KSE Institute

October 2026

DEMOGRAPHY AS A LIMITING FACTOR OF UKRAINE'S POST-WAR GROWTH

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KEY PROJECTION RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

KSE Institute's demography work answers two questions: how the population will change over the next 15 years and who will work during the recovery. The report has three parts: (1) a population estimate for January 1, 2026; (2) a cohort-component projection for 2026–2041; and (3) an analysis of the available labor force and its productivity, building on the results of the demographic analysis. The central finding is that the labor force will shrink in every scenario, even with large-scale returns and fast veteran integration. A real GDP growth path of 4.4% and 5% during the post-war recovery is therefore consistent with the demographic outlook only if output per worker grows more than two and a half times faster than before the full-scale war.

Labor is the binding constraint on Ukraine's post-war growth path: the published GDP forecasts are consistent with the demographic outlook only if output per worker grows more than two and a half times faster than in 2011–2021. This conclusion comes from testing the GDP forecast against the labor supply that Ukraine's demography can deliver. Real GDP growth is determined by the growth of employment and of output per worker, so the GDP path of the Ukraine Macroeconomic Handbook Q4 2026, combined with the employment projection, which follows from the population by age and sex, labor force participation rates, and unemployment, yields the required labor productivity growth as a residual. This requirement is compared with the 1.9% a year that Ukraine achieved in 2011–2021; the country last saw productivity growth of the required magnitude in the boom years before 2008. The civilian labor force will decline even under the most favorable combination of refugee returns and veteran integration, to 12.2 million at the end of 2030, and to 11.5 million under the least favorable one. The decline will continue after 2030: in 2040 the population aged 15–64 will be 16% smaller than in 2026 in the moderate scenario and 26% smaller in the pessimistic one. Either more people must work than the central case assumes (more refugee returns, less emigration, higher labor force participation, faster veteran integration), or output per worker must grow much faster than before the full-scale invasion.

The demographic projection is based on a cohort-component model with a single-year age grid. The model advances every sex-and-age cohort through deaths, births, flows between civilian life and military service, emigration, and return, one calendar year at a time, from January 1, 2026 to January 1, 2041 (section "The Demographic Projection Model," Figure 1). The model covers three non-overlapping groups: the resident population of government-controlled Ukraine (civilians and military personnel), refugees abroad, and migrants, that is, Ukrainians abroad who are not refugees (pre-war migrants, whom the State Statistics Service de facto still counted in Ukraine's population at the start of 2022; people who left after February 2022 on work, study, or family permits; their children born abroad; and, in the projection, everyone who emigrates after the war). Together, these three groups make up the total population outside Russia, Belarus, and the occupied territories. It does not cover all Ukrainians worldwide: it excludes the long-standing diaspora and those who left earlier and were no longer counted in Ukraine's population by early 2022. Migration is modeled through separate channels: the wartime net outflow adds to the refugee stock; a one-off post-war outflow (family reunification and deferred emigration) and ordinary emigration add to the migrant stock; refugees return on a scenario schedule, and migrants return each year at a small constant rate. The three scenarios differ in five parameters:

- The war ends in 2027 (optimistic and moderate scenarios) or in 2030.
- By 2040 the total fertility rate rises from 1.04 to 1.40, 1.25, or 1.10.
- Half, a third, or 15% of refugees return.
- Migrants return at a rate of 2.5%, 1.5%, or 0.5% a year.
- By 2040 the life expectancy gap with five EU countries (Bulgaria, Latvia, Slovakia, Hungary, and Romania) narrows by half, by a quarter, or persists.

On January 1, 2026, 29.4 million people lived in government-controlled Ukraine. Another 6.5 million Ukrainians were abroad: 5.0 million refugees and 1.5 million migrants (Table 1). Since the start of 2022 the resident population within today's territory has fallen by about 4.3 million (13%),[1] mostly through emigration. Deaths exceeded births by about 1.2 million. More than one in five residents is aged 65 or older, and there are 114 women for every 100 men. The projection puts the resident population on January 1, 2041 at 26.7, 25.0, and 22.3 million (optimistic, moderate, and pessimistic scenarios). Natural decrease is the largest and most predictable driver: 2.1–2.8 million births are expected over 2026–2040, against 7.1–7.4 million deaths. Migration drives the spread between the scenarios: net migration is +1.6, +0.4, and −1.8 million, and returns alone account for more than half of the 4.5 million gap between the extreme scenarios. The population aged 15–64 will fall from 19.6 million to 17.4, 16.4, and 14.6 million in 2040. In the moderate scenario, the number of people aged 65 and over per 100 people aged 15–64 will rise from 31 to 39.

Table 1: Key demographic indicators, 2026 and 2041, by scenario

	2026 (base)	2041: Optimistic	2041: Moderate	2041: Pessimistic
Resident population (GCA), million	**29.37**	**26.73**	**25.01**	**22.27**
Refugees abroad, million	4.97	2.66	3.64	5.78
Migrants abroad, million	1.54	2.22	2.49	2.50
Total population (resident + abroad), million	**35.88**	**31.60**	**31.14**	**30.55**
Population aged 15–64, million (2040)	19.6	17.4	16.4	14.6
Persons 65+ per 100 persons 15–64 (2040)	31	38	39	41
Median age, years (2040)	45	50	50	51
Births 2026–2040, million		2.81	2.52	2.11
Deaths 2026–2040, million		7.10	7.25	7.43
Net migration 2026–2040, million		+1.64	+0.37	−1.79

Note: Group stocks as of January 1, 2041; age structure as of January 1, 2040. Military personnel are included in the resident population. Ukrainians in Russia and Belarus and the population of the occupied territories are not estimated or projected.
Source: KSE Institute

Key policy recommendations

- **Invest in innovation and dual-use goods, building on the wartime defense-technology model.** Ukraine already has a working instrument for financing technological innovation. Brave1, the defense-technology cluster launched in April 2023 by the Ministry of Digital Transformation, the Ministry of Defense, the General Staff, and other state bodies, has awarded more than 1,000 grants worth UAH 6.2 billion[2] and helped create new industries such as interceptor drones, unmanned ground vehicles, and short-range electronic warfare systems. The same model of fast grants, testing with end users, and start-up support should be extended to dual-use goods: technologies with both military and civilian markets, such as drones for agriculture and logistics, communications, energy systems, and software. This would keep engineers and capital in high-productivity activities, support exports, and help offset the shrinking labor force.

[1] On January 1, 2022, the territory controlled by the government before February 2022, excluding Luhansk oblast, had a population of 36.0 million, of whom 2.3 million lived in the parts of Donetsk, Kherson, and Zaporizhzhia oblasts occupied after February 24, 2022; within today's government-controlled territory, the population was therefore 33.7 million. The decline of 4.3 million by January 1, 2026 consists of 3.6 million in the 21 oblasts and Kyiv (Table 3) and 0.7 million in the government-controlled parts of the front-line oblasts (from 1.86 to 1.13 million; subsection "How the population in Ukraine is estimated").

[2] Ministry of Defence of Ukraine, "Brave1 has awarded more than 1,000 grants to Ukrainian defense developers": https://mod.gov.ua/en/news/brave1-has-awarded-more-than-1-000-grants-to-ukrainian-defense-developers.

- **Prepare veteran integration programs before mass demobilization begins.** Mass demobilization after the war will bring a large number of veterans back into civilian life within two to three years. How quickly they return to work accounts for a difference of about 0.2 million in the 2030 civilian labor force between the pessimistic and optimistic scenarios. The programs should be in place before demobilization starts: medical and psychological rehabilitation; retraining linked to reconstruction jobs; recognition of skills gained in military service; wage subsidies or tax incentives for employers who hire veterans; and return-to-work pathways for veterans with disabilities. A detailed review of these integration policies is available in the KSE Institute report. Most of these instruments should also be available to other vulnerable groups with weak links to the labor market: people with disabilities (including those whose disability is not war-related), internally displaced persons, older workers, and the long-term unemployed. Building them as general programs with a dedicated veteran track, rather than as veteran-only schemes, would reach more people and reduce the risk of resentment between groups.

- **Treat return and reduced emigration of the working-age population as a single policy field.** In the moderate scenario, the first peace year combines about 0.4 million returns with about 0.6 million departures, so net migration turns positive only in 2029. Policies that make return attractive for families also discourage departures to join relatives abroad: families separated by the war reunite in Ukraine. Ordinary post-war emigration can be reduced only through better wage and job prospects in Ukraine.

- **Raise labor force participation among women, older people, and people with disabilities**. A one-percentage-point change in participation is worth about 0.2 million workers, as much as the difference between slow and fast veteran integration. The largest reserve is women aged 25–39: in 2021 their participation rate was 65–76%, against about 90% for men. Almost three-quarters (73.2%) of non-working women would like to find a job.[3] The key instruments are affordable care for children and older relatives, flexible forms of employment, and adapted workplaces.

- **Put tax incentives for Ukrainians abroad to return up for discussion, taking into account the ethical side of such an initiative.** Portugal, Italy, and Greece exempt half of a returning emigrant's income from personal income tax for five to seven years.[4][5][6] A Ukrainian version could reduce personal income tax for three to five years for people who return after a minimum period abroad. The incentive should be tied to formal employment, capped, time-limited, and evaluated from the outset. Before it is introduced, its fairness toward those who stayed in Ukraine should be discussed, and it should be balanced against other benefits for those who worked in the country during the war. There are 6.5 million Ukrainians abroad, 5.0 million of them war refugees. On average, every two returnees are estimated to add one worker to the labor force. The stakes are therefore high, and this channel matters for Ukraine's future growth.

[3] VoxUkraine, Ukrainian Women's Fund, Info Sapiens. From Inactivity to Productivity: The Economic Effect of Integrating Women into the Labor Market (in Ukrainian): https://voxukraine.org/wp-content/uploads/2026/07/Ekonomichnyy-efekt- integratsii-zhinok-u-rynok-pratsi-analitychnyy-zvit.pdf

[4] Portugal: 50% of income from employment and self-employment is exempt from taxation for five years: https://info.portaldasfinancas.gov.pt/pt/informacao_fiscal/legislacao/instrucoes_administrativas/Documents/Oficio_Circulado_20210_2019.pdf.

[5] Italy: 50% of income is exempt from taxation for five years; 90% of income for researchers and teachers (https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:2023-12-27;209).

[6] Greece: 50% of income from employment and self-employment is exempt from taxation for seven years for persons who were not Greek tax residents in five of the previous six years (https://www.aade.gr/sites/default/files/2025-11/forologika_kinitra_ENG.pdf).

Methodological note. The projection shows how the population of government-controlled Ukraine and the number of Ukrainians abroad, by sex and age, may change under different assumptions about fertility, mortality, migration, and military service. In line with the approach of Eurostat and the demographic literature, **it is not a prediction of the future but a set of conditional scenarios that show possible developments under the stated assumptions**.[7]

Where the available data allow, the assumptions are set as close as possible to the actual situation, in particular for the starting population, fertility, mortality, and the migration outflow during the war. For highly uncertain factors, such as the year the war ends or the share of Ukrainians abroad who will return, several scenario assumptions are used.

The three scenarios outline a range of possible paths, but they are not assigned probabilities, and the actual path may fall outside this range. Migration is the largest source of uncertainty, as the population will depend heavily on the scale of returns from abroad (Annex 1). Future policy changes are not modeled separately and enter only through the scenario assumptions. The labor force projections in the section "Labor Force Projection to 2030" build on the population projection and are equally conditional. The estimate and the projection cover the population of government-controlled Ukraine and Ukrainians abroad. They do not include Ukrainians in the Russian Federation and Belarus. The population of the occupied territories is neither estimated nor projected. The projection does not model the migration of foreigners.

In this report, the resident population includes military personnel. Their number, and the flows between civilian life and military service used in the projection, are conditional modeling assumptions based on public statements and open-source estimates. KSE Institute did not measure them, and the report does not show them separately. The labor force and productivity results refer to the civilian economy.

[7] Eurostat, Population projections in the EU – methodology, Statistics Explained (last edited on July 7, 2026): https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_projections_in_the_EU_-_methodology. On the difference between a projection and a forecast, see also Smith, S. K., Tayman, J. and Swanson, D. A. (2013), A Practitioner's Guide to State and Local Population Projections, Springer, Section 1.1; Preston, S. H., Heuveline, P. and Guillot, M. (2001), Demography: Measuring and Modeling Population Processes, Blackwell, Section 6.1.

THE DEMOGRAPHIC PROJECTION MODEL

The model holds the population in groups by sex and single year of age 0–79, with an open-ended group 80+ (Table 2). The resident population of government-controlled Ukraine, civilians and military personnel together, is the universe for everything that concerns physically present households. Refugees and Ukrainian migrants abroad form the second universe as two separate stocks. Refugees return on a scenario schedule, migrants return each year at a small constant rate, and, of the two stocks abroad, only the refugee stock has births. The sum of both universes is the total population: those living in government-controlled Ukraine and those who have left Ukraine and are abroad, together with their children born abroad. It does not cover all Ukrainians worldwide: it excludes the long-standing diaspora (including people of Ukrainian descent who hold other citizenships), those who left earlier and were no longer counted in Ukraine's population on January 1, 2022, Ukrainians in Russia and Belarus, and the population of the occupied territories. The universes never mix, and each person belongs to exactly one group.

Table 2: The population groups of the model

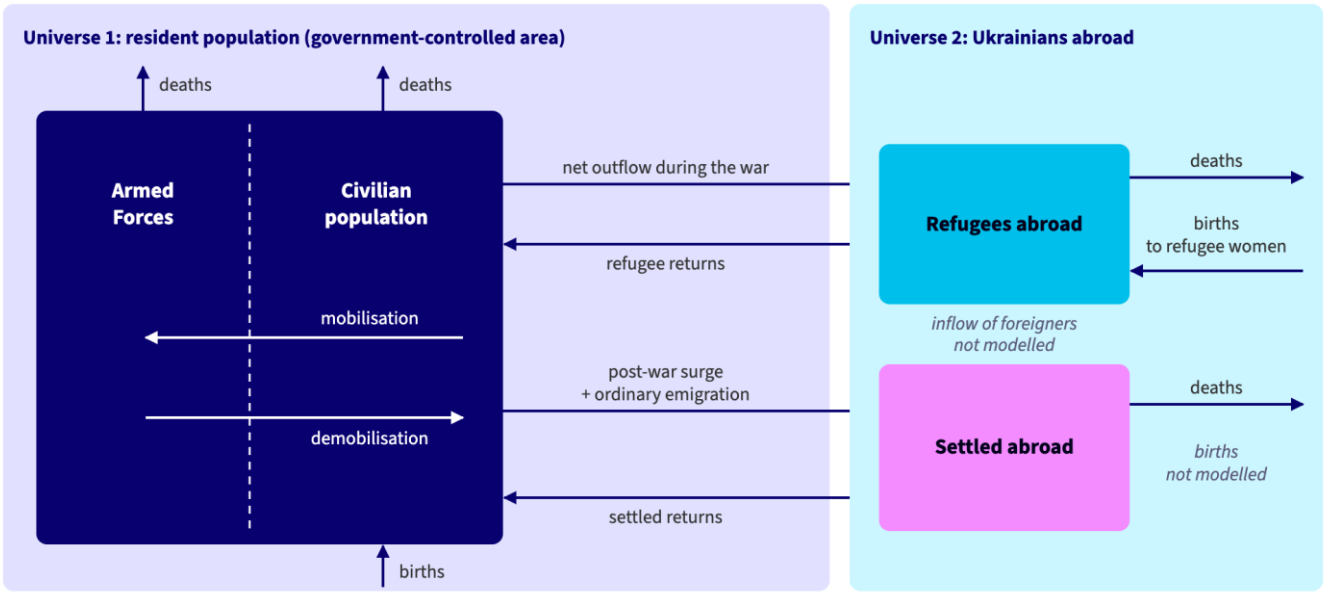
Group	Who	Inflows	Outflows
Resident population	Civilians and military personnel physically present on government-controlled territory	Births, returns	Deaths, emigration
Refugees abroad	People who left after February 24, 2022 under temporary protection or refugee status, and their children born abroad	Wartime outflow, births abroad	Deaths, returns on the scenario schedule
Settled abroad	Pre-war migrants and their children born abroad, people who left after 2022 on work, study, or family permits, and everyone who leaves after the war	Post-war outflow	Deaths, slow returns at a constant annual rate

Every calendar year runs through the same sequence of steps: deaths, aging by one year, births, flows between civilian life and military service, and migration (outflow, returns, and deaths and births among Ukrainians abroad). The rates of year t determine the state on January 1 of year t+1, so the last step is 2040 and the last state is January 1, 2041. Figure 2 illustrates this mechanism with the 2030 balance of the resident population in the moderate scenario, the third year after the war ends, when both emigration and returns are under way. The January 1, 2030 state plus that year's flows reproduces the January 1, 2031 state (27.3 million) up to rounding; the same identity holds for both stocks abroad.

The model tracks the population by single year of age: each year, everyone becomes exactly one year older. Probabilities of death, age-specific fertility shares, and age profiles of migration are set for five-year age groups because of data limitations and applied uniformly to each single year of age within the group: for example, women aged 25, 26, 27, 28, and 29 have the same fertility rate.

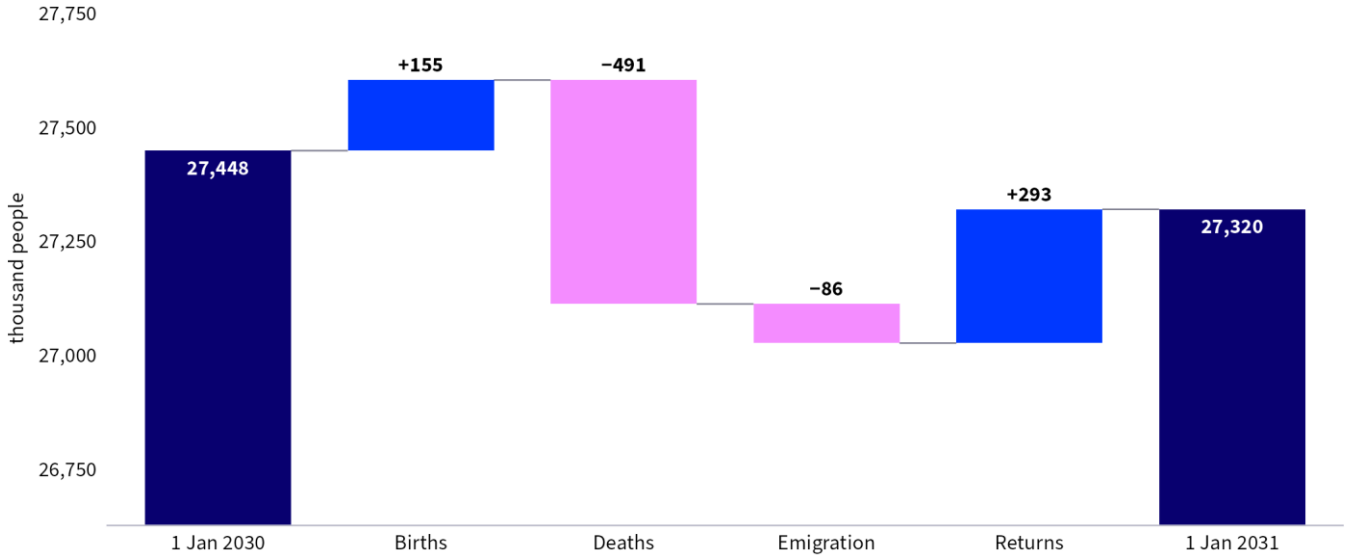
The projection starts from a population estimate that separately determines Ukraine's resident population and the number of Ukrainians abroad by sex and single year of age, without counting the same people twice. The resident population is estimated at 29.4 million. Table 3 shows how this estimate is built: for the 21 rear oblasts and Kyiv, it is derived from the demographic balancing equation based on 2022 figures, and for the government-controlled parts of Donetsk, Kherson, and Zaporizhzhia oblasts, it is estimated separately

Figure 1: Block scheme of the projection model: three population groups, the flows between them, and the sequence of one model year.



