ЕКОНОМІЧНА ТА СОЦІАЛЬНА ГЕОГРАФІЯ І ТУРИЗМ

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GEOSPATIAL ASPECTS OF CHILD MORTALITY RESEARCH IN UKRAINE AT THE BEGINNING OF THE XXI CENTURY

Abstract
The demographic situation in Ukraine remains extremely tense, the mortality rate of populatuion is the largest in Europe. Mortality is an extremely informative indicator of public health in particular and level of socio-economic development of the country as a whole. For mortality affects the whole complex of factors: demographic, socio-economic, medical, natural biological, political, environmental, ethnic, etc. The article deals with a child mortality rate used to assess socio-economic development of regions, since child mortality is more sensitive to regional features and living conditions of the population. Today, the problem of reducing child mortality is becoming a special significance against the background of population reduction due to high mortality and low fertility. Dynamics of child mortality indicators for 1989 and 2020 by regions. In almost all administrative oblasts, we see a significant reduction in this indicator, this is due not to improve the state of medical care, or the improvement of the socio-economic level of the population of Ukraine, which is primarily due to the decrease in the birth rate of Ukraine and with a general depopulation situation. Such an indicator as mortality of young people aged from 0–18 years in 2020 positive changes in its declining. The considered indicators have a rather pustular territorial differentiation within the regions of Ukraine and is characterized both in spatial and in time ratios less stable than other geodemographic indicators.

Keywords: population, geodemographic situation, child mortality rate, health care.

INTRODUCTION

The deep demographic crisis both at the national and regional levels, the need to solve a number of problems related to the search for ways to improve the geodemographic situation, increases the relevance of a deep understanding of the features of geodemographic processes and their territorial differentiation within Ukraine and its individual regions.

The child mortality rate in the world is considered a generally recognized indicator of the health of the nation, reflecting the quality of life of the population, the level of well-being and distribution of social and material benefits in society, the state of the environment, acts, the level of accessibility and quality of medical care, etc. (Paliy, Ringach, 2011). Since the 1980s, infant and child mortality has been considered one of the most serious problems of international development. At the World Summit, the first agreed goal was to significantly reduce the mortality rate of toddlers and children under 5 years of age (Ginzburg, 2012).

Although in developed countries (and in Ukraine, too), child mortality has reached such a low level that further improvement of this indicator has little effect on the average life expectancy, it is considered as a general characteristic of the degree of civilizational development of society.

The works of ya. Wallin, F. Mesle, S. Adamets, S. Pirozhkova (Wallin et al., 2008) are devoted to the assessment of various losses of the population of our country, including child mortality, regional analysis of changes in the demographic situation in rural areas is provided in the works of O. Rogozhin, G. Rogozhin (1998), regional geodemographic aspects are devoted to the works of V. V. Yavorskaya, O. G. Topchiev, Institute of demography and Social Research named after M. V. Ptukha monograph "population of Ukraine. Demographic trends in Ukraine in 2002–2019", in which one of the sections deals with mortality and life expectancy, including the causes of premature and child mortality (population of Ukraine, 2020). Such researchers as Mezentseva N. I., Batichenko S. P., Mezentsev K. V. analyzed the level of morbidity in the regional context (Mezentseva, Batichenko, Mezentsev, 2018).

A comparative analysis of infant mortality in some countries according to national data and calculations of WHO and UNICEF, as well as infant mortality of children under 1 year of age in Ukraine in the regional context is given in the study of V. G. Ginzburg (Ginzburg, 2012).

Given the importance of the child mortality rate for the country's development, this area of research has been and remains relevant both in Ukraine and around the world. The aim of the work is to analyze the child mortality rate in the regional context.

MATERIALS AND METHODS

An analysis and assessment of the dynamics of the child mortality rate in Ukraine for the period 1989–2020 was carried out in the context of administrative oblasts according to official state statistics (State statistics, 2024; Official page, 2024). The article used a statistical method for studying the quantitative characteristics of dynamics of child mortality, the development of the health care system, studies the impact of socio-economic factors on demography indicator in the regional context. The historical method allows investigating the evolution of geodemographic phenomena in the regions that are studied, compare and predicting. The method of system analysis and system approach is used for a comprehensive study of the demographic system and its individual indicators.

