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From Migration Magnet to Isolated Outpost: Demographic Scenarios for the Kaliningrad Region (2025–2045)

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Abstract

This paper examines possible demographic trajectories of the Kaliningrad region up to 2045 under conditions of growing geopolitical isolation after 2022. Using the cohort-component method, it models three scenarios that differ only in net migration, while fertility and mortality remain fixed. The results show that migration remains the decisive factor shaping future population size and age structure. Under sustained negative net migration, the region may fall below 1 million inhabitants by 2030 and experience accelerated ageing, with additional implications for the regional economy and defence potential.

KEY WORDS: *Kaliningrad region, demographic forecasting, cohort-component method, migration, depopulation, population ageing, exclave, demographic security, mobilization potential, Spectrum DemProj.*

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1. Introduction

Following the Second World War, the demographic evolution of the Kaliningrad region became a rare historical example of near-total population replacement within an exclave territory. The resettlement of the region began with the organised arrival of migrants from various parts of the Soviet Union, while the original German population was deported. During the Soviet era, the region maintained strong migration links with the rest of the country, bolstered by its strategic transport and economic functions on the Baltic Sea.

Despite the wider trend of national depopulation, the Kaliningrad region remained a consistent magnet for migrants, standing alongside the capital cities and the Krasnodar region as one of Russia's few stable centres of attraction. By 2018, the population of the region had surpassed one million. Natural population change was largely offset by net migration from former Soviet republics and other Russian territories. Consequently, the demographic trajectory of the region differed sharply from the trends seen in neighbouring Baltic states, where depopulation had become a deep-rooted, long-term issue [1].

The external environment for the region shifted dramatically after February 2022. Sanctions and restrictions on transport transit have significantly increased the isolation of the exclave, narrowing the scope for economic adaptation. The appeal of the region to potential migrants has declined. At the same time, growing uncertainty about the future appears to have accelerated the outflow of the most mobile, younger age groups.

Meanwhile, fertility indicators are deteriorating. In 2023, the total fertility rate in the region fell to 1.18, which is far below the replacement level of 2.05. The number of annual births dropped to 7.6 thousand, compared to more than 12 thousand in the mid-2010s. The cohort-component method reveals the demographic mechanism behind this shift. The smaller cohorts born during the 1990s and early 2000s are now entering their reproductive years. As a result, the total number of births is falling even if age-specific fertility rates remain unchanged. Mortality also remains a significant factor. However, for the purposes of this modelling, mortality and fertility parameters have been fixed at the levels of the Rosstat medium forecast across all scenarios. This decision was made because migration is currently the main driver of uncertainty regarding the future demographic dynamics of the region.

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Since 2024, access to detailed demographic statistics has become increasingly restricted. Under these circumstances, independent modelling takes on a particular importance. This study employs the cohort-component method and the DemProj module of the Spectrum software suite. This approach allows us to estimate potential changes in the population size and age structure of the Kaliningrad region up to 2045. The resulting estimates provide scenario-based trajectories for different migration regimes and are dependent on the specific assumptions applied.

2. Literature review

In the academic literature, the stability and even the expanded reproduction of the Kaliningrad region's demographic potential have typically been linked to the compensating role of migration. Data from censuses and micro-censuses between 1989 and 2015 reveal that the region maintained a relatively young age structure for longer than many other Russian territories. This specific feature was directly tied to external migration inflows [3]. More recent studies, however, track the weakening of this model after February 2022. This change is clearly visible in the net migration figures: the region saw gains of about 14 thousand in 2019 and 16 thousand in 2021, but these figures fell to roughly 6 thousand per year in 2022 and 2023.

Kolosov and Sebentsov [6] demonstrate that since the start of the war in Ukraine, the exclave's borders have acted increasingly as a barrier. As a result, economic ties are narrowing while the costs associated with the region's isolated position continue to rise. Similar findings appear in research on cross-border cooperation, which shows that interaction between border regions depends heavily on border regimes and the degree of permeability [16]. For an exclave, sustained population losses through migration are much harder to replace than in standard border regions.

