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TURNING THE TRIPLE BURDEN OF UKRAINIAN DEPOPULATION INTO A QUADRUPLE BURDEN: THE RESULTS OF A SURVEY AMONG UKRAINIAN REFUGEE WOMEN

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ABSTRACT. The effects of the Russian-Ukrainian war on Ukraine's demographic landscape are immense. One key consideration is whether Ukrainian refugee women intend to return to their country after the war ends. If the return is planned, the question of whether they would wish to have children is also relevant. This study explored these issues by surveying women who fled to Hungary and the Netherlands. Among those surveyed, 42% did not plan to return under any circumstances, and only 12% intended to return even if their home area came under Russian control. Logistic regression was used to identify factors influencing the intention to return, with reluctance to have additional children and income earned through employment emerging as the strongest explanatory factors. However, we found only modest associations between the intention to return and other variables. Our findings suggest that deeply rooted personal preferences shape these women's plans.

Keywords: Russian-Ukrainian war, refugee women, survey, depopulation in Ukraine, intentions to return to Ukraine, childbearing plans

Introduction

In 1991, when Ukraine declared its independence following the dissolution of the Soviet Union, the country had a population of 52 million. By the end of 2021, this number had dropped to an estimated 41.6 million (Kulu et al., 2023). In the years since Ukraine gained independence, only one census has been conducted, in 2001 (Tyshchuk & Sologoub, 2024), so these population figures are of uncertain accuracy. Different sources have reported varying figures; for instance, the European Commission Joint Research Centre (2023) estimated the population at 43.3 million as of 1 January 2022. These estimates include data for the Autonomous Republic of Crimea and the regions controlled by Donbas separatists. Looking ahead, the National Academy of Sciences of Ukraine predicts that the population could fall to between 24 and 32 million within the next decade, depending on the outcome of the ongoing war in Ukraine

(Ukrinform, 2023). According to Rogoża (2023), the war is merely the final blow in a series of challenges facing Ukraine's population, as the conflict significantly heightens unpredictability and fosters pessimistic demographic and economic expectations.

When examining the components of Ukraine's continuous and expected population decline, Perelli-Harris & Hilevych (2023) use the term "triple burden of depopulation". However, given the consequences of the recent Russian occupation, the term "quadruple burden" is more appropriate. Previously, population decline was primarily driven by natural causes, but the war has introduced a fourth factor. The most significant natural cause has been the decrease in the Total Fertility Rate (TFR), which hit a low of 1.08 in 2001. Although the TFR increased to 1.53 in 2012, it began to decline again, reaching 1.16 in 2021, the year before the second Russian invasion. The second natural cause of population decline has been the high natural mortality rate in Ukraine, which meant that life expectancy only began to rise modestly and much later than in other European countries. In 1991, the average life expectancy was 69.1 years; by 2021, it had only increased to 71.6 years (European Commission Joint Research Centre, 2023), with values fluctuating throughout the period. Life expectancy declined following independence, then began to rise again, though men continued to have a life expectancy about ten years shorter than women. Life expectancy declined once more with the onset of the conflict in the Donbas region, the annexation of Crimea, and the COVID-19 pandemic. The third natural cause of population decline has been large-scale emigration. Although in some years, the net migration balance was modestly positive, overall, it reached a significant negative figure. Between 1991 and 2021, individuals with different national backgrounds and those dissatisfied with their livelihoods left Ukraine, while those moving to Ukraine were primarily of Ukrainian national origin (European Commission Joint Research Centre. 2023). According to United Nations' estimates, between 1994 and 2004, one million more people left the country than moved there (United Nations, 2022).

An additional and severely aggravating factor contributing to the natural causes of population decline is the full-scale Russian invasion that began in February 2022. The invasion has led to a significant number of fatalities and a mass exodus of refugees from Ukraine, many of whom may never return, thus drastically and unpredictably reducing the population. This invasion-related population decline constitutes the fourth burden of population decline.

Several hypothetical population projections have been made (European Commission Joint Research Centre, 2023; Kulu et al., 2023; Puhachova, 2024; Rogoża, 2023) that attempt to account for the consequences of the war. However, these projections are all based on known statistical data and hypotheses, which inherently emphasise uncertainty. To our knowledge, no research has yet contributed to improving the accuracy of population projections by directly mapping the return intentions of Ukrainian refugee women. In this article, we present our survey results to address this gap. In addition to estimating return intentions, the survey reveals other significant findings, such as refugee women's language skills and childbearing intentions. Our results are presented in tables and analysed using logistic regression equations to estimate the intention to return to Ukraine based on several variables. Although strong causation is not established, we do identify some associations. We may not be making population projections, but we hope our findings will improve the accuracy of those who do.

