

Recent Forced Migration and Demographic Trends of Endangered Areas of Ukraine

By *Monika Komušanac**

Recent geopolitical circumstances in the area of the eastern Ukrainian-Russian border have resulted in intense forced migrations of the Ukrainian population into and out of the territory of Ukraine. According to estimates by the United Nations and the International Organization for Migration, about 13.5 million people participated in the wave of refugees and exiles, i.e., 30% of the total population of Ukraine (May 2023). Migration movements (external and internal) caused by the war showed a distinct spatial (regional) differentiation of certain forms of forced migration with regard to the main corridors, dynamics and scale of population displacement. The largest share of war migration in Ukraine refers to refugees and asylum seekers in the European area (8.2 million), and a smaller part to the internally displaced population who replaced their pre-war residence with that in the free territories of Ukraine (5.3 million) (UNCHR, 2023). Standard analytical demographic approach was based on a list of 14 threatened areas (territories) and selected indicators of the overall and natural population movement. Selected indicators and data pointed to the negative pre-war demographic trends of the threatened areas, above all to the level of natural and total depopulation and specific regional demographic relations that are a consequence of the unevenly successful transition-reform period after independence.

Keywords: *demographic potential, forced migration, war, threatened territories, Ukraine*

Introduction

Tensions on Ukraine's eastern border with the Russian Federation have been rising since 2014, i.e., since the Ukrainian Revolution, Russia's annexation of Crimea, and pro-Russian separatist actions in the Donbass, which resulted in the gathering of Russian troops near Ukraine's eastern borders during 2021 and 2022. The escalation of the conflict occurred at the end of February 2022 with the Russian recognition of the self-proclaimed states, the Donetsk People's Republic and the Luhansk People's Republic, and three days later, on February 24, 2022, the Russian Federation's military campaign against Ukraine began. The direct demographic consequence of the Russian-Ukrainian war is the forced relocation of the population from the occupied and threatened areas to the free territories of Ukraine and increased waves of refugees to neighboring countries. Forced migrations were most intense in the first few weeks of the war, primarily due to the sudden nature of the military campaign and the fear, insecurity and life-threat faced by a large population in a very short period of time. The subject of research in this paper is to define the intensity and characteristics of the increased spatial mobility of the population on

*Assistant Professor, Faculty of Croatian Studies, University of Zagreb, Croatia.

and outside the territory of Ukraine, with regard to the standard typology of forced migration. In accordance with the great demographic potential of Ukraine in Europe and the regional significance of the eastern Ukrainian basin, the main "pre-war" demographic characteristics of 14 endangered areas (regions) of Ukraine were singled out. The main goal of the paper is to analyze the demographic scale of Russian aggression against Ukraine, primarily the direct ones in the context of increased migration, and secondarily the long-term ones, in the context of possible revitalization after the end of the war and the stabilization of spatial, economic and social conditions in Ukraine, with regard to the inherited demographic processes of the threatened oblast (region).

Recent Refugee Waves of the Population of the Ukrainian Population

The basic criterion for distinguishing war-induced migrations is voluntariness, according to which we distinguish two basic types, forced and forced migrations. "Forced migration implies a type of migration in which the migrant does not have any decision-making ability (in the case of expulsion, implementation of the policy of ethnic cleansing, etc.), while in the case of forced migration, the migrant decides for himself whether to stay or leave" (Živić 2014, 301). It is clear that the areas in the immediate vicinity of the source of war events are the most threatened and will be most affected by some form of forced migration. UNHCR distinguishes several categories of forced migration, depending on the characteristics and territorial scope, namely; refugees and internally displaced persons (IDPs). "A refugee is someone who has been forced to leave their country due to persecution, war or violence, and has a well-founded fear of persecution because of race, religion, nationality, political opinion or belonging to a particular social group (UNHCR 2022a), and currently there are 27 million (UNHCR 2022b). "An internally displaced person is a person who is forced to leave his home (mainly due to internal conflicts and natural disasters) and who finds safety in nearby settlements, cities, schools, camps, etc., but who do not cross the international border. Internally displaced persons are not protected by international law because they are legally under the protection of their own government, unlike refugees", and it is estimated that there are about 51 million of them in the world (UNHCR 2022b). These two types of forced migration movements confirm the most common criterion in the typology of migration, which is spatial (territorial) distance with the difference that refugees leave the borders of a country threatened by war, while internally displaced persons are relocated from threatened areas to free territories, but within the framework of internal migration movements. Taking into account all possible limitations and shortcomings in monitoring forced migration, and above all related to the dynamics of the migration process, the impossibility of monitoring the actual scale, time gaps in data collection, increased internal and cross-border mobility, difficult monitoring of multiple relocations and the like, we still have certain data on the extent, intensity and directions of forced movements of the population of Ukraine. It should be emphasized that these are estimates and should be considered in the context of the unstable current situation in Ukraine, and in accordance with the phases of conquest

or liberation of the Ukrainian territory during which there is more pronounced mobility of the population in space.