Studzińska and Dunaj[10] note a rise in uncertainty within the daily lives of local residents. For the younger generation, this likely leads to a re-evaluation of both their migration intentions and their reproductive plans. In a later study, Studzińska, Dunaj, and Domaniewski [11] explore this through the concept of "local border resilience", which describes how people adapt to the region's heightened isolation on a day-to-day basis. Vlasova[14] describes this state through the "politics of fear", where war, the anticipation of threats, and a heightened sensitivity to risk become part of the everyday experience. Mamedov [8] identifies a related shift in the official rhetoric regarding the war, which is becoming increasingly ideological and value-driven.

Veebel [13] links the militarisation of the region to its decreasing appeal for highly qualified professionals. Cordes [4] emphasises a different angle, suggesting that the exclave's location, combined with heightened security risks, makes it less suitable for long-term residency. Topolski [12] views the Kaliningrad region as a territory with a military potential that goes beyond simple defence. This, in turn, increases strategic tension around the exclave.

Based on a 2024 survey, Lialina [7] shows that the migration potential of the local population has strengthened since 2022. The main drivers cited include security concerns, political uncertainty, and economic motives. In essence, the literature is beginning to describe a transition from a state of stable migration attraction to one of higher migration vulnerability. This shift should be viewed within the broader context of research on Russian territorial resilience during wartime. In this context, the focus has moved away from regional development and towards maintaining governance, territorial control, and the ability of regions to adapt to a prolonged crisis [9].

3. Data and Methodology

The population projection for the Kaliningrad region was developed using the cohort-component method via the DemProj module of the Spectrum software suite. This method calculates future changes by tracking births, deaths, and migration for each age group over time. Data was sourced from official publications by Rosstat and Kaliningradstat, including the regional demographic forecast released in December 2023. By using Rosstat's parameters–which assume an optimistic rise in fertility and life expectancy–this projection remains conservative. If the expected growth in birth rates fails to happen due to isolation and socio-economic stress, the actual rate of depopulation will be even more severe than our models suggest. The starting point for the calculations is the population size and age-sex structure as of 1 January 2024.

The baseline scenario, titled Inertial, replicates the medium-level forecast parameters set by Rosstat. In this version, the total fertility rate (TFR) rises gradually from 1.18 in 2025 to 1.56 by 2045. Mortality rates improve, with life expectancy at birth reaching 79.6 years by the end of the period, up from 74.9 years. Net migration is expected to remain between 10 and 12 thousand people per year. This scenario serves as a control, reflecting the assumption that the region will maintain its previous level of migration appeal.

In the two alternative scenarios, only the migration component is adjusted. Fertility and mortality parameters are kept the same as in the baseline. This restriction was applied intentionally to ensure that any differences in results can be attributed specifically to migration. This is vital for the Kaliningrad region. Throughout the post-Soviet era, migration has consistently offset natural decrease and supported population growth. By fixing other variables, the impact of migration becomes much clearer. This approach aligns with Russian studies on compensatory migration, where migration is seen as a primary tool for replacing natural population loss [15]. It also reflects broader demographic theory: in societies that have finished the demographic transition, migration is often the most volatile factor affecting population size and age structure [5].

The Zero migration scenario assumes a net migration balance of zero. Under these conditions, migration no longer compensates for natural population decline.

The Negative migration scenario presents a crisis version with a steady net loss of residents. The parameters are set as an inversion of 50% of the migration gain seen in the baseline. While the inertial model gains 10-12 thousand people annually, this crisis model assumes a loss of about 5-6 thousand people per year. We do not claim this is an exact prediction of the future migration balance. Instead, it serves as an analytical stress test to see how sensitive the region is to a shift from migration gain to migration loss. This scenario is justified by the recent drop in migration to the region and the weakening of transport, economic, and geopolitical links following the full-scale invasion of Ukraine. This assumption creates a clear deviation from the inertial path without relying on extreme or impossible figures.

Thus, the model explores three migration regimes: positive, zero, and negative net migration. A more complex set of scenarios would likely not provide more useful insights. Given the high level of uncertainty and limited data, too many options would only create a false sense of precision.

