (Musselman et al. 1998). Life expectancy at birth is partially negatively influenced by the quality of health care and scarce accessibility of modern diagnostic methods, higher infant mortality (especially in eastern Slovakia), unhealthy way of life (men in south-Slovakian districts) – high alcohol consumption, heavy smoking, high animal fat consumption, low fruit and vegetable consumption (Ginter 2004a, 2004b). The districts with the lowest values of life expectancy at birth, except for Čadca and Námestovo in the case of men, or Kežmarok, Levoča, Turčianske Teplice and Senica in the case of women, are concentrated in the southern part of the country, where they form an almost continuous belt of territory along the frontier with Hungary. As this is where the Hungarian minority lives, considerations of some effect of ethnic population structure on life

expectancy at birth values are possible. Demographic studies confirm the fact that the demographic behaviour of different ethnic groups is different. For example, the Hungarian ethnicity in Slovakia is characterized by low reproduction rates and poorer demographic dynamics compared to the majoritarian population of the country. Although Hungarians living in Slovakia live longer than Hungarians living in Hungary (where the life expectancy at birth ranks among the lowest in Europe), they still live less than the national average of Slovakia. The Roma population is also characterized by distinctly lower life expectancy at birth and the causes lie most probably in their life style and educational level (Centrum pre hospodársky rozvoj 2003, Ginter 2004b). Mortality values of the Roma population are significantly different from mortality of the non-Roma population. Compared with the rest of population in Slovakia, the Romas are characterized by higher mortality values although the differences between both groups gradually diminish (Vaňo 2002).

The highest differentiation is evident in infant mortality. In settlements with very low living standards (with a high representation of the Roma population) the value of infant mortality was about 20.3 ‰ in the years 1993-2002 and in the settlements with low living standard it was 17.4 ‰, while the value for the whole Slovakia in the same time period was 9.3 ‰. It means, that in the settlements with very low living standards the value of infant mortality was more than twice as high the average for the whole population of Slovakia. (Vaňo and Mészáros 2004).

Demographic factors, such as the high share of the Roma ethnicity with lower life expectancy at birth are also important. Some partial studies with Roma confirmed that life expectancy at birth of Roma (agreeing estimates) concentrated in the east of the country, was shorter than that of the rest of population by as much as 10 years in the 1990s (Ginter 2000). More recent investigations (Vaňo and Mészáros 2004) confirm not only trend of slightly improving mortality values in Slovakia, but the lowering of differentiation of life expectancy at birth values between the Roma minority and the population of the whole Slovak Republic as well. The recent difference in life expectancy at birth is 3 to 4 years in the case of both men and women.

Although it is very difficult to prove the effect of ethnic factors, some investigations focused on the life style of the ethnic groups and their life length do exist. E. Ginter's research conducted in 1996 followed the most important factors affecting life expectancy at birth of Slovaks, Hungarians and Roma living in the district of Levice. The results showed a highly unhealthy lifestyle of the Roma minority characterized by features like the high consumption of beer, distillates, tabakism, and so on aggravated by the significantly lower education level and high rate of unemployment. The concentration of Roma population seems to be one of the crucial factors in socio-economic differences between regions of the country. The share of Roma in Slovakia is about 6.5-7.0 %, but in some regions it is more than 10 % (Vaňo 2002). The regions with the highest share of Roma are situated in the east and partly in the south of the country. The life expectancy at birth in different regions is therefore influenced very significantly by concentration of this minority.

As evident from the results of the sociographic survey (Jurásková et al. 2004 cf. in Šprocha 2006), the highest concentration of Roma has been recorded in

several regions of eastern Slovakia (districts Kežmarok, Levoča, Gelnica, Spišská Nová Ves, Poprad, Sabinov, Stará Ľubovňa, Prešov, Vranov nad Topľou, Košice, Rožňava, Michalovce and Trebišov, in some districts of the southern part of central Slovakia such as Revúca, Rimavská Sobota, Lučenec) and in western Slovakia (districts Malacky, Senica and Skalica). As far as the spatial aspect is concerned, these are the same areas identified in the 2001 census (Mládek 2006), but the mapping of Roma communities of 2004 yielded percentages at a higher level and this source is probably closer to reality (Šprocha 2006).