Source: KSE Institute.

Figure 2: One model year (2030, illustrative): how the resident population changes in the moderate scenario, thousand people.



Note: deaths are all deaths of the resident population; emigration is the post-war outflow. Returns are those of refugees and of settled Ukrainians abroad.
Source: KSE Institute population projection.

Table 3: How the resident population on January 1, 2026 is obtained, million people

Component	Million people
Population on January 1, 2022 (21 oblasts and Kyiv)	31.85
+ Births 2022–2025	0.71
− Deaths 2022–2025	1.89
− Missing persons (Unified Register of Missing Persons)	0.07
− Net migration abroad	3.76
+ Internal migration, net	1.40
= 21 oblasts and Kyiv	**28.25**
Donetsk oblast (government-controlled part)	0.22
Kherson oblast (government-controlled part)	0.13
Zaporizhzhia oblast (government-controlled part)	0.77
= Front-line oblasts	**1.13**
Total resident population (GCA)	**29.37**

Note: Net departures abroad: people from these oblasts who left after February 24, 2022 and were abroad on January 1, 2026, less about 0.14 million pre-war labor migrants who have returned. The front-line oblasts are estimated separately. Rounded to the nearest 10 thousand; components may not add up to the total.
Source: KSE Institute population estimate.

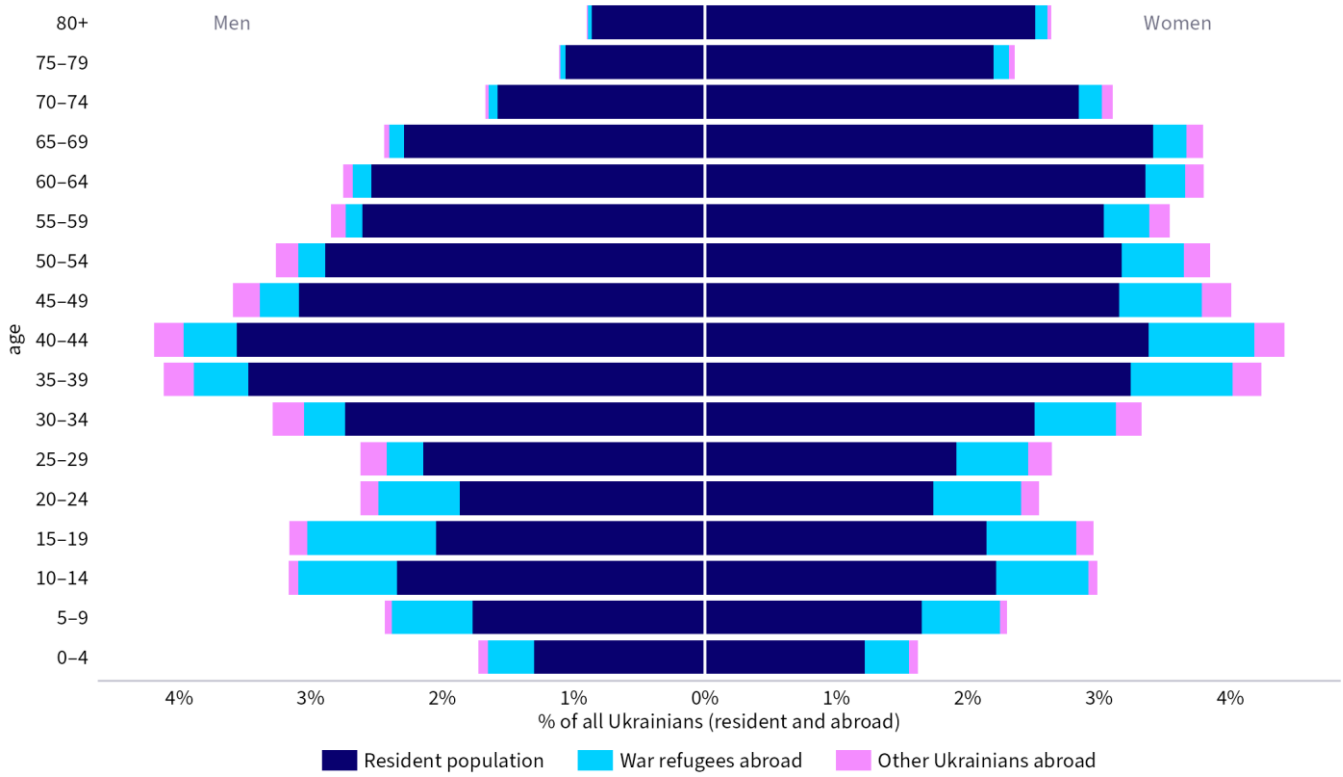
On January 1, 2026, 6.51 million Ukrainians were abroad; they fall into five groups, which the model assigns to two stocks (Table 4). The refugee stock (5 million people) covers those who left because of the war and their children born abroad. The migrant stock (1.5 million people) covers pre-war migrants and their children, as well as people who left after 2022 on work, study, or family permits. The two stocks are projected separately because they behave differently: refugees may return in large numbers after the war, migrants only gradually. The subsection "How the number of Ukrainians abroad is estimated" explains how each group is measured and how the bounds of its estimate are set, and Figure 10 shows the path from the raw refugee register data to the people actually present.

Table 4: Groups of Ukrainians abroad on January 1, 2026 and their stock in the model, million people

Group	Estimated number (central estimate)	Stock in the model
War refugees who left in 2022–2025	4.89	Refugees
Children born abroad after 2022 to refugee women	0.08	Refugees
Pre-war migrants (abroad on January 1, 2022)[8]	1.15	Settled
Left after February 24, 2022 on work, study, or family permits	0.35	Settled
Children born in 2022–2025 to pre-war migrant families	0.04	Settled
Total	**6.51**	

[8] The estimate of the pre-war stock outside Russia and Belarus (1.15 million) is independently confirmed by host-country statistics: at the end of 2021, Ukrainian citizens held 1.61 million valid residence permits in the EU and EFTA, which, adjusted for the seasonality of Polish short-term permits, corresponded to about 1.27 million people actually present in Europe at the start of 2022 (Annex 5).

Figure 3: Starting sex-and-age structure on January 1, 2026 by five-year age group: resident population and Ukrainians abroad, %



Source: KSE Institute population estimate.

Three scenarios of the demographic projection

The optimistic scenario assumes a durable settlement after 2027 with rapid demobilization. EU temporary protection ends, and half of the refugees return from 2028. Fertility recovers most strongly, and the life expectancy gap with Central and Eastern European (CEE) countries halves. The moderate scenario assumes an unstable ceasefire after 2027 and a moderate pace of demobilization. A third of refugees return, in line with the central value of intention surveys and the Eurostat baseline,[9] and fertility and life expectancy recover moderately. The pessimistic scenario assumes war until the end of 2030, with prolonged mobilization and war-related civilian mortality. Returns begin only in 2031 and reach only 15% of refugees (the Syrian pattern), and the life expectancy gap with CEE countries does not narrow. The outflow, the pace of mobilization and demobilization, indirect war mortality, and fertility abroad also depend on the scenario. The subsection "How the model components are computed" describes them together with their components; Annex 3 sets out the basis for each assumption.

How the model components are computed

Population aging is modeled by moving every person to the next age each January 1. People who reach 80 move into the open-ended group 80+, and newborns form age 0. The model has 81 single-year age groups for each sex and population group. Each age uses the rate of its five-year age group, and aggregate flows between groups are distributed across single years of age in proportion to population.

[9] UNHCR, Lives on Hold: Intentions and Perspectives of Refugees from Ukraine #7 (July 2026): https://data.unhcr.org/en/documents/details/123284; Eurostat, EUROPOP2025, annex on assumptions about refugees: https://ec.europa.eu/eurostat/cache/metadata/Annexes/proj_25n_esms_an_Annex_1_-_EUROPOP2025_-_Refuge.pdf.

Table 5: Scenario parameters

Parameter	Optimistic	Moderate	Pessimistic
Last year of the war	2027	2027	2030
Total fertility rate in GCA, 2026 → 2040 (children per woman)	1.04 → 1.40	1.04 → 1.25	1.04 → 1.10
Share of refugees that returns	50%	33%	15%
Return window: start and length	2028, 13 years	2028, 13 years	2031, 10 years
Annual return rate of settled Ukrainians abroad	2.5%	1.5%	0.5%
Share of the life-expectancy gap with Europe closed by 2040	50%	25%	0%

Source: KSE Institute.

Civilian mortality is modeled as the probability of dying within the year for each age and sex. Life expectancy is projected to converge gradually toward the European level, at a speed that depends on the scenario.

The starting point is a pre-war period life table built from State Statistics Service data on deaths and population by single year of age for 2015–2019. Donetsk and Luhansk oblasts are excluded, because their population data also covered non-government-controlled areas, while death registration there was incomplete. This table gives life expectancy at birth of 66.8 years for men and 76.7 years for women. These values are the baseline of the projection, not an estimate of actual mortality in 2026: no reliable life table exists for the war years.

The benchmark for subsequent dynamics is the EUROPOP2025 median for five CEE countries. Under that projection, it rises from 73.1 to 75.4 years for men and from 80.5 to 82.3 years for women over 2026–2040. The initial gap between Ukraine and this benchmark is therefore 6.3 years for men and 3.8 years for women. Depending on the scenario, the gap narrows by 50%, 25%, or not at all by 2040. Even in the last case, life expectancy in Ukraine rises along with the European benchmark.

In 2040 life expectancy at birth reaches 72.2, 70.7, and 69.1 years for men and 80.4, 79.5, and 78.5 years for women under the three scenarios (Figure 4).

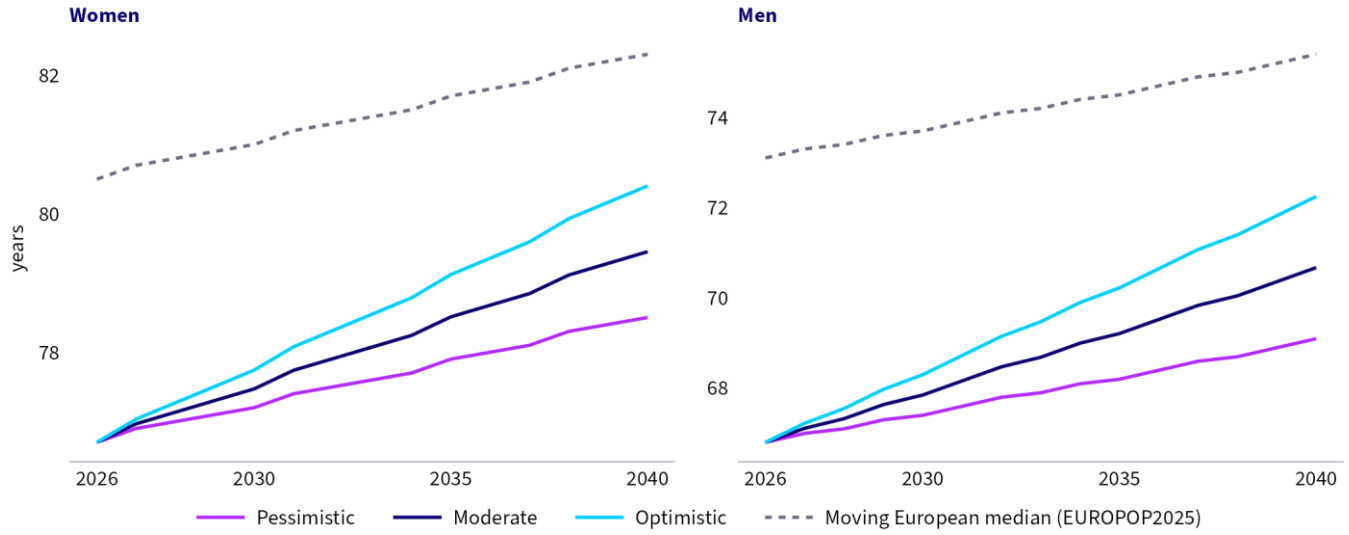
The model accounts for indirect war mortality among civilians caused by damage to infrastructure and the health care system. Only in the pessimistic scenario does this factor raise mortality further in the war years, adding about 30 thousand deaths in 2026–2030. Civilian deaths from strikes before 2026 are already reflected in the starting population, while direct losses from strikes after 2026 are not modeled separately.

Births are computed as a sum over mothers' ages: the number of civilian women of each age, multiplied by the current year's total fertility rate (TFR) and the age group's share in fertility, and divided by five. The TFR for 2026 is 1.036 and is common to all scenarios;[10] by 2040 it rises linearly to 1.40, 1.25, or 1.10.[11] Over 2026–2040 the model produces 2.81, 2.52, and 2.11 million births in government-controlled territory. Births to refugee women abroad are computed separately (Figure 5).

[10] The 2026 TFR is the 2025 estimate for government-controlled Ukraine carried forward to 2026. Live births registered in 2025 by oblast (Ministry of Justice) are distributed by mother's age using the latest age structure of deliveries from the Ministry of Health (2024) and divided by the number of women of the same age in the population estimate. The result is multiplied by a calibration factor of 0.99, at which the same method reproduces the official State Statistics Service TFR for 2008–2021 with an average deviation of about 0.01.

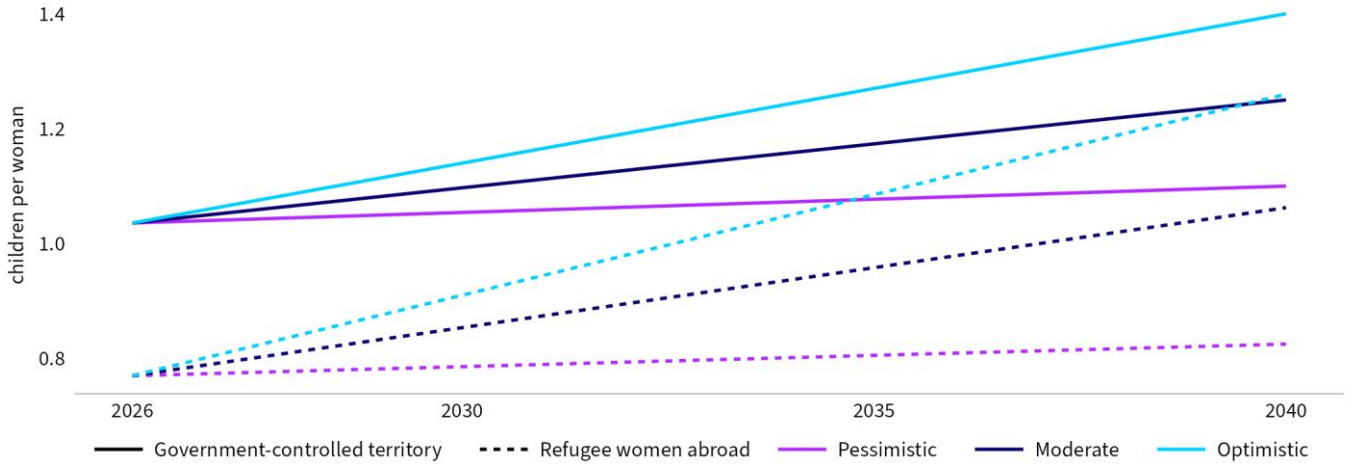
[11] Age-specific fertility shares are fixed at their 2025 level: only the overall level (TFR) changes, while the distribution of births by mother's age stays the same, with the largest shares at ages 25–29 (33.6%) and 30–34 (36.6%); the mean age of mothers at childbirth is about 30 years. The share of boys among births is 0.5155, or about 106 boys per 100 girls.

Figure 4: Life expectancy at birth in government-controlled territory by scenario, compared with the EUROPOP2025 median for five CEE countries, years



Source: KSE Institute; EUROPOP2025.

Figure 5: Total fertility rate in government-controlled territory and in the refugee stock abroad, by scenario



Source: KSE Institute.

Migration is the most uncertain and most scenario-dependent component of the projection. The model divides the migration of Ukrainians into five non-overlapping channels: the wartime net outflow (departures minus entries, so returns during the war are already netted out), the one-off post-war outflow, ordinary post-war emigration, refugee returns, and migrant returns. **The inflow of foreigners is set to zero**: the population estimate does not separate foreigners, so adding their inflow could double-count some of them; this issue will be revisited in a future revision.

The wartime outflow is the net departure of Ukrainian citizens during the war years.[12] Its level is calibrated to the net departures of Ukrainian citizens observed in recent years: about 0.20, 0.25, and 0.38 million in 2026 (optimistic, moderate, and pessimistic scenarios), declining until the war ends. The age profile follows UNHCR

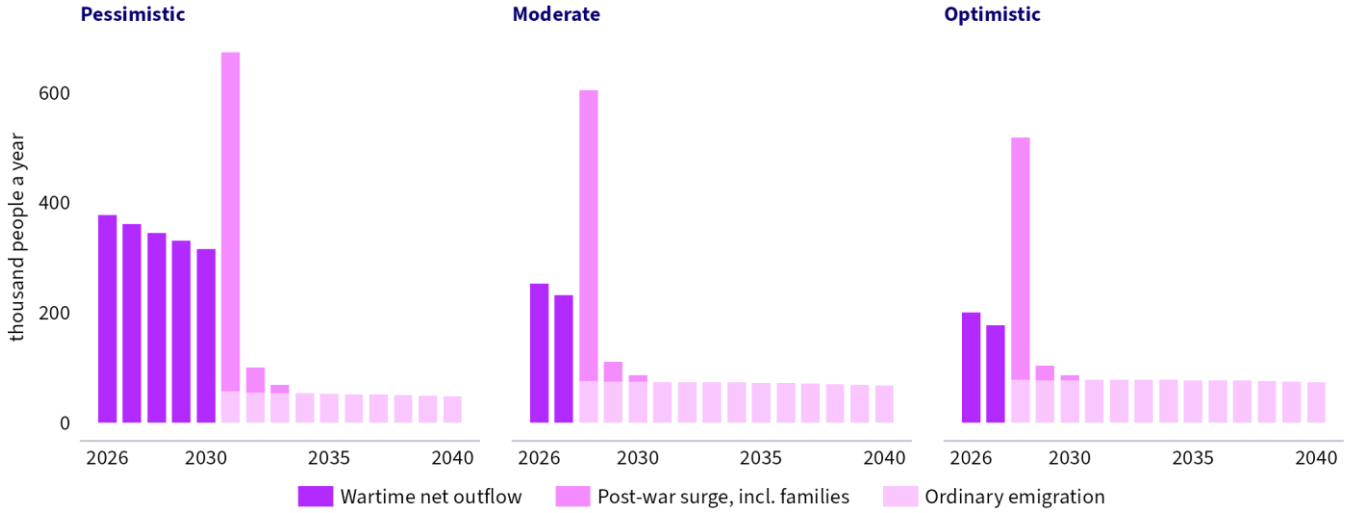
[12] The wartime outflow is a net balance, not a gross flow: departures minus returns of Ukrainian citizens. Returns during the war are therefore already included in the balance, and the separate return channel starts operating only when the return window opens.

data,[13] and the whole flow goes to the refugee stock, including the small share of people who leave on work or study permits (about 7% of departures in 2022–2025).

