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METHODOLOGICAL APPROACH TO ASSESSING THE LEVEL OF DEMOGRAPHIC SECURITY IN THE REPUBLIC OF BELARUS



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The problem of demographic security is becoming increasingly relevant in the modern world, and the Republic of Belarus is not an exception. Negative demographic trends and threats can have serious consequences for the development of the country and society as a whole, so it is necessary to strengthen research in the field of demographic security and develop new methodological approaches for its quantitative assessment. In the context of significant regional differentiation, there is a need for such assessments at the level of oblasts and even districts. The aim of the study is to substantiate the methodological approach to the assessment of demographic security and its testing on the regions of the Republic of Belarus in comparison with the border regions of Russia. The article proposes the author's methodology for calculating the demographic security index, which allows us to assess the degree of demographic security not only for the country as a whole, but also in the regional context. This approach helps to identify specific problems and threats faced by different regions of Belarus. The testing of the methodology proved that the border regions of Belarus have a more favorable demographic situation than the border regions of Russia in terms of demographic security. Nevertheless, there are certain demographic threats in each region (depopulation, population decline, disproportionality of the sex composition of

the population, etc.). Addressing demographic threats and risks is a task for states, businesses, church and society. Integration associations and interstate unions play an important role in ensuring demographic security. Combining the efforts of all stakeholders will strengthen the socio-economic basis and mental foundations of demographic processes. The authors used general scientific methods (comparison, generalization, analysis, etc.) when writing the work. The application of a new methodological approach to assessing demographic security has important scientific and practical significance. Scientific novelty lies in the structuring theoretical information on the issues of demographic security assessment and the development of a specific methodology for its quantitative evaluation. This makes it possible to obtain more accurate and substantiated data on the demographic situation in the country and its regions. In addition, the methodology allows comparing the regions within a country and the regions of one country with those of another, as well as the countries with each other and over time. The practical significance of the study lies in the possibility of using the author's methodology in the development and implementation of measures to ensure demographic security.

Demographic security, demographic development of regions, demographic policy.

Theoretical framework

The problems of demography have long attracted the attention of representatives of public thought. Thinkers of the ancient world gave a worthy place in their works to the issue of population control and put the necessity of state intervention in demographic processes on the agenda. Aristotle, developing Plato's ideas on population problems, assigned the tasks of regulating population growth and movement to the state. Representatives of the feudal Middle Ages paid special attention to the study of economic consequences of demographic changes. Feudal lords calculated their needs in labor force and were interested in its constant growth, which gave them political, financial and military power. The loss of life due to epidemics, wars and famines generated interest in the role of social factors in population reproduction and growth. In the late sixteenth century, the view that social contradictions were a consequence of large numbers of people was spreading. Capitalism fostered more systematized views, and population's knowledge became the most important administrative task of the ruling class.

The accelerated growth of the world's population in the post-war period has been called the "population explosion". This phenomenon has become one of the main topics of research, as its study is important for determining the prospects for socio-economic development of all countries.

Today, even in conditions of off-scale economic differentiation, population growth is not questioned. Countries compete for every person living on their territory and spend a lot on attracting migrants. Knowledge of the demographic situation is becoming a prerequisite for ensuring national security.

Monitoring of demographic development is carried out in almost every country, since the assessment of the current state, as well as forecasts, predetermines socio-economic policy. Large-scale demographic changes have a direct impact on the national security of countries and regions. In addition, demographic deficit and urbanization transition continue to intensify regional differences in socio-economic development of territories, affecting not directly, but on a large scale.

Demographic security provides protection of socio-economic development from the negative consequences of demographic modernization, determining the functioning of the population in its age-sex and ethnic parameters and correlating it with other interests. The term "demographic security" itself is not so popular and is applied only in the EAEU states and some neighboring countries. The concept of demographic security can be linked to the concepts of "demographic equilibrium" and "population optimum". In relation to population optimality "consists in the idea of the best possible and desirable number of people" (Sauvy, 1977), and the theory of population

optimum explains the problems of population pressure and livelihood.

Currently, in the literature on demography one can find many different definitions of demographic security. The instrumental and value-based approaches are usually distinguished¹. The instrumental approach considers the main demographic processes (population reproduction) from the point of view of their impact on socio-economic processes and is a tool for achieving the country's certain economic goals (Soboleva, Chudayeva, 2008; Tatarkin et al., 2008; Kuklin et al., 2011).

The value approach assumes the self-value of demographic processes, the presence of autonomous, own demographic goals, and the definition of demographic security is interpreted in terms of continuous natural renewal of people's generations (Glushkova, Khoreva, 2014). A significant contribution to the study of demographic security was made by the Russian scientist L.L. Rybakovsky, who emphasized the assessment of demographic dynamics by both the system of reproduction indicators and changes in general indicators (Rybakovsky, 2004).

It should be noted that the countries of the Union State of Belarus and Russia have a solid legal foundation for demographic security, which stands out significantly against the background of even the CIS countries. Among the neighboring countries of Belarus, only Russia implements the Concept of Demographic Policy, where demographic processes are considered in a comprehensive manner and special attention is paid to the most problematic issues of demographic development. The remaining countries (Latvia, Lithuania, Poland and Ukraine) implement programs and strategies aimed at addressing individual demographic challenges (e.g., population ageing, etc.).

