



Journal of Geology, Geography and Geoecology

Journal home page: geology-dnu.dp.ua

ISSN 2617-2909 (print)
ISSN 2617-2119 (online)

Journ. Geol. Geograph.
Geology,
32(1), 201-211.

[doi:10.15421/112319](https://doi.org/10.15421/112319)

L.B. Zastavetska, T.B. Zastavetskiy, B.B. Havryshok, N.B. Taranova, N.M. Smochko, N.P. Stetsko

Journ. Geol. Geograph. Geoecology, 32(1), 201-211

Geographical aspects of demographic burden on the employable population of Ukraine: analysis for 1989-2021

Lesia B. Zastavetska¹, Taras B. Zastavetskiy¹, Bohdan B. Havryshok¹, Nataliia B. Taranova¹, Nataliia M. Smochko², Nadiia P. Stetsko¹

¹Ternopil Volodymyr Hnatiuk National Pedagogical University, Ternopil, Ukraine, e-mail: zast.lesia@gmail.com

²Mukachevo State University, Mukachevo, Ukraine, e-mail: natasmochko@gmail.com

Received 20.06.2022;

Received in revised form 26.11.2022;

Accepted 07.01.2023

Abstract. The article is devoted to the study of population dynamics in the main age groups and the impact of demographic burden on the employable population in Ukraine during 1989-2021. The purpose of the study is to characterize the dynamics of demographic burden on the employable population of Ukraine for the period 1989-2021, to identify patterns of influence

of the demographic crisis and aging processes of the population on the growth of the demographic burden indicator. Based on the processing of statistical information of the State Statistics Service of Ukraine, census data in 1989 and 2001, an analysis of the demographic burden in Ukraine in general and in some of its regions in particular, revealed peak years of demographic burden on the employable population and indicated the causes of such a phenomenon. The analysis of the dynamics of the main demographic indicators of the population of Ukraine made it possible to establish that the long period of low birth rate over the past three decades, the insignificant increase in mortality among the elderly population against the background of a sharp increase in mortality in working age, as well as the impact of migration processes have left a deep imprint on the level of demographic burden. A comparative analysis of the total demographic burden factors in Ukraine and the EU countries was carried out. It was found that in all EU countries, the structure of the overall load is dominated by the burden of the elderly (over the age of 65 years), which emphasizes the deepening of the aging processes of the population. Analysis of the age structure of the population of the countries of this group confirms that in the future the share of people of disabled age will only grow, and accordingly, the indicator of demographic burden will increase, which threatens to increase the so-called «social abstinence». The obtained results allow us to conclude that there are signs of «demographic degradation» and «demographic reurbanization» of the employable population in Ukraine. And in the future, the age structure of the population in Ukraine will move towards aging: the number of elderly people will increase, and the number of people of employable population will decrease. This, in turn, will lead to a significant increase in the demographic burden on the employable population. To solve this problem, a set of effective and thoughtful measures of demographic and social policy is needed, which will be aimed at effective and rational regulation of migration flows, creation of new jobs, increase of wages and productivity of labor, improvement of the taxation system, etc.

Key words: population, demographic burden, demographic degradation, aging of the population, age cohorts.

Географічні аспекти демографічного навантаження на працездатне населення України: аналіз 1989-2021 рр.

Л.Б.Заставецька¹, Т.Б. Заставецький¹, Б.Б. Гавришок¹, Н.Б. Таранова¹, Н.М.Смочко², Н.П.Стецько¹

¹Тернопільський національний педагогічний університет імені Володимира Гнатюка, м. Тернопіль, Україна, e-mail: zast.lesia@gmail.com

²Мукачівський державний університет, м. Мукачеве, Україна, e-mail natasmochko@gmail.com

Анотація. Стаття присвячена вивченню динаміки чисельності населення у основних вікових групах та впливу демографічного навантаження на працездатне населення в Україні впродовж 1989-2021 рр. Мета дослідження – охарактеризувати динаміку демографічного навантаження на працездатне населення України за період 1989-2021 рр., виявити закономірності впливу демографічної кризи та процесів старіння населення на зростання показника демографічного навантаження. На основі опрацювання статистичних матеріалів Державної служби статистики України, даних переписів населення у 1989 р. та 2001 р.,

здійснено аналіз демографічного навантаження в Україні загалом та в окремих її регіонах зокрема, виявлено пікові роки демографічного навантаження на працездатне населення та вказано на причини такого явища. Аналіз динаміки основних демографічних показників населення України дозволив встановити, що багаторічний період низької народжуваності впродовж трьох останніх десятиліть, несуттєве підвищення смертності серед літнього населення на тлі різкого зростання смертності у працездатному віці, а також вплив міграційних процесів наклали глибокий відбиток на рівень демографічного навантаження. Здійснено порівняльний аналіз коефіцієнтів загального демографічного навантаження в Україні та країнах ЄС. Виявлено, що у всіх країнах ЄС у структурі загального навантаження переважає навантаження особами літнього віку (у віці понад 65 років), що підкреслює поглиблення процесів старіння населення. Аналіз вікової структури населення країн цієї групи підтверджує, що в подальшому частка осіб непрацездатного віку буде лише зростати, а відповідно збільшуватиметься показник демографічного навантаження, що загрожує збільшенням т. зв. «соціального утримання». Отримані результати дозволяють зробити висновок про появу ознак «демографічної деградації» та «демографічної реурбанізації» населення у працездатному віці в Україні. А в подальшому вікова структура населення в Україні буде прямувати у бік старіння: збільшуватиметься чисельність осіб літнього віку, а кількість осіб працездатного віку – навпаки, знижуватися. А це, в свою чергу, призведе до суттєвого зростання демографічного навантаження на працездатне населення. Для вирішення цієї проблеми необхідний комплекс ефективних та продуманих заходів демографічної та соціальної політики, які будуть направлені на ефективне та раціональне регулювання міграційних потоків, створення нових робочих місць, підвищення заробітної плати та продуктивності праці, удосконалення системи оподаткування тощо.

Ключові слова: населення, демографічне навантаження, демографічна деградація, старіння населення, вікові когорти.

Introduction

The employable population is the main potential bearer of the economic, social and intellectual power of any state. This age group is obliged to ensure a decent level not only of their lives, but also of the life of the population of retirement age, as well as the younger generation.

According to the existing forecasts, the age structure of the population in Ukraine in the future will move towards aging: the number of people older than employable population will increase, and the number of people of employable age, on the contrary, decrease. These trends will lead to a significant increasing of demographic burden on the employable population.

The purpose of the study is to characterize the dynamics of demographic burden on the working-age population in Ukraine in general and in some of its regions, in particular.

The object of research is the population of Ukraine.