Work incapacity is one of the health condition indices of the productive population. It reflects socio-economic relationships, work conditions, environment and to a considerable extent it is also the indicator of the level of care for employees and their health. This indicator is often used in social and health statistics. The situation in employoment and unemployment, performance at work, adequate inclusion of persons with impaired health, working and social adaptability, level and accessibility of health care or the individual's care and responsibility for his/her health, mental hygiene, working and living styles are the factors that play their role in the level of work incapacity. Precisely because its level and development depends on a great number of varied factors, this indicator is a useful tool for evaluation of different quality of life levels at the national or regional levels.

The mean work incapacity percentage in a year is computed as the share of calendar days of work incapacity caused by disease or injury and the mean number of workers with health insurance multiplied by the number of calendar days in the year. In the first half of the 1990s, the mean work incapacity in Slovakia exceeded 5 %; subsequently in 2003 it slightly decreased to 4.52 %. It must be born in mind though that some workers are reluctant to go work incapable because of low health insurance benefits. Hence, the improved health condition of the active population suggested by this indicator is rather relative; only the decrease of injuries leading to work incapacity has been statistically confirmed.

Figure 3 shows the mean work incapacity percentages in districts of Slovakia in 2003. Generally, much higher values have been observed in the eastern part of the country than in the west. Among the worst districts are Stropkov, Stará Ľubovňa and other while high work incapacity rates have been also found in some other areas of Slovakia such as Námestovo, Bánovce nad Bebravou, Partizánske, Veľký Krtíš and Poltár.

The level of education is one of the most important determinants of the population's health. Experts in social medicine, sociology or demography generally accept the fact of indirect mediated dependence of mortality level on the education level of population. However, specialized analyses traditionally prefer assessment of differences in mortality by employment and the relationship between mortality and educational level is seldom analysed. Meanwhile, the educational level can be considered the most useful social variable, which also boasts several advantages, compared to the classification of population by employment in the studies concerning mortality and life expectancy at birth (cf. Sobotík and Rychtaříková 1992). The level of education reached at an early age

normally does not change and it is defined for active and not active population groups and is more internationally comparable than information about employment.

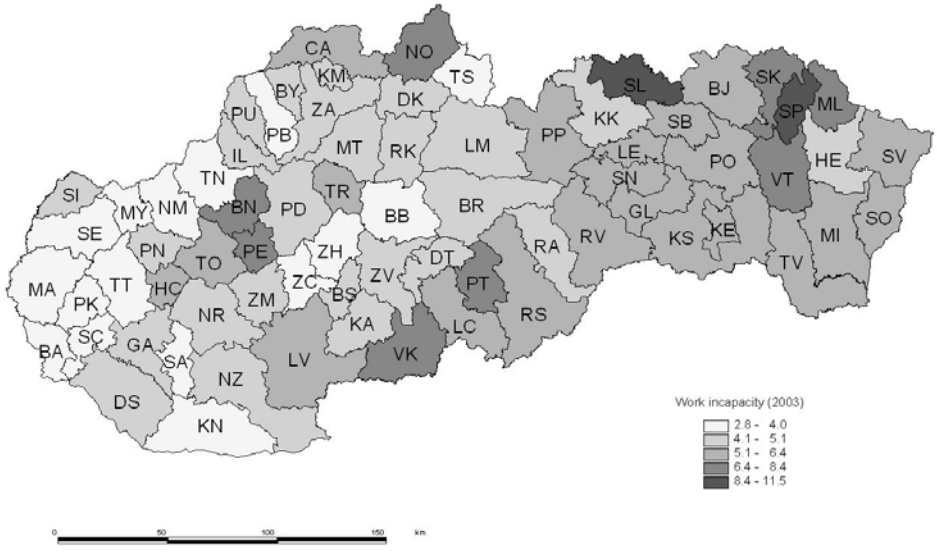

Fig. 3. Work incapacity (2003)

The level of education determines the social position, it influences the attitudes of individuals and families, their value hierarchy and behaviour in terms of their own health including the area of nutrition, diet and the relevant habits. One of the main causes of low life expectancy at birth in Slovakia is the unhealthy life style adopted by a large portion of male population, above all that with lower education. Education leads to acquistion of varied knowledge so that educated people are normally better informed about healthy or unhealthy life styles and can contribute to improvement of their health condition. Good and higher education is usually a prerequisite necessary to find a better job with a higher income that offers the corresponding quality of life level. In the past regime, the Government comparatively frequently intervened in these natural relationships and qualified analyses of the implications pointing to the lag behind the advanced countries were not too desirable. In spite of this, statistically significant correlations between the level of education and mortality appeared as in the advanced countries of Western and Northern Europe (Sobotík and Rychtaříková 1992). Until 1986, the statistical death report also contained the note about the level of education of the dead. After 1986, this feature was deleted from the new forms. This is the reason why it is now practically impossible to produce relevant statistical analysis of mortality in relation to education. It is only possible to assume the connections between these individual factors.