Russia attaches special importance to the demographic development of regions (Shabunova, 2014; Kiseleva, Gokova, 2016;

Goncharova et al., 2020). After the adoption of the Demographic Policy Concept at the regional level, the constituent entities of the Russian Federation developed documents and projects aimed at solving certain demographic problems, taking into account the peculiarities of the region; regional projects are also being coordinated with the ongoing activities of priority national projects in various social spheres – education, health care, housing policy, etc.

In Belarus, demographic development also receives a lot of attention. Demographic security is regulated by the Law “On Demographic Security of the Republic of Belarus” (2002), which establishes the legal and organizational framework for the implementation of demographic policy and defines the powers of the Government, the Ministry of Labor and Social Protection, and local executive and administrative bodies in this area. In accordance with the Law, demographic security programs are being developed.

Significant successes in the implementation of the National Programs of Demographic Security of the Republic of Belarus for 2007–2010 and 2011–2015 were insufficient to establish a simple type of reproduction of the country's population. Further efforts are required to optimize the state socio-demographic policy, especially in the new geopolitical and economic realities.

Analysis of scientific works and acts of Belarusian legislation allows us to consider demographic security today as a state of protection of the individual, society and the state from the impact of demographic threats, ensuring stabilization of the population, development of human potential of the country, preservation of family and intergenerational ties².

When studying the relationship between demographic and national security, it should be taken into account that demographic processes and phenomena have a significant impact on various spheres of life of society and the state.

¹ Mostakhova T.S. (2010). Improving the management of demographic development of the region: author's thesis. ... Dr. econ. sciences: 08.00.05. RANEPa under the President of the Russian Federation. Moscow.

² On Consideration of the Draft of the New National Security Concept of the Republic of Belarus: Resolution of the Security Council of the Republic of Belarus No. 1 of March 6, 2023. Available at: <https://pravo.by/document/?guid=3871&p0=P223s0001> (Accessed May 15, 2023).

Demographic security covers a wide range of issues related to the state and development of the population. It includes ensuring sustainable demographic development, preserving population size, regulating fertility and mortality, promoting the formation of a healthy and active population, as well as overcoming demographic threats and challenges that may negatively affect the demographic situation in the country.

National security is the state of protection of national interests of the Republic of Belarus from internal and external threats, ensuring sustainable development. Political security, economic security, scientific and technological security, social security, demographic security, etc. are distinguished as its components.

The place of demographic security in the system of national security can be justified as follows. Demographic development is the basis for sustainable development of the state. Sufficient population size and quality determine the country's economic potential, social well-being and political stability. The regulation of demographic processes makes it possible to prevent demographic crisis associated with the negative consequences of uneven population growth, population aging, low birth rate and other factors.

So, ensuring demographic security is one of the most important components of national security, on which depends the preservation of statehood in principle. Assessing the level of demographic security is an urgent task and is of undoubted interest in the context of new geopolitical challenges.

Research methodology

Ensuring demographic security involves both quantitative characterization of the state of the demographic phenomena and processes under study in individual countries (regions, etc.) and their subsequent ranking, mutual positioning, etc., depending on the actually achieved level of development.

There are two approaches that can be used to assess the level of demographic security.

1. Assessing by a single indicator (individual or integrated)

This method allows us to clearly determine whether a given security criterion is met or not. However, due to the multiplicity of aspects of demographic security, it is difficult to justify the choice of a private indicator. In the context of crisis phenomena in almost all areas of demographic security, it becomes impossible to single out an indicator of exceptional importance at a particular stage of demographic development of society.

The calculation of an integral indicator of the level of demographic security in the vast majority of cases eliminates the problems of applying individual private characteristics. There are practically no methodologies and recommendations in the scientific literature that would use several indicators combined to describe certain aspects of demographic security.

2. Using a group or system of indicators

This method makes it possible to obtain a comprehensive picture of the state of demographic security and facilitates the construction of an integral indicator. If the system of indicators is sustainable, covering all variants of demographic threats without exception (even those that are currently absent for a given country), it guarantees the comparability of generalized and private assessments of demographic security in both temporal and spatial aspects. The systemic approach is also effective in that it avoids the limitations inherent in a single private indicator.

Russian demographers widely use the method of indicative analysis to assess demographic security. A number of authors (V.B. Dudarev, A.I. Tatarkin, A.A. Kuklin, A.F. Shorikov, V.A. Tyulyukin, A.V. Cherepanova, E.V. Vasilyeva, E.V. Nekrasova, etc.) form these indicators into several blocks reflecting individual demographic components. Comparison of the achieved values with the planned values is the basis for establishing the level of demographic security⁵ (Tatarkin et al., 2008; Kuklin et al., 2011).

⁵ Dudarev V.B. (2008). Statistical study of demographic security of Russia: author's thesis. diss. ... Cand. econ. sciences: 08.00.12. Moscow.