The review of previous studies indicates a significant interest of scientists in studying demographic processes in Ukraine, identifying the main factors that influenced the formation of the current demographic situation in the country as a whole and some of its indicators, in particular (including demographic burden). Theoretical and methodological foundations of the study of geodemographic processes, the basis of their statistical modeling is set out in the works of D. Goddesses, M. Dolishny, A. Dotsenko, V. O. Kustovska, Steshenko, O. Paliy, O. Topchiyev, V. Yavorska, etc.

The research team from the Institute of Demography and Social Research M.V. Ptukhy – O. Hladun, S. Aksenova, O. Gavrilyuk, T. Hnatiuk, B. Krimer, I.

Kurylo, N. Levchuk, I. Medyanyk, O. Poznyak, N. Ringach, L. Slusar, P. Shevchuk, committed a study of the main demographic parameters of the population of Ukraine during 2002-2019, trends in fertility, mortality and migration during this period, presented a demographic forecast until 2100 according to various scenarios. Scientists of the Institute have identified the main directions of socio-demographic policy of Ukraine for the near future (Naseleння Ukrainy. Demografichni tendentsii., 2019). Several works by E. Libanova are devoted to the problems of population reproduction and the impact of migration processes on the demographic situation in Ukraine (Libanova, 2018).

The problems and prospects of demographic burden on the population of rural areas in the context of the regions of Ukraine were reflected in the studies of E. Matviyshyn and Y. Dziurach. Scientists compared the regions of Ukraine by changes of demographic burden per 1 thousand population aged 16-59 years, in particular in rural areas. To predict changes of demographic burden until 2025 a methodology based on the analysis of changes in the number of age groups was used (Matviyshyn, Dziurakh, 2019).

A detailed analysis of the development of demographic processes in post-communist countries (particularly, in Ukraine) for the period 1990-2020, which was carried out by E. Matviyshyn, makes it possible to draw certain demographic parallels and identify common demographic threats to this group of countries. Scientists have found that according to the main demographic indicators – fertility, average life expectancy, the ratio of the number of male and female population, the rate of aging of the population, Ukraine is close to countries such as Latvia, Lithuania and Poland (Matviyshyn, 2022).

A separate issue of transformational changes (including in the economy and demography), which took place in post-communist countries, are devoted to the research of O. Bruslovska (Bruslyovska, 2016).

The study of general demographic trends in Ukraine, as well as the consideration of factors that influenced the formation of the demographic situation in our country in the late 20th and early 21st centuries, devoted their research to A. Romanyuk, O. Hladun (Romaniuk A., Hladun O., 2015) At the same time, studies of certain demographic indicators in Ukraine as a whole and in the context of its regions, in particular, do not lose their relevance (Yavorska V., Sych V., Hevko I., Shorobura I., Dolynska O., 2021).

An important place worldwide as well as in European Scientific Research is given to the study of the aging process of the population and the impact of this process on the economic development of a certain country (Gauti B. Eggertsson, Manuel Lancastre, Lawrence H. Summers, 2019; Rahul Malhotra, Mary Ann C Bautista, Andre Matthias Müller, et al., 2019).

Material and research methods

To conduct the study, we used formulas to determine the coefficients of demographic burden on the working population considering separately children, people aged 65 and older, as well as the total burden of unemployable population (children and elderly people in total). To calculate the demographic load factor of children (0-14 years old), we used the formula (1):

$$K_{dem.burden.children} = \frac{S_{0-14}}{S_{15-64}} \times 1000 \quad (1)$$

where:

$K_{dem.burden.children}$ – the coefficient of demographic burden of children, %

S_{0-14} – the number of people aged 0-14 (children), persons;

S_{15-64} – the number of people in working age, persons.

To determine the demographic burden of elderly people (persons over the age of 65) (2):

$$K_{dem.burden.65+} = \frac{S_{65+}}{S_{15-64}} \times 1000 \quad (2)$$

where:

$K_{dem.burden.65+}$ – coefficient of demographic burden by elderly persons, %;

S_{65+} – the number of people over the age of 65, persons;

S_{15-64} – the number of people in working age, persons.

The calculation of the total demographic burden of the disabled was carried out according to the formula (3):

$$K_{total.dem.burden} = \frac{S_{0-14} + S_{65+}}{S_{15-64}} \times 1000 \quad (3)$$

where:

$K_{total.dem.burden}$ – coefficient of total demographic burden, %;

S_{0-14} – the number of people aged 0-14 (children), persons;

S_{65+} – number of persons over the age of 65, persons;

S_{15-64} – the number of people in working age, persons.

It is worth noting that in the practice of Ukrainian demographers and geographers the indicator of the overall demographic burden is more often used, while in European studies more emphasis is placed on the demographic burden of the elderly.

In our study, we are guided by the approaches of Ukrainian demography, and analyze mainly the coefficients of the total demographic burden in Ukraine in general, and in some of its regions, in particular, during the time period 1989-2021. However, we also provide indicators of demographic burden in terms of age categories of children and elderly people separately which makes it possible to trace qualitative changes in demographic burden over a given period, as well as to trace the deepening of the process of demographic aging of the population in recent years.

The implemented analysis commonly used statistical methods (Gerasimenko (ed.), 2000) and demographic indicators (Doroshenko, 2005; Gudzelyak, 2013).

A more detailed explanation requires only determining the category of older people through different approaches. During the study, we are guided by the generally recognized world standards of demography, which include people over the age of 65. This makes it possible to further make certain comparisons with the world and European indicators of demographic burden.

The statistical materials of the State Statistics Service of Ukraine were used in this study, as well as data from the Eurostat website to compare the value of the coefficients of the total demographic burden in the EU countries and Ukraine, to study the age structure of the population of the EU countries.

Results and discussion

According to the State Statistics Service of Ukraine, in 2021, the population of the country decreased, compared to data of 2000, by 7.8 million persons (Fig. 1, Table 1). At the same time, depopulation occurred at the expense of the working and child-age population (Table 1). Especially rapid rate of decline of the population in working age in Ukraine was traced in 1995-1998 and in 2014-2021 – annually by about 200 thousand rubles persons (Fig. 1). In the first

period a significant reduction in the population of this age group was due to significant volumes of labor migrations of Ukrainians abroad due to the instability of

the socio-economic situation in the country and a significant financial and industrial crisis, large amounts of unemployment (including structural).