Table 1. *Number of Registered Refugees from Ukraine in Neighboring and Other European Countries in June 2023*

Country	Number of refugees from Ukraine	Share of refugees from Ukraine (%)
Poland	1,605,738	19.45%
Russian Federation	2,852,395	34.55%
Romania	94,179	1.14%
Republic of Moldova	108,899	1.32%
Slovakia	116,718	1.41%
Hungary	36,313	0.44%
Bellarus	27,673	0.34%
Total neighbouring countries	4,841,915	58.65%
Germany	1,067,856	12.94%
Czech Republic	520,234	6.30%
Spain	177,228	2.15%
Italy	175,107	2.12%
France	118,994	1.44%
Bulgaria	51,365	0.63%
Austria	97,047	1.18%
Other european countries	1,205,542	14.60%
TOTAL UKRAINIAN REFUGEES	8,255,288	100.00%

Source: UNHCR 2023.

According to available UNHCR estimates, in the first three months after the beginning of the war, about 12.8 million people participated in forced migrations, of which the majority were those who changed their pre-war place of residence but remained in Ukraine (internally displaced persons - IDPs), about 7.7 million, while a much smaller number, about 5.1 million, refers to refugees outside Ukraine (United Nations 2022b). According to latest data (January 2023), the number of IDPs has been continuously decreasing in Ukraine since August 2022, and currently amounts to 5.4 million (United Nations 2023). Considering the total demographic potential of Ukraine, which, according to the Demographic Yearbook from 2019, has close to 42 million inhabitants (without the annexed parts of the Autonomous Republic of Crimea and the City of Sevastopol) (State Statistics Service of Ukraine 2020), over 30% of the population of Ukraine participated in recent forced migrations, within and/or beyond borders since the beginning of the war. UNHCR (2023), which has been monitoring the refugee crisis since the beginning of the Russian invasion of Ukraine, shows that currently (June 2023) there are about 8.3 million of its citizens outside the borders of Ukraine, of which 5.1 million are registered for temporary protection or similar national protection programs in Europe. About 21 million crossings were recorded at the border crossings of Ukraine (from Ukraine), but this data does not reflect the movements of individuals, but all total cross-border movements, including border crossings of residents from

the Donetsk and Luhansk regions immediately before the start of the war in Ukraine, as well as crossings due to the delivery of humanitarian aid help. Analyzing the directions of the refugee waves from Ukraine, the population moved from the war-affected areas of the east and southeast of Ukraine towards the borders of Ukraine in the west, northwest, and northeast.

The data from Table 1 shows that currently most Ukrainian refugees are in neighboring countries, about 4.84 million (58.65%), of which the most, over a million, are in Russian Federation (2.8 million) and Poland (1.6 million), in Slovakia (116 thousand), in Republic of Moldova (108 thousand), in Romania (94 thousand) etc. For the sake of comparison, in the first four weeks of the war, more than three million people escaped from Ukraine, almost 75% of them to neighboring Poland (1.86 million) and Romania (467 thousand) (UNHCR, 2023), which confirms the fact as the wave of refugees was most intense immediately after the start of the war, and with the advancement of the Ukrainian forces in liberating the territory and military successes, the number of "new" refugees is decreasing, while the number of those who leave their pre-war residence, but do not go beyond the borders but to free (other) territory of Ukraine. In addition to the pronounced spatial selectivity of refugee waves towards neighboring countries due to geographical proximity, movement towards individual European countries also confirms pronounced differentiation, but for other reasons. Currently, there are 1.2 million refugees from Ukraine or 14.60% of the total number in other European countries, and a relatively significant refugee contingent is in Germany (1 million), the Czech Republic (520 thousand), Spain (177 thousand), Italy (175 thousand), France (118 thousand) and Austria (97 thousand), where together there are currently 2.1 million Ukrainian refugees. The mentioned differentiation in the spatial distribution of refugees is in direct correlation with the size of the Ukrainian emigrant contingent from the pre-war period. The European Commission (2022) states that Poland, Italy, the Czech Republic, Germany and Spain are home to about 80% of the population that emigrated from Ukraine in the last decade, and the data in Tables 1 and 2 confirm the mentioned connection between the Ukrainian diaspora and the extent of the recent wave of refugees directed according to individual European countries. In 2019, most Ukrainian emigrants lived in Eastern Europe (67%), Southern (8.6%) and Western Europe (close to 6%), primarily in the Russian Federation (3.2 million) and Italy (246 thousand), Germany (241 thousand), Belarus (222 thousand), Poland (218 thousand) and the Czech Republic (110 thousand), which together were the destination for 1.03 million Ukrainian emigrants (Table 2).

Table 2. Population of Ukrainian Origin in Diaspora in 2019 According to Current Place of Residence

Country	Total 2019	Country	Total 2019
Russian Federation	3,269,248	Czech Republic	110,337
Italy	246,367	Spain	94,120
Germany	241,486	Hungary	55,609
Belarus	222,917	Portugal	47,323
Poland	218,716	Republic of Moldova	42,548
Ukrainian diaspora in Europe 2019			4,779,015
Ukrainian diaspora in Eastern Europe 2019			3,958,674
Ukrainian diaspora in the World 2019			5,901,067

Source: United Nations 2019.