After this introduction, in the „Literature review" we delve into recent demographic studies on the Ukrainian war, particularly those examining population changes since the first Russian invasion. Following this, we present our survey and share the descriptive statistics of our findings. The next section examines our logistic regression analysis, exploring potential associations between the intention to return to Ukraine and various characteristics of women. Finally, we present a summary of key insights and takeaways.

1. Literature review

The direct antecedents of the current Russian-Ukrainian war date back to 2014, when Russian-supported separatists occupied parts of the Donbas region, and Russia annexed the Crimean Peninsula (Tong, 2024). The 2015 Minsk Agreement, in which Germany and France participated alongside the two affected countries, failed to steer the conflict toward a peaceful resolution. On 24 February 2022, Russia deployed 100,000 troops to Ukraine, marking the beginning of the second and far more devastating phase of this ongoing war.

After the first phase of the war in 2014, several demographic analyses were conducted; however, these studies generally did not focus on the future development of the population but rather highlighted other demographic aspects. For instance, Sasse (2020) examined internally forced displacement, estimating the number of internally displaced people (IDPs) at 1.4 million. Additionally, though less visibly, significant numbers of people left the Donbas region and fled to Russia, with Sasse estimating this number to be at least one million.

Among the noteworthy demographic analyses is the study by Coupe & Obrizan (2016), which examines the impact of the war on people's happiness, revealing a significant decline. Düvell & Lapshyna (2015) show that Ukraine already had one of the world's largest foreign diasporas before the 2014 conflicts, and the conflicts further increased the number of emigrants — a likely indicator of the growing desperation among the Ukrainian people. A similar issue is addressed by Osiichuk & Shepotylo (2020), who investigate changes in the welfare of the Ukrainian and Russian populations as a consequence of the war. They found that in Ukraine, even in areas far from the conflict, people's welfare declined, whereas in Russia, such effects were only detectable near conflict zones. The decline in welfare primarily manifested in deteriorating financial prospects and mental health issues, and in Ukraine, there was also an increase in the incidence of chronic diseases.

Perelli-Harris (2005) was published before the events of the 2014 war. Yet, it is worth including in this literature review because it provides a valuable summary of the causes of population decline in Ukraine. The author explains the phenomenon of "lowest-low fertility" in Ukraine primarily as a result of the widespread adoption of the one-child family model. Among Ukrainian women, the postponement of childbearing to older ages was only moderately observed; however, few chose to have additional children after the birth of their first child. Perelli-Harris (2008) attributes the prevalence of one-child families to economic uncertainty, social anomalies, and gender inequality.

Romaniuk & Gladun (2015) chronologically list the demographic catastrophes that affected Ukraine before the 20th century and in the first half of the 20th century. These were consequences of wars, famines, and political purges. The Ukrainian nation emerged from these catastrophes largely due to its high Total Fertility Rate (TFR). However, in the years leading up to the dissolution of the Soviet Union, and especially after its dissolution, the TFR consistently declined, reaching its lowest level in 2001. Due to this persistently low TFR, the Ukrainian population can no longer easily recover from the demographic shocks it experiences. It became especially obvious during the third wave of emigration from Ukraine caused by war (Chugaievska & Wisła, 2023).

Perelli-Harris & Hilevych's (2023) investigation into the "triple burden of depopulation" (as referenced earlier in the introduction of this study) examines the consequences of depopulation by analysing opinions gathered from various focus groups in their survey from July 2021. Participants expressed clear concerns about declining birth rates and the migration of rural populations to cities, leading to the depopulation and rapid ageing of rural areas. Interestingly, despite the significant increase in mortality rates due to the COVID-19 pandemic, high mortality rates were mentioned less frequently. Participants agreed that the ongoing war

is accelerating Ukraine's population decline and that, after the war ends, the country will need assistance to halt depopulation and mitigate its effects.