In the context of limited statistics, in particular regional statistics, on individual demographic events, the system of indicators proposed by O.N. Kalachikova and A.V. Korolenko is of particular interest. They used auxiliary indicators in addition to the main, “classical” ones to assess the level of demographic security of Russian regions. The testing of the methodology made it possible to identify the most “strong” and “weak” aspects of regional development, while avoiding the averaging of results (Kalachikova and Korolenko, 2015).

The disadvantage of assessing the level of demographic security by the system of indicators is that when using several private indicators together, it is necessary to take into account their interrelation and hierarchy.

One of the variants of the integrated approach is the development of the above-mentioned Russian demographer L.L. Rybakovsky, the essence of which is to build a typology of territories according to the ratio of components of demographic dynamics. The territories with favorable or unfavorable demographic situation are identified through the grouping of administrative-territorial units.

Quite recent calculations by O.N. Kalachikova and A.V. Korolenko (Korolenko, Kalachikova, 2017; Korolenko, 2019), made for the Vologda Oblast using L.L. Rybakovsky’s typology, allowed us to once again make sure of the significant regional differentiation and the need to pay more attention to unfavorable territories.

Based on the experience of Russian colleagues and the capabilities of Belarusian statistics, we propose the following scheme to assess the level of demographic security of the Republic of Belarus: the choice of approach and indicators is based on the analysis of both target values stated in demographic security programs and the most important indicators of demographic development, which are not included in strategies and programs due to the low probability of their implementation, but focus on long-term challenges.

In our opinion, the advantages of this approach are a comprehensive analysis of

demographic development, based not only on the achievement of threshold values, but also on the dynamics of indicators, as well as the possibility of identifying prosperous and disadvantaged regions of the country.

Regardless of the choice of approaches to the use of indicators in assessing the level of demographic security, the threshold values of indicators are extremely important, those limit values, the excess (or decrease) of which provides negative trends in demographic development, complicates the process of generation replacement (Epstein et al., 2013; Smelov et al., 2015).

At the beginning of the 21st century, the system of demographic security indicators proposed by L.P. Shakhotko and N.N. Privalova (Shakhotko, Privalova, 2001), which is partially used in the Republic of Belarus, became widespread in Belarus. Despite its relevance and undoubted practical significance, the system of indicators of Belarusian demographers was at the stage of formation, accumulation and comprehension of ideas concerning the statistical assessment of demographic security, and therefore it was modified and supplemented for use in the framework of security level assessment in accordance with the concept of demographic security⁴.

The concept of demographic security has a certain list of indicators to assess demographic security. Nevertheless, the changes taking place in the socio-economic and political life of the country revise the indicators.

The construction of the system of demographic security indicators should be based on some conceptual idea that determines the sequence of the arrangement of the indicators used, as well as their interrelationships.

In our view, the system of statistical indicators of demographic security should include three independent sections (*Fig. 1*).

1. Assessment of the levels achieved in all key parameters selected to quantify the different aspects of population security

Indicators of the level of individual aspects of demographic security serve as a baseline or

⁴ On Approval of the Concept of National Security of the Republic of Belarus: Decree of the President of the Republic of Belarus of November 9, 2010 № 575 (ed. from 24.01.2014 No. 49). IPS “Etalon-Online”.