Assessment of the educational level in Slovakia as a whole compared to the advanced countries of Northern or Western Europe shows a distinctly lower share of university students. (19.4 per 1,000 population of the corresponding age group). The data are similar in Poland, Hungary and the Czech Republic while, for instance in Austria it is 31.3 and about 40 in Scandinavian countries. Although the number of university students in Slovakia increased in the last decades, the allocated means are far from sufficient (only about 1.5 % of the national budget). Increasing numbers of elementary school pupils continue studying and acquiring the medium or higher education which also increases their chances in terms of health. Low-level education not only reduces chances on the labour market, it increases social risk including that of poor health condition.

Spatial distribution of the Education Index values is highlighted in Fig. 4. The share of the population with accomplished university education among 20-year old and older and that with population possessing only the elementary education among 15-year old and older were considered. The higher index value stands for higher representation of population with university education. The highest values of the Index were found in districts with universities and in the neighbouring districts of Pezinok, Piešťany and Ilava. The districts of Bratislava, Trenčín, Nitra, Žilina, Martin, Banská Bystrica, Košice and Prešov not only display high education index values but also higher values of life expectancy at birth.

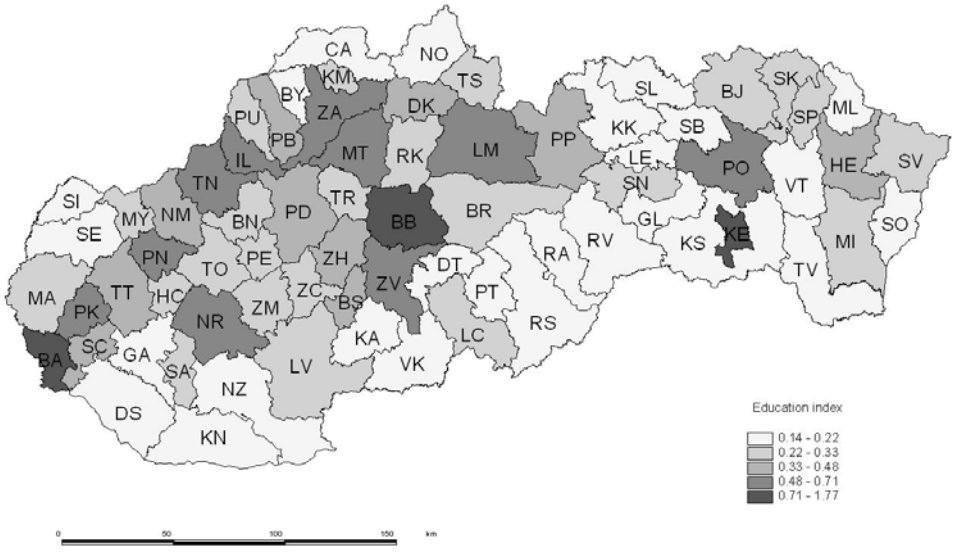

Fig. 4. Education index (2001)

Housing conditions directly affect the mental or bodily health of humans. Although comparison with other countries of Central and Eastern Europe may seem favourable for Slovakia as a whole in terms of housing quality and ameni-

ties, there are distinct differences between individual regions that in their way affect the physical and mental health of the population in individual areas of Slovakia.

The situation in the housing economy of the country clearly reflects the standardized concept of mass construction of flats. However, the fact that the majority of households were able to create a comparatively comfortable environment amidst uniform and not too friendly buildings is positive. Household appliances contribute to the quality of housing and imply ownership of durable goods, which guarantee a certain quality of life.

Assessment of housing quality applying the Index of House Equipment (Ira 2006), which includes the basic characteristics of housing level (central heating, bathroom, automatic washing machine, computer, personal car and ownership of a cottage or hut), demonstrates the pronounced differences existing in the territory of Slovakia. Figure 5 shows spatial distribution of the House Equipment Index and points to substantial differences between the western and eastern parts of the country (with the exception of Košice) and the southern part of central Slovakia. As far as the equipment of houses is concerned, the best situation was found in Bratislava and Košice. Due to extensive construction of first category flats in recent decades and a relatively high income of the population, the level of house equipment is also high. The below-average level of house equipment is typical of several districts of north-western Slovakia, several districts of the southern part of central Slovakia and several districts in the east-Slovakian region. There are 14 regions with very low values of the House Equipment Index, and 12 of them are characterized by very low values of life expectancy at birth of men as well (below 68.9 years – Čadca, Námestovo, Detva, V. Krtíš,