Kulu et al. (2023) focus on population projections, applying various assumptions regarding the number of casualties, refugees, and the return of displaced persons. The study predicts an average population decline of 33%, with an even greater reduction among children and those of working age. Their most pessimistic estimate anticipates an even more significant population decrease. The study also assumes that more educated individuals are more likely to return home among the displaced population, as they have a better chance of reintegrating into society.

Rogoża (2023) argues that Ukraine is facing a demographic catastrophe. According to her description, between February 2022 and April 2023, the number of registered civilian fatalities in Ukraine was 10,000, and the number of injured civilians was 13,000. However, she believes the actual numbers are likely higher. Additionally, based on U.S. intelligence data, the number of killed soldiers is estimated to be between 15,500 and 17,500, with between 109,000 and 115,000 injured. According to the United Nations High Commissioner for Refugees (UNHCR), in the first month of the war, 8.2 million civilians left the country, and 8 million were internally displaced. These figures do not include the indirect consequences of the war, such as deaths due to deteriorating or uninhabitable living conditions and the effects of poor healthcare. Birth rates have also declined compared to previous years, with 30% fewer children born in 2022 than in 2021.

As previously noted, Ukrinform (2023) projects that the Ukrainian population will range between 24 and 32 million over the next decade. Additionally, Ukraine is expected to become one of the oldest societies in Europe. The European Commission Joint Research Centre (2023) reports that between February and December 2022, based on statistics from surrounding countries, 16.3 million people left Ukraine, but 8.5 million have already returned. The problem is deepening due to the low social integration of internally displaced persons (Mishchuk et al., 2024; Roshchyk et al., 2024) who can consider further displacement abroad with appropriate positive consequences for hosting communities (Sułkowski et al., 2023), especially in case of proper public and private assistance (Kochaniak et al., 2024). However, according to Smutchak (2023), a demographic collapse is expected in Ukraine regardless of whether forced or voluntary migrants return. There will be a massive labour shortage, and if nothing changes, the number of retirees in the country will be twice the number of active workers in a few years.

As the literature review suggests, all demographic projections indicate a significant population decline. However, the exact extent of this decline remains uncertain, and there is limited information on how those who have fled the country envision their futures. While these studies provide valuable insights into Ukraine's demographic challenges, our research fills a critical gap by directly examining refugee women's return intentions and fertility plans, offering a more detailed understanding of how the war shapes future population trends.

2. The background of the survey and the descriptive analysis of the results

2.1. Description of the survey

Our survey was distributed among Ukrainian refugee women in Hungary and the Netherlands in two waves. The first was between 1 May and 30 June 2024; the second was between 20 August and 15 September 2024; between the two periods, a few answers also arrived through social media. We chose Hungary and the Netherlands as the focus of our research because we found helpers in both countries (see the number and distribution of participants in Table 1). The questions were written in Ukrainian and presented on Google

Forms. The questions focused on the refugees' intentions to return, their demographic characteristics (including intentions regarding childbirth), the number of elderly relatives and deceased family members, their language skills, and their sources of income. We employed multiple methods to distribute the questionnaire: our helper in Hungary and another helper in the Netherlands directly contacted the refugee women they knew. Additionally, in the text accompanying the survey, we requested respondents to forward the questionnaire. To gather as many responses as possible, we joined several Facebook, Viber, WhatsApp, and Telegram groups across Hungary and the Netherlands, asking the administrators' permission when necessary before distributing our questionnaire.

Potential participants were characterized by a high level of distrust and a low willingness to respond. However, the mixed distribution method did not allow us to calculate an exact response rate. We inferred this distrust mainly from the feedback provided by our helpers and the low number of completed questionnaires received from the electronic groups when we distributed the survey solely through social media (only three responses, although we continuously refreshed our posts). While distrust seems to be a major contributor to this low response rate, other potential factors could include survey fatigue, limited access to the internet in some cases, or a lack of interest in participating in surveys.

Table 1. Current residence of Ukrainian refugee women participating in our survey

Country Name	Participants' Number
Hungary	58
Netherlands	63
Total	121

Source: own calculation

Using the questionnaire, we focused on three closely related research areas. First, we sought to determine the proportion of refugee women who wish to return to Ukraine after the war, depending on whether Ukrainians or Russians control the district where their residence is located. Our second research question concerned the expected completed fertility rate among refugee women, specifically how many children they have and how many more they wish to have. Our third research area focused on the characteristics of the women who intend to return to Ukraine.