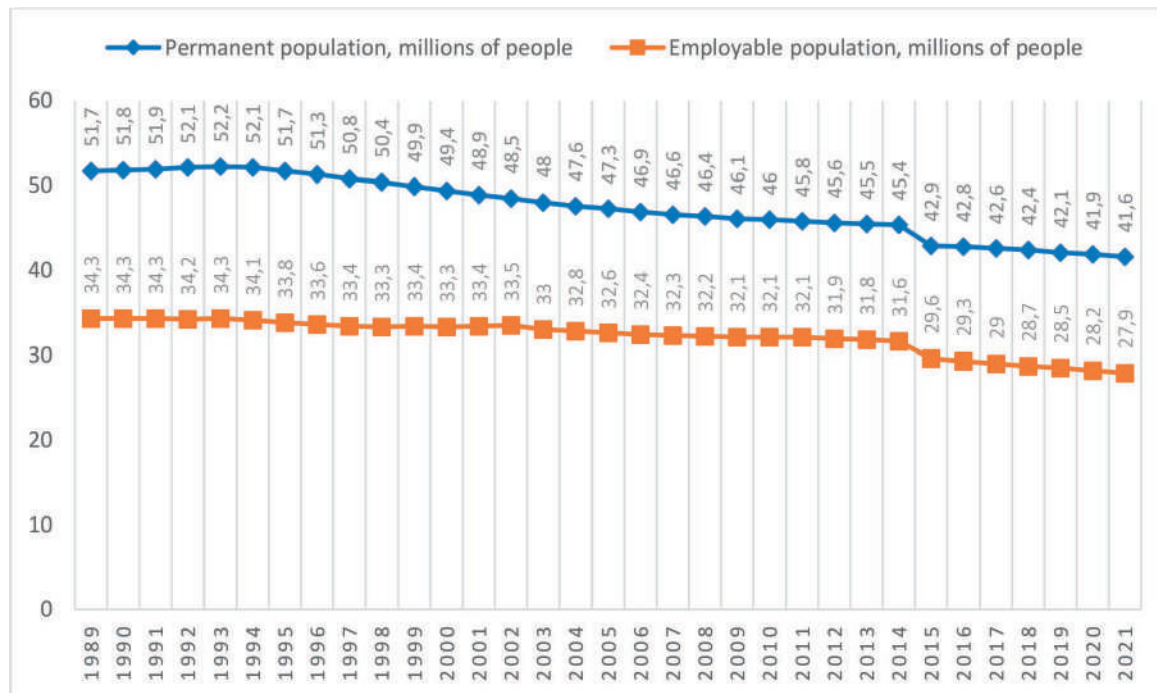


Fig. 1. Dynamics of permanent population of Ukraine in 1989-2021 (Source: State Statistics Service of Ukraine, Population)

Analysis of demographic indicators shows that for the period 1989-2021 there was a decrease in the employable population – from 34.3 million up to 27.9 million persons. At the same time, in 2021 in cities, the employable population decreased by 17% compared to 1989, and in villages – by 22% (Table 1).

A significant decrease in the number of children's population during the period of Ukraine's independence occurred in 1989-2005 from 11.1 to 6.9 million or 1.6 times. In subsequent years, it is stabilized at the level of 6.9-6.3 million persons (Table 1). Statistics show that in 2021 the decline rate in the child population decreased, and the growth of the elderly remained almost at the level of 2010. At the same time, in cities for the period 1991 – 2021 the number of people over the age of 65 has increased significantly – from 6.0 to 7.2 million persons in rural areas there was a slight decrease in this indicator – from 2.8 to 2.3 million persons (State Statistics Service of Ukraine, Population).

As for certain regions of Ukraine, migration also has a significant impact on the degree of their aging, in addition to fertility. Thus, due to the influx of the population from the regions of Kyiv the share of the elderly population (over 65 years old) is on a par with the relatively «young», due to the higher birth rate,

regions (Fig. 2). In general, in Ukraine there is a significant regional variation in the levels of the population aging. The «older» regions of the country include the northern and northeastern, the relatively «young» include the western regions, the capital and some southern ones. Currently, the population of Chernihiv region is distinguished by the highest level of aging, and the lowest – by Zakarpattia.

It should be noted that the reduction of the total population of Ukraine had a significant impact on the occupation of the Autonomous Republic of Crimea and significant territories of Donetsk and Luhansk regions, the population of which is not reflected in the statistics for 2015. In addition to military and migration factors, the natural population decline factor remains important due to a decrease in fertility rates, an increase in the share of the population over the age of 65.

Indicators of natural movement of the population have significant differences in urban and rural settlements (Table 2) and in the regions of Ukraine.

Since 1991, the indicators of natural population growth in Ukraine are negative, but in rural areas they have become so even earlier since 1985. In 2001, 156,000 more people died in Ukrainian villages than were born in 2004 – by 159 thousand persons, and in 2021 – by 162 thousand persons.

Table 1. Population dynamics and demographic burden on the working-age population in Ukraine in 1989-2021*

Indicators		1989	1995	2000	2005	2010	2015	2020	2021
Total population (million)	Total	51.7	51.7	49.4	47.3	45.9	42.9	41.9	41.6
	Towns	34.6	35.1	33.3	32.0	31.5	29.7	29.1	29.0
	Villages	17.1	16.6	16.1	15.3	14.4	13.2	12.8	12.6
The population in working age (million people)	Total	34.3	33.8	33.5	32.6	32.1	29.6	28.2	27.9
	Towns	23.6	23.5	23.4	22.9	22.7	20.8	19.8	19.6
	Villages	10.7	10.3	10.1	9.7	9.4	8.8	8.4	8.3
Population aged 0-14 years	Total	11.1	10.5	8.7	6.9	6.5	6.4	6.4	6.3
	Towns	7.5	7.1	5.6	4.3	4.2	4.3	4.2	4.1
	Villages	3.6	3.4	3.1	2.6	2.3	2.1	2.2	2.2
Population aged 65 years and older	Total	6.0	6.9	6.8	7.5	7.2	6.7	7.1	7.2
	Towns	3.2	3.9	3.9	4.5	4.4	4.3	4.9	4.9
	Villages	2.8	3.0	2.9	3.0	2.8	2.3	2.3	2.3
The coefficient of total demographic load (per 1000 persons in working age)	Total	499	517	465	445	425	443	480	483
	Load by persons aged 0-14 years	323	311	262	215	202	218	226	225
	Load by persons aged 65 years and older	176	206	203	230	223	225	254	258

*(Source: State Statistics Service of Ukraine, Population)