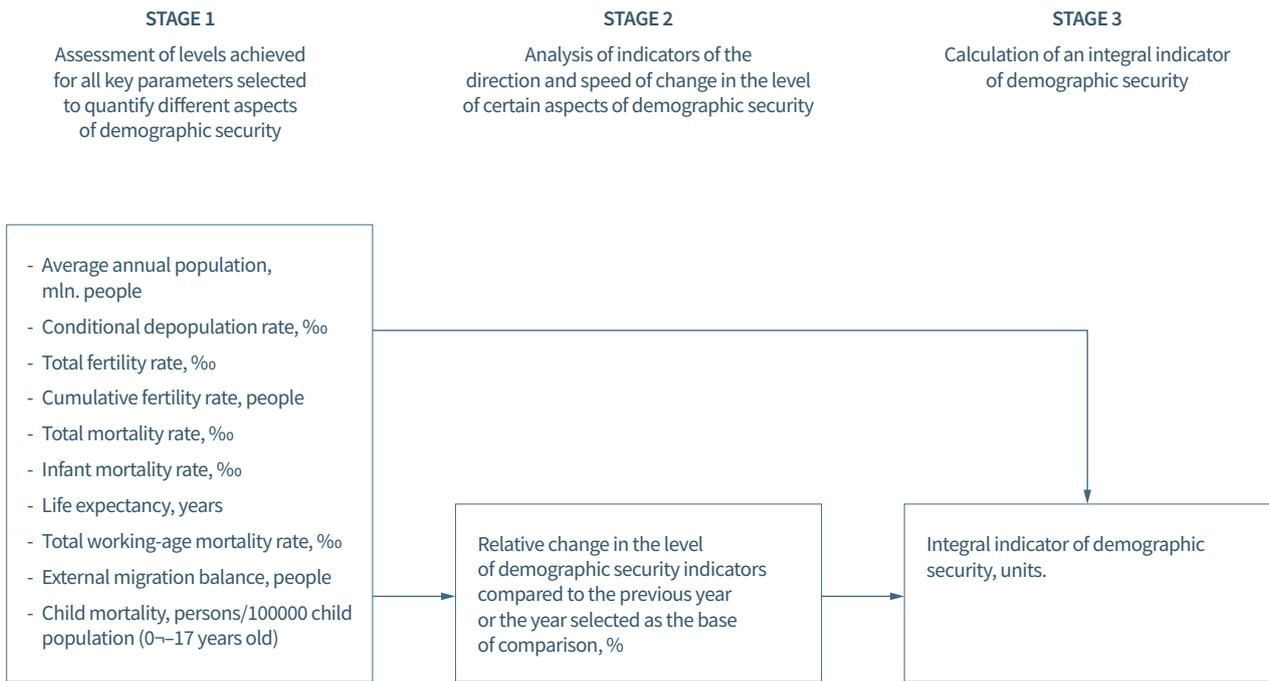


Fig. 1. System of demographic security indicators

Source: own compilation.

Table 1. List of additional indicators for assessing demographic security in the Republic of Belarus

Indicator	Calculation of the indicator	Critical limit values	Significance for demographic security in the Republic of Belarus
Old age coefficient	The share of persons aged 65 and over in the total population, %	15	15
Family coefficient	Proportion of persons with families in the total population, %	51	80
Life expectancy at birth for men, years	Number of years to be lived by a boy born in a year	Level of economically developed countries	Annual growth of 0.3 years
Life expectancy at birth for women, years	Number of years to be lived by a girl born in a year	Level of economically developed countries	Annual growth rate of 0.1 years
Level of irregular migration	Number of irregular migrants per 100,000 population	1	1

Source: own compilation.

foundation for the calculation of indicators that reflect the specifics of transformation and final results of the object under consideration.

Currently, to analyze the degree of demographic security in the Republic of Belarus, a list of indicators is used, which is presented in Figure 1 as the first stage. This list does not allow to cover all the components of the current model of demographic development of the Republic of Belarus, in particular, population ageing, differentiation of life expectancy between men and women and so on.

Taking into account the main national interests and threats in the demographic sphere to analyze the degree of demographic security, it is advisable to include the indicators presented in Table 1 in the list of indicators.

The indicators of “conditional depopulation rate”, “infant mortality rate”, “life expectancy at birth”, “total fertility rate” refer to the indicators of population reproduction. The indicator of “population ageing coefficient” characterizes the age structure of the population, which has a direct impact on the reproduction processes.

The indicator of “family coefficient” allows assessing the state of the family institution. The indicator of “illegal migration rate” characterizes the state of the external source of threats in the demographic sphere – the arrival of illegal migrants on the territory of the country.

2. Analysis of indicators of the direction and speed of change in the level of certain aspects of demographic security

The levels of certain aspects of demographic security are subject to certain changes over time, which makes it necessary to assess the direction (improvement or deterioration) and speed of evolution of the parameters of specific demographic threats. This group of indicators is important because it allows to objectively reflect the dynamics of demographic security. It should be noted that any shifts in the levels, directions and speed of change in certain aspects of demographic security lead to certain consequences, which also require statistical assessment, especially relevant in terms of the development and justification of measures to minimize current and future public losses.

3. Calculation of the integral indicator of demographic security

The accumulation of all the main indicators by weighting the degree of pairwise superiority provides comparable information on demographic development in dynamics and space, which is especially relevant for the study of regional differences.

The methodology for calculating the demographic security index includes several stages.

The first stage involves the selection of indicators for calculations and data collection, the second stage involves the calculation of weights.

For this purpose, the method of pairwise comparisons of indicators by means of expert evaluation is used. The matrix element b_{ij} takes the value of 2 if P_i is more important than P_j ; the value of 1 if the parameters P_i and P_j have equal weight category; the value of 0 if P_i is less important in relation to P_j :

$$b_{ij} = \begin{cases} 2, & \text{if } P_i \text{ is more important than } P_j; \\ 1, & \text{if } P_i \text{ is equal to } P_j; \\ 0, & \text{if } P_i \text{ is less important than } P_j \end{cases}$$

The order of the matrix is $n = 10$, then $n^2 = 100$, respectively, $\sum S_i = 100$. The matrix presented in *Table 2* is correctly compiled.

The weight of each indicator is calculated by the formula:

$$M_i = S_i / n^2$$

The third stage of the methodology consists in assigning a rank for each indicator within the existing values. For ranking, the indicators are given a score on a scale equal to the number of indicators in the block, from the worst – 1 point to the best – 10 points (*Tab. 3*).