Our questions had to be formulated succinctly and clearly to ensure the questionnaire could be completed quickly and easily. Therefore, we could only ask basic questions, which were presented as multiple-choice options where respondents selected the choice that best described their situation. With two exceptions, all responses were mandatory; participants could only proceed to the next question if they answered the previous one. The exceptions regarded the respondent's partner. Since there were reports during our survey period that some countries were deporting Ukrainian men of military age, it was not mandatory to answer whether the respondent had a partner and whether their partner was currently in Ukraine. As a result, there were fewer responses to these two questions, but we received 121 responses to all other questions. We also allowed respondents to provide additional comments and share their email addresses for a more detailed follow-up interview. Interestingly, despite the distrust surrounding the survey, 21 respondents (17% of participants) provided their contact information, and we received seven comments.

2.2. Intention to return home of survey participants

We asked the survey participants whether they planned to return to their country if their place of residence came under Ukrainian control and whether they would return if it came under Russian control. Hereafter, we will refer to the scenario where their place of residence is under Ukrainian control as "Ukraine wins" and to the scenario where it is under Russian control as "Russia wins". The results can be seen in Figure 1.

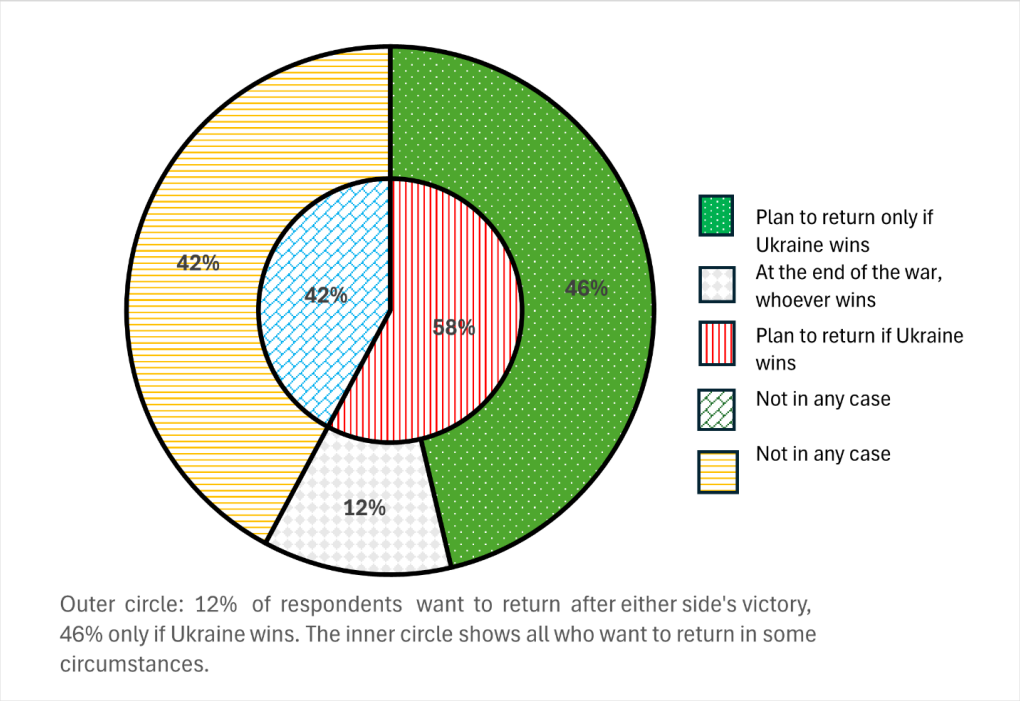

Figure 1. Intention to return to Ukraine (N=121). All percentages refer to the entire sample
Source: own calculation

Forty-two percent of the survey participants do not wish to return to their country under any circumstances. Among those who do wish to return, the majority—comprising 46% of the entire sample—are only willing to do so if Ukraine wins in their area of residence. Only 12% of the entire sample intends to return after the war, regardless of which country wins. There are no women who would stay abroad if Ukraine wins but return if Russia wins. The 42% who do not wish to return aligns closely with the findings of Adema et al. (2024). In their survey conducted in October-November 2023, 54% of participants had either already returned to Ukraine or intended to do so if conditions improved, while 46% did not wish to return. However, it is important to note that our survey had a much smaller sample size and did not represent the entire Ukrainian refugee population.