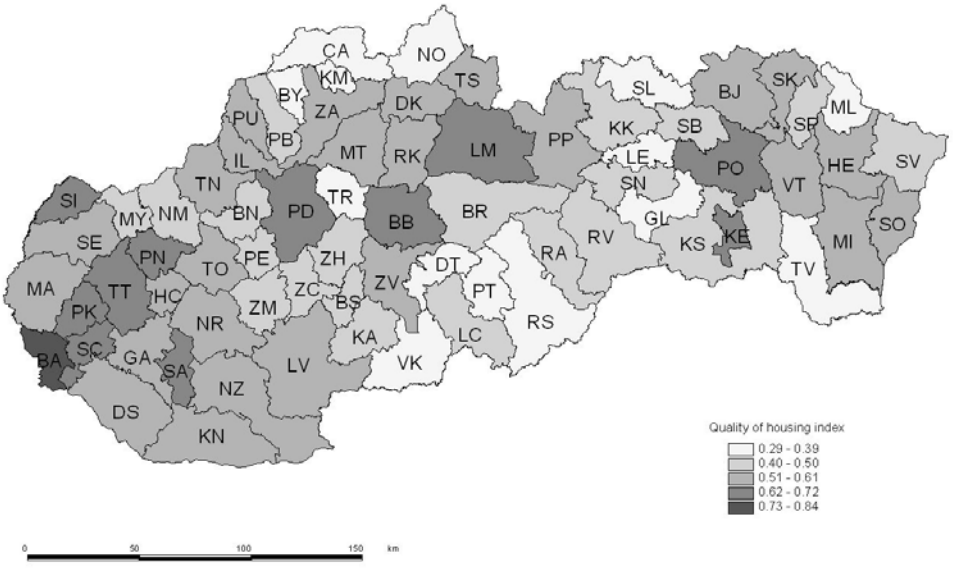

Fig. 5. Quality of housing index (2001)

R. Sobota, Trebišov, Bytča, Kysucké Nové Mesto, Turčianske Teplice, Poltár, Gelnica and Medzilaborce). At the same time, 8 districts with very low values of the House Equipment Index are also characterized by very low values of life expectancy at birth for women (below 77.4 years – Turčianske Teplice, Veľký Krtíš, Rimavská Sobota, Gelnica, Levoča, Trebišov, Čadca, and Námestovo). On the other side, there are districts of Bratislava, Prievidza and Banská Bystrica with the highest values of House Equipment Index and life expectancy at birth for men.

Other studies have shown that the impact of the polluted environment (although the situation in Slovakia has evidently improved in the last years) is not detrimental enough to cause any significant decline in the life expectancy in any region. Data for Slovakia as a whole prove it – the areas with the highest rates of emissions of pollutants (Bratislava, Košice, and Prievidza) are among the regions with the highest life expectancy at birth (Centrum pre hospodársky rozvoj 2003). It is then obvious that life expectancy at birth is influenced to a high degree by other factors of a different nature and many of them are of socio-economic origin. Disparities, especially income disparities, constitute the most important conditions in this sense. Life expectancy at birth increases almost directly proportionally with income. In other words, low or no income (extreme poverty) distinctly reduces life expectancy at birth. On the other hand, high income (wealth) means high probability of longevity (see the considerable differentiation in life expectancy at birth in developing countries). Income itself can be considered in certain political, economic and geographical conditions an important economic variable, which directly or indirectly determines life expectancy at birth.

This fact – important dependency between income, life expectancy and mortality of population – has also been proved by several authors (Rodgers 1979, Marmot 1989 and 1996, Wilkinson 1992 and 1999, Walberg 1998, Lynch et al. 2000). The results of these studies in different countries agree on one thing: rich people have lived and live longer than the poor. The character of the data in Slovakia enables only the more general formulation that people live longer in wealthier regions (Volná 1991, Ginter 2001, Centrum pre hospodársky rozvoj 2003). The lowest social layer is exposed even to the double risk of morbidity and mortality compared with people ranking in the highest social positions (WHO 1998, Ginter 2001). A continuous social and medical gradient exists between the top and the bottom of the society. It was confirmed that the same disease is more fatal for the poor than for the rich part of the population. Higher probability of death from cardiovascular diseases, diabetes, inflammation and chronic pulmonary disease, influenza, AIDS, cirrhosis or that produced after various accidents, murders or suicides has also been confirmed for low-income population (Barondess 2001, Michálek 2001). In general, the indigent do not know enough about the healthy way of live (nutrition, hygiene, and the like) and live or work in worse conditions (in overcrowded areas, flats and low standard houses). In a worse environment, they often tend to aggressive and hazardous behaviour. It has been proved that low-income people are not resistant enough to the stress caused by the financial burden. The quoted studies also point to the fact that stress activates biochemical reactions in the human brain that cause depression, anxiety and the feeling of hopelessness which in turn leads to mental