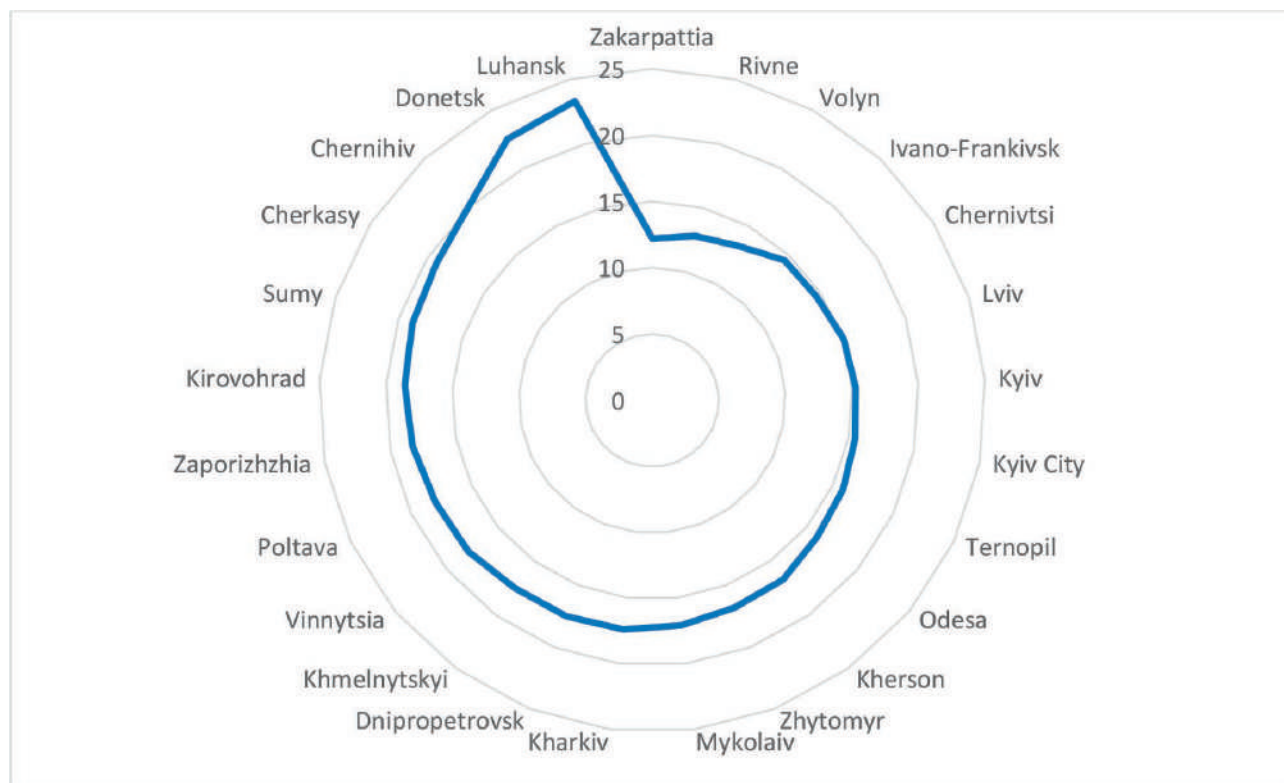


Fig. 2. Share of persons over the age of 65 in the regions of Ukraine as of 01.01.2021, %
(Source: State Statistics Service of Ukraine, Population)

Table 2. Fertility, mortality and natural population growth rates in urban and rural settlements, %

	1990	1995	2000	2000 to 1990	2005	2010	2010 to 2000	2015*	2020*	2021*	2021 to 2010
Number of births											
Total	12.7	9.6	7.8	4.9 ↓	9.0	10.8	3.0 ↑	10.7	7.8	7.7	3.1 ↓
In urban settlements	12.7	8.8	7.1	5.6 ↓	8.9	10.4	3.3 ↑	10.4	7.5	7.5	2.9 ↓
In rural areas	12.7	11.1	9.4	3.3 ↓	9.4	11.9	2.5 ↑	11.3	8.5	8.4	2.5 ↓
Number of deaths											
Total	12.1	15.4	14.8	2.7 ↑	14.8	15.4	0.7 ↑	16.0	15.9	15.8	0.4 ↑
In urban settlements	10.2	13.6	13.0	2.8 ↑	13.0	13.8	0.8 ↑	14.4	14.8	14.6	1.8 ↑
In rural areas	16.1	19.1	18.7	2.6 ↑	18.7	18.6	0.1 ↓	12.6	18.1	18.1	0.5 ↓
Natural growth											
Total	0.6	-5.8	-7.0	7.6 ↓	-7.6	-4.4	2.6 ↑	-4.2	-8.1	-10.3	5.9 ↓
In urban settlements	2.5	-4.8	-5.9	8.4 ↓	-5.9	-3.3	2.6 ↑	-2.8	-7.3	-9.3	6.0 ↓
In rural areas	-3.4	-8.0	-9.3	5.9 ↓	-11.1	-6.7	2.6 ↑	-6.7	-9.6	-12.2	5.5 ↓

*excluding the temporarily occupied territories of the Autonomous Republic of Crimea, parts of Luhansk and Donetsk regions

Since the early 1990s, and by the 2000s, natural growth was rapidly declining – from -0.8‰ in 1991 to -10.3‰ – in 2000 (Table 2). From 2002 to 2012, there was a gradual increase in the indicator of natural growth – from -8.3‰ to -1.8‰. The period from 2014 to 2021 was marked by a decrease in the indicator from -3.4‰ to -10.3‰. Analysis of ten-year periods in the study made it possible to establish that an increase in fertility rates was observed only in the period 2000-2010 – in the country as a whole by 3.0‰, in cities – by 3.3 ‰, and in villages – by 2.5‰. The main factors of fertility growth can be indicated by the successful reform of demographic policy aimed at increasing payments at birth, as well as the relative stability of the economic situation in the country, compared to the 90s of the twentieth century.

However, in the next decade (2000-2021), the fertility rate decreased by 3.1‰. At the same time, the coefficients of natural growth decreased significantly (by 5.9‰ in the country, by 6.0‰ in cities and 5.5‰ in villages). The main factors of this situation were: the beginning of the Russian-Ukrainian war in 2014 and the occupation of territories in eastern Ukraine and the Autonomous Republic of Crimea, general political instability, and economic uncertainty in the country.

Over the entire studied period, there is a clear descending trend line, which reflects the natural population growth in Ukraine (Fig. 3). This phenomenon was caused by a number of factors, among which the most significant was a significant reduction in the birth rate (for example, in 1990, 657 thousand babies were born in Ukraine per year, while in 1995 – 492