Table 2. Results of pairwise comparison of demographic security indicators

Indicator	a)	b)	c)	d)	e)	f)	g)	h)	i)	j)	S_i	M_i
a. Average annual population, people	1	0	2	0	2	0	0	0	2	0	7	0.07
b. Conditional depopulation rate	2	1	2	1	2	1	1	2	2	1	15	0.15
c. Total fertility rate, ‰	0	0	1	0	1	2	1	1	2	0	8	0.08
d. Cumulative fertility rate, people	2	1	2	1	2	1	1	1	2	1	14	0.14
e. Total mortality rate, ‰	0	0	1	0	1	0	0	0	2	0	4	0.04
f. Infant mortality rate, ‰	2	1	0	1	2	1	1	1	2	1	12	0.12
g. Life expectancy, years	2	1	1	1	2	1	1	2	2	1	14	0.14
h. Total working-age mortality rate (15–60 years old), ‰	2	0	1	1	2	1	0	1	2	1	11	0.11
i. External migration balance, people	0	0	0	0	0	0	0	0	1	0	1	0.01
j. Child mortality, persons/100000 child population (0–17 years old)	2	1	2	1	2	1	1	1	2	1	14	0.14

Source: own compilation.

Table 3. Ranking of demographic security indicators for the Republic of Belarus

Indicator \ rank	1	2	3	4	5	6	7	8	9	10
Conditional depopulation rate	0.890–0.855	0.856–0.823	0.822–0.789	0.788–0.753	0.754–0.721	0.72–0.687	0.686–0.653	0.652–0.619	0.618–0.585	0.584–0.551
Cumulative fertility rate, people	<1	1.001–1.088	1.089–1.176	1.177–1.264	1.256–1.352	1.353–1.44	1.441–1.528	1.529–1.616	1.617–1.704	>1.705
Child mortality, persons/100000 child population (0–17 years old)	4.40–4.18	4.19–3.99	3.98–3.78	3.77–3.57	3.56–3.36	3.35–3.13	3.14–2.94	2.93–2.73	2.72–2.52	2.51–2.31
Life expectancy, years	73.3–73.69	73.70–74.08	74.09–74.47	74.48–74.86	74.87–75.25	75.26–75.64	75.64–76.03	76.04–76.42	76.43–76.81	76.82–77.2
Infant mortality rate, ‰	3.5–3.31	3.3–3.11	3.1–2.91	2.9–2.71	2.7–2.51	2.5–2.31	2.3–2.11	2.1–1.91	1.9–1.71	1.7–1.51
Total working-age mortality rate, ‰	4.78–4.99	4.77–4.57	4.56–4.36	4.35–4.15	4.14–3.94	3.93–3.72	3.71–3.51	3.50–3.30	3.29–3.09	3.08–2.88
Average annual population, people	<1000000	1000000–1099999	1100000–1199999	1200000–1249999	1250000–1299999	1300000–1349999	1350000–1399999	1400000–1449999	1450000–1499999	>1500000
Total fertility rate, ‰	8.31–8.56	8.57–8.82	8.83–9.08	9.09–9.34	9.35–9.6	9.61–9.86	9.87–10.12	10.3–10.38	10.39–10.64	10.65–10.9
Total mortality rate, ‰	15.1–14.49	14.48–13.87	13.86–13.25	13.24–12.63	12.62–11.99	12–11.39	11.38–10.77	10.76–10.13	10.14–9.53	9.52–8.9
External migration balance, people	<700	701–900	901–1100	1101–1300	1301–1500	1501–1700	1701–1900	1901–2100	2101–2300	>2300

Source: own compilation.

Table 4. Ranking of the regions of the Republic of Belarus by demographic security indicators, 2019

Indicator	Brest Oblast	Vitebsk Oblast	Gomel Oblast	Grodno Oblast	Minsk	Minsk Oblast	Mogilev Oblast
Conditional depopulation rate	1	1	1	1	1	1	1
Cumulative fertility rate, people	10	5	8	8	1	7	8
Life expectancy, years	6	3	7	2	10	9	2
External migration balance, people	1	1	1	2	10	8	1
Average annual population, people	3	1	1	3	10	1	1
Total mortality rate, ‰	4	1	3	2	10	3	2
Total working-age mortality rate, ‰	3	1	1	1	10	2	1
Total fertility rate, ‰	10	3	7	5	1	6	5
Infant mortality rate, ‰	6	3	7	10	8	1	10
Child mortality, persons/100000 child population (0–17 years old)	7	3	9	10	10	1	10

Source: own compilation.

At the fourth stage, the regions are grouped according to the indicators of each block (*Tab. 4*).

The final stage is to calculate the demographic security index using the formula:

$$d = \sum M * R,$$

where:

M – weight of the indicator;

R – rank of the indicator.

The higher the value of the index, the lower the chance of risks. The threshold value of the demographic security index is 5.

Results

The undoubted successes of the National Demographic Security Programs of the Republic of Belarus for the periods of 2007–2010 and 2011–2015 were insufficient to establish a simple type of reproduction of the country's population (*Tab. 5*). Further efforts are required to optimize the state socio-demographic policy accompanied by sustainable economic growth.

The current stage of development is characterized by negative dynamics of almost all demographic indicators that are among the target ones. Positive effects remain in the reduction of infant mortality.