disturbances. Long-term stress also decreases the activity of human immunity systems while combination of high stress and weakened organism increases the threat of cardiovascular morbidity and mortality and directly lowers resistance to other diseases as well. The level of income determines and shapes the attitudes of individuals and families. Low-income families try or have to "save" in the wrong places (nutrition, medicines, hygiene, relaxation, etc.) – which can significantly influence life expectancy at birth.

CONCLUSIONS

In spite of a relatively positive development in the last decade, Slovakia lags behind the value of life expectancy at birth in the advanced world. The worst aspect is the existence of regions in Slovakia where life expectancy at birth is far below the level of the advanced European countries. This fact is proved by the results of spatial analysis concerning life expectancy at birth. Pronounced differences are the consequences of different disparities that more or less influence the health condition and mortality of the population. Cognition of the most important factors and the rate of their impact on health and consequently life expectancy at birth of inhabitants is the basic prerequisite necessary for removing the existing unequal conditions. It is obvious that disease as the consequence of different socio-economic and other factors determines and shortens life expectancy in some, above all, poorer regions of the Slovak Republic (Michálek 2002). The existing problematic situation in these regions is the matter of social policy that should address the causes of poverty and unfair accentuation of economic disparities.

The causes of unfavourable values of life expectancy at birth in regions of Slovakia have to be identified in a broader context. Evaluation of the social and economic sphere, the environment, behaviour of the individual and his/her attitudes to health and value scale probably explains only part of the problem we have been focused on. Other influence should be found in the situation and conditions of the actual health care system. All the implications are rather complicated and difficult to express in statistics with data and indices available. Most of the considerations have a hypothetical basis. Despite, it is necessary to continue in the research.

Cartographic presentation of regional differentiation of life expectancy at birth, level of education and some other social impacts, show indirectly their influence on life expectancy at birth. The analyses present just a basic level about spatial differences and it seems to be very useful to apply some correlation or regression analyses to quantify different impacts. It might be very useful to use some other variables, such as differences of life expectancy at birth between genders or infant mortality.

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VYBRANÉ DETERMINANTY REGIONÁLNEJ DIFERENCIÁCIE V OČAKÁVANEJ DĹŽKE ŽIVOTA PRI NARODENÍ NA SLOVENSKU

Postupným zvyšovaním diverzifikácie sociálno-ekonomickej situácie na Slovensku dochádza nielen k výrazným zmenám v stratifikácii spoločnosti, ale aj zvyšovaniu regionálnych rozdielov. Tieto skutočnosti nachádzajú svoj pochopiteľný odraz aj v činiteľoch, ktoré rozhodujúcim spôsobom ovplyvňujú kvalitu života, ktorej jedným z najreprezentatívnejších ukazovateľov sú hodnoty strednej dĺžky života pri narodení. V tomto ukazovateli sú regionálne disparity pozoruhodne výrazné. Na Slovensku existujú regióny, v ktorých žijúce obyvateľstvo má perspektívu dožiť sa vyššieho veku, ale aj regióny s „perspektívou“ nízkeho veku dožitia.

Vývoj strednej dĺžky života pri narodení na Slovensku možno rozdeliť do niekoľkých etáp. Najvyšší nárast bol zaznamenaný po druhej svetovej vojne. Obyvatelia Slovenska sa v tomto období dožívali približne rovnakého veku, aký dosahovali obyvatelia ekonomicky vyspelých demokratických krajín Európy. Avšak už v šesťdesiatych, ale