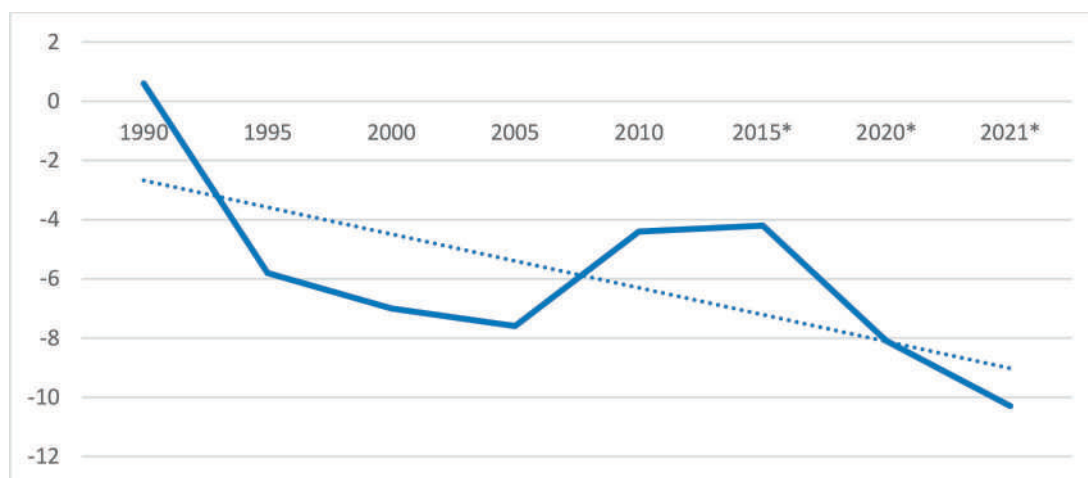


Fig. 3. Dynamics of the natural population growth ratio in Ukraine, % (source: State Statistics Service of Ukraine, Population)
*excluding the temporarily occupied territories of the Autonomous Republic of Crimea, parts of Luhansk and Donetsk regions

thousand, in 2000 – 385 thousand, in 2010 – 497 thousand, in 2015 – 411 thousand, and in 2020 – 293 thousand people). That is, over 30 years, the birth rate in Ukraine has decreased by almost 2 times. At the same time, mortality rates remained high (from 629 thousand people in 1990 to 613 thousand people in 2020) with a slight downward trend over the past 10 years (from 698 thousand people in 2010 to 613 thousand people in 2020). The peak of mortality during the study period was observed in 1995 – 792 thousand tons. Persons. The highest mortality rates were traced in the period from 1993 to 2009 – more than 700 thousand persons per year died (State Statistics Service of Ukraine, Population). The main factors of high mortality of the population during this period include: a deep economic crisis generated by the pecu-

liarities of the transition from a planned to a market system of state management, a structural restructuring of social life in general; low level and quality of life of the population; low level of medical care, etc.

The highest rates of natural population growth can be traced in the Volyn, Rivne and Zakarpattia regions (from -2.1 to -5.0‰) (Fig. 4). Since the 1990s, these regions have maintained the highest trends in fertility and natural growth. However, in recent years, their situation has worsened compared to previous years. The lowest rates of natural growth in 2021 were in Chernihiv (-13.8‰), Sumy (-12.2‰) regions. Traditionally, over the past five years, very low rates have been demonstrated by Zaporizhia, Kirovohrad, Poltava, Cherkasy regions (from -11.0‰ to -11.9‰) (Naseleння Ukrainy za 2020...).

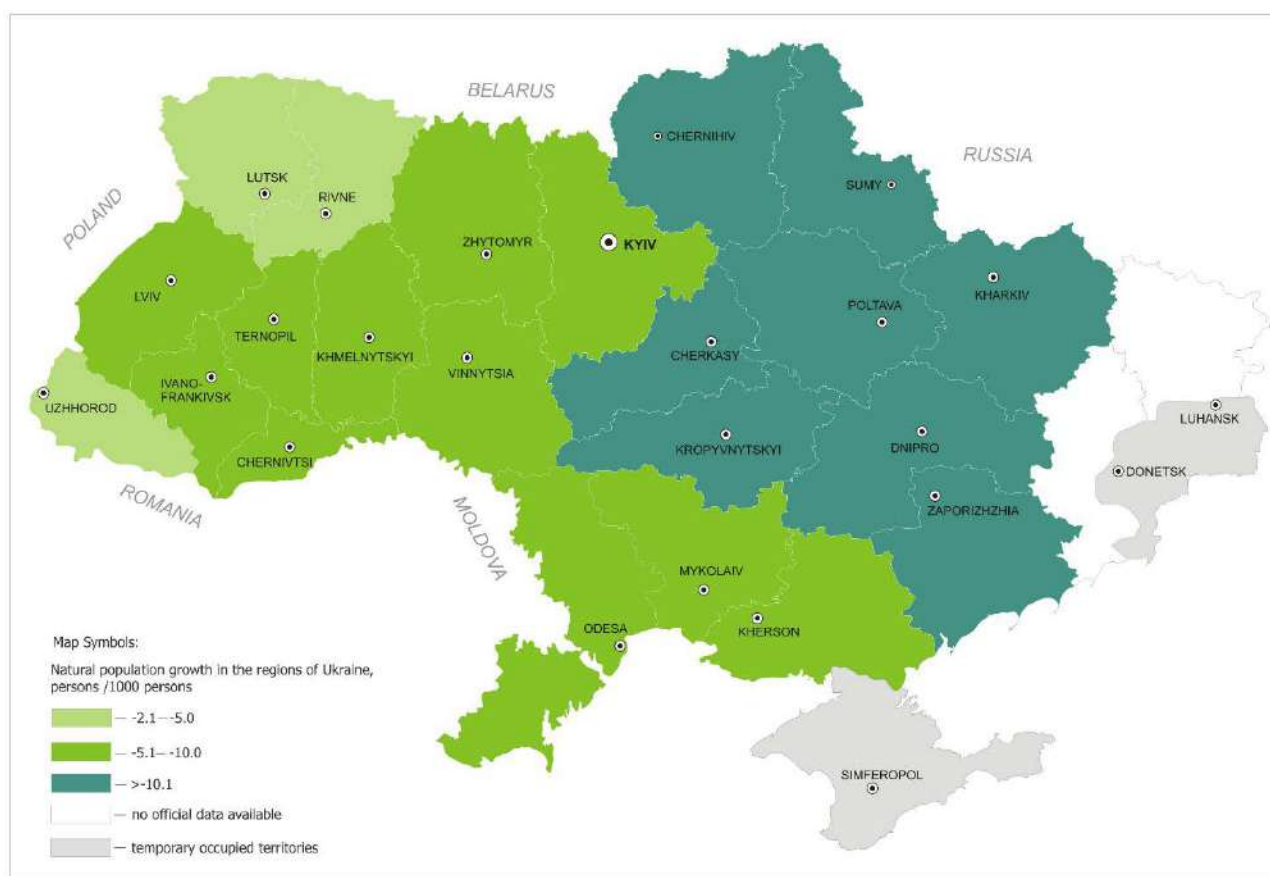


Fig. 4. Coefficient of natural population growth in the regions, 2021, ‰
(Source: State Statistics Service of Ukraine, Population)

In rural settlements, the processes of depopulation are more pronounced which is reflected in the lower indicator of natural growth (in 2021 natural growth was -12.2‰ in villages, while in cities -9.3‰) (State Statistics Service of Ukraine, Population, 2021)

The long period of low birth rate over the past three decades, an insignificant increase in mortality among the elderly population against the background

of a sharp increase in mortality in working age, as well as the impact of migration processes have left a deep imprint on the level of demographic burden. At the same time, it should be emphasized that the true demographic burden on the working-age population is calculated as the amount of load on the part of children and the elderly, and the consideration of these processes is disparately a significant methodological error.