Furthermore, increased isolation means that some forms of movement are difficult to track accurately. This includes temporary departures, household relocations, and young people who leave for education and do not return. There are also gaps between where people are officially registered and where they actually live. Current data does not allow us to model these behaviours as separate components. Therefore, we treat them as part of the overall shift in the migration regime. While this simplifies the human side of migration, it keeps the scenarios comparable and makes the demographic outcomes easier to see.

Finally, it must be noted that since 2024, the publication of official Russian demographic statistics has been significantly reduced. Some data has been effectively closed to external analysis. This lack of transparency has hit migration data hardest, specifically regarding age, sex, and the direction of moves. Consequently, this projection relies on aggregated figures and scenario-based assumptions. However, for the purpose of this study, such aggregation is not a major obstacle. Our goal is not to rebuild every tiny detail of demographic change, but to assess how the presence or absence of compensatory migration affects the total size and age structure of the population.

4. Results

Our projections reveal that the various paths begin to diverge significantly within the first few years of the forecast. In the baseline scenario, the population grows from 1.03 million in 2024 to 1.06 million in 2030, reaching 1.14 million by 2045. However, under zero net migration, the figures drop to 1.0 million and 923.5 thousand respectively. The decline is even more pronounced in the negative migration scenario, where the population falls to 974.3 thousand by 2030 and continues to drop to 814.5 thousand by 2045.

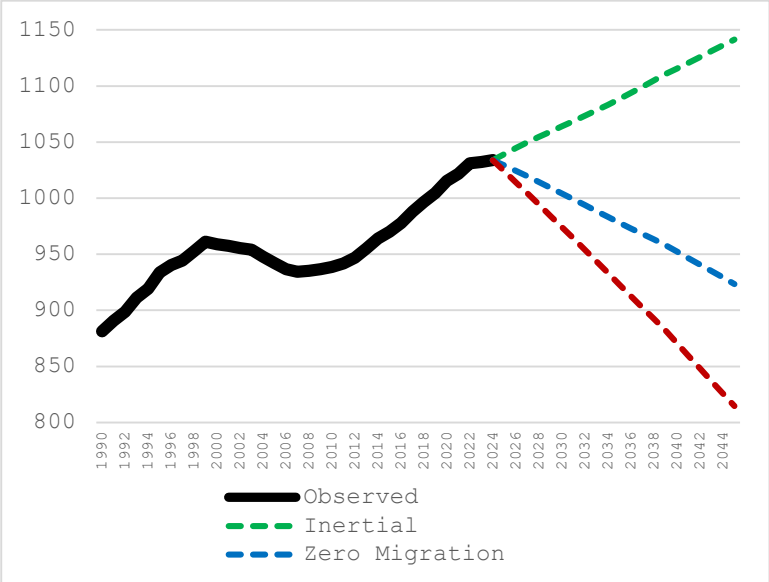

Fig. 1. Dynamics of Total Population in the Kaliningrad Region in 1990–2045 (thousands)

In the negative migration scenario, the population dips below the 1 million mark between 2029 and 2030. This suggests that without compensatory migration, the region's previous growth trajectory cannot be maintained over the long term. Birth trends also differ across the models. While the baseline scenario sees annual births rise from 7.6 thousand in 2024 to 8.3 thousand in 2030, the negative scenario sees them fall to 7.0 thousand. Because migration losses primarily affect young adults, the pool of potential parents shrinks, which inevitably lowers the number of future births.

By 2040, the consequences of this cumulative loss are even more apparent. The 30–44 age group, which is vital for the labour market, family formation, and migration mobility, is hit particularly hard. By 2045, this cohort consists of 245.4 thousand people in the baseline scenario. In the zero migration scenario, it shrinks to 175.6 thousand, and in the negative migration scenario, it falls to just 140.6 thousand. This is approximately 42.7% lower than the baseline figure.

The results for 2045 confirm a major shift in the age structure of the population. In the baseline scenario, there are 180.0 thousand children aged 0–14, while the 15–64 age group reaches 729.7 thousand. The group aged 65 and over totals 231.7 thousand, or 20.3% of the population. In the zero migration scenario, these figures are 118.7 thousand, 579.8 thousand, and 224.9 thousand, with the elderly share rising to 24.4%. In the negative migration scenario, the figures drop further to 88.1 thousand for children and 504.9 thousand for the working-age population. In this case, the share of those aged 65+ rises to 27.2%.