Internal Forced (War) Migration on the Territory of Ukraine

The aforementioned data on the consequences of the Russian attack on Ukraine showed that forced migrations in the territory of Ukraine, in relative terms, were on a larger scale than the waves of refugees from Ukraine at the beginning of the war, while now there are more refugees and returnees in Ukraine. On March 6, 2022, the Cabinet of Ministers of Ukraine defined the spatially most threatened administrative-territorial units of Ukraine for the purpose of social assistance and support to the displaced population, i.e. it adopted the "Decision on approving the list of administrative-territorial units in whose territory assistance is provided to insured persons under eSupport Program" (Government Portal of Ukraine 2022). The Government of Ukraine has also defined a list of persons who are considered and registered as Internally Displaced Persons (IDP) for the purpose of realizing various social, financial, material, housing and other rights from the launched state support programs. Therefore, internally displaced persons are considered to be those "persons who have been relocated from war-affected areas from the list of the most endangered territories (14 and later 8 regions) and whose registered residence is outside the most endangered territories, but are registered as liable for contributions to the mandatory state social insurance or have paid the same contribution for the fourth quarter of 2021 or for the year 2021 in that "threatened" area" (Government Portal of Ukraine 2022). According to the decision of the same name, the most threatened regions (areas) of Ukraine at the beginning of March were a total of 14, and they were; Volyn, Dnipropetrovsk, Donetsk, Zhytomyr, Zaporizhia, Kyiv, Lugansk, Mykolaiv, Odesa, Sumakha, Kharkiv, Kherson and Chernihiv regions and the City of Kyiv (Government Portal of Ukraine, 2022) According to the course and characteristics of the war and the advance and retreat of Russian forces, list of territories in which "active hostilities, i.e., areas that are occupied, besieged or blocked" are being conducted, has been revised and currently includes eight oblasts, namely certain parts of Dnipropetrovsk, Donetsk, Zaporizhia, Luhansk, Mykolaiv, Kharkiv, Kherson and Sumakha regions. In addition to the reduction of the territorial extent of the most affected areas, there is also a noticeable spatial shift of war hotspots exclusively to the southern, eastern and southeastern regions of Ukraine, in contrast to the threatened areas. Regardless of the number and spatial size of the

separated, war-affected territories, the directions of internal migration, i.e. the movement of internally displaced persons, are primarily directed from the east and south, from directly threatened areas and those in their immediate vicinity, towards the west, north-west and south-west areas along the borders with neighboring countries, Poland, Romania, Moldova, Slovakia and Hungary. According to the list of the occupied territories, their basic spatial and demographic characteristics were singled out, which will be the basis for the assessment of direct and indirect demographic losses, not only for the threatened parts but also for the entire population of Ukraine, in accordance with their current (pre-war) demographic potential. We are also interested in the data from Table 3, which confirm the regional demographic potential of threatened areas.

Table 3. *Endangered Regions of Ukraine by Population, Area and Population Density in 2020*

Region	Surface (km ²)	Population density 2020 (inhabitants per square kilometer)	Total population estimation 2020 (resident population)	Share in total (estimated) population 2020
UKRAINE	603,665	76,27	41,418,717	
Volyn	20,143	50,87	1,024,669	2.47%
Dnipropetrovsk	31,914	98,35	3,138,726	7.58%
Donetsk	26,517	154,14	4,087,395	9.87%
Zhytomyr	29,900	40,01	1,196,264	2.89%
Zaporizhia	27,200	61,24	1,665,726	4.02%
Kyiv	28,131	63,37	1,782,751	4.30%
Lugansk	26,684	79,33	2,116,725	5.11%
Mykolaiv	24,598	45,03	1,107,679	2.67%
Odesa	33,310	70,76	2,357,047	5.69%
Sumakha	23,834	44,11	1,051,260	2.54%
Kharkov	31,415	83,34	2,618,198	6.32%
Kherson	28,461	35,67	1,015,275	2.45%
Chernihiv	31,865	28,04	893,501	2.16%
City of Kyiv	839	3481,37	2,920,873	7.05%
Total threatened areas	364,811	73,95	26,976,089	65.13%

Source: State Statistic Service of Ukraine 2020.

If we take into account the total territory of the areas that were most affected at the beginning of March, over 364 thousand square kilometers of Ukraine were directly threatened by war suffering, which makes up 60% of its surface, and in this area, according to estimates for the year 2021, almost 27 million people lived or 65% of the total Ukrainian population (without annexed parts) (State Statistics Service of Ukraine 2020). It is also significant that some of the threatened areas are the regions with the highest population in Ukraine, namely the Donetsk and

Dnipropetrovsk regions and the city of Kyiv, where together 10 million people or 25% of the total population of Ukraine live. The average population density of the 14 threatened areas is moderate, 76 people/square kilometer and slightly lower than the national average, and the areas with the highest population density are commensurate with the areas with the largest number of inhabitants (Kyiv City - 3,481 people/square kilometer, Donetsk region - 54 people/square kilometer, and Dnipropetrovsk region - 98 people/square kilometer), i.e. those areas that were the target of attacks in the first few days of the Russian invasion of Ukraine. The extent of the threat is of course not only related to the size of the territory that was or is exposed to war suffering, but also to the destructive consequences of the war for the population and future population development, which will be discussed in the framework of the pre-war demographic characteristics of the war-affected areas. Forced migration is a direct consequence of war events and as such, manifests itself immediately after the first conflicts, and the laws of their occurrence and development follow the course of the war, while the long-term consequences will be assessed after the end of the war and the stabilization of the war situation in Ukraine. Accordingly, we can single out several legalities of internal forced migration on the territory of Ukraine, which in absolute and relative terms are more pronounced than external (refugee) migration, more complex and more difficult to monitor (register) due to the emergence of the so-called multiple relocations (deployments), increased internal spatial mobility (arrival for family members, arrival of humanitarian aid...) and internal return flows. Nevertheless, the International Organization for Migration (IOM) conducted several surveys among the local population with a monthly time lag in order to be able to compare the intensity of migration, the spatial selectivity in origin and destination, and the intention to leave and return. In addition to analytical estimates of the number of people who participated in the recent migration waves, based on the data obtained, the IOM also defined the main internal migration corridors and the legality of the regional distribution of internally displaced persons of Ukraine during the recent crisis.

