

STATISTICAL ASSESSMENT OF THE LIFE POTENTIAL IN THE REGIONS OF THE REPUBLIC OF BELARUS

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Abstract

The paper presents an evaluation and statistical analysis life potential of the Republic of Belarus population at large, as well as a comparative analysis of the performance of individual regions.

1 Introduction

Health of population is the most important criteria of the level of socio-economic development. It is one of the main features of population vitality, performance capacity, physical development, average life expectancy and a guarantee of healthy reproduction. In recent decades indicators of potential demographics have been applied along with traditional health and demographic indicators used to assess the level of population health. This is a relatively young sector of demographics, the advantage of which is its unit measure - a number of person-years (in the traditional demographics the unit measure is an individual).

2 Life potential as a major characteristic of demographic indicators of potential

The main indicator of potential demographics is life potential measured in person-years. In certain studies instead of live potential a loss of life potential is used, which is based on the records of failure to live up to a certain attainable age.

Life potential changes with age for each individual: first it rises (maximum rate have children aged one to couple of years), then the growth slows down, and then begins to decline. Life potential in various countries may differ quite significantly: in countries with low mortality its value can be 2-3 times greater than a potential for a person of the same age in countries with high mortality. And only in the older age groups these differences fade.

Life potential represents time that observed generation in a certain age group will live in average in future based on a current mortality rate in this group. Full life potential of the population is the most detailed "volume" characteristic of the average duration of the different states that human generations find themselves over the period of their life. Integrality of life potential indicator is provided by its ability to reflect

the levels of several demographic indicators simultaneously. In their researches scientists have proved a direct proportional dependency of life potential from average life expectancy and birth rates, as well as a particular sensitivity to mortality in young and middle-aged groups. Demographic potential value depends on the size and age structure of the population at the time of calculation, as well as life expectancy of the population. Life potential can be estimated for the whole period of life or it can be a partial life potential (for a specified interval).

3 Analysis of the structure and dynamics of the life potential of the Republic of Belarus

Life potential of the population of the Republic of Belarus at large, as well as in the context of administrative-territorial regions (6 regions and Minsk), was calculated for 2005 and 2011 based on mortality tables, life expectancy and age structure of the population.

The result showed a significant decline in the total life potential of the country's population - by 7 038.6 thousand person-years, or 2.1 % over the observed period. However, given the trend of depopulation particularly evident in the recent years, which has led to a decline in population in all regions of the country (the average population of the Republic of Belarus for this period decreased by 3.1 %), the mid-levels of the indicator should be assessed in dynamic (i.e., the number of potential years of life per 1 inhabitant).

Thus, we can note an increase in the life potential of the population of the Republic of Belarus - from 34.9 years in 2005 to 35.2 years per 1 person in 2011 (an increase of 0.9 %). There has been a similar trend in regions of the country. "Volume" feature of the life potential during 2005-2011 decreased in all regions (the only exception being Minsk), however, the average indicators have increase for all regions. This trend is explained mostly by the reduction of population in each region.

The structure of full life potential for each year covered by research was impacted by domination of life potential of the female population, which increased from 54.6 % to 56.8 %. At the same time during the study period influence of the life potential of children and young people decreased (age of 0-19 years - from 43.3 % to 36.2 % for both sexes) while there was a significant increase in the proportion of the age group 20-59 years (from 51, 1 % to 57.8 %). A slight decline in the life potential of employable men was noted (from 46.6 % to 43.0 %), which may be due to the intense process of their mortality. Some increase of the life potential in retirement age (from 5.6 % to 6.0 % of the capacity of the entire population) may be caused by the transition from employable group that was characterized by large numbers of people born during postwar years.

An analysis of ranking of territories represents the main interest in comparative characteristic of regions by health level (based on the rate of life potential). In 2005, the leading positions were held by the city of Minsk and Brest region - 38.3 years and 35.7 years per resident. The lowest rate was observed in Minsk region (33.4 years) and Vitebsk region (33.4 years). The obtained integral assessment is confirmed by

the analysis of individual statistical characteristics. Thus, the leaders by value of life expectancy at birth in 2005 were Brest region (69.3 years) and the city of Minsk (72.3 years), the same regions had the lowest mortality rates. At the same time, in 2011 mortality rates in Minsk and Vitebsk regions exceeded the existing countrywide level, while the level of life duration was minimal (compared to the overall level in the Republic).

Subsequent spatial and dynamic assessment of the health levels of regional population (based on the rate of life potential) confirmed the emerging trend. 2011 was led by Brest region and city of Minsk, where the number of potential years of life (per 1 inhabitant) exceeded the nationwide level: 35.8 and 38.7 years compared with 35.2 years (total population of the Republic of Belarus). Outsiders (low health) were still Minsk and Vitebsk regions where the average value of life potential did not exceed 33 years (an average of 6.7 % below the prevailing rate for the country as a whole).

4 Concluding remarks

Subsequently, in order to ensure the objectivity of the resulting estimates the coherence of two rated regions of the Republic of Belarus was explored. It was based on the indicators of life potential and life expectancy at birth (traditionally used to assess the health index). The ratings were formed based on increase in analyzed indicators. Consistency of ratings was assessed using Spearman's rank correlation coefficient. The resulting value (0.722) indicates the proximity of the two constructed ranked series and, accordingly, a reasonable estimate of life potential of the regions.

References

- [1] Population statistics with the fundamentals of demography: a textbook / G. S Kildishev, L. L Kozlov, S. P Anan and others - Moscow: Finance and Statistics, 1990. - 312 p.(in Russian)
- [2] Tables of mortality and life expectancy of the population of the Republic of Belarus in 2001. - Minsk: Ministry of Statistics and Analysis of Belarus, 2002. - 132 p. (in Russian)
- [3] Tables of mortality tables and life expectancy of the population of the Republic of Belarus in 2011. - Minsk: Nat. statistician. Committee Resp. Belarus, 2012. - 132 p. (in Russian)