RESULTS

The main factors that led to the widespread and significant deterioration of the geodemographic situation in all regions of Ukraine are the general economic and political crisis, military actions, in addition to socio-economic factors on the deterioration of the geodemographic situation affected by purely demographic factors: aging of population, due to the growth of elderly people, entering the reproductive age of relatively small group of women who were born in the 1990s of the twentieth century. Consider one of the indicators that negatively affect the geodemographic situation in Ukraine and its regions – child mortality. Child mortality is important for the characteristics of geodemographic processes (Yavorska et al, 2021).

In Ukraine, this indicator of child mortality is part of the list of monitoring indicators of the Cabinet of Ministers of Ukraine and is used to assess the level of socio-economic development of the regions. The mortality rate of children under one year is considered by the World Health Organization (WHO) at the level with such indicators as the internal gross product and the total health care costs. At the World Summit, the first agreed goal was to significantly reduce the mortality rate of toddlers and children under 5 years of age. The emphasis on reducing infant and child mortality rates under 5 years of age was further emphasized in the Millennium Development Goals and in the commitments made in the final document "a world fit for children" of the special session of the United Nations General Assembly on children held in May 2002 (Ginzburg, 2012).

Child mortality continues to remain relatively high, although in the last period there is some tendency to reduce this important demographic indicator. In general, child mortality rates are extremely sensitive to crisis of socio-economic phenomena, to changes in the environmental situation, to the level of general and sanitary culture of the population. They are largely determined by traditions and customs, child care, demographic conditions that form family relations; they are largely influenced by the level and qualitative parameters of medical care, etc (Parkhomenko, Nefedova, Nikolayeva, 2023). Consequently, child mortality always responds to the regional features of the living conditions of the population. Today, the problem of reducing child mortality is becoming a special significance against the background of population reduction due to high mortality and low fertility.

An analysis of child mortality indicators in spatial relation shows that their variation in regions significantly exceeds the variation of general mortality rates. This circumstance is to a large extent with the fact that child mortality is more sensitive to regional features and conditions of life of the population.

The general idea of the state of child mortality in regions of Ukraine gives statistical indicators in Table 1 and Figures 1–2.

In Table 1, the last column determines the dynamics of changes in child mortality for 21 years period, the trend line on Figure 1 clearly distinguishes a group of regions with relatively low indicators of child mortality fluctuations. There are Vinnytska, Donetska, Kirovohradska, Kharkivska, Khersonska, Sumska, Zakarpatska,

Table 1

Dynamics of infant mortality rate 1989–2020. (mortality per 1000 live births)*

Oblast**	1989	1991	1995	2000	2005	2010	2015	2020	2020/1989* 100–100
Ukraine	12,9	13,9	14,7	11,9	10,0	9,1	7,9	6,7	48,1
Avtonomna Respublika (AR) Krym	12,9	13,0	14,0	11,4	9,0	8,8			-
Vinnytska	10,5	12,0	12,3	9,9	9,1	8,4	7,2	6,4	39,0
Volynska	11,1	11,2	14,3	11,5	8,3	8,2	6,3	6,3	43,2
Dnipropetrovska	13,8	13,8	14,6	12,7	10,2	9,7	8,5	6,8	50,7
Donetska	12,9	12,8	16,2	13,9	11,5	12,0	8,7	8,0	38,0
Zhytomyrska	11,2	14,6	13,0	10,4	9,5	9,1	7,3	5,9	47,3
Zakarpatska	13,2	14,0	12,5	9,4	11,5	10,9	10,5	9,8	25,8
Zaporizka	15,0	17,9	15,5	14,8	11,1	10,1	7,8	5,2	65,3
Ivano-Frankivska	13,9	21,7	19,3	13,7	12,9	10,3	6,8	6,9	50,4
Kyivska	9,7	13,8	11,4	9,0	7,5	7,0	5,4	4,0	58,8
Kirovohradska	13,1	12,5	13,9	11,7	11,1	10,6	9,3	8,5	35,1
Luhanska	13,9	15,0	14,3	13,2	11,7	9,4	9,8	7,0	49,6
Lvivska	12,8	13,5	14,8	12,2	8,3	9,2	8,2	6,8	46,6
Mykolaivska	12,4	13,7	13,8	12,3	8,1	8,1	6,2	7,2	41,9
Odeska	15,0	14,5	16,5	13,7	10,7	9,2	8,2	6,6	56,6
Poltavska	11,9	11,2	11,1	7,9	8,6	6,1	5,8	6,3	47,1
Rivnenska	12,0	11,8	17,2	13,7	10,4	9,2	8,5	5,3	55,8
Sumska	11,4	11,7	15,2	13,1	11,4	9,3	7,7	8,4	26, 3
Ternopilska	11,3	13,1	13,7	12,3	8,9	8,2	7,5	5,7	49,6
Kharkivska	14,5	14,6	16,1	11,3	10,2	9,2	9,8	9,0	37,9
Khersonska	15,8	17,1	17,4	10,8	11,3	9,4	8,4	10,5	33,5
Khmelnytska	12,6	12,8	12,5	12,0	8,8	7,5	8,3	6,9	45,2
Cherkaska	10,5	12,3	13,4	10,7	10,2	10,0	7,5	7,2	31,4
Chernivetska	13,5	15,6	16,1	10,7	12,6	8,2	8,6	5,4	60,0
Chernihivska	12,3	12,0	15,1	13,2	11,7	8,1	8,3	9,1	26,0