Ukraine recorded a trend of increasing the number of internally displaced persons even before the Ukrainian crisis in 2022, that is, since the deterioration of Russian-Ukrainian relations and the escalation of tensions in 2014, when the Russian Federation annexed Crimea and Sevastopol, the Crimean port that had a special administrative status in Ukraine, and after self-proclamation of the Donetsk and Lugansk People's Republics. According to the data of the Ministry of Social Policy of Ukraine, there were about 1.46 million internally displaced persons in the territory of Ukraine in 2021, primarily from the temporarily occupied areas of Donetsk and Luhansk regions (i.e., the areas of the self-proclaimed republics), the Autonomous Republic of Crimea and Sevastopol (Government Portal of Ukraine 2021). The total number of internally displaced persons in those four areas was about 1.1 million, of which the largest number was in Donetsk (512 thousand) and Lugansk (282 thousand) regions (unoccupied parts), Kyiv (163 thousand) and Kharkiv (136 thousands). Some cities had large shares of internally displaced persons even before the Russian military campaign in Ukraine, for example, Severodonetsk (44%), Mariupol (20%), Izyum (13%), Bucha (11%), Irpin (9%), Berdjansk (8%), Kyiv (5.5%) and others (CEDOS 2022). The recent events at the end of February

2022, i.e., the Russian aggression against Ukraine, intensified migration from this area in view of the source of conflicts precisely in the prominent Russian-Ukrainian border area in the east and southeast and encouraged "new" refugees and refugee proportions in a very short time, so by mid-March 2022, almost 3 million refugees from Ukraine and about 6.4 million internally displaced persons were registered (United Nations 2022a). The first displacements related to the exiled population from those areas towards the western areas along the border with Poland, Slovakia and Hungary and the central areas, and in the first three weeks of the war, the number of newly arrived internally displaced persons was particularly large in the Lviv region (200 thousand) and almost equally in Zakarpattia and Ivano-Frankivsk regions (80 thousand) and slightly less in Khmelnytskyi (about 70 thousand) (CEDOS 2022). A survey conducted by the IOM in March showed that "48% of IDPs in Ukraine left their homes after the war, 45% left their homes when the war arrived in their area, and 5% left their homes in anticipation of the conflict." (CEDOS 2022), depending on the location of the exiled population or endangered population (with still free territories) and the circumstances at the time.

Table 4. *Internal Migration Flows of the Displaced Population - According to Pre-war Place of Residence (February 2022 – May 2022)*

Makroregion	% of the Total Internally Displaced Contingent	Estimation of the Number of Internally displaced Persons according to Place of Pre-war Residence
Kyiv	20.6%	1,654,000
East	49.0%	3,938,000
South	10.8%	871,000
Center	1.1%	87,000
North	16.5%	1,327,000
West	1.9%	152,000
Total	100.00%	8,029,000

Source: United Nations 2022a.

As expected, according to the same source, the most people left the eastern macro-region (2.3 million), the Kyiv region, i.e., the city of Kyiv and the Kyiv region (1.9 million) and the northern macro-region (1.3 million), and majority was placed in the western macroregion, about 2.5 million. From the beginning of the war until today, the IOM has been continuously conducting national surveys on a monthly basis in order to collect as much data as possible on the waves of exiles and refugees, and based on the results of these surveys, return flows were estimated at 2.7 million (including those who returned from free/other parts of Ukraine and those who returned from abroad) (United Nations 2022a). Tables 4 and 5 show data on the size of the displaced contingent according to pre-war and current residence at the macro-regional level. The main internal migration corridor indicates leaving primarily the east of Ukraine (about 3.9 million) and Kyiv (1.6 million) and immigrating to the western regions or regions that are in the immediate vicinity of threatened areas (to the north or to the interior) (Table 4). Using a regional approach,

it was determined that the most internally displaced persons are from Kharkiv (23%), Kyiv (20%), Donetsk (17%) and Kyiv (12%) region (United Nations 2022a).

Table 5. *Internal Migration Flows of the Displaced Population - According to the Current Place of Residence (February 2022 – May 2022)*

Makroregion	% of the Total Internally displaced Contingent	Estimation of the Number of Internally displaced Persons according to Current Destination
Kyiv	2.96%	238,000
East	18.33%	1,472,000
South	6.46%	519,000
Center	20.75%	1,666,000
North	15.37%	1,234,000
West	36.12%	2,900,000
Total	100.00%	8,029,000

Source: United Nations 2022a.

According to these data, almost 50% of the internally displaced contingent was from the territory of eastern Ukraine. In proportion to the absolute ratios and directions of displacement of displaced persons on the territory of Ukraine, the macro-regions where the largest number of displaced persons are located are those farthest from the war events and along the western and northern borders, and the least in directly threatened areas and those in their immediate vicinity. In other words, according to the current destination, the most internally displaced persons are located in the West and Center macro-regions, almost 4.5 million or 57% of the total displaced contingent, and the most of those who have found their current residence are in Kyiv (9), Lviv (9%), Dnipropetrovsk (8%), Khmelnytskyi (8%) and Vinnytsia (7%), while the fewest displaced persons are located in the macro-regions of Kyiv (238 thousand) and South (520 thousand) (Table 5). Such trends have persisted until today, with a gradual decline in internal migration flows in absolute terms since the summer of last year, so more recent data confirm the aforementioned relationships in smaller numbers.