In the first peace year, a one-off post-war outflow adds to the migrant stock. It has three components: reunification with families already abroad; deferred emigration, that is, departures that would have happened earlier given the pre-war propensity to emigrate but were postponed by martial-law restrictions; and partners and children who leave with them.[14] Over the first post-war years, this amounts to about 0.5, 0.6, and 0.7 million people (optimistic, moderate, and pessimistic scenarios). Annex 7 describes the components for the moderate scenario (Table G1).

Ordinary post-war emigration is the permanent peacetime outflow of labor and family migrants, corrected for the fact that the people most inclined to leave already left during the war.[15] Applied to the 2026 population, pre-war rates would give about 0.15 million people a year, and about 0.09 million after this correction. In the projection, ordinary emigration after the war amounts to about 0.05–0.08 million a year, or about 1.0, 0.9, and 0.5 million over 2028–2040 (2031–2040 in the pessimistic scenario). The model assigns this entire flow to the migrant stock (Figure 6). Annex 7 explains the pre-war rate and the self-selection correction; Annex 3 lists the assumptions.

Figure 6: Outflow by channel and calendar year, thousand people a year.



Source: KSE Institute.

Refugee returns are a scenario share of the refugee stock at the start of the return window (50%, 33%, or 15%), spread over the following years so that most returns occur in the first years. In total, about 2.8, 1.9, and 1.0 million refugees return by 2040. Migrants return gradually, at 2.5%, 1.5%, and 0.5% of their number a year, calibrated on the registers of the host countries Germany, Italy, and Czechia:[16] about 0.7, 0.4, and 0.1 million over fifteen years (Figure 7).

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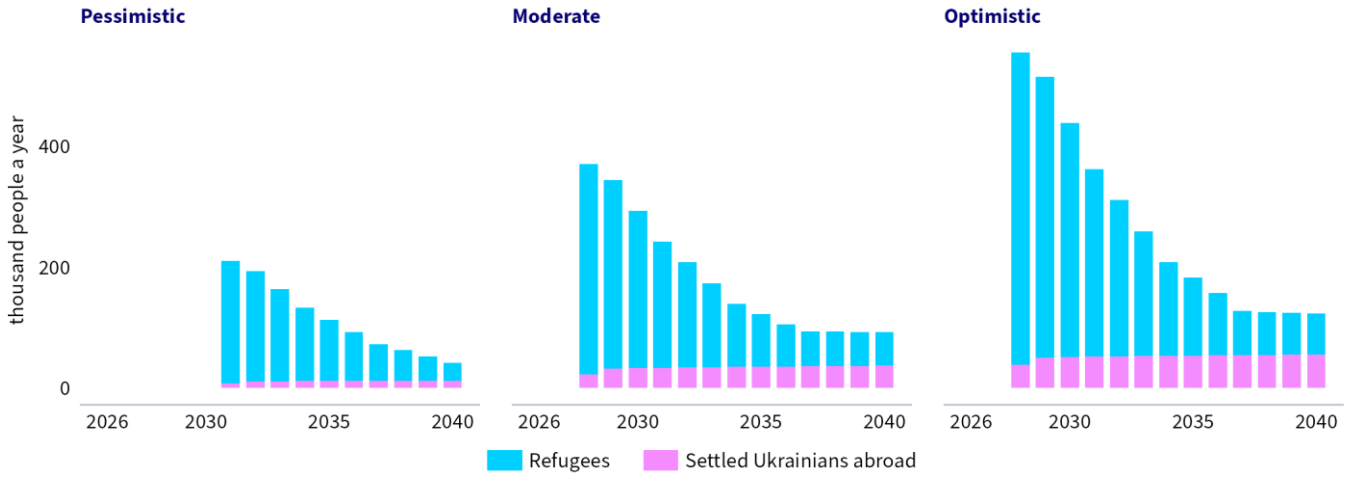
[13] UNHCR, Ukraine Refugee Situation, Operational Data Portal: https://data.unhcr.org/en/situations/ukraine.

[14] The share of refugee households in which the husband stayed in Ukraine is estimated from refugee surveys: UNHCR, Lives on Hold: Intentions and Perspectives of Refugees from Ukraine #7 (July 2026): https://data.unhcr.org/en/documents/details/123284; #6 (December 2024): https://www.unhcr.org/ua/sites/ua/files/2024-12/UNHCR%20-%20LIVES%20ON%20HOLD%206%20-%20INTENTIONS%20OF%20REF%2C%20REF%20RETURNEES%20AND%20IDPS%20FROM%20UKR%20%28SUMMARY%29_0.pdf. The estimate of the number of partners and children accompanying men is based on the Multiple Indicator Cluster Survey (MICS) 2025–2026 of the State Statistics Service of Ukraine: https://stat.gov.ua/uk/publications/zvit-pro-rezultaty-obstezhennya-mics-v-ukrayini -2025-2026.

[15] The correction is calibrated on two waves of the omnibus survey of the Kyiv International Institute of Sociology (KIIS) (a telephone survey of adults in government-controlled Ukraine): the share of those willing to move to the United States or the EU if granted citizenship fell from 28% in October 2020 to 19% in September 2024, and among people aged 18–29 from 46% to 26%; the second ratio is used for an out-of-sample check. KIIS, "Dynamics of readiness to move to live in the USA or the EU in case of obtaining citizenship of these countries," September 17, 2024: https://www.kiis.com.ua/? lang=eng&cat=reports&id=1430. Details are provided in Annex 7.

[16] Eurostat, population on January 1 by citizenship (migr_pop1ctz): https://ec.europa.eu/eurostat/databrowser/view/migr_pop1ctz/default/table, emigration by citizenship (migr_emi1ctz): https://ec.europa.eu/eurostat/databrowser/view/migr_emi1ctz/default/table, and acquisition of citizenship (migr_acq):

Figure 7: Returns by calendar year, thousand people a year.



Source: KSE Institute.

In the annual balance, net migration equals the wartime outflow until the war ends. In the first peace year, gross outflow peaks, but the balance depends on the scenario: it is already positive in the optimistic scenario, close to its 2026 level in the moderate one, and the most negative of the whole period in the pessimistic one. In the second peace year, the balance is positive in all scenarios (Table 6, Figure 8). In 2026 the balance is about −200, −250, and −380 thousand. Over the war years, net departures reach about 0.4, 0.5, and 1.7 million people. In the first peace year, family reunification and deferred emigration take place, ordinary emigration begins, and the return window opens with its largest share. Outflow is about 0.5, 0.6, and 0.7 million, returns about 0.55, 0.37, and 0.21 million, and the balance +40, −230, and −460 thousand. In the second peace year, the balance is about +410, +230, and +90 thousand, as the one-off outflow runs out while returns remain high. The balance then declines as the return schedule winds down while ordinary emigration remains stable; the floor on refugee returns (their return rate is no lower than that of migrants) takes effect only from 2037 in the optimistic and moderate scenarios and from 2040 in the pessimistic one. In the pessimistic scenario, every year of 2026–2030 shows a net outflow, and the one-off post-war outflow and the return window both fall in 2031.

Refugees and migrants have their own mortality, lower than in Ukraine, based on host-country death registers. The fertility of refugee women in 2026 is about 0.8 children per woman (according to host-country registers) and then follows the scenario; only some of the children born abroad are registered as Ukrainian citizens. Over 2026–2040, the refugee stock gains about 0.3–0.4 million children.

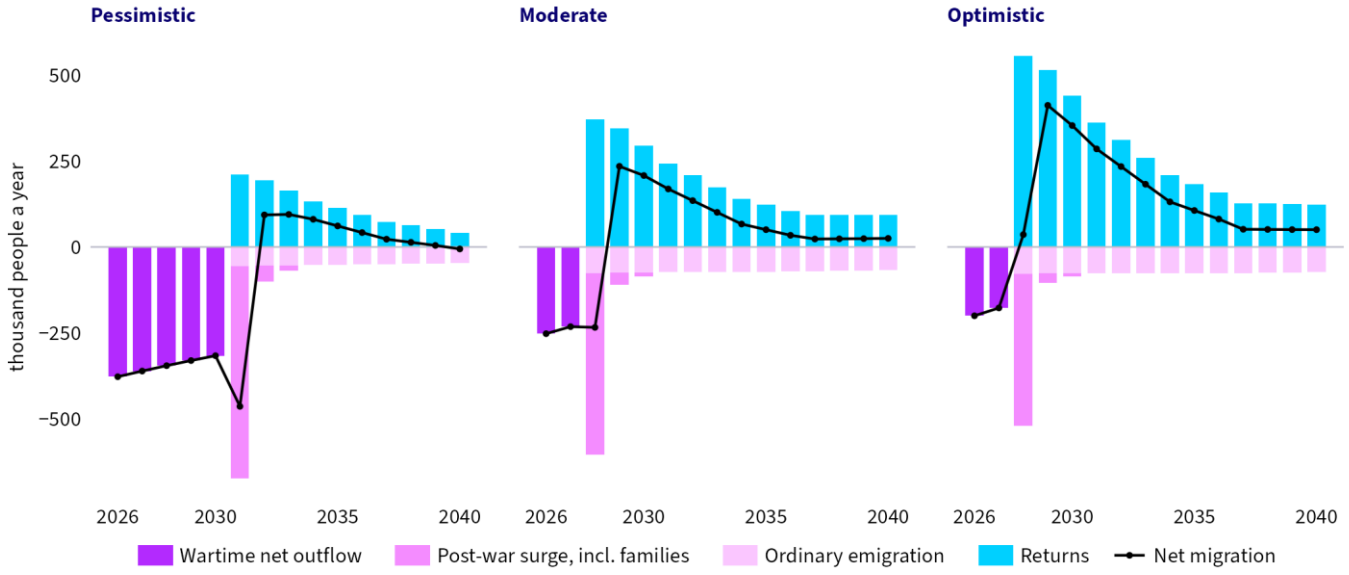
https://ec.europa.eu/eurostat/databrowser/view/migr_acq/default/table; Federal Statistical Office of Germany (Destatis), statistics on the foreign population based on the Central Register of Foreigners: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Migration-Integration/_inhalt.html and migration statistics: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Wanderungen/_inhalt.html; Italian National Institute of Statistics (ISTAT), IstatData, emigration recorded in municipal population registers by citizenship and country of destination: https://esploradati.istat.it/databrowser/#/en/dw/categories; Czech Statistical Office (ČSÚ), Demographic Yearbook of the Czech Republic, 2025 data (emigration by citizenship): https://csu.gov.cz/produkty/demographic-yearbook-of-the-czech-republic-2025 and foreigners by type of residence and citizenship (CIZ002): https://data.csu.gov.cz/datastat/info/SADA/CIZ002. The rates are explained in Annex 3.

Table 6: Components of net migration, 2026–2031, thousand people (outflow with a minus sign), resident population

Scenario	Component	2026	2027	2028	2029	2030	2031
Optimistic	Wartime net outflow	−200	−180	0	0	0	0
	Post-war surge, incl. families	0	0	−440	−30	−10	0
	Ordinary emigration	0	0	−80	−80	−80	−80
	Returns	0	0	550	510	440	360
	Net migration	**−200**	**−180**	**40**	**410**	**350**	**280**
Moderate	Wartime net outflow	−250	−230	0	0	0	0
	Post-war surge, incl. families	0	0	−530	−40	−10	0
	Ordinary emigration	0	0	−80	−70	−70	−70
	Returns	0	0	370	340	290	240
	Net migration	**−250**	**−230**	**−230**	**230**	**210**	**170**
Pessimistic	Wartime net outflow	−380	−360	−340	−330	−320	0
	Post-war surge, incl. families	0	0	0	0	0	−620
	Ordinary emigration	0	0	0	0	0	−60
	Returns	0	0	0	0	0	210
	Net migration	**−380**	**−360**	**−340**	**−330**	**−320**	**−460**

**Thousand people, rounded to the nearest 10; components may not add up to the total. Outflow is shown with a minus sign.*

Figure 8: Annual net migration by component, 2026–2040, thousand people, resident population



Source: KSE Institute.

ESTIMATING UKRAINE'S POPULATION AT HOME AND ABROAD

On January 1, 2026, about 29.4 million people lived in government-controlled Ukraine. About 6.5 million Ukrainians lived abroad. Of these, 5.0 million left because of the full-scale war, including about 80,000 children born abroad. The remaining 1.5 million are mostly labor migrants who were already abroad before 2022 and people who left after 2022 on work, study, or family permits. Together, these 35.9 million people form the population base from which the labor force of the next decade will be drawn. Almost one in five (18%) lives outside the country.

Table 7: Population in Ukraine and abroad on January 1, 2026, million people

	Central	Low	High
Living in government-controlled Ukraine	**29.37**	29.04	29.71
Ukrainians living abroad	**6.51**	6.26	6.86
of whom war refugees (incl. children born abroad)	**4.97**	4.93	5.01
of whom other Ukrainians abroad (pre-war migrants, post-2022 permits)	**1.54**	1.33	1.85
Total: Ukraine + abroad	**35.88**		
Share living abroad	**18.1%**		

Note: The lower and upper bounds are scenario bounds, not statistical confidence intervals. For the population in Ukraine, they combine the five largest uncertain assumptions as if these assumptions were independent (±0.34 million); for Ukrainians abroad, they are the sum of the bounds for each group. Neither estimate covers Ukrainians in Russia or Belarus.
Source: KSE Institute

Population in Ukraine. This is the number of people actually living in the government-controlled area (GCA) on January 1, 2026, regardless of their place of registration. Internally displaced persons are counted where they currently live. Luhansk oblast is excluded as fully occupied; Crimea and the areas occupied since 2014 are not covered by the estimate. For Donetsk, Kherson, and Zaporizhzhia oblasts, only the government-controlled part is counted.

Population abroad. This is the number of Ukrainians living abroad on January 1, 2026, whatever the reason for their departure. It consists of two parts that are likely to evolve differently in the future and that the projection treats separately:

- **War refugees (5.0 million): people who left after February 24, 2022 and hold temporary protection or refugee status abroad, counted as of December 31, 2025, together with 80,000 children born to them abroad.** They are also counted by oblast of origin.
- **Migrants (1.5 million): pre-war labor migrants who are still abroad (1.1 million), people who left after February 2022 on work, study, or family visas (0.4 million), and 38,000 children born in 2022–2025 to pre-war migrant families.** The projection assumes that they return at a low annual rate, and everyone who emigrates after the war joins this group.
- **By convention of the estimate, Ukrainians in Russia or Belarus are not counted, whether they left before or after 2022.** Most of those who went there after 2022 came from the occupied territories, whose population the estimate does not cover.

Both figures are calculated consistently to avoid double counting. Every person who left after 2022 and is counted abroad has either been subtracted from the population in Ukraine or was never part of that estimate, as in the case of pre-war migrants or children born abroad. Thus nobody is counted twice, and the combined estimate covers both population groups.

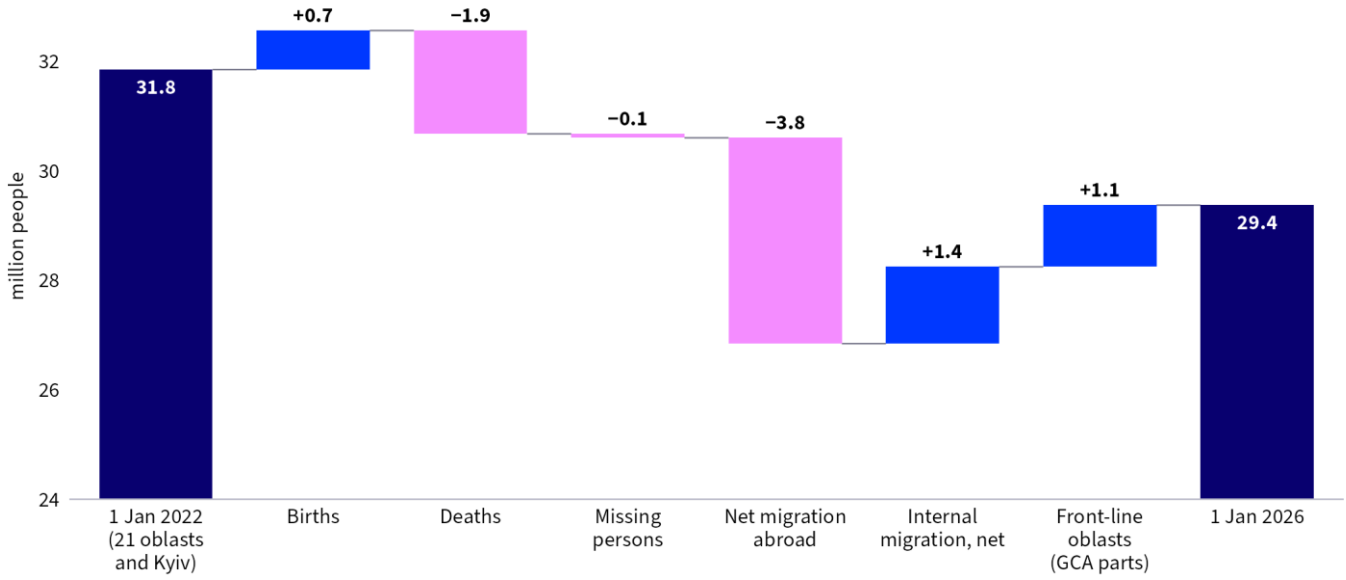
How the population in Ukraine is estimated

Ukraine has not held a census since 2001, and the State Statistics Service of Ukraine (SSSU) stopped publishing population estimates after February 2022. The estimate therefore relies on the demographic balancing equation: every flow recorded since then is added to a known starting population.

Population 2026 = Population on January 1, 2022 + births − deaths and missing persons − net departures abroad + net arrivals from occupied and front-line areas.[17]

The equation is applied separately to the 21 oblasts and Kyiv city. It cannot be used for the three front-line oblasts, because the refugee and displacement data do not distinguish between people from the occupied and the government-controlled parts. Their population is estimated separately using a combination of public statements, indirect demographic data (primarily data of the National Health Service of Ukraine on declarations with family doctors), and humanitarian assessments, and interpolated to January 1, 2026.

Figure 9: Population of government-controlled Ukraine from January 1, 2022 to January 1, 2026, million people



Note. Baseline: population of the 21 oblasts and Kyiv on January 1, 2022. Missing persons: people listed in the Unified Register of Persons Missing under Special Circumstances (based on public statements). Net departures abroad: people from these oblasts who left after February 24, 2022 and were abroad on January 1, 2026 (war refugees and those who left on work, study, or family permits). Internal migration: net arrivals of internally displaced persons and other movers from occupied and front-line areas (based on the IOM internal displacement dashboard). Front-line oblasts: government-controlled parts of Donetsk, Zaporizhzhia, and Kherson oblasts, estimated separately. Components may not add up due to rounding. GCA: government-controlled area.
Source: KSE Institute population estimate

[17] The demographic balancing equation is usually applied to the population of a whole country, where movements within the country cancel out and internal migration does not enter the equation. Here it is applied only to the 21 oblasts and Kyiv. Movements between these oblasts likewise cancel out, and the corresponding term of the equation covers net arrivals from outside this territory: internally displaced persons and other movers from the occupied territories and from Donetsk, Zaporizhzhia, Luhansk, and Kherson oblasts. The government-controlled parts of these three oblasts are estimated separately, so these people are not counted twice.

The 2022 baseline is the KSE Institute estimate of the population actually present on January 1, 2022, so it already excludes labor migrants who were abroad on that date. The State Statistics Service estimate for the 24 oblasts and Kyiv as of January 1, 2022, which is based on registered place of residence, is about 1.6 million higher; this difference gives a rough idea of the number of pre-war labor migrants abroad (Annex 5).