*According to state Statistics Service of Ukraine (State statistics, 2024; Official page, 2024)
**source used for area names (Toponymic guidelines, 2011)

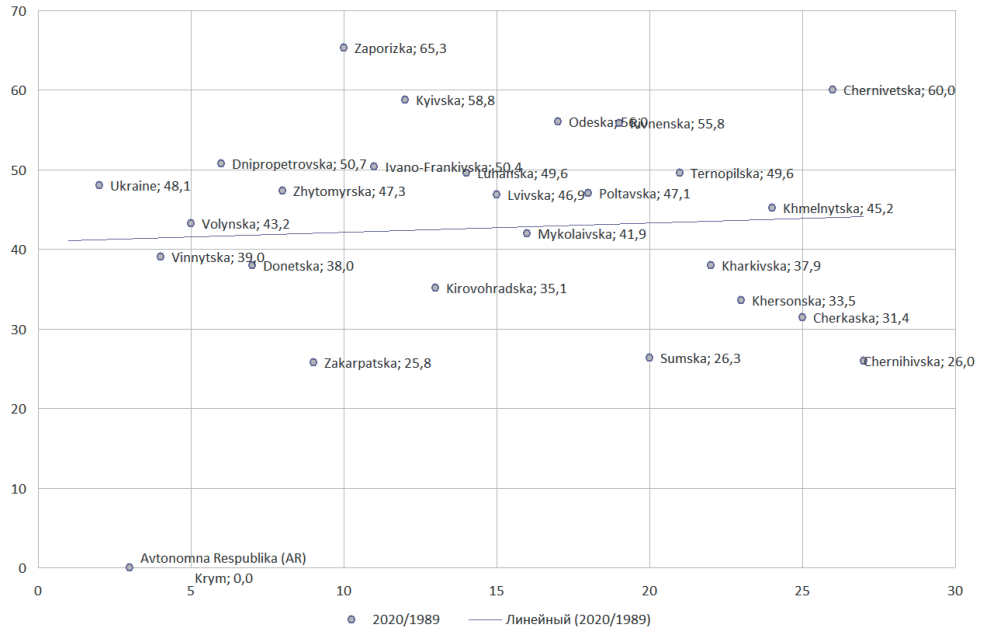

Fig. 1. Dynamics of changing the fraction of child mortality in the period 1989–2020.

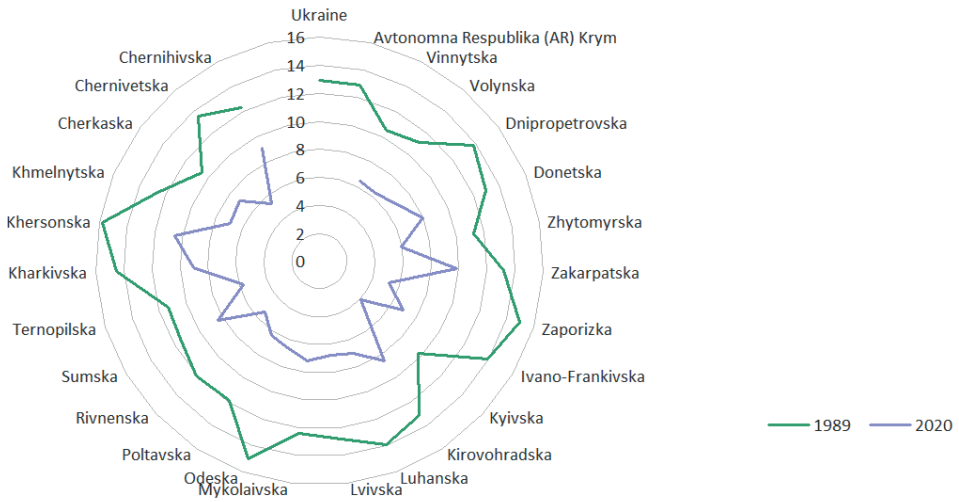

Fig. 2. Indicator of child mortality in Ukrainian administrative oblasts in 1989 and 2020 years

Chernihivska and Cherkaska oblasts where the share of child mortality reductions compared to 1989 reaches 40%.