Table 5. Meeting the of target indicators of programs aimed at ensuring demographic security of the Republic of Belarus

Indicator	National Program of Demographic Security of the Republic of Belarus for 2007–2010		National Program of Demographic Security of the Republic of Belarus for 2011–2015		Program “Health of the People and Demographic Security of the Republic of Belarus” for 2016-2020		Program “Health of the People and Demographic Security of the Republic of Belarus” for 2021–2025
	target indicators	indicator level in 2010	target indicators	indicator level in 2015	target indicators	indicator level in 2019	target indicators
Average annual population, mill. people	-	9.48	9.44–9.45	9.46	-	9.42	-
Conditional depopulation rate	1.45	1.27	-	1.007	-	1.37	-
Total fertility rate, ‰	9–10	11.4	11.8–12.0	12.6	-	9.3	-
Cumulative fertility rate, people	-	1.486	1.55–1.65	1.708	1.75	1.38	1.32–1.46
Total mortality rate, ‰	12–13	14.5	12.5–13.0	12.7	-	12.8	-
Infant mortality rate, ‰	6	4	3.8	3	3.4	2.4	3
Life expectancy, years	70	70.4	72–73	73.8	74.6	74.4	-
Total working-age mortality rate, ‰	-	-	5	4	3.8	4.3	3.9
External migration balance*, people	-	+40999	+60000	+65087	+70000	+35046	-
Child mortality, persons/100000 child population (0-17 years old)	-	-	-	-	-	-	30

* Amount for the entire period of the programs.
Source: (Bobrova et al., 2022).

The calculations of the demographic security index for 2010, 2015 and 2019 allow us to see significant improvements in demographic security in the regions of Belarus (*Fig. 2*).

By 2019, the index value less than the threshold was recorded in the Vitebsk, Gomel, Minsk and Mogilev oblasts. Nevertheless, the index in the Gomel and Mogilev oblasts is close to the threshold. The city of Minsk, which is the most stable in terms of demographic security, clearly stands out against the background of all the regions.

The Vitebsk Oblast is the most depressive in terms of demographic security. Here the demographic ageing of the population is pronounced, the rural population is fading and dying out, low population density is observed, etc. The most favorable situation is in the Brest Oblast, as well as in the capital region, which are characterized by the presence of a minimum number of demographic threats. Nevertheless,

in Brest region, as in all regions of Belarus, there is depopulation, population decline due to natural loss and outflow of residents outside the region. The metropolitan region also has a number of negative demographic trends: depopulation, high concentration of population, excessive inflow of migrants, etc.

The proposed index can be used to compare demographic security between countries and regions of countries.

For example, according to the calculations for 2010, 2015 and 2019, Belarus has a more favorable demographic situation than Russia in terms of demographic security (*Fig. 3*).

In addition, there are noticeable differences in this index in the context of regions of Belarus and Russia that share a common border. If in 2010 all the regions under consideration had close to each other values of the index, by 2019 the higher index was observed in the Vitebsk Oblast (*Fig. 4*). All the regions under