Table 1.

Comparative Population Structure by Main Age Groups (thousands)

Year	Scenario	Children 0–14	Working 15–64	Older 65+	65+, %
2030	Inertial	150.0	709.8	204.2	19.2
	Zero migration	136.7	665.4	202.1	20.1
	Negative migration	130.1	643.1	201.1	20.6
2035	Inertial	142.7	733.3	212.3	19.5
	Zero migration	115.7	654.1	208.4	21.3
	Negative migration	102.2	614.4	206.5	22.4
2040	Inertial	157.1	735.7	222.7	20.0
	Zero migration	114.0	621.1	217.3	22.8
	Negative migration	92.5	563.8	214.5	24.6
2045	Inertial	180.0	729.7	231.7	20.3
	Zero migration	118.7	579.8	224.9	24.4
	Negative migration	88.1	504.9	221.5	27.2

Within these scenarios, population ageing is driven mostly by a shrinking number of young newcomers and a loss of young adults. The role of rising life expectancy is much smaller by comparison. Essentially, the region is transitioning toward a significantly older age structure. This shift will inevitably increase the demographic burden on the working-age population.

5. Discussion

For a relatively isolated territory, the total population size is not the only thing that matters. The volume of specific age groups that ensure the daily functioning of the economy, infrastructure, and life-support systems is equally vital. A weakening of migration inflows leads to a general population decline. Crucially, it also reduces the number of people in the age groups that form the backbone of transport, construction, logistics, communications, and healthcare. These sectors are essential for the resilience of the region.

The effects of isolation are not limited to permanent migration as captured in official statistics. Households adapt in other ways. These include sending children to study outside the region, temporary relocation of family members, or shifting economic activities to external jurisdictions. Some residents may also prepare to move without immediately changing their official registration. Such forms of mobility are rarely captured in civil registration and vital statistics (CRVS). Nevertheless, they can drain the demographic potential of the region well before the impact shows up in official net migration figures.

In this context, the number of men aged 18–29 is particularly significant. In the current climate, this group serves as a proxy indicator for the potential pool of those available for military service and mobilisation. This cohort clearly demonstrates how shifts in the migration regime affect young male populations, which carry high demographic, economic, and strategic importance.

Our calculations show that by 2030, the number of men aged 18–29 will be 95.8 thousand in the inertial scenario, 80.8 thousand under zero migration, and 73.3 thousand in the negative scenario. By 2035, the gap widens to 108.8 thousand, 79.9 thousand, and 65.4 thousand respectively. By 2040, this group reaches 107.5 thousand in the baseline, but only 75.0 thousand under zero migration and 58.8 thousand in the negative scenario. By 2045, the number of men in this age bracket falls to 95.3 thousand in the inertial scenario, compared to 62.2 thousand under zero migration and just 45.6 thousand in the negative scenario.

This sharp contraction is the result of a cumulative effect. By 2045, this age range will be occupied by generations born during periods of low fertility. At the same time, migration outflows disproportionately affect the youth, who are the most mobile segment of society. As a result, by the end of the forecast period, the numbers in the negative scenario are 52.2% lower than the baseline.

The dynamics of the 18–29 male cohort are not uniform. In the inertial scenario, the group grows until 2040 before starting to decline. This pattern is caused by the movement of larger and smaller generations through this age range. However, under zero and especially negative migration, this cohort shrinks much faster after the mid-point of the forecast. This highlights how sensitive young male groups are to a long-term decline in migration.

The number of men aged 20–49 represents the core male labour force. This group is essential for maintaining logistics, transport, infrastructure, and technical services. It provides a clear measure of the male population available for both economic and defence tasks in an isolated territory.

In 2030, the number of men aged 20–49 is 219.8 thousand in the inertial scenario, 203.4 thousand under zero migration, and 195.2 thousand in the negative scenario. By 2045, these values change to 229.1 thousand, 167.8 thousand, and 137.1 thousand respectively. Consequently, by the end of the forecast, the core male workforce in the negative scenario is 40.2% smaller than the baseline level.