Separated migration directions and main source corridors confirm the overall spatial selectivity of forced migration (both in destination and origin), existing regional differences and the importance of geographic location in the distribution of internally displaced persons. It is also important to note that as the war progressed, the number of internally displaced persons from all macro-regional origins and towards all macro-regional destinations increased, with more or less comparative (proportional) relations with the war and war operations on Ukrainian territory and recent events on the Russian-Ukrainian border. The only exception is Kyiv, where a noticeable decrease in the number of displaced persons is primarily due to more pronounced return flows, the liberation of Kyiv's territory on several occasions, but also greater exposure of Kyiv to the main humanitarian corridors. Therefore, the estimates of return flows shown in Table 6 should be considered within the framework of changing military-political circumstances and the likely continuation of instability in the region.

Table 6. *Estimated Return Flows (Internal and External) by Macro-region of Return (January 2023)*

Return makroregion	Return estimates	Share of the return contingent (%)
Kyiv	1,400,000	25.00%
East	1,238,000	22.00%
South	95,000	10.00%
Center	359,000	9.00%
North	1,489,000	27.00%
West	520,000	6.00%
Total	5,562,000	100.00%

Source: United Nations 2023.

It is estimated that around 2.7 million people were included in return flows by May 2022, most of which refer to interregional returns (from other cities within the same region and from one region to another), almost 93%, while the smallest share is those who returned from abroad (7%) (United Nations 2022a). From that period to the present, the number of returnees to Ukraine has increased by over 50% and it is estimated that the returnee flows are at the level of 5.65 million people (United Nations 2022a, 2023). There is a significant difference, apart from the absolute one, in that as the war progressed, the number of refugee-returnees to Ukraine increased to around 1/5, and accordingly the share of interregional refugee return migrations decreased. Analysis of the direction of return shows that the most returnees are registered in the North (1.48 million) and in Kyiv (1.4 million) macro-regions, which is in accordance with the size of the current exile contingent in these macro-regions (Tables 4 and 5). The expected fewest returns were registered in the south, which is continuously the most affected by war events. Although it is evident that the return trends exist, from the current perspective it is ungrateful to forecast their scale in view of the unstable and changing war situation in Ukraine. In this context, differences were also observed in the expression of intention to leave by the population that was not directly affected by the war events (population from the free territories), at the beginning of March 2022 and at the beginning of January 2023. Namely, the number of those who thought about leaving Ukraine was the highest immediately after the start of the war and decreased over time, while the intention to relocate was stable, expressed and persistent among already displaced persons, with an increasing trend parallel to the continuation of the war.

Displacement of the population, destruction of space and social structures, human and material losses, etc. are the initial effects of the presence of war events, they manifest themselves very quickly and leave direct consequences. After the end of the war, real data on refugee, exile and returnee movements and the demographic consequences of the war for individual macro-regions and regions of Ukraine will be seen.

Demographic Trends of the War-endangered Areas of Ukraine

Given that the intensity of forced external migration was the highest immediately before the start of the war and in the first month of the war, and the intensity of forced internal migration increased with the continuation of the war, we will focus on the scale of internal migration according to the first list of 14 threatened areas (areas), while analyzing their basic demographic characteristics. The characteristics of the spatial distribution of population at the level of threatened regions were defined in the previous chapter, and here we will focus on the basic pre-war demographic trends in the area of total, natural and spatial movement of the population and regional demographic potential and resources in the context of possible post-war revitalization. Observed processes and trends are essential for understanding the prospects of future demographic development of areas threatened by war, and in accordance with general depopulation processes and the advanced second demographic transition, which is occurring equally at the national and regional levels.

According to population estimates for the year 2020, almost 27 million, or as much as 65% of the population of Ukraine, lived in threatened administrative units. The most endangered areas, in equal numbers, belong to the east and north macroregions (5 in total), the south macroregion 3, and in the west only one area had the status of endangered (Volyn). At the macro-regional level, more than 15 million people had a pre-war residence in vulnerable areas in the East of Ukraine. Donetsk and Dnipropetrovsk regions in the east had the greatest potential, where 9.87% and 7.58% of the population of Ukraine lived, respectively. The overall movement of all 14 endangered areas shows distinct depopulation processes and more or less similar trends (Table 7).

The absolute change in the number of inhabitants in 2020 compared to 2019 confirms that in the pre-war year, the area lost almost 192,000 people in one year! In the same year, the whole of Ukraine lost around 314,000 people, which shows that in the pre-war depopulation processes, threatened areas make up almost 62%. The loss of population in 20 years for these areas is 10%, with the fact that in some areas the relative 20-year decline is over 20%, such as in Chernihiv and Sumakha region in the north, while only Kyiv region recorded an increase in the number of inhabitants due to positive migration trends. and the fact that it is the most developed part of Ukraine. It is interesting to analyze the natural and migration components and how they affect the overall decline in the number of inhabitants. Depopulation of Ukraine 2020/2019 was the result primarily of natural decline, which amounted to over -323,000 people, while the migration balance was positive (9,316), but with very low values for such a large population. All threatened units had a negative natural change, while only four had a positive migration balance, Kyiv region and City of Kyiv in the north, Odesa in the south, and Kharkiv region in the east (Table 7).