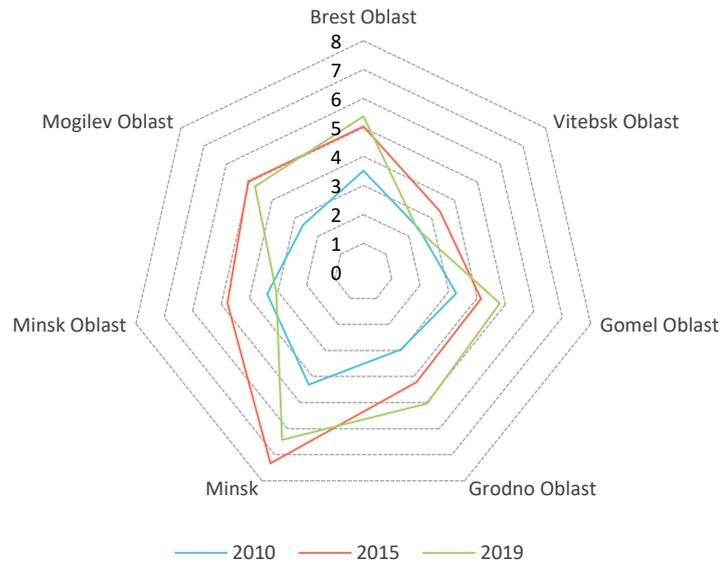


Fig. 2. Demographic security index of the regions of the Republic of Belarus

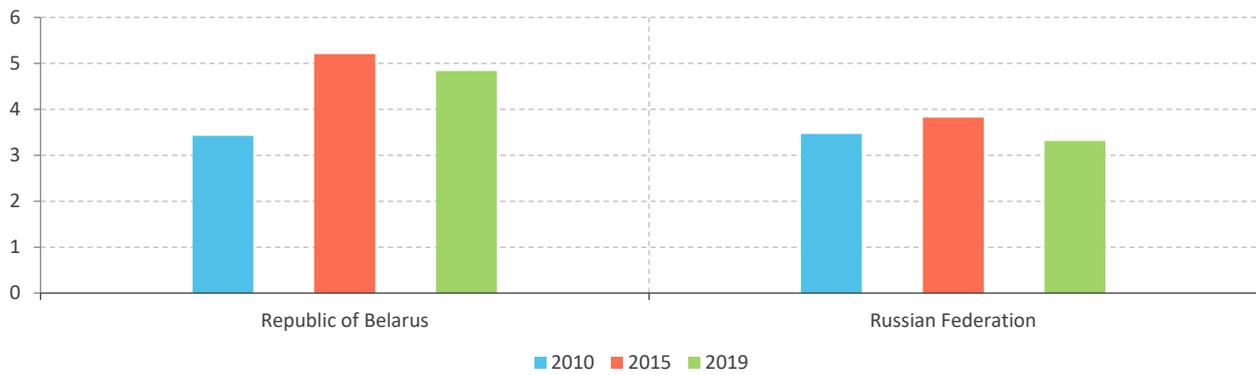


Fig. 3. Dynamics of the demographic security index in Belarus and Russia

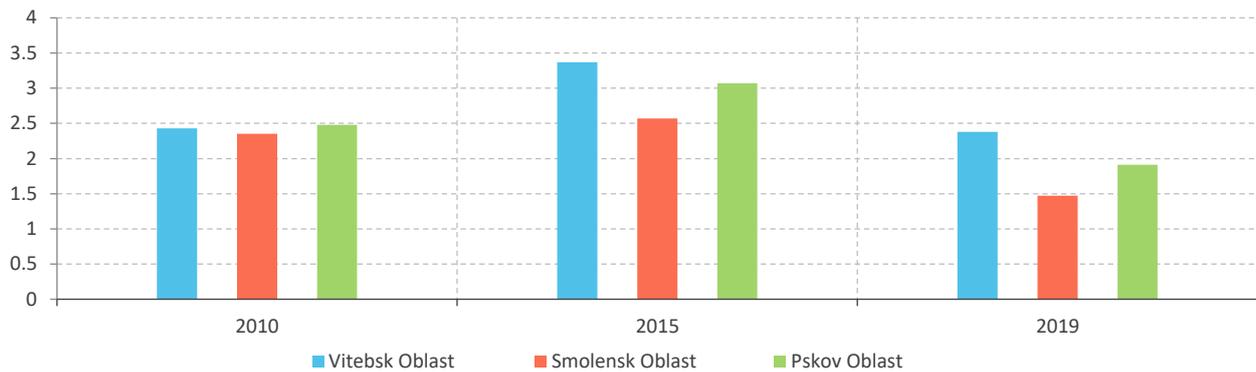


Fig. 4. Dynamics of the demographic security index by border regions of Belarus and Russia

consideration have similar dynamics: growth in 2015 and decline in 2019.

During the study period, the demographic security index in the Mogilev Oblast increased 1.7 times, from 2.77 (2010) to 4.75 (2019), while the index decreased in the Bryansk and Smolensk oblasts. The main factors contributing to the

improvement of the demographic situation in the Mogilev Oblast include a decrease in mortality rates, including child and infant mortality. The most noticeable drop occurred in the Smolensk Oblast, due to a decrease in birth rates and a decrease in migration growth. As a result, the gap with the second Belarusian

oblast with which there is a common border, the Mogilev Oblast, has widened. If in 2010 the value of the demographic security index of the Mogilev Oblast was at the same level with the indicators of the Bryansk and Smolensk oblasts, by 2019 the gap amounted to 62–69% (Fig. 5).

In the third Belarusian region bordering Russia, the Gomel Oblast, the demographic security index increased from 3.27 (2010) to 4.8 (2019). The decline in mortality rates (in particular, child mortality, infant mortality and mortality of the working-age population) had a favorable impact on the demographic situation in the region as a whole. In the Bryansk Oblast, on the contrary, there was a decrease in the demographic security index due to a decrease in the birth rate in the region. Thus, from 2010 to 2019, the value of the demographic security index in the Bryansk Oblast decreased by 33.7% (Fig. 6).

In general, in the period under review, the regions of Belarus had a more favorable situation in terms of demographic security

in comparison with the regions of Russia. In the Belarusian regions, higher values of the demographic security index are due to low values of infant mortality, infant mortality, and higher birth rates. At the same time, all the selected regions are characterized by a wide list of demographic threats (Tab. 6).

In addition to the demographic threats common with Russia in the form of depopulation, high mortality and low birth rate, the regions of Belarus are also characterized by disproportionate territorial distribution of the population, decreasing intensity of marriage, fading and extinction of the rural population, and migration loss (Karmanov et al., 2015).

Russian regions are characterized by higher marriage rates than the regions of Belarus (Popova, Barashkova, 2014). In the considered regions of Russia there is also a decline in the rural population, but its share still exceeds 25%. Despite the migration growth, their population continues to decline due to high natural decline.