Table 2.

Dynamics of Male Population in Mobilization-Relevant Age Groups in the Kaliningrad Region (thousands)

Year	Inertial	Zero migration	Negative migration	Inertial	Zero migration	Negative migration
	Males 18–29			Males 20–49		
2030	95.8	80.8	73.3	219.8	203.4	195.2
2035	108.8	79.9	65.4	224.6	192.9	177.1
2040	107.5	75.0	58.8	224.8	178.5	155.3
2045	95.3	62.2	45.6	229.1	167.8	137.1

A comparison of these two age groups shows that the younger male contingent is shrinking faster than the broader working-age male population. By 2045, the gap between the inertial and crisis scenarios is 49.7 thousand for men aged 18–29 and 92.0 thousand for those aged 20–49. In relative terms, the losses are most severe in the younger group.

This decline has two main implications. First, it reduces the potential mobilisation reserve. Second, it diminishes the number of men in their most active working years – the people responsible for the maintenance of transport, engineering, and utility networks. Within this context, the gap in the total 15–64 age group is striking. By 2045, the difference between the baseline and crisis scenarios reaches nearly 225 thousand people, as shown in Table 1.

The dependency ratio is also telling. In 2045, there are roughly 564 dependants per 1,000 people aged 15–64 in the baseline scenario. This rises to 593 under zero migration and 613 in the negative scenario. While these figures do not signal an immediate collapse, the cohorts that are shrinking the fastest are those tied to employment, family formation, and military readiness. Because of this, the actual strain on regional systems may feel much heavier than the general statistics suggest.

Our findings show that continued isolation could fundamentally change the demographic resilience of the Kaliningrad region. For a long time, the region relied on migration to grow. Now, as migration weakens, it faces depopulation and a shrinking base for its economy and defence. Even if external restrictions are eventually lifted, the long-term impact of losing so many young and middle-aged people will persist. Such losses are difficult to recover through natural population change or a short-term rebound in migration.

6. Conclusions

The results of our cohort-component projection highlight that migration is the deciding factor for the demographic dynamics of the Kaliningrad region. Rosstat's inertial scenario maintains a model where migration inflows offset natural population decline. However, under conditions of zero or negative net migration, the region enters a path of steady depopulation and population ageing.

The years 2029–2030 represent a turning point. In the crisis scenario, the region loses its status as a territory with a population of over 1 million. By 2045, the total population reaches 1.14 million in the baseline case, 923.5 thousand under zero migration, and 814.5 thousand with a negative migration balance. These discrepancies emphasise just how much the demographic future of the region depends on long-term migration.

The age structure of the population is also shifting. In the crisis scenario, the share of the elderly exceeds 27% by 2045, the number of children falls to 88.1 thousand, and the population aged 15–64 drops to 504.9 thousand. This reduction hit the working-age and potential mobilisation cohorts particularly hard. These groups are essential for the labour market, infrastructure, and the military reserve. Men aged 18–29 show the highest sensitivity to a worsening migration regime.

Isolation leads to a gradual shrinking of the region's own demographic foundation, affecting mainly the permanent working-age population and young male cohorts. For this reason, it is appropriate to view demographic security as a component of the broader security of the territory.

Measures to boost the birth rate are unlikely to change the long-term trend if the region's appeal to migrants continues to decline. In recent years, Russia's family and demographic agenda has shifted increasingly towards ideological goals, such as "traditional values", while the expansion of actual social support for families remains limited [2]. Under such circumstances, it is difficult to offset migration losses through higher fertility.

While the internal redistribution of the Russian population may alter the scale of these processes, the underlying demographic logic remains the same. In the Kaliningrad region, fertility is lower and the role of migration is significantly higher than in most other parts of the country, yet the core patterns of population reproduction are moving in the same

direction. In this sense, the region can be seen as a case study that clearly shows the consequences of losing migration as a way to compensate for natural population decline.