The most favorable situation in relation to child mortality indicators is observed in Dnipropetrovska (50.7%), Chernivetska (60.0%) oblasts and in others exceeding the rate of 43.0%, and are higher than the corresponding indicators in Ukraine a total of 48.1%.

Figure 2 clearly demonstrates the dynamics of child mortality rates for 1989 and 20201 by regions. It should be noted that in almost all oblasts, we see a significant reduction in this indicator, this is due not to improve the state of medical care, or the improvement of the socio-economic level of the population of Ukraine, this is primarily due to a decrease in the birth rate of Ukraine and with a general depopulation situation.

It should be noted that in Ukraine in the period from 1989 to 2020, the child mortality rate declining from 12.9 to 6.7; decrease is equal to 48.1%. There is group of oblasts where this indicator exceeds the middle republican indicator, this is Zaporizka, Kyivska, Odeska, Ivano-Frankivska oblasts and maximum value reaches 60% in the Chernivetska oblast (ie in 1989 reached 13.5 permille and in 2020 decreased to 5.7 permille).

Consider now the territorial differentiation of this demographic indicator in the regions of Ukraine. First of all, in the last period in most regions tendencies of slight decrease in this indicator began. To construct the corresponding graph as of 2020, we adopted a three degree scale (the first degree for regions, where the mortality rate does not exceed 6.0‰, the second – 6.1–9.0‰, the third – more than 9.1‰. The territorial variation of this indicator is rather motley, but still it is possible to distinguish several compact zones, subzone and areas with similar indicators. This is primarily a group of western and central administrative oblasts such as Chernivetska, Ternopilska, Rivnenska, Zhytomyrska and Kyivska, which observed the lowest child mortality rates (up to 6‰).

Relatively low indicators of child mortality is also observed in the group of administrative oblasts where this indicator ranges from 6.1 – to 9.0‰ – there are Vinnytska, Volynska, Dnipropetrovska, Donetska, Kirovohradska, Lvivska, Odeska, Poltavska, Sumska oblasts, etc.

The third group of regions, they are placed by three oblasts in which child mortality rates exceed 9.1‰ – Chernihivska, Zakarpatska and Khersonska.

Describing such a depressive indicator as mortality of young people from 0–18 years old, to mention positive changes in its decreasing. The following conclusion it could be made from the Table 2 and Fig. 3.

Analyzing the data in Table 2 in the period from 1989 to 2020 years, the number of young people deaths decreased from 17,992 in 1989 to 3,777 people in 2020 almost 4.5 times. Data from the Figure 3 demonstrate the dynamics of changing of the proportion of deaths at the age of 0–18 from total mortality in the Ukrainian administrative oblasts. It should be noted that is observing the positive dynamics of

Table 2

The dynamics of the mortality rate of young people from 0–18 years for the period 1989–2020 years*

Year	Total number of deaths (people)	Number of deaths at the age of 0–18 (people)	The proportion of deaths at the age of 0–18 from total mortality,%
1989	600590	17992	2,99
1991	669960	17850	2,66
1995	792587	16045	2,02
2000	758082	11168	1,47
2005	781961	9117	1,16
2010	698235	7817	1,12
2014	632296	6277	0,99
2015	594796	5662	0,95
2016	583631	5098	0,87
2017	574123	4812	0,83
2018	587665	4376	0,74
2019	581114	4088	0,70
2020	616835	3777	0,61

*According to state Statistics Service of Ukraine (State statistics, 2024; Official page, 2024)