Table 7. Potentials of Threatened Areas of Ukraine in the Overall Movement of the Population of Ukraine 2020/2019

Region	Total population change 2020/2019	Relative population change 2020/2019	Total natural change 2020	Total migration balance 2020
UKRAINE	-314,062	-10.05%	-323,378	9,316
Volyn	-4,024	-3.40%	-3,896	-128
Dnipropetrovsk	-34,613	-12.02%	-33,981	-632
Donetsk	-31,528	-15.57%	-26,095	-5,433
Zhytomyr	-12,717	-13.90%	-12,061	-656
Zaporizhia	-20,886	-13.66%	-18,865	-2,021
Kyiv	7,486	-2.47%	-17,276	24,762
Lugansk	-14,591	-16.87%	-11,100	-3,491
Mykolaiv	-11,468	-12.42%	-10,132	-1,336
Odesa	-9,123	-4.54%	-14,254	5,131
Sumakha	-14,795	-19.12%	-12,969	-1,826
Kharkov	-24,627	-10.16%	-27,470	2,843
Kherson	-11,206	-13.60%	-9,407	-1,799
Chernihiv	-5,066	-28.25%	-4,543	-523
City of Kyiv	-5,180	11.85%	-5,421	241
Total threatened areas	-192,338	10.50%	-207,470	15,132

Source: State Statistics Service of Ukraine 2020.

The given data confirm the level of total and natural depopulation at the national and separate spatial level, and rare examples of population growth are related to urban areas and their immigration potential. The size of the influence of the separate administrative units on the total and natural movement of the population of Ukraine is clear. Table 8 shows some other selected indicators of natural and biodynamic characteristics of threatened areas in the context of assessing the possibility of post-war revitalization, and in accordance with negative pre-war demographic trends. The classic approach to revitalization is based on the domicile population, its demographic characteristics and identity peculiarities, even in conditions of long-term population loss through natural means (Šterc and Komušanac 2012). Biodynamic features are indicators of the current natural (fertile) potential for demographic renewal in the future, so in this context, some specifics and relations will be singled out at the level of Ukraine and threatened areas. The demographic development of Ukraine during the 20th century was the result of specific actions such as "the direct and indirect effects of two world wars, the consequences of the Bolshevik Revolution, the famine of 1932/1933 connected with the collectivization of the country, mass deportations and executions of the "Great Stalin's Terror", etc. (Romaniuk and Gladun 2015, p. 315). Factors are the ones that influenced the continuation of negative demographic trends even after independence, along with the unfavorable effects of the transition process and economic instability of Ukraine after the 1990s.

Table 8. Selected Indicators of Natural and Biodynamic Features of 14 Endangered Parts (regions) of Ukraine in 2020

Region	Crude birth rate	Crude mortality rate	Total fertility rate	Average age	Share of population up to 15 years (%)	Share of population 60+ years (%)
UKRAINE	7.8	15.9	1.217	42.1	16.12 %	24.44%
Volyn	10.1	13.9	1.514	38.4	20.77%	19.69%
Dnipropetrovsk	6.7	17.5	1.091	42.2	16.27%	24.64%
Donetsk	...	...	...	46.2	11.91%	30.53%
Zhytomyr	7.6	17.6	1.198	41.2	17.41%	23.44%
Zaporizhia	6.3	17.5	1.030	42.9	15.37%	25.72%
Kyiv	8.0	17.6	1.184	40.4	18.48%	21.90%
Lugansk	...	...	...	47.3	10.51%	31.80%
Mykolaiv	6.9	15.9	1.106	41.9	16.28%	24.12%
Odesa	8.7	14.7	1.336	40.6	17.95%	22.46%
Sumakha	5.7	17.9	0.925	43.7	13.90%	26.55%
Kharkov	6.3	16.7	0.978	42.5	14.53%	24.59%
Kherson	7.5	16.7	1.204	41.4	17.01%	23.64%
Chernihiv	9.0	14.1	1.302	39.6	18.30%	20.86%
City of Kyiv	10.3	12.2	1.437	40.3	17.60%	21.81%

... Data not available.

Source: State Statistics Service of Ukraine 2020.

Due to these unfavorable social and economic circumstances, Ukraine went through the transitional demographic model without the expected development and creation of preconditions for the population to remain and post-war population growth. Today, Ukraine's birth rate is at a low, post-transition value of 7.8 per thousand, while the marginal drop in the birth rate below 20 per thousand occurred already at the beginning of the 1960s (Macrotrends 2022). Areas threatened by the war generally have a slightly higher birth rate than the national average (but still low), and the range ranges from 6.3 to 10.3 per thousand (Table 8). On the other hand, the mortality rates in all threatened units are higher than the birth rate, which results in a negative natural change. Mortality rates are generally very high, between 12 and almost 18 per thousand, and the causes of such a high number of deaths should be sought in continuous depopulation and aging of the population, but also in specific causes such as problems with alcoholism, risky sexual behavior, drug consumption, high suicide rates etc. (Radczenko and Michalski, 2015, 34). The most unfavorable natural trends are in the areas in the north and east of Ukraine, for example, as many as 5 out of 24 threatened areas have a mortality rate above 17 per thousand (Sumakha, Zhytomyr and Kyiv in the north and Dnipropetrovsk and Zaporizhia in the east), and at the same time these are areas with very low birth rates, such as Suma Oblast (5.7 per thousand) and Zaporizhia (6.3 per thousand). The isolated general indicators show the level of natural depopulation in them, so the total fertility rate (TFR) is expected to be below the level required for simple population renewal (2.1 children) and at the national level is 1.22. The TFR in selected areas is below 1.6, which means that the natural renewal of the population in them has been threatened and below the required level for decades (Table 8). The worst situation is in the Sumy Oblast in the north and Kharkiv in the east of Ukraine,