Flows since 2022:

- **Births and deaths** are civil registration data from the Ministry of Justice. In the 21 oblasts and Kyiv, about 180,000 births and about 470,000 deaths were registered each year in 2022–2025.
- **Missing persons.** About 0.07 million missing persons listed in the Unified Register of Persons Missing under Special Circumstances[18] (February 2026), allocated across the 21 oblasts and Kyiv, are subtracted from the estimate.
- **Internal migration** moves people between oblasts. Net arrivals of internally displaced persons and other movers, mostly from occupied and front-line areas, add about 1.4 million people to the 21 oblasts and Kyiv (based on Ministry of Social Policy data on internal displacement processed by IOM).[19]
- **Net departures abroad** are the largest flow, about 3.76 million people. This is the 3.90 million people from these 21 oblasts and Kyiv who left after February 2022 and were abroad on January 1, 2026 (including 0.28 million who left on work, study, or family permits rather than with temporary protection), less about 0.14 million pre-war labor migrants who have since returned. Both adjustments are estimates with wide bounds, but together they change the population estimate only within ±0.05 million. Their calculation is described in the subsection "How the number of Ukrainians abroad is estimated."

The population is aging, and women significantly outnumber men. More than one in five residents is aged 65 or older. There are 114 women for every 100 men; the female surplus is concentrated at older ages and, as before the full-scale war, stems from higher male mortality. Departures abroad, mostly of women, have slightly reduced this surplus: before the full-scale invasion, there were about 116 women per 100 men.

Table 8: Population of government-controlled Ukraine by broad age group, January 1, 2026

Age group	Total, million	Share
0–14	3.8	12.8%
15–64 (working age)	19.6	66.7%
65+	6.0	20.5%
Total	**29.4**	**100%**

Note: Military personnel are included
Source: KSE Institute population estimate

[18] The Unified Register of Persons Missing under Special Circumstances has been maintained by the Ministry of Internal Affairs of Ukraine since 2023; its records are not public, and the estimate is based on the latest public statement: https://www.ukrinform.ua/rubric-society/4100583-u- reestri-zniklih-bezvisti-e-dani-pro-ponad-90-tisac-ludej-mvs.html

[19] International Organization for Migration (IOM), Displacement Tracking Matrix, Ukraine, Registered IDP Dashboard: https://dtm.iom.int/online-interactive-resources/registered-idp-dashboard

How the number of Ukrainians abroad is estimated

The base source is the UNHCR count of refugees from Ukraine, compiled from host-country registers: 5.76 million people on December 31, 2025, excluding Russia and Belarus,[20] allocated by UNHCR to oblasts of origin using its surveys. These data overstate the number of war refugees actually abroad, for two reasons.

- **Records outlive departures.** A person who registered for temporary protection in Germany and later returned to Ukraine or moved to another country often remains on the register, so a person who has moved on may be counted twice. Registers are cleaned with long, country-specific delays.
- **Visa programs count arrivals.** In the United States, the United Kingdom, and Canada, the data add up arrivals under special programs since 2022, not the number of people still there.

The estimate converts these records into people and adds the Ukrainians abroad who are not refugees, in three steps:

- **Starting point**: 5.76 million documents on December 31, 2025, allocated to oblasts of origin according to UNHCR estimates (UNHCR, subsection "Main sources of uncertainty"). Russia and Belarus are excluded by convention of the estimate.
- **Counting people, not documents:** in 14 countries that account for two-thirds of the documents, host-country registers show how many people were present on December 31, 2025, and these data are used directly. In the United States, the United Kingdom, and Canada, program arrivals are adjusted to the number of people still there. For the remaining 28 countries, where no measurement exists, a standard presence share is applied.[21] The result is about 4.97 million war refugees abroad, including about 80,000 children born to refugees abroad, who are Ukrainians abroad even though they have never been in Ukraine.
- **Adding migrants:** about 0.35 million people (bounds of 0.26 to 0.65 million) who left after February 2022 on work, family, or study permits rather than with temporary protection (valid residence permits according to Eurostat[22] and national registers, net of permit renewals by pre-war migrants); 1.15 million pre-war migrants who were abroad on January 1, 2022 and still are (Annex 5); and about 38,000 children born in 2022–2025 to pre-war migrant families in Poland, Italy, and Spain, who are Ukrainian citizens from birth. As a result, an estimated 6.51 million Ukrainians were abroad on January 1, 2026.

Presence data put the number of war refugees at 4.93 to 5.01 million. For all Ukrainians abroad, the bounds of the individual groups add up to 6.26 to 6.86 million; if the five largest uncertain assumptions are treated as independent, the range is about ±0.31 million. The largest of them are the presence data, the number of people displaced in 2014–2021 in the register-based 2022 baseline (which determines the size of the pre-war migrant group, Annex 5), and the share of pre-war migrants who were in the EU. These are ranges of plausible assumptions, not confidence intervals. Two factors work in opposite directions:

- **Naturalized Ukrainians are included.** People who have acquired the citizenship of their host country are still counted as Ukrainians abroad who may return; without them, the stock would be up to 0.11 million smaller.

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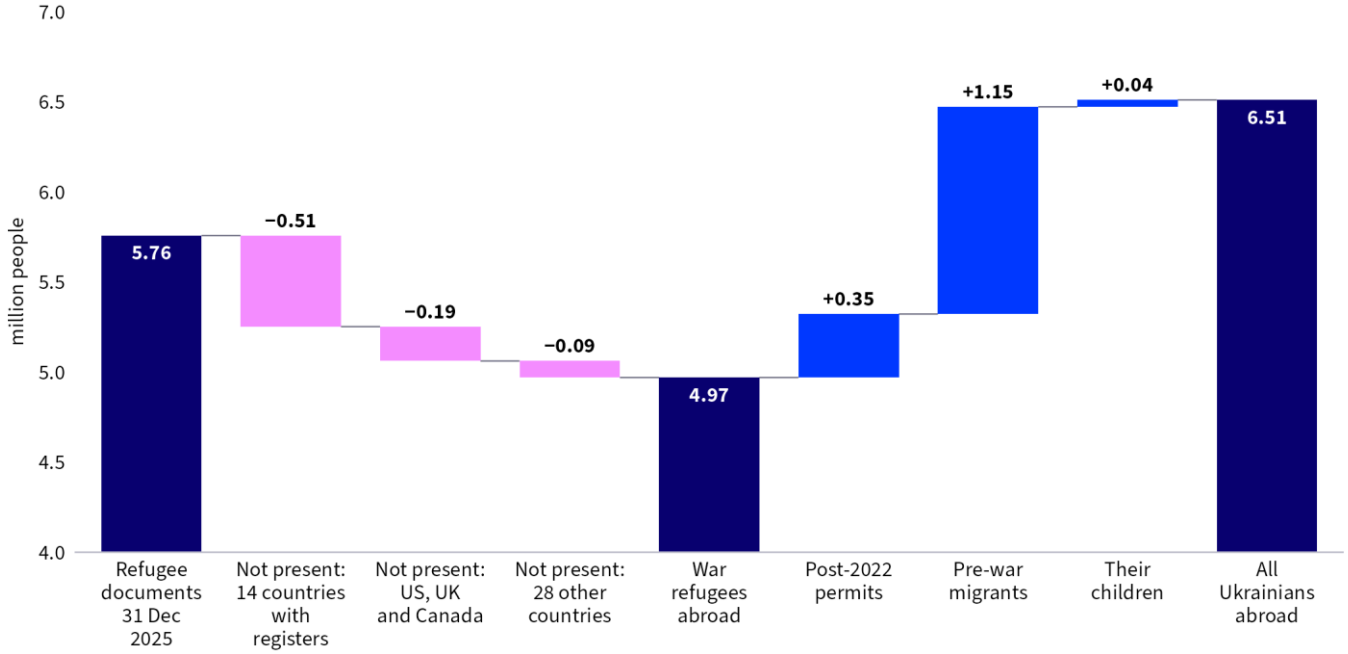
[20] Compiled in the KSE Institute population estimate using the UNHCR method: data on temporary protection, pending asylum applications, and residence permits based on refugee status and subsidiary protection as of December 2025 from the Eurostat database (migr_asytpsm, migr_asypenctzm, migr_resvalid) for most EU and EFTA countries; data from national registers and the UNHCR portal as of December 31, 2025 or within a month of that date for other countries; the latest available data (June 30, 2025) for the United States, Canada, and several small host countries: https://data.unhcr.org/en/situations/ukraine ; explanatory note: https://data.unhcr.org/en/working-group/437

[21] Presence is measured directly where the host-country register shows it (14 countries). In the United States, the United Kingdom, and Canada, program arrivals are adjusted using survey and permit data. For the other 28 countries, 87.5–89.2 people per 100 documents are assumed, except for Italy, Bulgaria, and Latvia, whose registers were cleaned in 2023–2025.

[22] Eurostat, all valid permits by reason, length of validity, and citizenship on December 31 (migr_resvalid): https://ec.europa.eu/eurostat/databrowser/view/migr_resvalid/default/table?lang=en.

- **Some groups are not measured.** Children born in 2022–2025 to pre-war migrant families in Germany, Czechia, and other EU countries who hold only local citizenship, as well as Ukrainians outside protection programs in the United Kingdom, the United States, and Canada, are not added to the estimate.

Figure 10: From refugee documents to Ukrainians abroad, January 1, 2026, million people



Note: The vertical axis starts at 4 million to make the adjustments visible. War refugees include the children born to them abroad.

By oblast of origin, 3.9 million people come from the 21 oblasts and Kyiv (Table 3). Another 1.2 million come from the three front-line oblasts, whose population is estimated separately, and 0.2 million from Luhansk oblast.

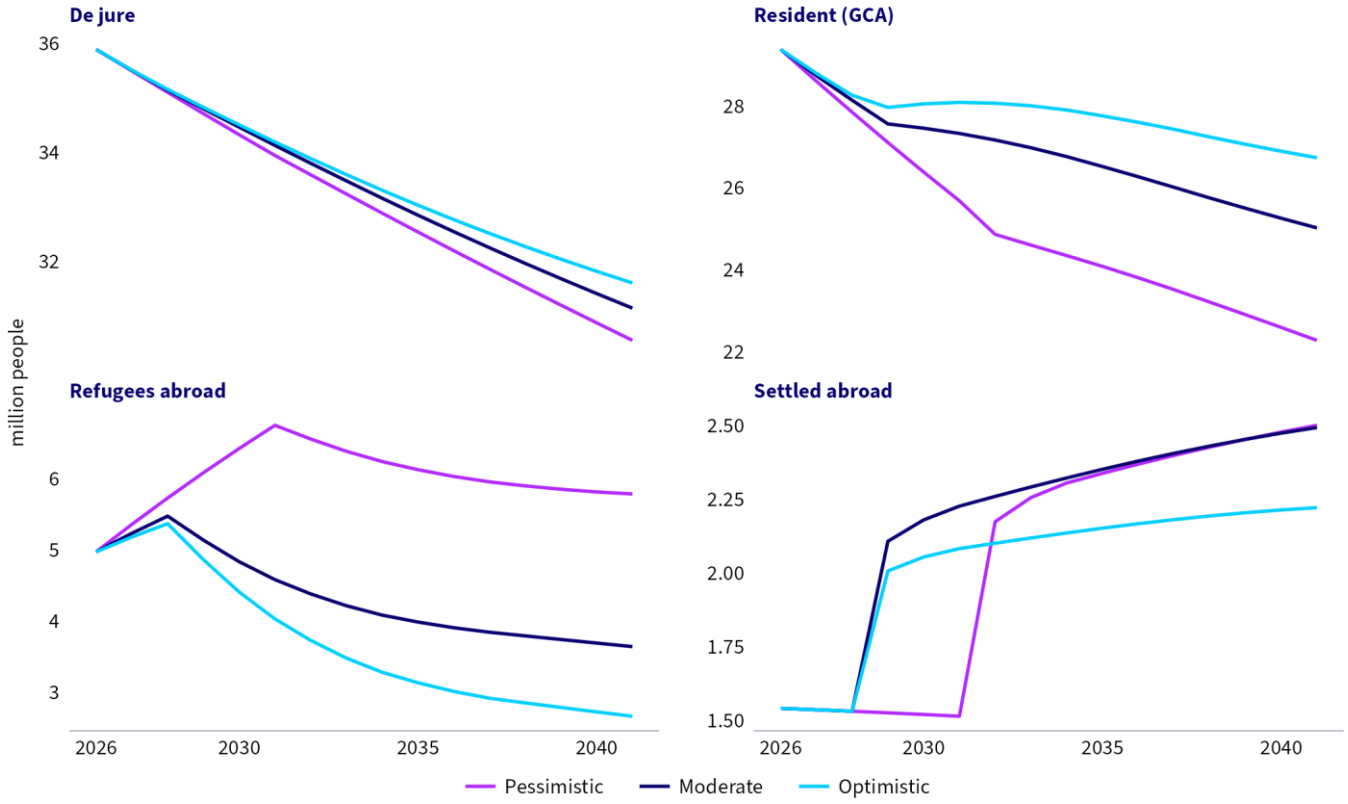
Main sources of uncertainty

- **No direct count.** The estimates are built from administrative data and surveys rather than a census or official statistics; the 2022 starting population is also an estimate.
- **Internal displacement data.** Some displaced people never register, while some registered IDPs are in fact abroad. These two errors probably partly offset each other, but neither can be measured.
- **Front-line oblasts.** Their population is estimated separately, being the most uncertain part of the estimate.
- **War losses.** Data on deaths and missing persons come from public registers and official statements and cannot be fully verified by age or region. Civilian deaths in the occupied territories are not registered.
- **Geography of refugees.** The number of refugees abroad is measured from host-country registers, but their distribution by oblast of origin is still based on shares from UNHCR surveys. This determines how many of them are subtracted from Ukraine's population rather than from the front-line oblasts, and it is one of the two largest sources of uncertainty in the overall total (about ±0.19 million). The same correction factors are applied to every oblast of origin, because no data link the host country to the oblast of origin.

POPULATION PROJECTION FOR 2026–2041

The resident population declines in all three scenarios, from 29.4 million on January 1, 2026 to 26.7, 25.0, and 22.3 million on January 1, 2041. The gap between the extreme scenarios is 4.5 million. Returns account for more than half of it (2.4 million), and the rest comes from outflow (1.1 million), births (0.7 million), and deaths (0.3 million). In the moderate scenario, the resident population falls by about 0.6 million a year in 2026 and 2027 through natural decrease and wartime outflow. In 2028 it continues to decline, as the one-off post-war outflow coincides with the first returns. The decline then slows: returns gradually decrease, but so does natural decrease. In the pessimistic scenario, the steepest decline lasts until 2031, when a surge of departures follows five years of net outflow (Figure 11, Table 9). By 2041, the refugee stock abroad falls to 2.7 and 3.6 million in the optimistic and moderate scenarios and rises to 5.8 million in the pessimistic one. The migrant stock grows to 2.2–2.5 million in all scenarios (Figure 11). The total population changes much less, from 35.9 million to 31.6, 31.1, and 30.6 million. Migration only moves people between population groups, whereas natural decrease reduces the overall number.

Figure 11: Population on January 1 by universe and scenario, million people



Source: KSE Institute.

Table 9: Population by universe and scenario, million people on January 1

Date	Scenario	Resident (GCA)	Refugees abroad	Settled abroad	De jure
2026	Base	29.4	5.0	1.5	35.9
2030	Optimistic	28.0	4.4	2.1	34.5
	Moderate	27.4	4.8	2.2	34.5
	Pessimistic	26.4	6.4	1.5	34.3
2035	Optimistic	27.7	3.1	2.2	33.0
	Moderate	26.5	4.0	2.4	32.8
	Pessimistic	24.1	6.1	2.3	32.5
2040	Optimistic	26.9	2.7	2.2	31.8
	Moderate	25.2	3.7	2.5	31.4
	Pessimistic	22.6	5.8	2.5	30.9
2041	Optimistic	26.7	2.7	2.2	31.6

Table 9: Population by universe and scenario, million people on January 1

Date	Scenario	Resident (GCA)	Refugees abroad	Settled abroad	De jure
	Moderate	25.0	3.6	2.5	31.1
	Pessimistic	22.3	5.8	2.5	30.6

Note: 2041 = state at the end of 2040. Military personnel are included in the resident population.
Source: KSE Institute

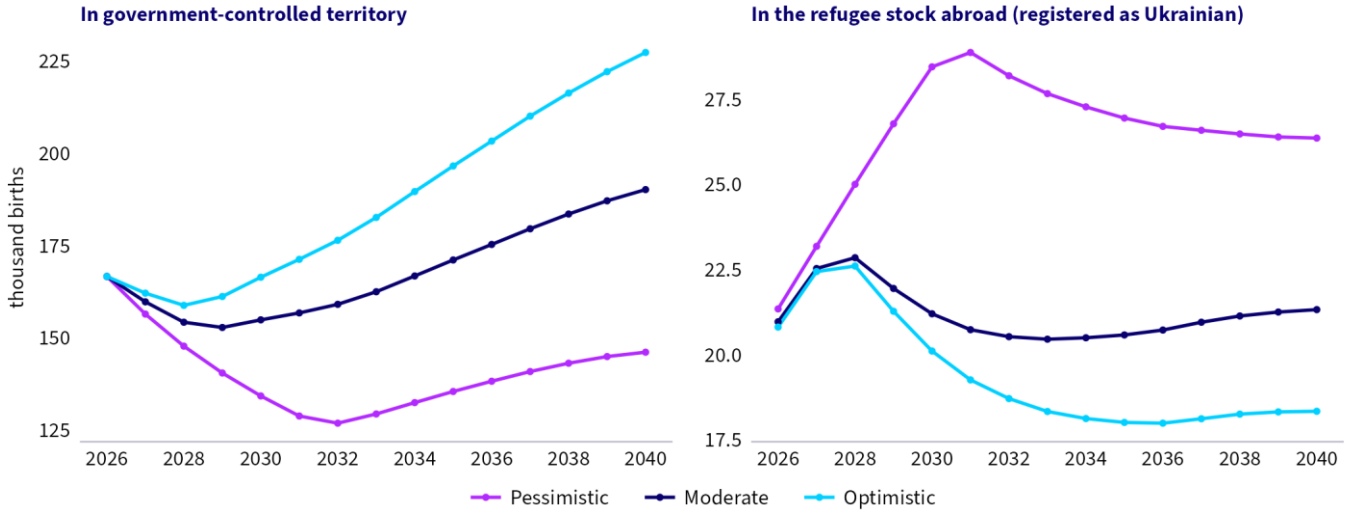
Natural decrease is the largest and least uncertain driver. Over 2026–2040 there are 2.8, 2.5, and 2.1 million births against 7.1, 7.3, and 7.4 million deaths, more than twice as many in every scenario (Table 10). Migration determines the spread. Net migration is +1.6, +0.4, and −1.8 million: 3.5, 2.4, and 1.1 million returns against 1.8, 2.0, and 2.9 million in outflow. Ordinary post-war emigration accounts for 1.0, 0.9, and 0.5 million of the outflow, and 1.5, 1.5, and 1.2 million of all leavers join the migrant stock. In every scenario, the change in the resident population equals natural change (births minus deaths) plus net migration.

Table 10: Cumulative flows over calendar years 2026–2040, million people

Flow	Optimistic	Moderate	Pessimistic
Births in GCA	2.81	2.52	2.11
Deaths in government-controlled territory	7.10	7.25	7.43
Outflow, total	1.85	2.00	2.92
of which ordinary post-war emigration	0.99	0.93	0.51
of which to the settled stock	1.47	1.51	1.19
Refugee returns	2.81	1.93	1.02
Settled returns	0.68	0.44	0.11
Inflow	0.00	0.00	0.00
Net migration	**1.64**	**0.37**	**−1.79**
Change in the resident population	**−2.65**	**−4.36**	**−7.11**

Note: Change = January 1, 2041 minus January 1, 2026. Rounded; components may not add up to the total.
Source: KSE Institute.