The United Nations Refugee Agency's survey, conducted in the summer of 2023 with a much larger sample, showed a higher return intention rate of 67% (Andrievska, 2023). Their survey also encompassed a broader and more representative range of host countries than ours, although it differed slightly from the findings of Adema et al. (2024). These varied findings further reinforce the assertion that mapping the highly diverse composition of refugees is challenging, and precise results are difficult to achieve.

Finally, it is important to note again that in our sample, those who would return even if Russia wins in their area would also return if Ukraine wins. However, most who would return if Ukraine wins would not return if Russia wins.

2.3. Demographic characteristics of survey participants

We present the basic statistical indicators of the survey results, organized by group. As shown in Table 2 below, these groups are based on the respondents' intentions to return home. Group 1 represents the entire sample, which is further divided into two smaller groups: Group 2 and Group 5. Group 2 includes women who wish to return to Ukraine under specific circumstances, while Group 5 comprises women who do not intend to return to Ukraine under any circumstances.

Group 3, a subgroup of Group 2, comprises women who wish to return only if Ukraine wins and do not intend to return if Russia wins. Within Group 2, all those willing to return if Russia wins also intend to return if Ukraine wins. However, the reverse is not true, as many women in Group 2 intend to return only if Ukraine wins. Group 4, another subgroup of Group 2, includes women who are willing to return regardless of whether Ukraine or Russia wins.

Table 2. Respondent subgroups

Groups	Participants
Group 1	Whole sample (N = 121)
Group 2	Those who wish to return if Ukraine wins (N=70)
Group 3 (Subgroup of Group 2)	Those who wish to return if Ukraine wins but not if Russia wins (N=56)
Group 4 (Another subgroup of Group 2)	Those who wish to return if either Russia or Ukraine wins (N=14)
Group 5	People who do not want to go back under any circumstances (N=51)

Source: own calculation

Participation in the survey required internet access. For Ukrainian refugees, mobile phones with internet-based voice and video services are essential for staying in touch with relatives and friends. Therefore, for most participants, completing a Google questionnaire was not problematic. It is likely that only those with very low levels of education or the oldest individuals were excluded from our sample due to these restrictions. Table A1 in the Appendix summarizes the demographic characteristics of the survey participants.

Comparing the aggregated indicator values across different groups is worthwhile. However, the relatively small differences in average and median values limit our ability to determine why respondents may or may not want to return to Ukraine. This observation becomes particularly significant in the next section of this paper.

The small differences in the average age of the survey participants are evident in Table A1. The average age of the respondents in the whole sample, in Group 1, was approximately 39 years. No women over 64 were included in the sample; the youngest respondent was between 20 and 21. The average number of children among the women in Group 1 was 1.23. When adding the number of planned children, which is 0.48, we can assume that, even in an optimistic scenario, the completed fertility rate of the women in our sample will only reach 1.71. While higher than the pre-war Total Fertility Rate (TFR), this number remains alarmingly low — a particularly concerning finding, given that mothers typically have fewer children than they plan (Beaujouan & Berghammer, 2019). Among those wishing to return to Ukraine, the average number of already-born and planned children is slightly lower than that in the total sample. Members of this group plan to have fewer "future" children, resulting in an expected completed fertility rate of 1.68.

Therefore, even if they return to Ukraine, a population decline appears inevitable, not only due to other factors but also because of their limited contribution to future births.

Interestingly, the group most willing to return to Ukraine under any circumstances after the war plans to have the most children, with an expected TFR of 1.78. However, even this is insufficient to sustain population growth, especially since the number of already-born children in this group is remarkably low. The small size of this group also prevents us from drawing statistically sound conclusions. Despite some observable differences in their statistics, these differences are marginal at best.

The findings in Group 5 are intriguing — while they appear to have given up on returning home, their future family plans suggest a stronger commitment to childbearing than those who still hope to resettle in a victorious Ukraine. However, this observation could also be explained by the non-returners having fewer children than those intending to move back to their native country. The difference in average values is not very high, only 0.30. The difference becomes slightly larger when compared solely to those who intend to return only if Ukraine wins (Group 3). In summarizing our results on the expected completed fertility rate, we must emphasize that even between Group 4 and the other groups, where Group 4 has the highest value, the differences are small. Additionally, the average values for each group are very close to those of the entire sample. These findings suggest that deeper statistical analyses may not yield conclusive results.