najmä v sedemdesiatych rokoch možno na Slovensku sledovať zaostávanie strednej dĺžky života pri narodení v porovnaní s vyspelou Európou. Hlavnou príčinou bola predčasná úmrtnosť na kardiovaskulárne ochorenia predovšetkým u mužov, čo spôsobilo postupné zastavenie (a u mužov dokonca mierny pokles) strednej dĺžky života. Trend sa zmenil až v 90-tych rokoch, kedy hodnoty strednej dĺžky života znova stúpajú (u žien aj u mužov) pravdepodobne aj v dôsledku pokroku kardiológie, lepšej dostupnosti kvalitnejších liekov a rýchlejšej diagnostiky závažných ochorení moderným prístrojovým vybavením. Po roku 1990 pozorujeme na Slovensku pokles celkovej úmrtnosti (zvlášť pokles úmrtnosti mužov súvisiaci s ich zvýšenou starostlivosťou o vlastné zdravie a zlepšenou skladbou výživy), ale najmä dojčenskej a novorodeneckej úmrtnosti, čo spolu s ďalšími priaznivými faktormi spôsobilo predĺženie strednej dĺžky života. Hodnota tohto ukazovateľa v roku 2006 dosiahla u mužov 70,2 roka a u žien 78,2 roka. Napriek tomuto zvýšeniu v porovnaní s „najzdravšími“ štátmi EÚ žijú slovenskí muži o 8-9 rokov a ženy o 5-6 rokov kratšie.

Na základe sledovania strednej dĺžky života u mužov môžeme vidieť veľké regionálne rozdiely. Rozdiel medzi okresom s najnižšou a najvyššou strednou dĺžkou života mužov bol za sledované obdobie 7,5 roka. Oveľa priaznivejšie vyznieva situácia pre ženy, ktorých stredná dĺžka života je oveľa vyššia a zároveň menej regionálne diferencovaná (rozdiel medzi krajnými hodnotami je 4,2 roka).

Zdá sa, že nepriaznivý stav v juhoslovenských a v niektorých východoslovenských okresoch determinujú do značnej miery nielen genetické, ale aj nepriaznivé sociálne a ekonomické faktory (nezamestnanosť a s ňou súvisiace finančné problémy až chudoba určitej časti populácie), ktoré sú mnohokrát príčinou rodinných a zdravotných problémov, medziľudských vzťahov, spolužitia a pod. Jedným z najvýznamnejších determinantov zdravia obyvateľov je vzdelanie. Úroveň dosiahnutého vzdelania určuje sociálne postavenie, ovplyvňuje postoje a stanoviská jednotlivcov aj celých rodín, ich hierarchiu hodnôt a skutočné správanie aj vzhľadom k ich vlastnému zdraviu. S tým je úzko spojená aj široká oblasť výživy, predovšetkým stravovacích návykov. Za jednu z hlavných príčin krátkej dĺžky života na Slovensku vo väčšine okresov s nepriaznivými hodnotami sa vo všeobecnosti pokladá nezdravý životný štýl, ktorý si osvojila veľká časť mužskej populácie, najmä populačné skupiny s nižším vzdelaním. Predovšetkým u mužskej časti populácie je vidieť, že stredná dĺžka života dosahuje najvyššie hodnoty v okresoch, v ktorých je podiel obyvateľov so základným vzdelaním nízky.

Určitý vplyv na duševné a telesné zdravie človeka majú aj bytové podmienky. Hoci pri porovnaní s ostatnými tranzitívnymi krajinami strednej a východnej Európy vyznieva situácia vo vybavenosti bytov a kvalite bývania na Slovensku ako celku pomerne pozitívne, v rámci krajiny existujú výrazné regionálne rozdiely, ktoré svojím spôsobom výrazne vplývajú na telesné a duševné zdravie obyvateľstva v jednotlivých oblastiach Slovenskej republiky.

Vo všeobecnosti menej majetní ľudia nemajú dostatok vedomostí o zdravom spôsobe života (výživa, hygiena a pod.). Žijú alebo pracujú v horších podmienkach (v preľudnených oblastiach, v bytoch a domoch s nižším štandardom), v horšom životnom prostredí, mávajú častejšie sklon k medziľudskej agresii a rizikovému správaniu. Je dokázané, že ľudia s nižším príjmom ťažšie zvládajú stres súvisiaci napr. s vyššou finančnou záťažou. Úroveň príjmu tiež určuje a ovplyvňuje postoje a stanoviská jednotlivcov i celých rodín, pričom rodiny s nižším príjmom mnohokrát „šetria“ na nesprávnom mieste (strave, liekoch, hygiene, oddychu a pod.), teda na veciach, ktoré majú významný dosah na kvalitu a dĺžku života. Aj tento faktor sa na Slovensku prejavuje výraznou úrovňou regionálnej diferenciácie.