Figure 12: Births by calendar year, thousand: in government-controlled territory and in the refugee stock abroad (registered as Ukrainian)



Source: KSE Institute.

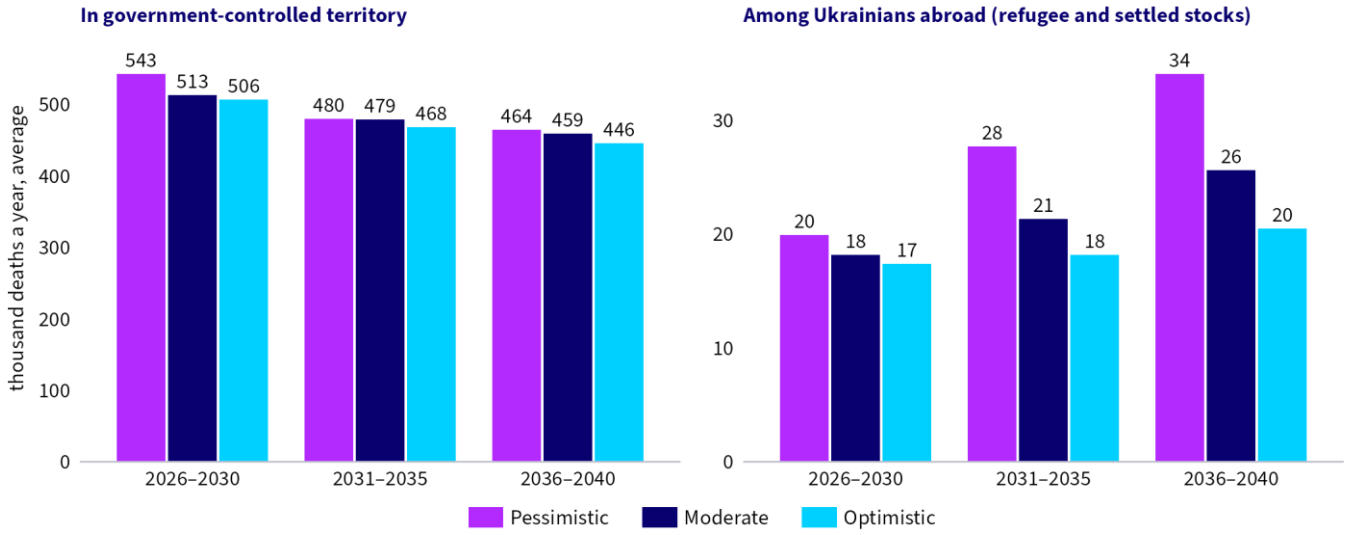
In 2026 there are 167 thousand births in every scenario;[23] the scenarios then diverge depending on the TFR path and the return of women of reproductive age (Figure 12). Births first decline, to a minimum of 153–159

[23] The 2026 figure is based on the 2025 total fertility rate carried forward to 2026. In January–June 2026, the Ministry of Justice registered 16% fewer births than a year earlier, so the projection probably overstates 2026 births by about 20–24 thousand unless fertility rises in the second half of 2026.

thousand in 2028–2029, as the small cohorts born around 2000 reach ages 25–34, and then rise; in 2040 they reach 227, 190, and 146 thousand.

Deaths in government-controlled territory decline in every scenario, from an average of 506–543 thousand a year in 2026–2030 to 446–464 thousand a year in 2036–2040 (Figure 13), as the population shrinks and life expectancy converges toward the European level. In 2036–2040, deaths are lowest in the optimistic scenario, even though it has the largest population and the most people aged 65 and over, because life expectancy rises fastest there. Deaths among Ukrainians abroad rise from 17–20 thousand a year in 2026–2030 to 20–34 thousand a year in 2036–2040, as those who stay abroad grow older; they are highest in the pessimistic scenario, in which the most people remain abroad. In government-controlled territory, deaths exceed births in every year of every scenario; natural decrease narrows from 343–394 thousand a year in 2026–2030 to 230–321 thousand a year in 2036–2040 (Table 11).

Figure 13: Deaths, thousand a year, average over 2026–2030, 2031–2035, and 2036–2040: in government-controlled territory and among Ukrainians abroad (refugee and settled stocks).



Source: KSE Institute.

Table 11: Births and deaths in government-controlled territory, thousand a year, average for 2026–2030, 2031–2035, and 2036–2040

Scenario	Period	Births	Deaths	Natural change
Optimistic	2026–2030	163	506	−343
	2031–2035	183	468	−285
	2036–2040	216	446	−230
Moderate	2026–2030	158	513	−355
	2031–2035	163	479	−315
	2036–2040	183	459	−276
Pessimistic	2026–2030	149	543	−394
	2031–2035	131	480	−349
	2036–2040	143	464	−321

Note: Rounded; components may not add up to the total.
Source: KSE Institute

The population ages in every scenario. The median age of the resident population rises from about 45 years in 2026 to about 50 years in 2040 (50, 50, and 51 years in the optimistic, moderate, and pessimistic scenarios), and the number of people aged 65 and over per 100 people aged 15–64 rises from 31 to 38, 39, and 41 (Table 12). The number of children aged 0–14 falls from 3.8 million to 2.8, 2.5, and 2.1 million, and the population aged 15–64 from 19.6 million to 17.4, 16.4, and 14.6 million. The group aged 65 and over stays close to 6 million (6.7, 6.3, and 5.9 million), and the group aged 80+ grows from 1.2 million to 1.9, 1.8, and 1.6 million by 2041. The large cohort of the 1980s reaches ages 55–59, while the small cohorts of the 2000s and the war years enter working age. The working-age population shrinks faster than the total: in the moderate scenario, the resident population falls by 14% by 2040, and the population aged 15–64 by 16%. The population aged 18–59 falls from 16.5 million to 13.9 million in 2040 and 13.6 million in 2041 (Table 13).

Table 12: Structure of the resident population of government-controlled territory on January 1

Indicator	2026	2040 Optimistic	2040 Moderate	2040 Pessimistic
Children 0–14, million	3.8	2.8	2.5	2.1
Working age 15–64, million	19.6	17.4	16.4	14.6
65+, million	6.0	6.7	6.3	5.9
Persons 65+ per 100 persons 15–64	31	38	39	41
Median age, years	45	50	50	51

Note: Military personnel are included
Source: KSE Institute

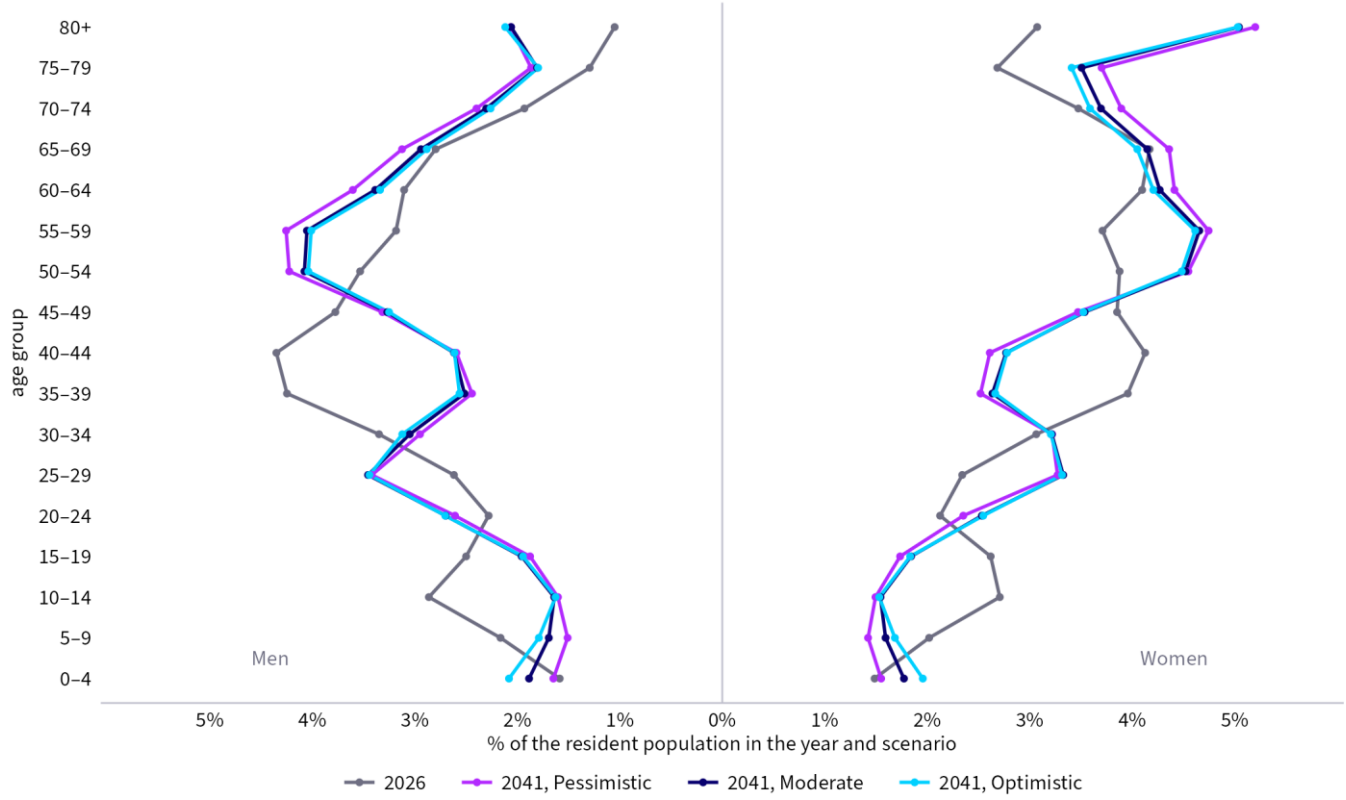
Table 13: Resident population by broad age group and scenario, million people on January 1

Year	Scenario	Children 0–17	18–59	60+	of which 65+
2026	**Base**	**4.7**	**16.5**	**8.1**	**6.0**
2030	Optimistic	4.1	15.8	8.1	6.2
2030	Moderate	4.0	15.4	8.0	6.2
2030	Pessimistic	3.7	14.9	7.8	6.0
2035	Optimistic	3.6	15.8	8.4	6.4
2035	Moderate	3.3	15.0	8.2	6.2
2035	Pessimistic	2.8	13.5	7.8	5.9
2041	Optimistic	3.4	14.6	8.7	6.7
2041	Moderate	3.1	13.6	8.3	6.4
2041	Pessimistic	2.5	12.0	7.7	5.9

Source: KSE Institute.

Figure 14 shows the sex-and-age structure of the resident population on January 1, 2026 and January 1, 2041. In 2026, the largest five-year groups are people aged 35–44, born in the 1980s, and the smallest working-age groups are people aged 20–29, born in 1996–2005. By 2041, both cohorts are fifteen years older. In every scenario, the largest five-year groups are those aged 50–54 and 55–59, and the cohorts born in 1996–2005 form a trough at ages 35–44. People aged 65 and over make up 25–27% of the resident population, against 20% in 2026, and those aged 80 and over 7%, against 4%. Children aged 0–14 make up 9–11%, against 13%. The scenarios differ most among children under 10 and at ages 55–79. Higher fertility and more returns give the optimistic scenario the largest share of children, while the pessimistic scenario has the highest shares at ages 55–79 because its younger population is smaller.

Figure 14: Sex-and-age structure of the resident population on January 1, 2026 and January 1, 2041 by scenario, % of the resident population in the respective year and scenario.



Source: KSE Institute.

LABOR FORCE PROJECTION UP TO 2030

The labor force comprises everyone aged 15–70 who either works or is actively looking for work, in line with the International Labour Organization (ILO) definition used by the State Statistics Service. Under the ILO definition, military personnel are counted as employed. This study counts only the civilian labor force, because its question is who will work in the civilian economy: military personnel on active duty do not produce goods and services sold in the civilian economy and are not available to civilian employers. The household Labor Force Survey (LFS), the usual data source, was suspended in 2022–2025. It resumed in January 2026, but as of September 2026 no results had been published. The study therefore estimates the labor force by combining the population estimate with the last pre-war survey (2021) and checks the result against administrative registers.

In this section, the population follows the moderate scenario from the subsection "Three scenarios of the demographic projection" (war until the end of 2027; demobilization and the lifting of martial-law exit restrictions from 2028); across the return scenarios, only the share of those who return changes.

Two independent approaches set the bounds for the 2026 labor force.

- **A. Demographic approach (lower bound).** The 2021 participation rates for each age group and sex (Table 14) are applied to the 2026 civilian population. This gives 12.5 million civilians in the labor force. The approach assumes that people of a given age and sex take part in the labor market as often as before the full-scale invasion.
- **B. Register approach (upper bound).** Pension Fund data on insured persons in December 2025, excluding military personnel, plus informal workers at the 2021 share (19.3% of employment), give 12.0 million employed civilians. At the NBU's estimated unemployment rate of 10.2% for 2026, this implies 13.4 million civilians in the labor force.

Table 14: Labor force participation and unemployment rates in 2021, by age and sex, %

Age	Participation, women	Participation, men	Unemployment, women	Unemployment, men
15–24	28.1	33.0	20.3	18.0
25–29	65.1	89.7	8.2	10.2
30–34	70.4	90.8	9.3	7.8
35–39	76.4	91.4	12.1	9.5
40–49	82.6	87.9	10.1	9.6
50–59	73.6	77.6	9.6	9.4
60–64	15.4	21.7	0.2	0.4
65–70	6.8	8.5	0	0
15–70	56.1	68.1	10.2	9.6

Source: State Statistics Service, "Labour Force of Ukraine 2021" (Tables 5.2 and 5.6). The rates for ages 60–64 and 65–70 are derived from the published data for ages 60–70 using the totals for ages 15–64 and 15–70. Low participation after age 60 reflects the retirement age of 60.

The two approaches have opposite biases. The demographic approach ignores the effect of labor shortages: the NBU reports persistent staff shortages and rapid wage growth, which draw more women, older people, and students into work. The register approach overstates the level, because some insured persons live abroad or in the occupied territories, but it may also miss men who work informally to stay out of official registers. The central estimate is the midpoint of the range: 12.9 million civilians, or 3.5% higher labor force participation at every age than in 2021. Annex 6 explains why the registers are not used on their own and what the 3.5% uplift means.

Table 15: Labor force of government-controlled Ukraine at the start of 2026

	Low (A)	Central	High (B)
Civilian labor force	12.5 m	12.9 m	13.4 m
Employed civilians	11.2 m	11.6 m	12.0 m
Unemployed (10.2%)	1.3 m	1.3 m	1.4 m
Participation rate, civilians 15–69	60.6%	62.8%	64.9%
Memo: labor force 2021 (LFS, 15–70)		17.3 m	

Sources: own calculations; State Statistics Service LFS 2021; Pension Fund of Ukraine annual report 2025; NBU Inflation Report, January 2026.[24] *The 2021 figure covers the territory controlled before February 2022, which is larger than today's.*

Holding labor force participation at its 2026 level and assuming no returns, the civilian labor force declines every year, from 12.9 million at the start of 2026 to about 11.5 million at the end of 2030. Over this period, it shrinks by about 1.5 million (12%). Over the same period, the civilian population aged 15–69 falls by 1.8 million. Four factors drive this decline (Figure 15):

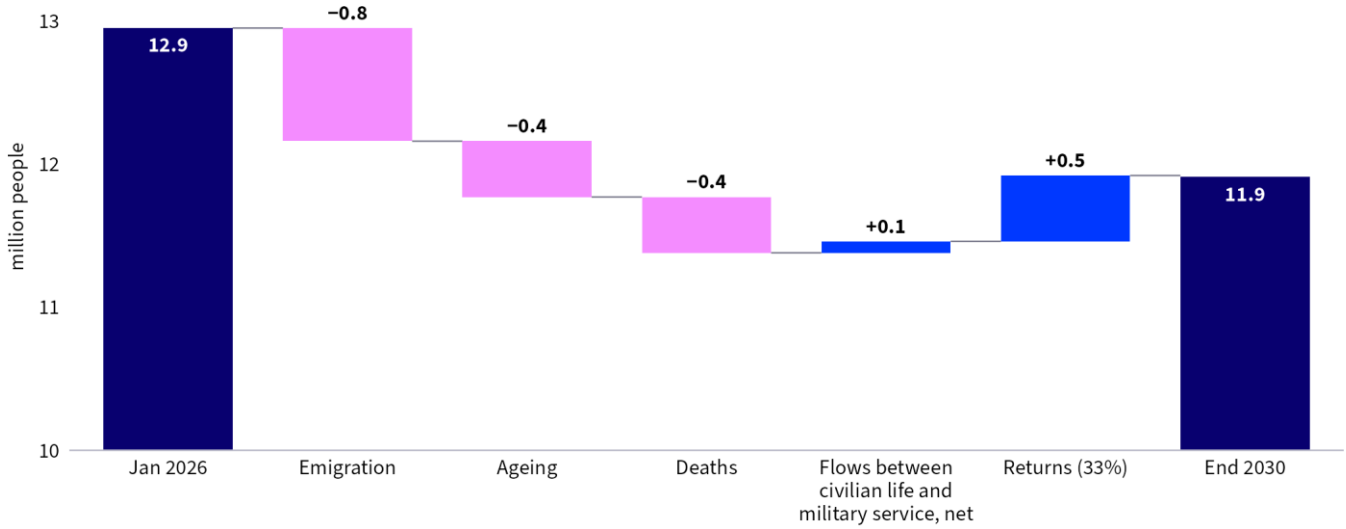
- **Emigration.** The moderate scenario assumes that about 1.3 million people will leave in 2026–2030: 0.5 million in the last two years of the war, about 0.6 million in 2028 under the scenario assumption of a one-off post-war outflow (family reunification, deferred emigration, partners and children), and then ordinary emigration of about 0.07 million a year. In labor force terms, emigration removes about 0.8 million workers by the end of 2030 and is the largest single driver. Annex 7 shows how both figures are derived.
- **Aging.** The large cohorts born in the 1960s pass the retirement age of 60, while the small cohorts born around 2000–2010 enter working age. Aging removes 0.07–0.10 million people a year, about 0.4 million in total.
- **Deaths.** In 2026–2030, about 0.9 million civilians aged 15–69 will die. Weighted by the participation rates for their age and sex, they would have made up at most about 0.4 million of the labor force. This is an upper bound: people in the last years of their lives are less likely to work than others of the same age.
- **Flows between civilian life and military service.** Until the ceasefire, mobilization takes people out of the civilian labor force; after it, demobilized service members return, but not all of them start working right away (subsection “How veteran integration changes the labor force”). In the central case, these two flows roughly offset each other by the end of 2030.

Returns are modeled in the same way as in the projection model. A certain share of the refugees abroad at the start of 2028 returns. By then, the refugee stock grows from 4.97 million in January 2026 to 5.47 million, as the war continues until the end of 2027 and the 0.48 million people who leave in 2026–2027 join it. This share returns over 13 years, mostly in the early years: 19% of all returns occur in 2028, 17% in 2029, and 14% in 2030, so about half of all returns take place by the end of 2030. Migrants (1.5 million) return at a fixed share each year from 2028. The three scenarios match the range used in the projection model and in the literature: 15% of refugees and 0.5% of migrants a year (the minimum observed after protracted conflicts, for example in Syria), 33% and 1.5% (anchored on the return intentions measured in the Centre for Economic Strategy surveys;[25] the model’s moderate scenario), and 50% and 2.5% (a full settlement). In none of them does anyone return before 2028: EU temporary protection runs until March 2028.