The average educational level of the respondents was slightly above the secondary school level. This finding aligns with Kupets (2016), who described the Ukrainian population as relatively over-educated, leading to an oversupply of workers in professions requiring higher education and a shortage in those requiring lower education. However, the absence of respondents who had not completed primary education in our sample is likely due, at least in part, to the challenges such individuals would have faced in completing the questionnaire. In addition, it is noticeable that members of Group 4 have the lowest educational level.

Nearly all respondents had a close relative (such as a mother, father, mother-in-law, father-in-law, or sibling) over 60 who remained in Ukraine. Those who indicated they would return even if Russia wins had slightly more elderly relatives than others. However, we again emphasize that since this group included only fourteen respondents, this observation cannot be used to draw broad conclusions.

We would have found it valuable to know more precisely whether our respondents had partners. However, to address ethical concerns — due to rumors of potential deportations — and to encourage participation in the survey, we chose not to make this question mandatory. Notably, about three-quarters of those who answered this question indicated that their partner is not currently in Ukraine.

2.4. Additional characteristics of the survey participants

During the survey, we also included additional questions that we anticipated might relate to the refugee women's intentions to return. The responses to these questions are summarized in Table 3.

Table 3. Participant characteristics

Variable	Group (No. Observations)	Explanation	Avg.	Median	SD	Min.	Max.
Speaks Local Language (Basic Level or Above)		0: Does not speak 1: Does					
	1 (121)		0.36	0	0.48	0	1
	2 (70)		0.30	0	0.46	0	1
	3 (56)		0.32	0	0.47	0	1
	4 (14)		0.21	0	0.43	0	1
	5 (51)		0.45	0	0.50	0	1
	HU (58)		0.31	0	0.47	0	1
	NL (63)		0.41	0	0.50	0	1
Speaks English (Basic Level or Above)		0: Does not speak 1: Does					
	1 (121)		0.64	1	0.48	0	1
	2 (70)		0.63	1	0.49	0	1
	3 (56)		0.70	1	0.46	0	1
	4 (14)		0.36	0	0.50	0	1
	5 (51)		0.65	1	0.48	0	1
	HU (58)		0.53	1	0.50	0	1
	NL (63)		0.73	1	0.45	0	1
Has Work Income		0: Does not have 1: Does					
	1 (121)		0.68	1	0.47	0	1
	2 (70)		0.74	1	0.44	0	1
	3 (56)		0.73	1	0.45	0	1
	4 (14)		0.79	1	0.43	0	1
	5 (51)		0.59	1	0.50	0	1
	HU (58)		0.62	1	0.49	0	1
	NL (63)		0.73	1	0.45	0	1
Has Additional Income		0: Does not have 1: Does					
	1 (121)		0.22	0	0.42	0	1
	2 (70)		0.19	0	0.39	0	1
	3 (56)		0.20	0	0.40	0	1
	4 (14)		0.14	0	0.36	0	1
	5 (51)		0.27	0	0.45	0	1
	HU (58)		0.22	0	0.42	0	1
	NL (63)		0.22	0	0.42	0	1

Source: *own compilation*

Sixty-four per cent of the respondents do not speak the language of their host country even at a basic level, while approximately 65% speak English at least at a basic level. However, upon reviewing our original data, we found that some people speak both the local language and English, at least at a basic level, and about 30% of our sample speaks neither English nor the local language. We do not know exactly what the participants mean by "speaking at a basic level," which could be misleading. However, we could not ask for more precise details about language proficiency in our short, quickly fillable questionnaire.

Around two-thirds of the respondents earned an income from work, and a quarter received income from other sources, likely either from their home country or the host country. Upon revisiting the original data, we found that some respondents reported both work and supplementary income, while about 20% did not indicate any source of income.

3. Attempt to identify characteristics related to the intention to return home

Our third research question examined the relationship between the intention to return home and various characteristics of the respondents. Since all those who plan to return to Ukraine intend to do so if their place of residence comes under Ukrainian control, we primarily focused on Group 2, compared to those who do not wish to return under any circumstances (Group 5 in Table 1). We also attempted to compare these groups with those who intend to return after the war, regardless of which side wins (Group 4 in Table 1). However, due to the small sample size of this latter group, we could not obtain statistically meaningful results, so below, we present only the comparison results between Group 2 and Group 5.