To preserve the human potential of the Kaliningrad region, its external links and its attractiveness for long-term migration–for both Russians and foreign nationals–are of decisive importance. Otherwise, demographic contraction will become one of the primary constraints on the economic and military development of the region. This study does not merely show the possible scale of population decline; it also identifies the mechanism through which an exclave loses its demographic stability under conditions of low fertility and natural decrease. In this situation, the weakening of migration inflows becomes the key factor in the transition from balanced population reproduction to steady decline. These scenarios should be understood specifically as an analytical framework for assessing the impact of losing the compensatory role of migration.

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References

1. Abylkalikov S. Natives of the former Soviet Union countries in contemporary Russia. Sotsiologicheskie issledovaniya, 2016, 4, p. 42–49. URL: https://www.socis.isras.ru/en/article/6140
2. Abylkalikov S., Karpunina A. The Cost of "Traditional Values": How State Ideology Undermines Family Social Protection and Worsens Demographics in Late-Putin's Russia. Socialni Prace, 2025, p. 49-70. URL: https://socialniprace.cz/en/issue/2025-04-eng/
3. Abylkalikov S., Sazin V. Migration in the Kaliningrad region reflected in the 1989–2015 censuses and microcensuses. Baltic Region, 2019, 11(2), p. 32–50. https://doi.org/10.5922/2079-8555-2019-2-3
4. Cordes M.J. Kaliningrad Oblast 2024: Russia's vessel of havoc on the Baltic Sea. DIIS Report 2024:08, 2024. URL: https://www.diis.dk/node/27096
5. Goujon A. The demographic future that we do not know about. Science, 2025, 390(6775), eaed1652. https://doi.org/10.1126/science.aed1652
6. Kolosov V., Sebentsov A.B. The border as a barrier and an incentive for the structural economic transformation of the Kaliningrad exclave. Baltic Region, 2023, 15(4), p. 104–123. https://doi.org/10.5922/2079-8555-2023-4-6
7. Lialina A. Factors of outmigration of the population of the Kaliningrad region: data from a sociological survey. Vestnik Moskovskogo Universiteta. Seriya 5, Geografiya, 2025. https://doi.org/10.55959/MSU0579-9414.5.80.2.3
8. Mamedov I. How are narratives sacralised? Russian dogma on the war in Ukraine. Contemporary Politics, 2025, 31(3), p. 461–478. https://doi.org/10.1080/13569775.2024.2387436
9. Paustyan E., Busygina I. The regional dimension of Russia's resilience during its war against Ukraine: An introduction. Post-Soviet Affairs, 2024, 40(4), p. 243–249. https://doi.org/10.1080/1060586X.2024.2350259
10. Studzińska D., Dunaj J. Kaliningrad as an isolated zone: the impact of the war in Ukraine on the daily life of the residents. Journal of Baltic Studies, 2023, 54(2), p. 395–407. https://doi.org/10.1080/01629778.2023.2197605
11. Studzińska D., Dunaj J., Domaniewski S. Living with isolation: The local border resilience in the Kaliningrad region. Geopolitics, 2025, p. 1–25. https://doi.org/10.1080/14650045.2025.2590093
12. Topolski I. Military potential of the Russian Federation in the Kaliningrad Oblast. Rocznik Instytutu Europy Środkowo-Wschodniej, 2025, 23(3), p. 235–252. https://doi.org/10.36874/RIESW.2025.3.12
13. Veebel V. Strategic role of Kaliningrad after outbreak of war in Ukraine. Baltic Rim Economies, 2022, 3, p. 7. URL: https://sites.utu.fi/bre/strategic-role-of-kaliningrad-after-outbreak-of-war-in-ukraine/
14. Vlasova O. War's Shadow: Exploring Multifaceted Strategies in the Politics of Fear. Challenges to National Defence in Contemporary Geopolitical Situation, 2024, 1(1). https://doi.org/10.3849/cndcgs.2024.161
15. Yumaguzin V., Vinnik M. Long-term forecast of the replacement migration in Russia. Journal of the New Economic Association, 2023, 58(1), p. 48–64. https://doi.org/10.31737/22212264_2023_1_48
16. Zabielska I.I., Klimach A., Dawidowicz A. Identification of factors influencing cooperation between border towns in different border traffic regimes. Applied Geography, 2026, 186, 103841. https://doi.org/10.1016/j.apgeog.2025.103841