[24] State Statistics Service of Ukraine, Labour Force of Ukraine 2021, labour-market publications: https://ukrstat.gov.ua/druk/publicat/kat_u/publ11_u.htm; Pension Fund of Ukraine, Annual Report 2025: https://www.pfu.gov.ua/content/uploads/2026/05/Zvit-2025.pdf; National Bank of Ukraine, Inflation Report, January 2026: https://bank.gov.ua/ua/news/all/inflyatsiya-bude-pomirnoyu-u-20262028-rokah-a-ekonomika-postupovo-zrostatime--inflyatsiyniy-zvit.

[25] Centre for Economic Strategy (CES), Ukrainian refugees: fifth wave of the survey: https://ces.org.ua/en/ukrainian-refugees-fifth-wave/.

Figure 15: Civilian labor force, central case, January 2026 to end-2030, million people



Note: Central case: 33% return, realistic veteran integration. Flows between civilian life and military service are shown as a single net bar. The vertical axis starts at 10 million.
Source: Table 19; own calculations

Table 16: Refugees abroad, moderate scenario, 2026–2030, million people

Calendar year	Refugees abroad, January 1	+ Departures (net, war years)	+ Children born abroad	− Deaths abroad	− Returns	Refugees abroad, December 31
2026	4.97	0.25	0.02	0.01	0	5.23
2027	5.23	0.23	0.02	0.01	0	5.47
2028	5.47	0	0.02	0.01	0.35	5.13
2029	5.13	0	0.02	0.01	0.31	4.83
2030	4.83	0	0.02	0.01	0.26	4.58

Note: War refugees with temporary protection or refugee status and the children born to them abroad; migrants form a separate stock. Departures in the war years are the net outflow across the border; from 2028, everyone who emigrates joins the other Ukrainians abroad. Children born abroad are those registered as Ukrainian citizens. Returns are 33% of the January 1, 2028 stock, spread over 13 years.
Source: KSE Institute population projection

Migrant return rates are calibrated on host-country registers: pre-war exits of Ukrainian citizens from the registers of Italy, Germany, and Czechia, as well as wartime net departures of Ukrainians who had lived there before 2022, bracket the central value of 1.5% a year (Annex 3).

Table 17: Effect of returns on the civilian labor force by the end of 2030, million people

	No returns	15% return	33% return	50% return
Returnees back in Ukraine	0	0.4	1.0	1.5
Labor force added by returns	0	0.2	0.5	0.7
Civilian labor force, end 2030	11.5	11.7	11.9	12.2
Change since January 2026	−1.5	−1.3	−1.0	−0.8
Share of the decline offset by returns	—	14%	31%	47%

Note: Civilian labor force with realistic veteran integration (as in Table 20).
Source: own calculations based on four runs of the projection model that differ only in the return parameters. With the lower or upper 2026 level (Table 15), the end-2030 level is about 0.4 million lower or higher

Returnees are drawn in proportion to the sex-and-age structure of the stock abroad, which is young and predominantly female: on January 1, 2028, 72% are of working age and 21% are children. Of every 100

returnees, about 46 are in the labor force by the end of 2030. Annex 4 presents the calculation and the assumptions about re-entry into work in the first two years.

Returns matter, but they cannot reverse the decline before 2030. Even if half of all refugees return, the civilian labor force at the end of 2030 will be about 0.8 million smaller than in 2026. In the central case, returns offset about a third of the decline.

Each returnee adds less than half a worker. Of every 100 returnees, about 46 are in the labor force by the end of 2030 if they resemble Ukrainians abroad by age and sex (Annex 4). The other 54 are children, people above working age, or adults who are not yet working or looking for work. Most returning children reach working age only after 2030.

The timing of return policy matters. In the model, nobody returns before 2028, and 71% of the returnees in Ukraine at the end of 2030 came back in 2028–2029. This coincides with the end of EU temporary protection, when many families will decide whether to stay or return. In 2028, post-war departures still outweigh the first returns, so net migration turns positive only in 2029. For comparison, the NBU's January 2026 forecast assumes net returns (returns minus new departures) of only about 0.1 million in 2027.

How veteran integration changes the labor force

The simplest assumption is that service members leaving the Armed Forces take part in the labor market from day one in the same way as other civilians of the same age and sex. The experience of other post-war countries and of earlier generations of Ukrainian veterans suggests that this is too optimistic. Many veterans need time to rest, receive treatment, and retrain, and those with combat injuries or long-term health problems, including post-traumatic stress, work much less often. This section therefore models three integration scenarios for people leaving the Armed Forces after January 2026.

Service members discharged from the Armed Forces after the war return to civilian life. Each veteran's participation rate equals the civilian rate for the relevant age and sex, multiplied by a long-run relative level and by a phase-in factor that starts at half of this level in the first year back and reaches it after a set number of years. Veterans discharged because of wounds are treated as persons with disabilities. Veterans age, die, and may emigrate in the same way as other civilians.

The veteran effect is largest immediately after mass demobilization, when most veterans are in their first year back, and then shrinks as they adapt; in the pessimistic scenario, adaptation takes five years.

The gap between the pessimistic and optimistic veteran scenarios (about 0.2 million) is as large as the gain from the low return scenario (15%, about 0.2 million). Rehabilitation, retraining, and helping employers hire veterans are therefore as important for labor supply as return policy. The two levers add up: with a realistic outcome for both returns (33%) and veterans, the civilian labor force at the end of 2030 is 11.9 million, about 1.0 million (8%) below its 2026 level.

Table 18: Veteran integration scenarios

	Pessimistic	Realistic	Optimistic
Share of demobilized with a disability or serious health limitation	30%	20%	12%
Long-run participation vs civilians: no disability	85%	93%	98%
Long-run participation vs civilians: with disability	30%	45%	60%
Years to reach the long-run level	5	3	2
Extra unemployment in the first two years	+8 pp	+5 pp	+2 pp
Change in the civilian labor force vs full integration, end 2030	−0.3 m	−0.2 m	−0.1 m
Change in employment vs full integration, end 2030	−0.3 m	−0.2 m	−0.1 m

Note: The parameters are illustrative and are to be calibrated using surveys of Ukrainian veterans of 2014–2021 (Veteran Hub, Ukrainian Veterans Fund, IOM), Ministry of Veterans Affairs registers linked to data on single social contribution payments, and international evidence. Recent surveys (Ukrainian Veterans Fund, 2024; REACH, 2026)[26] find unemployment rates and self-reported disability among veterans well above the national and registered levels, so the realistic case may prove optimistic.
Source: authors' own calculations.

The civilian labor force

In the central case, the civilian labor force falls by about 1.0 million (8%) between the start of 2026 and the end of 2030. It shrinks fastest while the war continues and immediately after it ends, as mobilization and post-war emigration take people out of it, and stops shrinking in 2029–2030, when demobilized service members and returnees join the civilian labor force.

Table 19: Civilian labor force, central case (33% return, realistic veteran integration), 2026 to end-2030, million

	January 2026	January 2027	January 2028	January 2029	January 2030	End 2030
Civilian labor force without returns	12.9	12.6	12.2	11.7	11.6	11.5
+ Returnees (33% return)	0.0	0.0	0.0	0.1	0.3	0.5
= Civilian labor force	12.9	12.6	12.2	11.9	11.9	11.9

Note: Central case: 33% return, realistic veteran integration. The first row includes veterans under realistic integration and excludes returnees; Figure 15 shows why it declines. Components may not add up to the total due to rounding.
Source: authors' own calculations

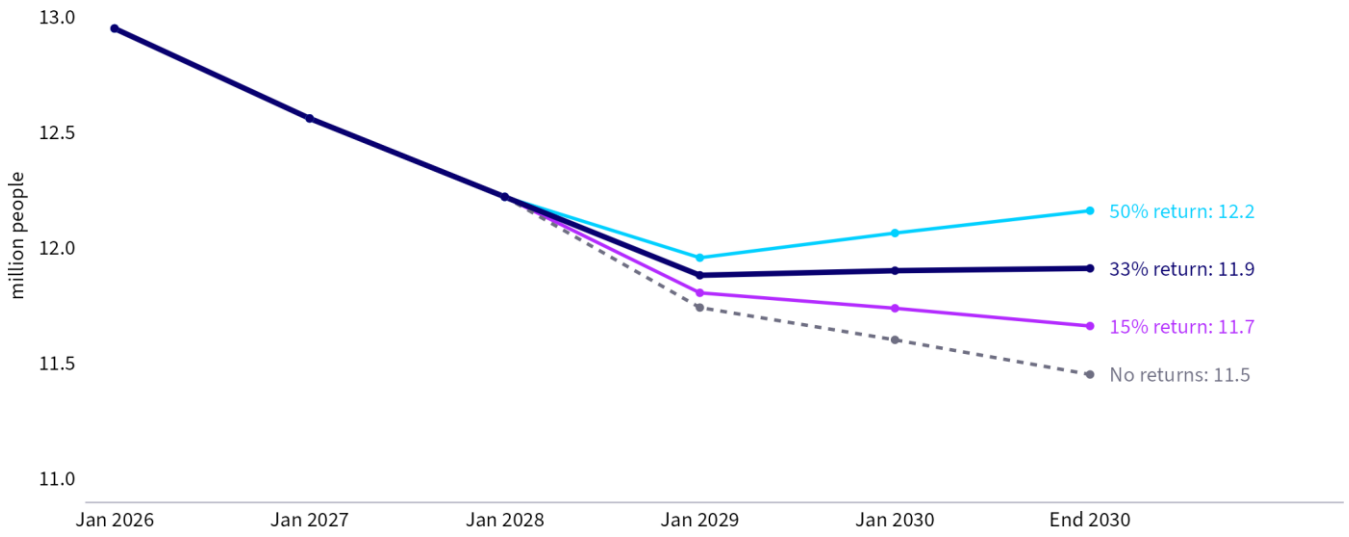
Table 20: Civilian labor force at the end of 2030, by return and veteran scenario, million

	Veterans pessimistic	Veterans realistic	Veterans optimistic	Full integration
No returns	11.3	11.5	11.5	11.6
15% return	11.5	11.7	11.7	11.8
33% return	11.8	11.9	12.0	12.1
50% return	12.0	12.2	12.2	12.3

Note: Civilian labor force. Start of 2026: 12.9 million.
Source: KSE Institute

[26] Ukrainian Veterans Fund, report for Q1 2024 (in Ukrainian): https://veteranfund.com.ua/wp-content/uploads/2024/05/1-2024.pdf; REACH, Veterans' Employment Assessment, February 2026: https://repository.impact-initiatives.org/document/impact/03f4528c/REACH_Veterans-Employment-Assessment_February-2026.pdf.

Figure 16: Civilian labor force by return scenario (realistic veteran integration), million people



Note: The vertical axis starts at 11 million.
Source: Tables 19 and 20; own calculations.

Across the scenarios, the civilian labor force shrinks by the end of 2030 by between about 0.6 million (50% return and full veteran integration) and 1.6 million (no returns and pessimistic veteran integration). Accordingly, **the decline does not go away.** At the end of 2030, the civilian labor force is below its 2026 level in every scenario: by about 1.0 million in the central case and by 1.4 million with 15% returns and pessimistic veteran integration. At the same time, **veteran integration is a labor supply policy, not just a social policy.** How quickly veterans return to work changes the 2030 civilian labor force by about 0.2 million, as much as a low (15%) refugee return adds.

Main sources of uncertainty

- **Participation is held at the 2026 level.** Reconstruction could raise participation further, for example among women and older workers; weak demand could lower it. A one-percentage-point change in participation across the entire working-age population is worth about 0.2 million workers.
- **Returnees may differ from the average person abroad.** Surveys show that people with jobs abroad are less likely to return, while older people are more likely to. If so, the labor force gain per returnee will be lower than assumed here. A profile of likely returnees is planned, based on CES survey data.
- **Unemployment hardly depends on the scenario.** Apart from the extra unemployment among newly demobilized veterans, unemployment follows the NBU path in every scenario. A large inflow of returnees is likely to raise unemployment for some time, so employment gains may lag behind labor force gains.
- **Immigration of foreigners is not modeled.** The population estimate does not separate foreigners from Ukrainians, so any inflow of foreign workers would risk double counting. Post-war labor immigration would lift the labor force above the paths shown here.
- **The 2026 level is uncertain.** The first results of the resumed Labor Force Survey will narrow this range.

LABOR PRODUCTIVITY

Labor productivity[27] is measured as real GDP per employed civilian. Military personnel do not produce goods and services sold in the civilian economy and are not available to civilian employers (section "Labor Force Projection to 2030").[28] GDP, like the population and labor force estimates, excludes the occupied territories and areas of active hostilities.

Real GDP in 2025 was 79% of its 2021 level, and KSE Institute expects it to contract by 0.3% in 2026, to 78% of the 2021 level. Civilian employment averages about 11.5 million in 2026, or 75% of the 15.4 million civilians employed in 2021 (15.6 million according to the LFS, less 0.2 million military personnel; the survey also did not cover people living in barracks). Output per civilian worker is therefore at or slightly above its pre-war level (105%), partly because GDP now includes a much larger defense sector, valued mainly at military pay.

Table 21: GDP per civilian worker, 2021 and 2026

	2021	2026	2026 / 2021
Real GDP, UAH bn at 2021 prices	5,451	4,276	0.78
Civilian employment, million	15.4[29]	11.5	0.75
GDP per civilian worker, thousand UAH at 2021 prices	354	371	1.05

Sources: KSE Institute, Ukraine Macroeconomic Handbook Q4 2026, Table 1 (real GDP growth in 2022–2026); State Statistics Service, LFS 2021 (employment aged 15–70); central scenario, annual average. The 2021 survey did not cover military personnel living in barracks, so the 2021 employment base is slightly understated. Authors' own calculations

The productivity gap with neighboring economies was already wide before the full-scale invasion. In 2021, a Ukrainian worker produced about USD 44,000 a year at purchasing power parity (PPP), the same as in Moldova, 79% of the Bulgarian level, and about 55% of the levels of Poland and Romania. Per hour worked, the gap is larger, because Ukrainians work long hours: output per hour was about half the Polish level and a quarter of the German level.

Table 22: Output per worker and per hour, 2021, USD at 2021 PPP

	GDP per worker	Ukraine as % of it	GDP per hour	Ukraine as % of it
Ukraine	44,300	100%	21.6	100%
Moldova	45,000	98%	22.6	96%
Bulgaria	56,100	79%	34.6	63%
Hungary	70,300	63%	41.6	52%
Slovakia	72,800	61%	46.0	47%
Romania	80,400	55%	44.1	49%
Poland	82,000	54%	44.9	48%
Czechia	88,500	50%	51.4	42%
Germany	111,300	40%	82.9	26%

Source: Penn World Table 11.0[30] (output-side real GDP / persons employed; per hour uses average annual hours).

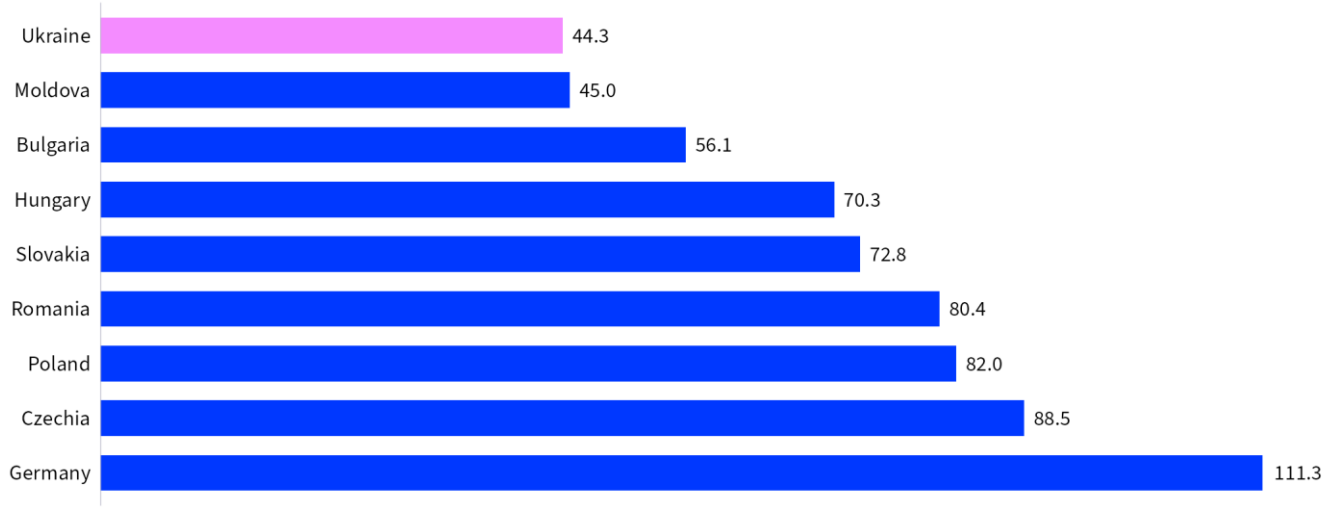
[27] In this section, the GDP forecast of the Ukraine Macroeconomic Handbook is divided by projected employment to determine the productivity growth it implies.

[28] Output per hour worked and productivity by sector would be better measures, but both require Labor Force Survey data (hours worked, employment by economic activity), which have not been published since 2021. They can be calculated once the resumed survey publishes its results.

[29] *To calculate the civilian labor force in 2021, 0.2 million were subtracted from the total labor force of 15.6 million. The law suggests that there must have been 215 thousand of Ukrainians in the military by the end of 2021: https://www.rada.gov.ua/news/Povidomlennya/212687.html.*

[30] Feenstra, R. C., Inklaar, R. and Timmer, M. P. (2015), "The Next Generation of the Penn World Table," American Economic Review 105(10), 3150–3182; Penn World Table version 11.0 (Groningen Growth and Development Centre, 2025): https://www.rug.nl/ggdc/productivity/pwt/.

Figure 17: GDP per worker, 2021, thousand USD at purchasing power parity



Source: Penn World Table 11.0 (output-side real GDP / persons employed).

In the central case, GDP per civilian worker would have to grow by 5.1% a year and be about 16% higher in 2029 than in 2026 (Table 23, Figure 18). This is more than two and a half times faster than in 2011–2021, and precisely at a time when the economy is also absorbing veterans and returnees. In 2027 the requirement is small (1.7%), because GDP itself contracts. Almost all of it falls in 2028–2029, when output per civilian worker would have to rise by 7.2% and 6.4%, as the KSE Institute forecast expects growth to recover to 4.4–5.0%. GDP also includes defense output, valued mainly at military pay. As the Armed Forces shrink, this part of GDP declines, so civilian output must grow faster than GDP as a whole, and 5.1% is a lower bound.

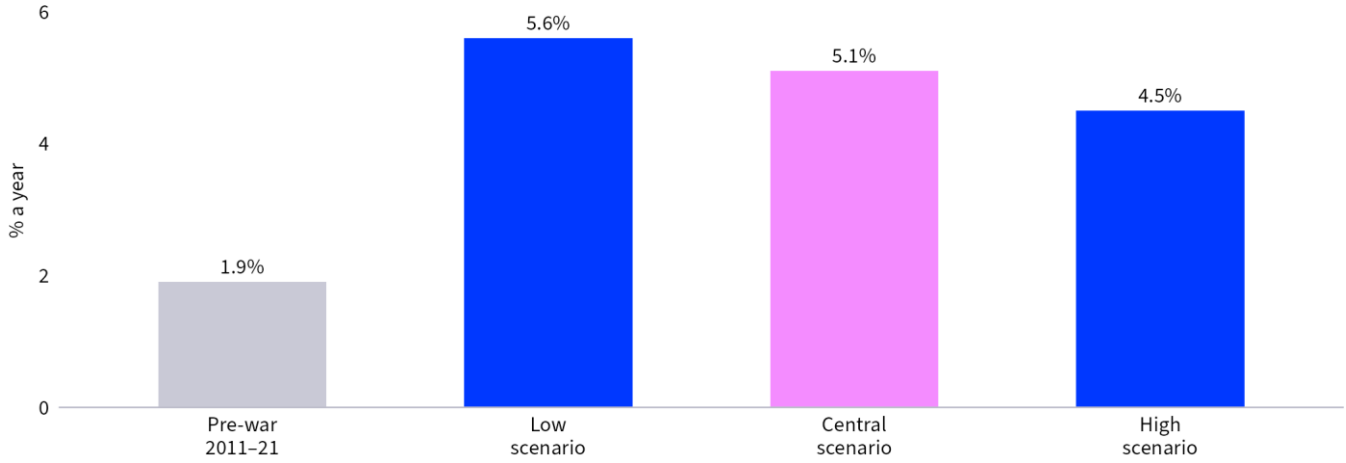
All three productivity scenarios use the moderate demographic path (war until the end of 2027); they differ only in the share of refugees who return and in how quickly veterans return to work.