where on average one woman gives birth to less than one child in the fertile period, while the situation is somewhat more favorable in the Volyn region (1.52) in the west and the City of Kyiv (1.44).

The other indicators from Table 8 also confirm mostly the same relationships and conclusions related to the demographic characteristics of threatened areas, the level of pre-war depopulation and the limited potential for demographic recovery. The analysis of the basic indicator of population aging, the ratio of the share of old and young population in separate units shows that in all units except for the Volyn region, the share of the young population (up to 15 years) is smaller than the share of the old population (+60 years). At the level of the whole of Ukraine, the difference between the share of the young and the share of the old is over 8%, unfortunately in favor of the increasing share of the old population, which in 2020 amounted to almost 25%. The alarming data is that in some areas, for example in Lugansk and Donetsk in the east, the share of young people is slightly higher than 10%, and the share of old people is above 30%. Demographic aging is not less intensive in other threatened areas either, given that the average share of the old population in them is 25%, and the young 16%, and the range of values depends on the mentioned relationships and long-term trends in birth rate and mortality. Regional aging trends are also confirmed by the average age of endangered areas, which is almost equal to the national value (42.1), it is somewhat more favorable in the west and north of Ukraine (below and around 40 years), while the highest values are in the east, in the Donetsk and Lugansk regions (above 47 years).

Given the number of isolated and presented indicators that cannot be covered individually for each area, the following will highlight the basic laws, relationships and trends within the framework of (macro) regional spatial-demographic differences. The western part of Ukraine (and Volyn as the only western region on the endangered list in 2022) are recording more positive trends in overall population movements, i.e., the lowest level of overall depopulation in the last 30 years or so. The only endangered area that recorded positive trends and low rates of population growth was the City of Kyiv, primarily due to more favorable migration trends. The central, southern and eastern regions have a more pronounced decrease in the number of inhabitants, while Donetsk, Luhansk, Chernihiv and Sumakha are among the threatened areas. The trends of natural population movement are also more favorable in the western and northwestern parts of Ukraine, and this is primarily the result of higher birth rates, especially among the rural population. On the other hand, the northeastern, eastern and central parts of Ukraine (and vulnerable areas from these macro-regions) have the lowest birth rates, the highest mortality rates and the lowest average life expectancy at birth. Likewise, specific causes of death are most prevalent in these parts of Ukraine, such as high rates of suicide, high rates of HIV and AIDS infection, increased alcoholism, etc. Unfavorable trends were additionally intensified by emigration, which occurred more significantly after the slow transitional transition. on the market economy, failed reforms, but also political instability. Although more or less the whole of Ukraine is affected by emigration, it is most pronounced from the economically poorest areas, and mostly directed towards the neighboring countries in the west and east.

The main reasons for spatial differences in certain demographic processes mostly stem from socio-economic conditions and development circumstances. The transition processes of the 1990s in the economic sense mostly affected the industrial and urban areas, i.e., the northeastern, eastern and southern parts of Ukraine, caused an economic crisis and an increase in unemployment, which continuously led to a social crisis and endangerment of existence, and consequently to an increase in alcoholism, drug consumption and suicides. The long-term effects of such (un)developmental circumstances caused the highest rates of poverty precisely in the north and central parts of Ukraine, where as much as 10% of the population is on the poverty line, while the west of Ukraine and areas in the immediate vicinity of Kyiv had the lowest rates of social and material deprivation. The few regional examples of a more favorable demographic picture are closely related to the functional gravitational significance of the City of Kyiv on the surrounding (neighboring) areas, more successful transition industrial areas in the east, and relatively more favorable biodynamic features in the west of Ukraine. It should be noted that the demographic trends in the eastern Ukrainian-Russian border zone have been significantly disrupted in the last decade as a result of unstable geopolitical conditions, pro-Russian military separatist actions in 2014, and the recent military campaign against Ukraine, which resulted in large direct and indirect war losses on east and south, and in accordance with the great pre-war demographic potential of that area.