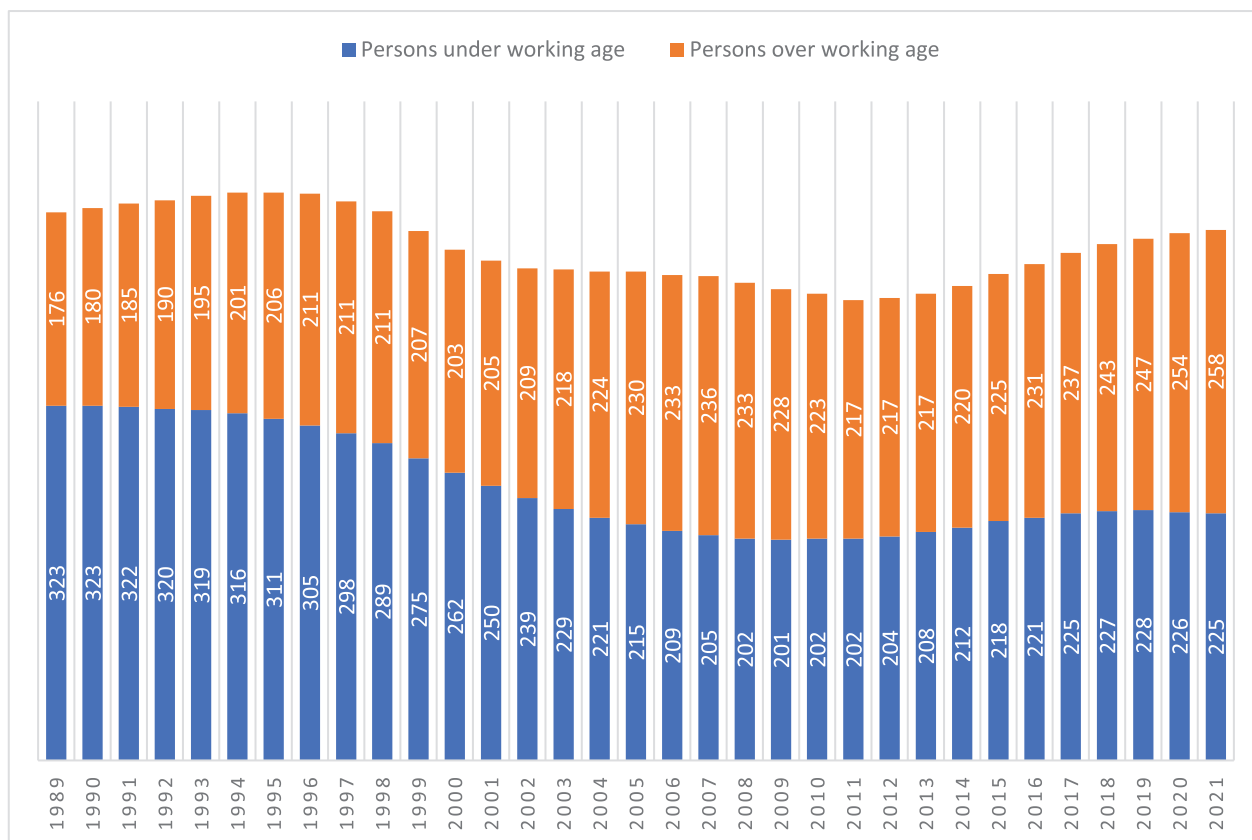


Fig.5. Dynamics of demographic load of the population of Ukraine in 1989-2021, %

Analysis of the dynamics of the total demographic load for 1989-2021. (Fig. 5) shows that during the study period this indicator decreased from 499 to 483 ‰. Its highest value was recorded in 1994-1995 (517‰), which was due to significant volumes of labor migrations of Ukrainians abroad due to the economic crisis and high unemployment level in Ukraine. However, since 1999 the demographic burden factor has decreased significantly and for the period up to 2021 did not exceed 500 persons per 1000 working people. At the same time, there were significant changes in the qualitative parameters of the demographic burden – if in the early 1990s most of the total load was made by children, then since 2004 and until now, the structure of the overall load is dominated by persons over the age of 65. For example, in 1990 the number of children in demographic burden was 1.8 times greater than elderly people, then in 2021 the predominance of the number of elderly over children was 1.1 times.

It is worth noting significant differences in the demographic load in different regions of Ukraine (Fig. 6). Thus, the highest indicators of the total demographic burden (more than 490 persons per 1000 working people) are typical for Chernihiv, Cherkasy, Volyn, Zhytomyr, Vinnytsia, Khmelnytsky, Odesa, as well as the government-controlled parts of Donetsk and Luhansk regions. This indicator significantly ex-

ceeds the average Ukrainian value of demographic burden (483 persons per 1000 working people).

The lowest volumes of the total demographic burden are inherent in Lviv, Ternopil, Ivano-Frankivsk, Kharkiv regions and Kyiv where this figure does not exceed 460 ‰.

The analysis of demographic burden in terms of regions for 1991 shows significant differences compared to modern regional indicators. At that time, the largest coefficients of demographic burden were in Chernihiv region – 572 ‰, Ternopil, Cherkasy, Vinnytsia, Zakarpattia, Volyn, Khmelnytskyi regions – more than 550 ‰. The lowest coefficient of demographic burden in 1991 is in Donetsk, Zaporizhzhia, Luhansk regions (about 470 ‰), in the cities of Kyiv and Sevastopol (up to 430 ‰).

Summarizing the results of the study, we can classify the regions of Ukraine according to the similarity of demographic characteristics and demographic load: Regions with high rates of natural growth and reproduction of the population and low demographic load (up to 460 persons per 1000 working people): Lviv, Ivano-Frankivsk, Ternopil regions, Zakarpattia, Chernivtsi, Volyn regions; Regions with average indicators of natural growth and demographic load (460-490 persons per 1000 working people): Kherson, Mykolaiv, Kyiv regions; Regions with average indicators of nat-