Table 23: Productivity growth per civilian worker required by the Ukraine Macroeconomic Handbook GDP path, 2027–2029, %

	2027	2028	2029	Average
Real GDP growth (Ukraine Macroeconomic Handbook)	−0.6	4.4	5.0	2.9
Civilian employment growth, central	−2.2	−2.6	−1.3	−2.1
Required productivity growth, central	1.7	7.2	6.4	5.1
Required productivity growth, low scenario	1.8	7.8	7.5	5.6
Required productivity growth, high scenario	1.6	6.7	5.4	4.5
Memo: pre-war growth of GDP per worker, 2011–2021				1.9

Note: Civilian employment excludes military personnel (annual averages of January 1 stocks). Low = 15% return and pessimistic veteran integration; central = 33% and realistic; high = 50% and optimistic. Average = average annual growth over 2027–2029. Because GDP includes defense output, this requirement is a lower bound.
Sources: KSE Institute, Ukraine Macroeconomic Handbook Q4 2026, Table 1; section "Labor Force Projection to 2030"; Penn World Table 11.0 (pre-war period). Authors' own calculations.

Figure 18: Growth of GDP per civilian worker required by the Ukraine Macroeconomic Handbook GDP path, % a year, 2027–29



Note: Civilian workers exclude military personnel. Low = 15% return and pessimistic veteran integration; central = 33% and realistic; high = 50% and optimistic. Pre-war = average for 2011–2021 (Penn World Table 11.0).
Sources: KSE Institute, Ukraine Macroeconomic Handbook Q4 2026, Table 1; section "Labor Force Projection to 2030."

ANNEX 1. SENSITIVITY OF THE PROJECTION

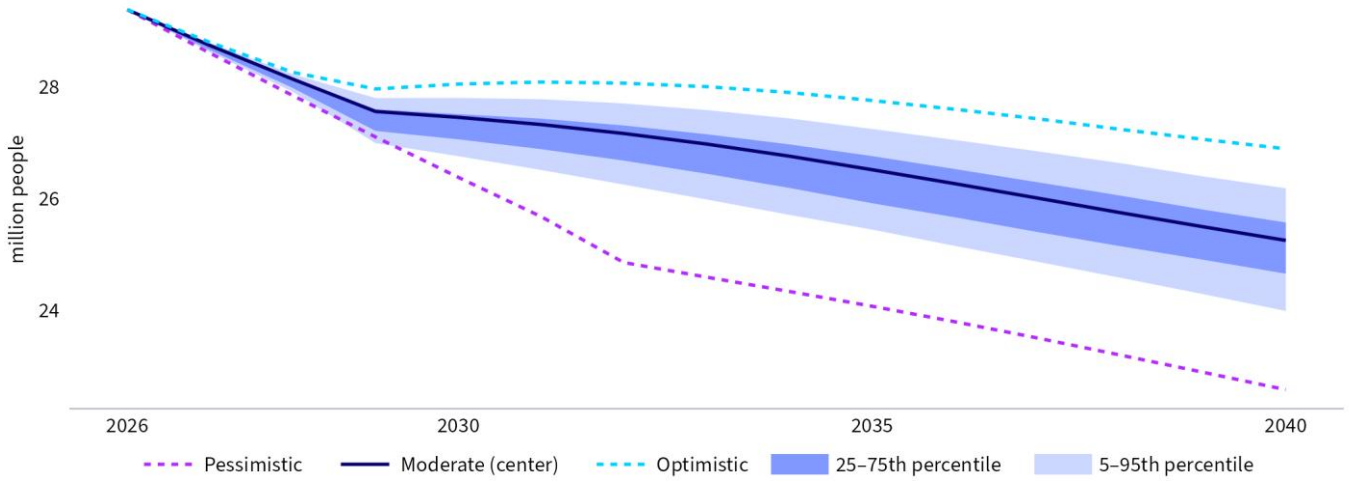
The sensitivity analysis uses Sobol variance decomposition (the share of the spread attributable to each assumption, including interactions; total index ST), Morris screening, and Monte Carlo simulation with uniform ranges, which are expert bounds rather than calibrated probabilities (Table A1, Figure A1). The resident and working-age populations depend, first, on the refugee return share (ST 0.50) and, second, on migrant returns (0.23) and the scale of outflow (0.22); the total population hardly depends on migration and is determined by mortality (0.65) and fertility (0.28). In the Monte Carlo simulation, the 2040 resident population ranges from 23.99 million (5th percentile) to 26.18 million (95th) with a median of 25.13 million, against a central value of 25.25 million.

Table A1: Share of the spread of the 2040 population attributable to each assumption (total Sobol index ST), and ranges

Assumption	Range (low – center – high)	Resident	De jure	Civilians 15–64
Refugee return share	0.15 – 0.33 – 0.50, share of the window	0.50	0.00	0.48
Settled returns	0.5% – 1.5% – 3.0% of the stock a year	0.23	0.00	0.24
Outflow scale (all channels)	0.8 – 1.0 – 1.5 × moderate	0.22	0.00	0.27
Life-expectancy catch-up	0 – 25% – 50% of the initial gap	0.04	0.65	0.00
TFR 2040 (convergence)	1.10 – 1.25 – 1.40 children per woman	0.02	0.28	0.00
Mortality abroad	−0.08 – 0 – 0.22, share of the path to the Ukrainian level	0.00	0.04	0.00
TFR of Ukrainian women abroad	0.94 – 1.00 – 1.07 × moderate (about 0.8)	0.00	<0.01	0.00

Source: KSE Institute

Figure A1: Monte Carlo fan chart for the resident population, million people (bands are the 5th–95th and 25th–75th percentiles).[31]



Source: KSE Institute population projection.

One-at-a-time runs give the "price" of each parameter in people: one percentage point of the refugee return share is worth about 47 thousand residents in 2040, so the gap between the 15% and 50% shares

[31] The Monte Carlo fan reflects parameter uncertainty under a fixed baseline war timeline (ending in 2027) and is therefore narrower than the range between scenarios, which also vary the duration of the war and the speed of returns.

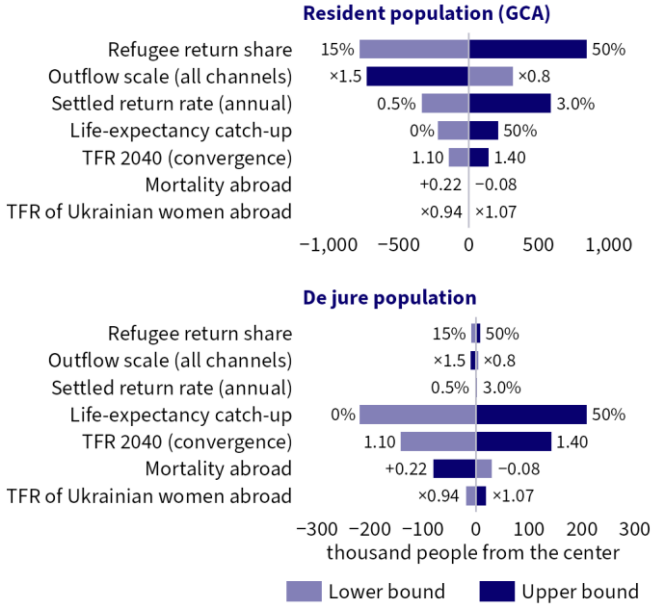
alone is 1.6 million, while the total population barely changes (less than 1 thousand per point), because returns only move people between universes (Table A2, Figures A2–A4). Each 0.1 percentage point of the migrant return rate is worth about 37 thousand, so the scenario spread of this rate (0.5–2.5%) weighs about as much as 16 points of the refugee share. An extra 0.1 children per woman in 2040 adds about 95 thousand to both the resident and the total population but nothing to the population aged 15–64 by 2040; closing ten more points of the life expectancy gap adds about 86 thousand to both the resident and the total population, the main lever for the total population; a ten percent larger outflow removes about 149 thousand residents; the other parameters change the 2040 resident population by at most 46 thousand across their ranges, and mortality abroad affects only the total population (110 thousand). The return share acts almost linearly above 0.075 and has no effect below it, where the floor binds; the TFR acts linearly across 1.0–1.6; in a joint grid, the 2040 resident population lies between 24.3 and 26.2 million, with the return share worth 1.6 million, the TFR 0.3 million, and little interaction.

Table A2: "Price" of a standard step in each parameter: change in the 2040 population, thousand people (linear between the bounds, moderate scenario)

Parameter	Step	Resident	De jure	Civilians 15–64
Outflow scale (all channels)	+10% outflow through all channels (war, post-war surge, ordinary emigration)	−149	−2	−130
TFR 2040 (convergence)	+0.1 children per woman in 2040	95	95	0
Life-expectancy catch-up	+10 pp of the life-expectancy gap closed	86	86	19
Refugee return share	+1 pp of the refugee return share	47	1	36
Settled returns	+0.1 pp of the annual settled return rate	37	0	30
Mortality abroad	+0.1 of the path to the Ukrainian mortality level	−2	−37	−1
TFR of Ukrainian women abroad	+1% TFR of Ukrainian women abroad	0	3	0

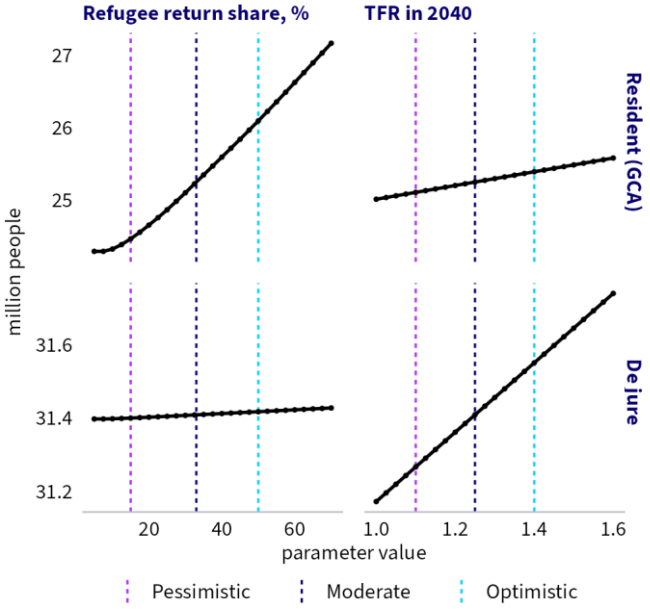
Source: KSE Institute population projection, one-at-a-time runs on the moderate scenario (center: 25.25 million residents in 2040).

Figure A2: Deviation of the 2040 population from the central value when one parameter is at its lower or upper bound, thousand people.



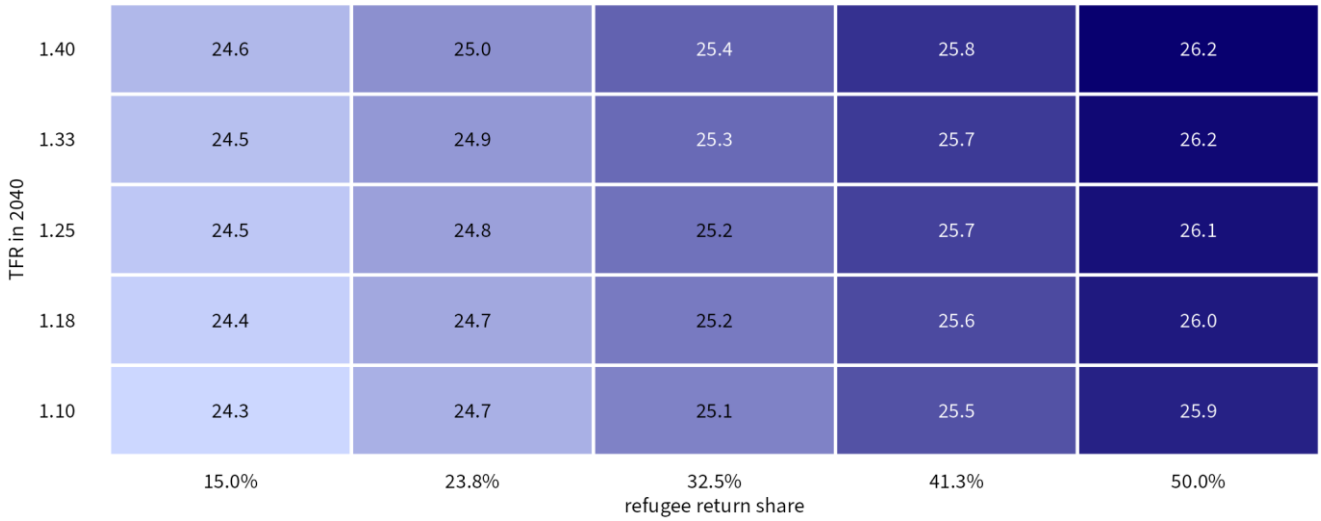
Note. Labels show the parameter values at the bound.
Source: KSE Institute population projection

Figure A3: Population in 2040 as a function of each parameter value (other parameters at the moderate scenario), million people.



Note. Dashed lines mark the values of the three scenarios.
Source: KSE Institute population projection

Figure A4: Resident population in 2040 under simultaneous changes in the return share and the 2040 TFR, million people (other parameters at the moderate scenario).



Source: KSE Institute population projection.

ANNEX 2. CHECKS, BENCHMARKS, AND LIMITATIONS

The projection passes standard accounting checks: the starting state matches the population estimate, and every year births, deaths, and migration add up to the change in each group.

Other projections cover the whole territory of Ukraine within its 1991 borders, including the occupied areas, but do not treat Ukrainians abroad as a pool of potential returnees. Compared with the 2023 projection of the Ptoukha Institute for Demography and Social Studies (IDSS),[32] the total population in the moderate scenario is 35.88 million in 2026 and 32.85 million in 2035 (IDSS: 35.75 and 35.26 million); compared with the medium variant of the UN World Population Prospects 2024 (WPP),[33] it is 35.88 million in 2026 and 31.41 million in 2040 (WPP: 39.54 and 35.27 million). The Demographic Development Strategy (Cabinet of Ministers Order No. 922)[34] is not used as a benchmark bound, because its 2040 scenarios (28.9 and 33.9 million) bracket the model results on both sides and do not distinguish between people present in Ukraine and those abroad. In 2026, the model's total population exceeds the IDSS estimate by 127 thousand (0.4%) despite the narrower territory, because the migrant stock includes people who left after 2022 on work, study, or family permits and children born abroad to pre-war migrant families (about 0.39 million), who were absent from earlier estimates; from 2027 onward, it is below the IDSS estimate. IDSS does not count departures under these statuses.

Table B1: Comparison with other projections, million people

Benchmark	Year	Benchmark	Model de jure (moderate)
IDSS 2023	2026	35.75	35.88
IDSS 2023	2035	35.26	32.85
UN WPP 2024, medium	2026	39.54	35.88
UN WPP 2024, medium	2040	35.27	31.41

Source: KSE Institute

Comparison with the MICS 2025–2026 household survey

The sex-and-age structure of the starting population agrees with the Multiple Indicator Cluster Survey (MICS) 2025–2026 on the share of children and the cohort pattern, but the survey population is older and has fewer men. MICS is a household survey conducted by the State Statistics Service of Ukraine with technical support from UNICEF in October 2025 – March 2026, that is, around the starting date of the projection; it covers 37,315 members of 16,186 households.[35] Its weights are not calibrated to population totals, so only shares can be compared, and its sampling frame excludes communities on the front line and on the border with Russia. Children aged 0–14 make up 12.8% of the population in both sources, and both sources show the same cohort pattern at working ages: a trough at ages 20–29 (born in 1996–2005) and the highest share at ages 35–44 (born in the 1980s) (Figure B1). In the survey, however, people aged 65 and over make up 26% of the population against 20% in the estimate, there are 76 men per 100 women against 87, men aged 20–49 make up 14.5% against 20.6%, and people aged 55–79 make up 38% against 30%. These differences far exceed the survey's margin of error, which is about ±1 percentage point for the share aged 65 and over. They persist when the comparison is limited to 15 oblasts and Kyiv city, which have no communities on the front line or on the border with Russia: there, people aged 65 and over make up 26% in the survey against 19% in the estimate.

[32] IDSS, population projections for Ukraine: https://idss.org.ua/forecasts/nation_pop_proj.

[33] United Nations, World Population Prospects 2024: https://population.un.org/wpp/; methodology report: https://population.un.org/wpp/assets/Files/WPP2024_Methodology-Report_Final.pdf.

[34] Demographic Development Strategy of Ukraine for the period up to 2040, Cabinet of Ministers of Ukraine Order No. 922-r of September 30, 2024 (in Ukrainian): https://zakon.rada.gov.ua/laws/show/922-2024-%D1%80#Text.

[35] State Statistics Service of Ukraine, Multiple Indicator Cluster Survey (MICS) 2025–2026: survey findings report (Tables SR.4.1 and DQ.1.2W) and microdata: https://stat.gov.ua/uk/topics/multyindykatorne-klasterne-obstezhennya-domohospodarstv-mics. Shares are weighted by household weight; the margin of error accounts for the 46 strata and 988 clusters of the sample.

Several features of the survey work in the direction of these differences, and pension data are consistent with the estimate rather than with the survey. First, the estimate includes military personnel, most of whom are away from home. Second, household surveys tend to undercount working-age adults, especially men of mobilization age, who are less often at home and may be left off the list of household members, while older people are easier to reach. Third, the survey's own data quality table shows 1.57 women aged 50–54 per woman aged 45–49, against 1.01 in the estimate, a sign that some women's ages were recorded outside the 15–49 range that qualifies them for the individual interview. Finally, most people aged 70 and over receive an old-age pension, and the Pension Fund of Ukraine has 4.0 million old-age pensioners of these ages on record; this number includes some who live abroad or in the occupied territories, as well as records of people whose deaths have not yet been registered.[36] The estimate puts the resident population aged 70 and over at 4.0 million, whereas the survey's age structure would imply 5.0 million, a quarter more than the number of old-age pensioners. The comparison therefore supports the estimate's share of children and cohort pattern, while the survey most likely understates the working-age population and overstates the older population.

Figure B1: Sex-and-age structure of the resident population on January 1, 2026: KSE Institute population estimate and MICS 2025–26, % of the population of both sexes.



Source: KSE Institute population estimate; State Statistics Service of Ukraine, MICS 2025–26 microdata; KSE Institute calculations.

Limitations and open questions

- **The migration of foreigners is not modeled.** The inflow is set to zero because the estimate does not separate foreigners; if foreigners arrive in peace years, the resident population will be larger than projected. A corresponding module is planned for the 2027 revision.
- **Refugee return is the main source of uncertainty and a purely scenario-based assumption.** The 15%, 33%, and 50% shares rest on intention surveys rather than observed decisions, and they account for most of the spread.
- **Composition of the stocks abroad.** The split of post-2022 emigrants between war refugees and those who left on work, study, or family permits is not verified by direct data.