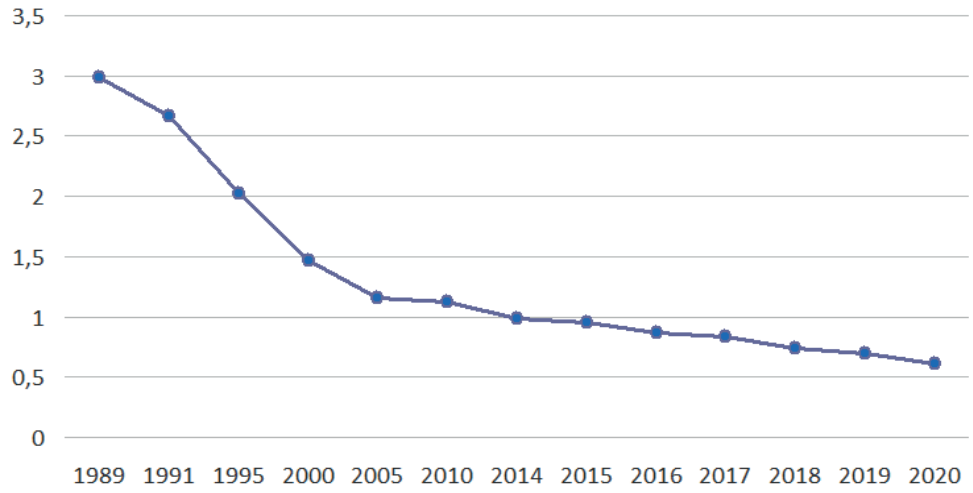

Fig. 3. Dynamics of the proportion of deaths at the age of 0–18 from total mortality in the Ukrainian administrative oblasts.

a declining in the proportion of young people deaths in the total deaths in Ukraine, if in 1989, the share of youth deaths amounted to 2.99% of the total number of deaths, then in 2020 this share was 0.61%.

CONCLUSION

Consequently, the child mortality rate and young people deaths indicator has a rather motley territorial differentiation within the regions of Ukraine and is characterized both in spatial and in time ratios less stable than other geodemographic indicators. Despite this it is an important parameter that reflects a certain side of the geodemographic process and the features of the geodemographic situation in the country as a whole.

An important criterion for health assessment is an indicator of morbidity of children and adolescents. The conducted studies indicate a steady deterioration of their physical, mental and intellectual health, which threatens the health of the nation. Taking into account the importance of creating children's best living conditions for their harmonious development, Ukraine has joined the UN Convention on the Rights of the Child in 1991. During the years of the existence of Ukraine as an independent state, a number of legislative acts and programs concerning maternity and childhood protection were adopted, in particular "State Program of Industrial Production of Children's Foods", National Program "Children of Ukraine". These measures have exceptional importance in connection with an extremely difficult position, a catastrophic decrease in the living standards of the population, which are most affected by children.

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ГЕОПРОСТОРОВІ АСПЕКТИ ДОСЛІДЖЕННЯ ДИТЯЧОЇ СМЕРТНОСТІ В УКРАЇНІ НА ПОЧАТКУ XXI СТОЛІТТЯ

Анотація
Демографічна ситуація в Україні залишається вкрай напруженою, рівень смертності населення є найвищим у Європі. Смертність є надзвичайно інформативним показником суспільної охорони здоров'я зокрема і рівня соціально-економічного розвитку країни в цілому. На смертність впливає цілий комплекс факторів: демографічних, соціально-економічних, медичних, природно-біологічних, політичних, екологічних, етнічних і т.д. У статті розглядається показник дитячої смертності, який використовується для оцінки соціально-економічного розвитку регіонів, оскільки дитяча смертність більш чутлива до регіональних особливостей і умов життя населення. Сьогодні проблема зниження дитячої смертності набуває особливої значущості на тлі скорочення чисельності населення через високу смертність і низьку народжуваність. Динаміка показників дитячої смертності за 1989 і 2020 роки представлена за регіонами. Практично у всіх адміністративних областях ми спостерігаємо значне зниження цього показника, це пов'язано не з поліпшенням стану медичного обслуговування або підвищенням соціально-економічного рівня населення України, а в першу чергу пов'язано зі зниженням народжуваності в Україні і з загальною депопуляцією. Такий показник, як смертність молоді у віці від 0 до 18 років, в 2020 році зазнає позитивні зміни в плані свого зниження. Розглянуті показники мають досить різку територіальну диференціацію в межах регіонів України і характеризуються як у просторовому, так і в часовому відношенні меншою стабільністю, ніж інші геодемографічні показники.

Ключові слова: населення, геодемографічна ситуація, рівень дитячої смертності, охорона здоров'я.