Conclusion

The direct demographic and spatial consequence of the Russian invasion of Ukraine is increased forced migration, which, according to estimates from various statistical sources, included around between 17 and 19 million people in Ukraine. The available data confirm that the wave of refugees was the largest immediately after the start of the war, and with the progress of the Ukrainian forces in liberating the territory, the number of "new" refugees is decreasing, while the number of internally displaced persons who find their post-war residence in the free (other) territories of Ukraine is increasing. The main migration corridors indicate a distinct spatial selectivity of the distribution of the population in the origin and destination, i.e. at the macro-regional, regional and border level. According to the criterion of geographical proximity, most Ukrainian refugees are in neighboring countries, about 4.84 million, primarily in Russian Federation and Poland (55%). In other European countries (those that do not border Ukraine), a relatively significant refugee contingent is located in Germany, the Czech Republic, Italy, Spain, France and Austria, which is in direct correlation with the size of the Ukrainian emigrant contingent from the pre-war period in those countries. The directions and extent of forced internal migration movements were defined based on the list of 14 endangered territories (areas) from the beginning of March. The level of demographic destruction is confirmed by the fact that almost 60% of the surface of Ukraine was affected by the war, where 65% of the Ukrainian population lived, who mostly moved from the war-affected areas to the free areas, i.e. from the east and southeast to the west and

northwest, with the fact that war increased the number of internally displaced persons from all macroregional origins and towards all macroregional destinations. Demographic analysis of endangered areas confirmed the level of total and natural depopulation at the national and isolated spatial level, and rare examples of population growth are related to individual urban centers, their functional significance and immigration potential. Unfavorable impacts of the transition process, economic and political instability after independence and other inherited demographic factors determined the level of negativity of today's dominant demographic processes and trends at the overall and regional level, and recent destructive events reduced the existing potential of post-war demographic reconstruction of Ukraine.

References

- CEDOS (2022) *Forced migration and the war in Ukraine (February 24 - March 24, 2022)*. Available at: <https://cedos.org.ua/researches/vymushena-migracziya-i-vijna-v-ukrayini-24-lyutogo-24-bereznia-2022/>.
- European Commission (2022) *Forced displacement from Ukraine: the role of the diaspora*. Available at: https://knowledge4policy.ec.europa.eu/news/forced-displacement-ukraine-role-diaspora_en.
- Government Portal of Ukraine (2021) *Ministry of Social Policy: 1,459,170 internally displaced persons registered*. Available at: <https://www.kmu.gov.ua/en/news/minsopolitiki-oblikovano-1-459-170-vnutrishno-peremishchenih-osib>.
- Government Portal of Ukraine (2022) *Order of the Cabinet of Ministers of Ukraine dated March 6, 2022, no. 204, Kyiv. On giving consent to the list of administrative-territorial units in the area of which assistance is provided to insured persons under the "eSupport" Program*. Available at: <https://zakon.rada.gov.ua/laws/show/204-2022-%D1%80#Text>.
- Macrotrends (2022) *Profile of Ukraine*. Available at: <https://www.macrotrends.net/countries/UKR/ukraine/birth-rate>.
- Radzenko O, Michalski IT (2015) Specifics of demographic transitions in Ukraine after the country gained independence. *Journal of Geography, Politics and Society* 5(1): 32–36.
- Romaniuk A, Ladun O (2015) Demographic trends in Ukraine: past, present, and future. *Population and Development Review* 41(2): 315–337.
- State Statistics Service of Ukraine (2020) *Demographic Yearbok*. Population of Ukraine 2019. Available at: http://www.ukrstat.gov.ua/druk/publicat/kat_u/publnasel_u.htm.
- Šterc S, Komušanac M (2012) Neizvjesna demografska budućnost Hrvatske-izumiranje i supstitucija stanovništva ili populacijska revitalizacija?. (Uncertain demographic future of Croatia - population extinction and substitution or population revitalization?) *Društvena istraživanja* 21(3): 693–713.
- United Nations (2019) Department of Economic and Social Affairs, *International Migrant Stock 2019, International Migrant Stock by destination and origin 2019*.
- United Nations (2022a) Department of Economic and Social Affairs, Migration, IOM, *Ukraine Internal Displacement Report, General Population Survey, 2022. Round 4*. Available at: <https://dtm.iom.int/reports/ukraine-%E2%80%94-internal-displacement-report-%E2%80%94-general-population-survey-round-4-29-april-%E2%80%93-may>.

- United Nations (2022b) *Human Rights, Office of the High Commissioner*, Press Release, 2022. Available at: <https://www.ohchr.org/en/press-releases/2022/05/ukraine-millions-displaced-traumatised-and-urgently-need-help-say-experts>.
- United Nations (2023) Department of Economic and Social Affairs, Migration, IOM, *Ukraine Internal Displacement Report, General Population Survey, 2023. Round 12. 23 January 2023*. Available at: <https://dtm.iom.int/reports/ukraine-internal-displacement-report-general-population-survey-round-12-16-23-january-2023>.
- United Nations High Commissioner for Refugees – UNHCR (2022a) *Refugee facts, What is a refugee?* Available at: <https://www.unrefugees.org/refugee-facts/what-is-a-refugee/>.
- United Nations High Commissioner for Refugees – UNHCR (2022b) *Refugee facts, Statistics*. Available at: <https://www.unrefugees.org/refugee-facts/statistics>.
- United Nations High Commissioner for Refugees – UNHCR (2023) *Ukraine Refugee Situation*. Available at: <https://data.unhcr.org/en/situations/ukraine>.
- Živić D (2014) Prisilne (ratne) migracije kao čimbenik demografskih promjena u Hrvatskoj (1991. – 2011.). (Forced (war) migration as a factor of demographic changes in Croatia (1991 - 2011)). In A Akrap, I Čipin, M Strmota (eds.), *Zbornik radova znanstvenog skupa „Demografija u Hrvatskoj” povodom 75. obljetnice života i 50 godina rada akademkinje Alice Wertheimer-Baletić, redovite profesorice demografije Ekonomskog fakulteta Sveučilišta u Zagrebu*, 297–317. Ekonomski fakultet.