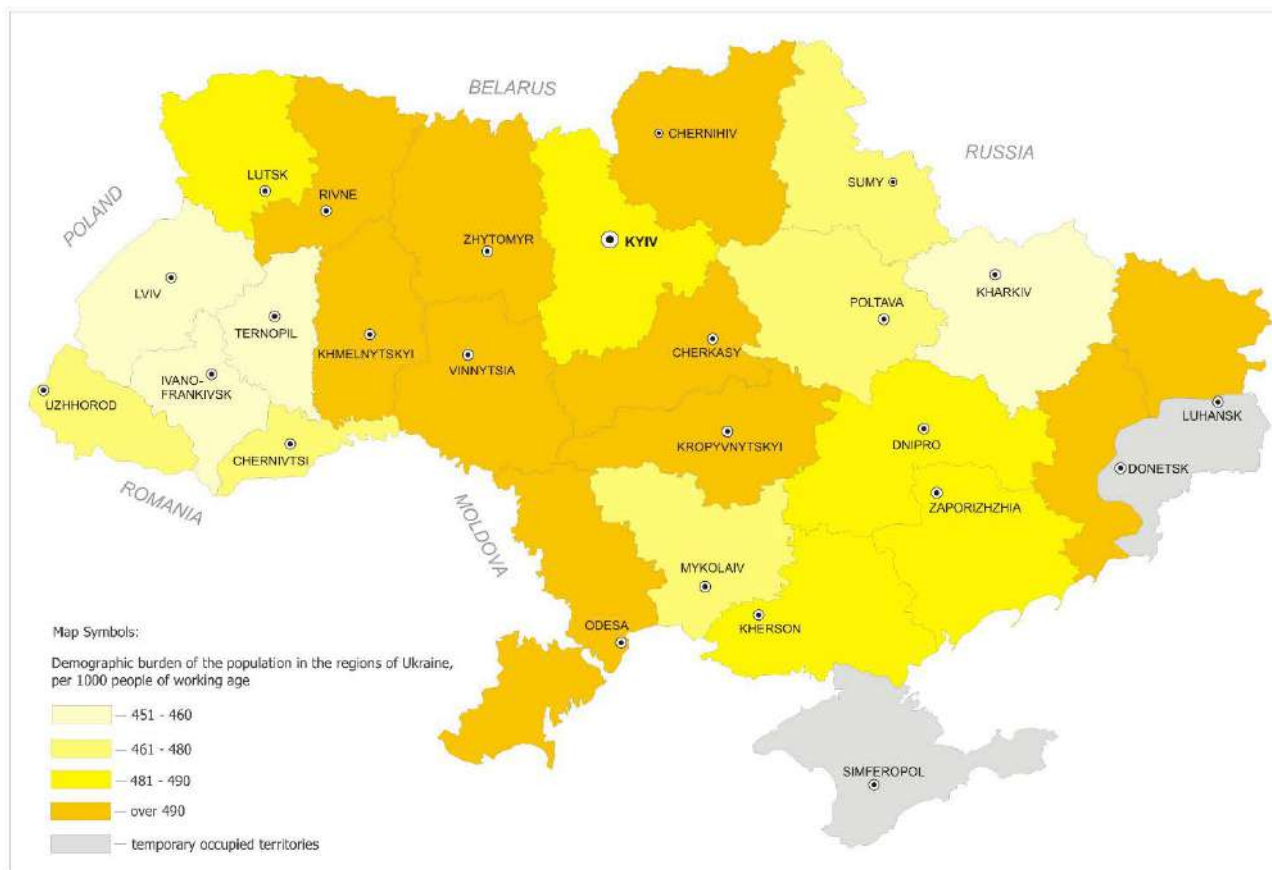


Fig. 6. Volumes of the total demographic load by regions of Ukraine, 2021
(Source: State Statistics Service of Ukraine, Population)

ural growth and the highest demographic load (more than 490 persons per 1000 working people): Rivne, Zhytomyr, Khmelnytsky, Vinnytsia, Odesa regions; Regions with the lowest rates of natural growth and high rates of demographic load (460-490 persons per 1000 working people): Zaporizhia, Kharkiv, Dnipropetrovsk, Poltava, Cherkasy, Chernihiv, Kirovohrad, Sumy regions.

Considering that, since the beginning of 2022 Ukraine has applied for a candidate of EU membership it will be advisable to study, analyze and compare the main demographic trends, parameters of this group of countries with Ukraine, and within the framework of our study – the general demographic burden on the working population.

Analyzing the coefficients of the total demographic burden (Fig. 7), it is worth noting that the highest rates are shown by France, Finland, Sweden (from 616 to 605‰), the countries with high demographic burden in the EU also include Estonia, Denmark, Latvia, Italy, Belgium (more than 550‰). Ukraine is among the countries with the lowest indicators of the total demographic burden (less than 500‰), such as Austria, Poland, Malta, Cyprus, Slovakia, Luxembourg. It is also worth noting that in all EU countries

the structure of the overall load is dominated by the load of elderly people (over the age of 65), which emphasizes the deepening of the aging processes of the population. Analysis of the age structure of the population of countries of this group (Eurostat. Population & demography, 2021) confirms that in the future the share of people of disabled age will only increase, and accordingly, the indicator of the burden will increase, which threatens to increase the so-called «social abstinence». Therefore, in order to reduce the demographic burden on the able-bodied population, a number of measures of demographic policy for the development of the «silver economy», popularization of education of third-age people, etc. are carried out.

Conclusions

Thus, the working-age population of Ukraine in recent years has been characterized by the presence of «demographic degradation» and «demographic reurbanization» processes. Considering the special role of this age group of the population, it is advisable to develop and implement a set of measures aimed at its preservation, multiplication and effective socio-economic functioning. An important place in this system of measures should be assigned