[36] Pension Fund of Ukraine, statistical reporting form No. 6-PF, Part I, as of January 1, 2026: old-age pensioners by sex and age.

- **Births to migrants abroad are not modeled in the projection.** The total population to 2041 is slightly understated; the resident population is unaffected.
- **Rates are uniform within five-year groups.** This matters little at the level of the total population but more for single-year indicators, such as the number of 18-year-olds.
- **Ordinary post-war emigration.** The correction for the people most inclined to leave having already left is fixed at the first peace year and calibrated on a single comparison of KIIS surveys; an out-of-sample check for ages 18–29 gives a close but not identical result.
- **Military personnel.** Their number and the flows between civilian life and military service are conditional assumptions based on public statements and open-source estimates (see the note at the beginning of the report).
- **The uncertainty of the starting estimate is not carried over into the projection.** The boundary between front-line and rear areas, the geography of refugees, and oblast shares are fixed at the central values of the estimate.
- **The age profile of family members accompanying those who leave is taken from MICS 2025–2026, that is, from households that stayed.** The families of those who leave may be younger; this affects the age structure of the first peace year, not the level.

ANNEX 3. REGISTER OF ASSUMPTIONS

Table C1: Main assumptions of the projection

Block	Assumption	Value (optimistic / moderate / pessimistic)	Basis
Base	Starting population	29.4 million resident; 5.0 million refugees and 1.5 million settled Ukrainians abroad	KSE Institute population estimate
War	Last year of the war	2027 / 2027 / 2030	Scenario assumption
Mortality	Share of the life-expectancy gap with Europe closed by 2040	50% / 25% / 0%	Scenario assumption; EUROPOP2025
Mortality	Mortality abroad	Lower than in Ukraine, falling 1.2% a year	Host-country death registers
Fertility	TFR in government-controlled territory, 2026 → 2040	1.04 → 1.40 / 1.25 / 1.10	State Statistics Service; scenario targets
Fertility	TFR of refugee women, 2026	about 0.8	Host-country registers
Outflow	Wartime net departures, 2026	about 0.20 / 0.25 / 0.38 million, declining until the war ends	Net departures of Ukrainian citizens in recent years; scenario corridor
Outflow	Post-war surge, including families	about 0.5 / 0.6 / 0.7 million over the first post-war years	Scenario assumption; UNHCR intention survey; MICS 2025–26
Outflow	Ordinary post-war emigration	about 0.06–0.08 million a year	Pre-war emigration rates by age and sex, corrected for those who have already left using KIIS surveys
Returns	Share of refugees who return	50% / 33% / 15%	Scenario assumption; intention surveys
Returns	Settled Ukrainians returning each year	2.5% / 1.5% / 0.5%	Host-country registers (Germany, Italy, Czechia)
Military	Military personnel	Conditional assumptions, not shown	Public statements and open-source estimates (see the note at the beginning)
Inflow	Migration of foreigners	Not modelled	The population estimate does not separate foreigners

Source: KSE Institute.

Why these return rates were chosen for migrants. No Ukrainian source measures how many of the migrants who were abroad before the full-scale invasion return: border data record crossings, not people. The rates are therefore calibrated on host-country registers. Before the full-scale invasion, 0.8% of Ukrainian citizens a year left the registers in Italy, 1.7% in Germany, and 5.4% in Czechia (Eurostat, 2015–2019),[37] and 60–90% of those who leave return to Ukraine, which implies returns of about 1.4–3.1% of the stock a year (a range weighted by the stocks in these countries). During the war, Ukrainians who had settled in Germany before 2022 left at a net rate of 1.2–2.2% a year after naturalizations and deaths are excluded, and almost all of them returned to Ukraine; in Italy, returns to Ukraine were 0.6% of the stock a year before the full-scale invasion and 1.3% in 2022–2024; in Czechia, exits were 2.1% in 2021, the last year before the full-scale war. The central value of 1.5% lies within these ranges. The low value of 0.5% assumes returns even below the pre-war Italian level, and the high value of 2.5% assumes

[37] Eurostat, emigration by citizenship (migr_emi1ctz): https://ec.europa.eu/eurostat/databrowser/view/migr_emi1ctz/default/table and population by citizenship (migr_pop1ctz): https://ec.europa.eu/eurostat/databrowser/ view/migr_pop1ctz/default/table.

the faster returns observed in the most favorable registers; all three values lie within the 0.5–3% range of the KSE Institute population estimate. The same rate is applied to people who left after 2022 on work, study, or family permits, although surveys show that they plan to return less often (27% against 48% of temporary protection holders, CES, wave 5);[38] a separate, lower rate for them would change the projected population by only about 0.1 million. By the end of 2030, these returns are small compared with refugee returns: 86,000 of the 1.00 million returnees in the central case.

[38] Centre for Economic Strategy (CES), Ukrainian refugees: fifth wave of the survey: https://ces.org.ua/en/ukrainian-refugees-fifth-wave/.

ANNEX 4. HOW MANY RETURNEES JOIN THE LABOR FORCE

The section "Labor Force Projection to 2030" states that of every 100 people who return by the end of 2030, about 46 will be in the labor force at that date. This annex explains where this number comes from. It is a model estimate, not a survey result. It follows from the age and sex of Ukrainians abroad, the 2021 participation rates, and an assumption about how quickly returnees find work.

Step 1: who returns. Each return scenario takes a share of the refugees abroad on January 1, 2028 (5.47 million in the projection model: 4.97 million as of January 2026 plus those who leave during the last two years of the war) and returns them over 13 years: 19% of all returns in 2028, 17% in 2029, and 14% in 2030. Migrants (1.5 million) return at a fixed annual rate (0.5%, 1.5%, or 2.5%; Annex 3 explains the choice). Returnees in each year have the same sex-and-age structure as the stock abroad in that year. Nothing in the model makes return more likely for younger or older people, or for those with or without a job abroad. After arrival, returnees age year by year and face the same mortality, mobilization, and emigration rates as other civilians of the same age and sex.

Step 2: who of them is in the labor force. Each returnee is assigned the 2021 participation rate for their age and sex (Table 14), multiplied by 1.035, as for residents (Table 15, Annex 6). Children under 15 and people aged 70 and over are counted with zero participation. In their first year back, returnees participate at 80% of the resident rate, and in their second year at 90%, to allow for job search, recognition of qualifications, and finding childcare. From the third year on, they take part in the labor market like residents. These two factors are assumptions, not estimates.

Step 3: the ratio. The labor force added by returns at the end of 2030 is divided by the total number of returnees of all ages in Ukraine at that date. Table D1 shows the calculation for the central scenario.

Table D1: Returnees and their labor force at the end of 2030, central scenario (33% return)

Age	Returnees, thousand	Women, %	Participation, %	Labor force, thousand
0–14	144	49	0	0
15–24	210	45	32	67
25–59	520	62	83	430
60–69	67	69	13	9
70+	55	73	0	0
All ages, at resident participation	996	58	51	505
Re-entry adjustment (80% / 90% in the first two years)			−5	−47
Labor force added by returns	996	58	46	458

Note. Participation = 2021 Labor Force Survey rate for the respective age and sex × 1.035, averaged over the age group. Returnees include 86,000 migrants. Components may not add up to the total due to rounding.
Source: authors' calculations

The ratio stays below one half for three reasons. About one in seven returnees is a child (14% at the end of 2030, taking into account that children grow older). Among adults of prime working age, about three in five (62%) are women, whose participation in 2021 was lower than men's (for example, 65% against 90% at ages 25–29). And the re-entry assumption takes off about 5 points, because all returns by 2030 are recent. In this respect, returnees are not an exception: among civilian residents of Ukraine at the start of 2026, about 46 of every 100 are in the labor force.

What this number does not capture. The ratio hardly depends on how many people return. It is about the same, 0.46, in the 15%, 33%, and 50% scenarios, because all of them draw returnees with the same structure. The main risk is that returnees differ from the stock abroad. Surveys suggest that people with jobs abroad are less likely to

return and older people more likely to (the “Main sources of uncertainty” box in the section “Labor Force Projection to 2030”); both effects would lower this ratio.

ANNEX 5. PRE-WAR MIGRANTS ABROAD: COMPARING TWO 2022 BASELINES

The section "Estimating Ukraine's Population at Home and Abroad" puts the number of Ukrainians who were already living abroad before 2022, mostly labor migrants, at about 1.6 million. This number is not measured directly. It is the difference between two independent estimates of the same population on January 1, 2022: the 24 oblasts and Kyiv, without Crimea and without the areas occupied in 2014 (Table E1). About 0.14 million of them had returned to Ukraine by 2026 and are counted in its population (Table 3 nets the 0.14 million in Ukraine out of net departures abroad); 1.15 million are still abroad outside Russia and Belarus and make up the largest group of migrants (Table 4). The rest are mostly in Russia or Belarus, which the estimate does not cover, or have died.

Table E1: Two estimates of the population of the 24 oblasts and Kyiv on January 1, 2022, million people

	Baseline 1 (used in this paper)	Baseline 2 (register-based)
Starting point	37.29: Government estimate for December 1, 2019 (Cabinet of Ministers of Ukraine), based on mobile-operator and administrative data[39]	41.17: State Statistics Service "present population", January 1, 2022
Adjustments	+0.59 births, −1.38 deaths, +0.11 net border crossings (December 2019 to January 2022)	−3.73 for the areas occupied in 2014; +0.85 for people displaced in 2014–2021 who are missing from the register; −0.09 for displaced people the register already counts
Population, January 1, 2022	36.61	38.20
Difference (Baseline 2 − Baseline 1)		1.59

Source: KSE Institute population estimate.

Why this difference measures people who were already abroad, and how EU registers confirm it. Baseline 2 is based on the State Statistics Service's current population accounts rolled forward from the 2001 All-Ukrainian Population Census, in which external migration is recorded only when a person officially deregisters their place of residence. A person who left to work or live in an EU country and did not deregister in Ukraine is still counted in the present population. Baseline 1 starts from an estimate of actual presence on December 1, 2019 and adds only births, deaths, and net border crossings after that date, so it already excludes pre-war labor migrants.

The resulting difference of 1.59 million people (all destinations as of January 1, 2022) is independently verified by host-country statistics. As of December 31, 2021, Ukrainian citizens held 1.61 million valid residence permits in the EU and EFTA countries. Since the Polish data in Eurostat (0.65 million documents) include short-term permits of 3–11 months, some of whose holders spent the winter at home in Ukraine, replacing the short-term documents in Poland with the holders of residence cards actually present (0.31 million according to GUS), together with the national registers of the other 21 EU and EFTA countries (0.97 million), gives about 1.27 million Ukrainians physically living in Europe at the start of 2022. This is 80% of the 1.59 million estimate (the remaining 20%, or about 0.32 million, were in Russia, Belarus, and other non-EU countries, consistent with the declining share of this destination in the State Statistics Service's labor migration surveys). After subtracting those who returned to Ukraine in 2022–2025 (0.14 million in government-controlled territory), switched to temporary protection (0.04 million), or died (0.03 million), the number of pre-war migrants outside Russia and Belarus on January 1, 2026 is 1.15 million (Table 4). As of the end of 2025, this figure (together with 0.35 million post-war

[39] Cabinet of Ministers of Ukraine, results of the estimate of the present population of Ukraine (January 2020): https://www.kmu.gov.ua/news/oprilyudneno-rezultati-ocinki-chiselnosti-nayavnogo-naselennya-ukrayini.

departures on residence permits) lies within the Eurostat corridor between the number of Ukrainians with EU long-term resident status after more than five years of residence (0.63 million, lower bound) and the total number of valid permits other than temporary protection (1.67 million, upper bound).[40]

Why this number remains approximate. At the same time, the difference between the two 2022 baselines is not a direct name-by-name count of migrants and absorbs the residual errors of both methods: inaccuracies in the 2019 mobile coverage ratios, the adjustment for the first wave of internally displaced persons (2014–2021), the unknown share of Polish seasonal permit holders who were physically in Poland at the end of 2021, and the lack of demographic data for the occupied territories updated after 2014. The last dedicated labor migration survey of the State Statistics Service was conducted in 2017.[41]

[40] Eurostat, all valid permits by reason, length of validity, and citizenship on December 31 (migr_resvalid): https://ec.europa.eu/eurostat/databrowser/view/migr_resvalid/default/table?lang=en; long-term residents among third-country nationals on December 31 (migr_reslong): https://ec.europa.eu/eurostat/databrowser/view/migr_reslong/default/table?lang=en; population on January 1 by citizenship (migr_pop1ctz): https://ec.europa.eu/eurostat/databrowser/view/migr_pop1ctz/default/table. National registers of the main host countries at the end of 2021: Statistics Poland (GUS), Rocznik Demograficzny (Table 42, valid residence cards: 307.7 thousand on December 31, 2021) and the 2021 National Population and Housing Census (NSP 2021): https://stat.gov.pl/obszary-tematyczne/roczniki-statystyczne/roczniki-statystyczne/; Italian National Institute of Statistics (ISTAT, valid residence permits: 230.4 thousand): https://esploradati.istat.it/databrowser/#/en/dw/categories; Czech Statistical Office (ČSÚ, Tables CIZ002/CIZ004: 196.9 thousand): https://data.csu.gov.cz/datastat/info/SADA/CIZ002; Federal Statistical Office of Germany (Destatis, Central Register of Foreigners (AZR), Table 12521: 155.3 thousand): https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Migration-Integration/_inhalt.html; National Statistics Institute of Spain (INE, *Estadística Continua de Población*: 109.8 thousand): https://www.ine.es/dyngs/INEbase/es/operacion.htm?c=Estadistica_C&cid=1254736177095&menu=ultiDatos&idp=1254735572981.

[41] State Statistics Service of Ukraine, modular sample survey "External Labor Migration of the Population of Ukraine" (2015–2017), statistical bulletin (in Ukrainian): https://ukrstat.gov.ua/druk/publicat/kat_u/2017/bl/12/bl_ztm_2017.zip. According to the State Statistics Service surveys of 2005–2008, 2010–2012, and 2015–2017, Russia's share among the destinations of labor migration from Ukraine declined steadily from 48.1% to 43.2% and 26.3% (and, together with Belarus, amounted to 28.0% in 2015–2017, against 64.2% for the EU and EFTA countries). Between 2017 and 2021, the number of valid residence permits held by Ukrainians in the EU and EFTA (migr_resvalid) grew by a further factor of 1.34 (from 1.20 to 1.61 million).

ANNEX 6. THE 2026 LABOR FORCE: WHY TWO APPROACHES, AND WHAT THE 3.5% UPLIFT MEANS

The section "Labor Force Projection to 2030" brackets the 2026 labor force with a demographic and a register approach and takes the midpoint of the range as the estimate. This annex explains why the register approach is not used on its own and what the resulting 3.5% uplift in participation means.

Why not rely on the registers alone? There are three reasons. First, the projection requires participation rates by age and sex, and only the demographic approach provides them. The register gives only a single total without any age or sex structure, so it cannot be carried forward as the population ages, emigrates, and returns. Its role is to calibrate the level: the central estimate equals the 2021 rates raised by 3.5% at every age, and these are the rates projected further in the section "Labor Force Projection to 2030." Second, the register total is not a clean count either. Some insured persons live abroad and work remotely or keep their Ukrainian registration as individual entrepreneurs, and some live in the occupied territories but remain on Ukrainian payrolls; these factors push the total up. Informal employment probably exceeds its 2021 share (19.3%), especially among working-age men; this pushes the total down. For example, with an informal share of 25%, the register approach would give about 14.4 million. The register estimate also rests on two ratios that are not observed in 2026: the informal employment share from 2021 and the NBU unemployment forecast. Third, the two approaches err in opposite directions, so together they bracket the true level. Neither is a measurement, and the midpoint is a transparent compromise rather than a statistical result; the range of about ±0.44 million reflects the uncertainty. As soon as the resumed Labor Force Survey publishes participation rates by age and sex for 2026, both approaches should give way to it.

What the 3.5% uplift means. The factor of 1.035 is the midpoint expressed as a ratio. The demographic approach gives 12.51 million and the register approach 13.39 million, that is, 1.070 times as much; the midpoint, 12.95 million, is 1.035 times the demographic result. The lower estimate therefore corresponds to a factor of 1.000 and the upper one to 1.070. In the central estimate, every age and sex group takes part in the labor market 3.5% more than in 2021; this is a relative increase, not a percentage-point one: participation of men aged 25–29 rises from 89.7% to 92.9%, of women aged 25–29 from 65.1% to 67.4%, and of women aged 40–49 from 82.6% to 85.5%. Participation of civilians aged 15–69 rises from 60.6% to 62.8%. The same factor is applied to every group because only the overall total is known, not which groups changed; scaling all groups preserves the 2021 profile by age and sex. Wartime changes were probably not uniform: labor shortages most likely raised participation more among women, older people, and students, while mobilization, disability, and informal employment lowered it, or made it less visible, among men of prime working age. By construction, the factor gets the total right, but probably not the mix. The scaled rates are held fixed until 2030 and applied to the changing population, including returnees and veterans. Each 0.01 of the factor is worth about 0.13 million people in the 2026 labor force.

ANNEX 7. POST-WAR EMIGRATION AND ITS COST IN LABOR FORCE

The section "Labor Force Projection to 2030" states that about 0.6 million people leave in 2028 and that emigration removes about 0.8 million workers by the end of 2030. Neither number is observed. The first is an assumption of the projection model for the first year after the war; the second follows from it.

The 2028 outflow. In the moderate scenario, the war ends in 2027, and the model sets the outflow for 2028 at about 0.6 million people. Each component is built on a documented assumption (Table G1). The wartime outflow, a net figure based on border data, stops when the war ends; ordinary emigration is modeled separately, as pre-war emigration rates corrected for those who have already left.

Table G1: Emigration in 2028 in the moderate scenario, by component

Component	People	How it is derived
Post-war surge: men leaving after exit restrictions are lifted, family reunification abroad, and partners and children accompanying them	about 0.53 million	Scenario assumption based on intention surveys and household surveys
Ordinary emigration	about 0.08 million	Pre-war emigration rates by age, corrected for those who have already left
Total	**about 0.6 million**	

Source: KSE Institute

Lost labor force. Each year's emigrants are distributed by age and sex according to the outflow profile in the model and multiplied by the participation rate for their age and sex (2021 rates × 1.035, as in Table 15). Table G2 shows the result by year. Of the 0.83 million, about 0.8 million corresponds to the emigration bar in Figure 15; the rest is the emigration of veterans, which Figure 15 includes on a net basis in the bar for flows between civilian life and military service.

Table G2: Emigrants and the labor force they could have formed, moderate scenario, million people

Calendar year	Emigrants	of whom aged 15–69	Labor force lost
2026	0.25	0.18	0.12
2027	0.23	0.17	0.11
2028	0.60	0.53	0.44
2029	0.11	0.11	0.09
2030	0.09	0.09	0.07
2026–2030	**1.28**	**1.07**	**0.83**

Note: Calendar years. Labor force lost = emigrants by age and sex × participation rate of their age and sex.
Source: KSE Institute

About two-thirds of all emigrants in 2026–2030 count toward the lost labor force. The share is highest for the post-war outflow, which consists mostly of men of prime working age; the earlier wartime outflow consists mostly of women and children.

How much these numbers can be trusted. The 0.8 million figure depends above all on the 2028 assumption and the date the war ends. The one-off post-war outflow is the least certain component; it is a scenario assumption, not an observation. The labor force figure also assumes that emigrants would have participated in the labor market at the same rates as other people of their age and sex.