For the comparison, we applied logistic regressions, with the outcome variable being the intention to return home. At the same time, we experimented with the explanatory variables from Table A1 and Table 3, as well as their transformed versions. However, no significant results were found for the respondents' age, current residence, level of education, or language proficiency. On the other hand, whether they had work income or not proved significant at the 10% level in several cases. Employed refugees were more likely to want to return home than those who were not employed —several variables were also positively or negatively associated with the intention to return. For example, those with non-work-related income were more likely to want to remain abroad. Younger respondents were slightly more likely to stay abroad, and basic proficiency in the host country’s language also increased the intention to stay. Interestingly, basic proficiency in English, on the other hand, increased the likelihood of returning. However, none of these variables were significant in any logistic regression. We identified two variables—both related to having or not having children, and the desire to give birth to a child in the future—that demonstrated explanatory power at the 10% significance level, provided work income was included in the equation. These results are presented in Tables 4 and 5. While the 10% significance level suggests a weak but potentially meaningful relationship, caution is needed when interpreting these findings. This threshold indicates only marginal significance and may not fully capture robust relationships, particularly given the relatively small sample size.

Table 4. Logistic regression analysis of returning to Ukraine in the event of a Ukrainian victory (Yes=1, No=0), Part 1.

Variables	Estimate	Std. Error	Z-value	p-value	90% Confidence Interval	
Intercept	0.05	0.33	0.14	0.89	-0.59	0.50
Does Not Have, Wants Child: Yes (1)/No (0)	-0.91	0.49	-1.85	0.06	-1.74	-0.11
Work Income: Yes (1)/No (0)	0.74	0.40	1.84	0.07	0.08	1.41
Variance Inflation Factors						
Does Not Have, Wants Child: Yes (1)/No (0)	1.02					
Work Income: Yes (1)/No (0)	1.02					
AIC value	165.08					

Source: own calculation

Based on Table 4, those who do not yet have children but would like to have them are more likely to remain abroad after the war ends. The p-value of 0.06 and the confidence interval, which does not include zero at the 90% confidence level but does at the 95% level, suggest that the negative coefficient is only marginally significant. Those who wish to have children in the future tend to be younger. Although in our regression attempts the birth year always had a negative coefficient (those born later are more likely to stay abroad), it was never significant. It appears that age alone does not have enough explanatory power to account for the return of Ukrainian migrant women, even though those planning to have children are from the younger age group. The takeaway from the results of Table 4 is that for respondents without prior children, the intention to have children is likely associated with choosing a new home country.

Similarly, the presence of work income is only marginally significant. Those who work and receive a salary are more likely to plan to return to their home country. This finding aligns with (Kulu et al., 2023)'s observation, that more educated individuals are more likely to want to return to their homeland, with the moderation that those who are flexible and able to find a job in a foreign country are more optimistic about the future of Ukraine. Although none of our logistic regressions showed a significant relationship between education and the intention to return (it was positively related, albeit not significantly), this may be because, as seen in Table A1, the average educational attainment of the survey respondents was high. It is likely that those who are more adaptable or have marketable skills — which likely required more advanced education — were able to find employment in the host country. They are the ones who, confident in their abilities, plan to return to their homeland.

Table 4 shows that the Variance Inflation Factor (VIF) for both explanatory variables is very close to 1, indicating that multicollinearity does not distort our estimates. In the equation of Table 4, the constant is not significant, meaning there is no clear indication of baseline odds in the absence of other predictors.

Much like the one before, our next equation produces marginally significant results (see Table 5) and includes a constructed variable related to the intention to have newborn children.

Table 5. Logistic regression analysis of returning to Ukraine in the event of a Ukrainian victory (Yes=1, No=0), Part 2.

Variables*	Estimate	Std. Error	Z-value	p-value	90% CI	
Intercept	-0.61	0.42	-1.44	0.15	-1.31	0.08
Has Child, Does Not Want More: Yes (1)/No (0)	0.67	0.39	1.73	0.08	0.04	1.31
Work Income: Yes (1)/No (0)	0.72	0.40	1.78	0.07	0.06	1.38
Variance Inflation Factors—						
Has Child, Does Not Want More: Yes (1)/No (0)	1.015					
Work Income: Yes (1)/No (0)	1.015					
AIC value	165.6					

Source: own calculation

In the equation of Table 5, employment income again explains the higher likelihood of returning to Ukraine. The equation also reveals that those who already have children but are not planning to have more are more likely to return home in the event of a Ukrainian victory than to remain abroad. These are likely people who have grown accustomed to and are attached to their previous environment and are not planning any further changes to their family. Regarding Ukraine's demographic future, it is not an optimistic sign that those who are more likely to return do not wish to have children. However, on a positive note, women with employment income, who are likely to be more capable of action, according to this correlation, are more inclined to return home rather than stay abroad. Based on the VIF values, multicollinearity does not pose a problem for the variables in the equation of Table 5.