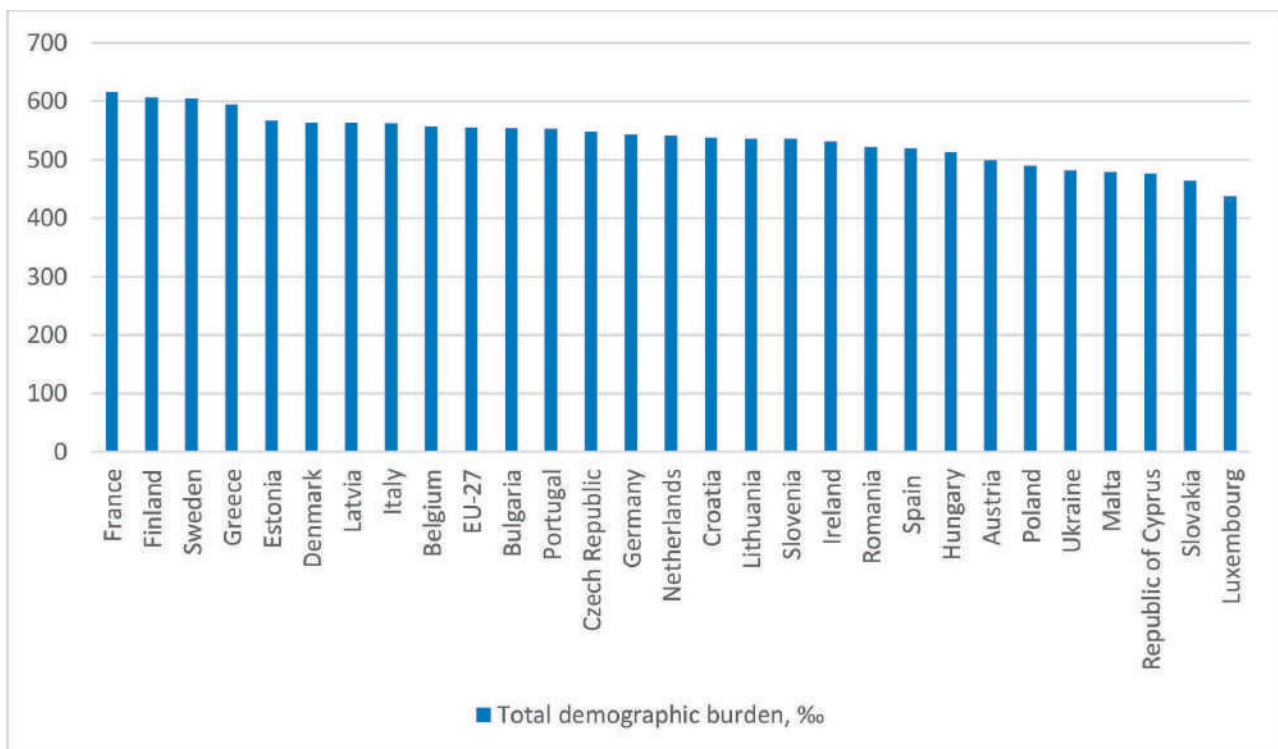


Fig. 7. Total demographic burden ratio in the EU and Ukraine, 2021
(Source: Eurostat)

to reducing mortality. In addition, more efficient and rational regulation of migration flows, creation of new jobs, increase of wages and labor productivity, improvement of the tax system, etc. are needed. All measures should have a clear focus on the develop-

References

- Bajziková L., Bajzik P. (2020). Mobility and working opportunities in the EU and Slovakia, *Management: Journal of Contemporary Management*. Issues, 25(1), 103–115. doi: 10.30924/mjemi.25.1.6.
- Brusylovska O. (2016). Systemic Transformation of the Region Eastern Europe (1989–2004), LAP LAMBERT Academic Publishing, Saarbrücken.
- Doroshenko L.S. (2005). Demografia (Eng. Demography), MAUP, Kiiv.
- Eggertsson, Gauti B., Manuel Lancastre, and Lawrence H. Summers. (2019). Aging, Output Per Capita, and Secular Stagnation. *American Economic Review: Insights*, 1 (3): 325-42. DOI: 10.1257/aeri.20180383
- Eurostat. Population & demography. Database. Retrieved from: <https://ec.europa.eu/eurostat/web/population-demography/demography-population-stock-balance/database>
- Eurostat. Retrieved from: <https://ec.europa.eu/eurostat/web/main/data/database>
- Gersimenko S.S. (Ed.) (2000). Statistika: pidruchnyk (Eng. Statistics: Textbook), KNEU, Kiiv.
- Gudzelyak I. (2013). Osnovi demografii (Eng. Foundations of demography). Vidavnychiy tsentr LNU imeni Ivana Franka, Lviv.
- Hladun O.M. (Ed.). (2020). Naselennia Ukrainy. Demografichni tendentsii v Ukraini u 2002–2019 rr. (Demographic trends in Ukraine in 2002–2019). K.: Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine, 174.
- Libanova E.M. (Ed.) (2018). Ukrainske suspilstvo: mihratsiyni vymir: Natsionalna dopovid. K.: Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine, 396.
- Matviyishyn, Y. (2022). Ukraine's Population Compared to European Post-Communist Countries in 1990 and 2020. *Journal of Geography, Politics and Society*, 11(4), 46–54. <https://doi.org/10.26881/jpgs.2021.4.05>
- Matviyishyn, Ye. H., Dziurakh, Yu. M. (2019). Rezultaty prohnozuvannia demografichnoho navantazhennia na naseleattia pratsezdatochno viku v silskii mistsevosti v oblastiakh Ukrainy. *Democratic governance*, Issue 1(23). Retrieved from: www.dv.lvivacademy.com. DOI: <https://doi.org/10.33990/2070-4038.23.2019.181482>.

- Mezentseva, N., Kondras, N. (2015). Second demographic transition: origins and concepts. *Ekonomichna ta Sotsialna Geografiya*, 73, 51-56 (in Ukrainian, abstr. in English), <https://doi.org/10.17721/2413-7154/2015.73.51-56>.
- Naselennia Ukrainy za 2019 rik. Demohrafichnyi shchorichnyk. (2020) [The population of Ukraine in 2019. Demographic Yearbook]. . Kyiv: Derzhavna sluzhba statystyky Ukrainy, 181 p. (In Ukrainian).
- Naselennia Ukrainy za 2020 rik. Demohrafichnyi shchorichnyk. [The population of Ukraine in 2020. Demographic Yearbook]. (2021). Kyiv: Derzhavna sluzhba statystyky Ukrainy, 186 p. (In Ukrainian).
- Official site of the State Statistics Committee of Ukraine. (2021). Retrieved from: <http://www.ukrstat.gov.ua>
- Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine (2021). Retrieved from: <https://idss.org.ua/index>
- Rahul Malhotra, Mary Ann C Bautista, Andre Matthias Müller, Su Aw, Gerald Choon Huat Koh, Yin-Leng Theng, Stephen James Hoskins, Chek Hooi Wong, Chunyan Miao, Wee-Shiong Lim, Chetna Malhotra, Angelique Chan (2019). The Aging of a Young Nation: Population Aging in Singapore. *The Gerontologist*. Volume 59. Issue 3. Pages 401–410, <https://doi.org/10.1093/geront/gny160>
- Romaniuk A., Gladun O. (2015). Demographic Trends in Ukraine: Past, Present, and Future, *Population and Development Review*, 41(2), 315–337. doi: 10.1111/j.1728-4457.2015.00049.x.
- State Statistics Service of Ukraine, Population (1990-2020). Retrieved from: https://ukrstat.org/en/operativ/menu/menu_e/ds.htm
- Topchiiev O.H., Yavorska V.V., Dimova N.V. (2014). Heodemohrafia: rehionalnyi demohrafichnyi rozvytok Ukrainy [Geodemography: regional demographic development of Ukraine]. BMB, Odesa. (In Ukrainian)
- Yavorska V., Sych V., Hevko I, Shorobura I., Dolynska O. (2021). Modern Demographic Processes in Ukraine. *Factors of Influence SHS Web of Conferences* 100, 05001. Retrieved from: https://www.researchgate.net/publication/350505268_Modern_Demographic_Processes_in_Ukraine_Factors_of_Influence <https://doi.org/10.1051/shsconf/202110005001>