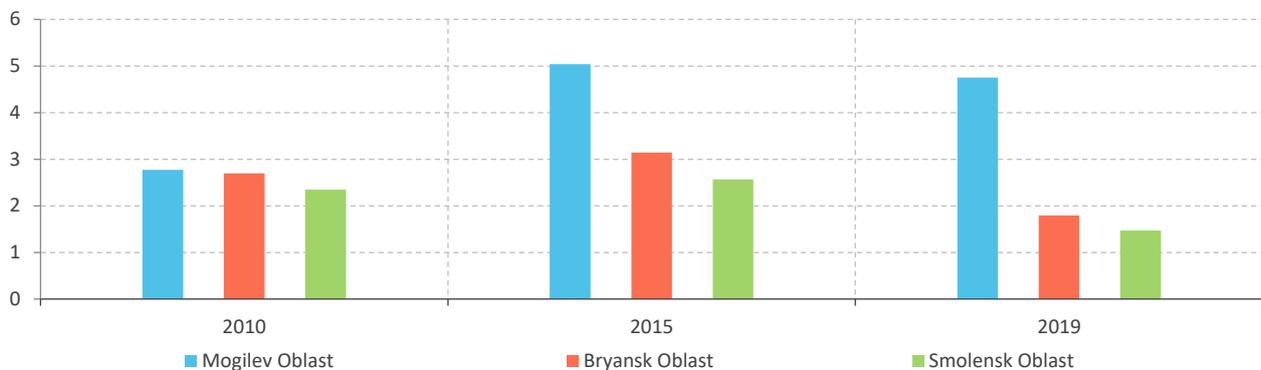


Fig. 5. Dynamics of the demographic security index in the context of the border regions of Belarus and Russia

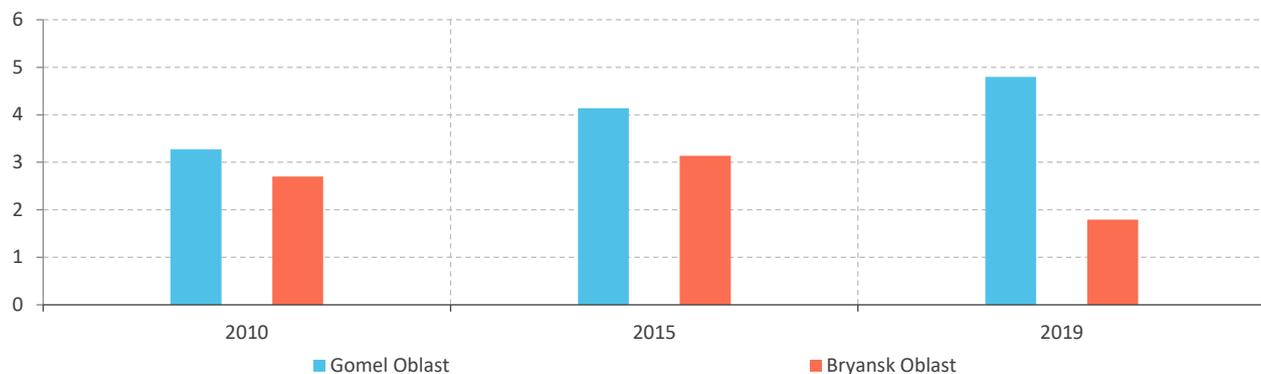


Fig. 6. Dynamics of the demographic security index in the context of border regions of Belarus and Russia

Table 6: Demographic threats characteristic of border regions of Belarus and Russia

Vitebsk Oblast	Mogilev Oblast	Gomel Oblast	Republic of Belarus	Demographic threats	Russian Federation	Bryansk Oblast	Smolensk Oblast	Pskov Oblast
				Depopulation				
				Population decline				
				Low or high population density				
				Disproportionate spatial distribution of inhabitants				
				Decay and extinction of rural population				
				Population aging				
				Excessive youth of the population				
				Disproportionality of the sex composition of the population				
				Narrowed population generation replacement				
				Negative natural increase (decrease) of population				
				Low or excessively high birth rate of the population				
				Decrease in the intensity of marriage of the population				
				Increase in the intensity of population divorce				
				Population overmortality (high mortality of the population with a developed health care system)				
				Low life expectancy of men				
				Outflow of population to other regions or outside the country				
				Excessive inflow of migrants				
				Negative migration growth (loss) of population				
	demographic threat confirmed							
	no demographic threat							

Source: own compilation.

Conclusion

Thus, the demographic block remains one of the most important components of security in both Belarus and Russia. Mitigating threats and risks in the demographic sphere is a task for the states, business, church, and society. Combining the efforts of all stakeholders will strengthen the socio-economic basis and mental foundations of demographic processes (Shabunova et al., 2013).

Interstate unions play an important role in solving demographic problems of the country. Russia and Belarus, experiencing common difficulties in improving the demographic situation, have unrealized potential for joint

actions. To overcome the negative consequences of the deteriorating demographic situation, both countries are implementing a number of measures aimed at preserving the health of the population, increasing the importance of family values and the prestige of families with children, popularizing healthy lifestyles, improving the quality of health care services, spreading gender equality in the family and society, and optimizing migration flows (Bobrova, 2021). Cooperation in the demographic sphere within the Union State of Belarus and Russia opens up new horizons for strengthening the socio-economic basis and mental foundations of demographic processes.

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