4. Discussion of results and conclusions

In addition to the visible (but not significant) relationships, we found some significant variables explaining the intention to return home or not. However, these were exclusively related to intent to give birth to a child (or not) and to work income. Several factors that could have had significant explanatory power—such as the number of elderly relatives left behind, age, educational attainment, supplementary income (non-work income), and other factors — showed some tendency toward a connection with the intention to return or not. However, these relationships did not prove to be significant in the logistic regressions. We believe this is because our short questionnaire could not include deeper questions that might have better captured the personal characteristics and expectations that define refugee women's plans. The depth of emotions behind their decisions is well illustrated by two of the seven remarks we received, which we quote verbatim in its English translation:

I want to say that I absolutely do not want to return to Ukraine—not at all. Absolutely not!!!!!!!!! I no longer want to live there, and even for a very long time, even before the war, I couldn't anymore. I am incredibly happy to be in another country, in a European country, in the [redacted], having lived here for a long time and intending to continue living either here or somewhere nearby in the future. Good salary in Euros, clean air, delicious, high-quality products in the supermarkets, my partner is a foreigner. Why should I want to return to Ukraine?!!!! Why??? There is not a single reason.

Return to Ukraine? I dream of it every day. The air tastes different, and the birds chirp differently. My homeland is there. Will I ever see it again in my lifetime? My house was destroyed, and my little girls are becoming happier and happier in their new school.

Gaining deeper insights into the experiences of refugee women and achieving a more comprehensive understanding requires conducting personal interviews. These interviews are part of our plans and will utilize the email addresses voluntarily provided in the current survey.

The generalisability of our survey results is limited because we distributed our questionnaire in only two countries, neither of which is a popular destination for Ukrainian refugee women. However, we believe that the choice of country has little (if any) influence on women's perceptions and expectations. Our finding that there were no significant differences between the indicators for women who fled to the Netherlands or Hungary supports this. In addition to its moderate explanatory power regarding the intention to return, our survey revealed other important findings.

The limited interest Ukrainian women have in returning to their homeland — with 42% of respondents having no desire to return under any circumstances and an additional 46% only being willing to do so in the event of a Ukrainian victory — may, alongside the war's fatalities, further contribute to the depopulation of Ukraine. Moreover, even those who plan to return in the event of a Ukrainian victory have modest plans regarding the birth of future children. Their expected completed fertility rate is only 1.68, which is likely to be even lower in reality, remaining well below the replacement rate.

It appears that the "triple burden of depopulation" mentioned by Perelli-Harris and Hilevych (2023) is not only being compounded by a fourth burden—the emigration and mortality losses caused by the war—but this burden is likely to be by far the most severe. These challenges will undoubtedly continue to impact the Ukrainian population for several generations regardless of how the war ends, emphasising the urgent need for further research to understand the long-term demographic effects better and to develop targeted interventions that can mitigate the consequences of this ongoing crisis.

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Table A1. Demographic characteristics of the survey participants

Variable	Group (No. participants)	Explanation	Avg.	Median	SD	Min.	Max.
Birth Year		"1" represents the year 1950 or earlier. From 1951 to 1975, the code number increases by 1 for every five-year interval. Starting from 1976, the code number increases by 1 for every two-year interval.					
	1 (121)		11.19	12	4.15	4	21
	2 (70)		11.33	12	3.94	4	19
	3 (56)		10.93	11.5	3.64	4	19
	4 (14)		12.93	13	4.76	6	19
	5 (51)		11	11	4.46	5	21
	HU (58)		11.14	11	4.21	5	21
	NL (63)		11.24	12	4.13	4	21
Education Level		1: Has not finished basic education 2: Basic level completed 3: Secondary education 4: At least college level					
	1 (121)		3.26	3	0.61	2	4
	2 (70)		3.26	3	0.63	2	4
	3 (56)		3.32	3	0.54	2	4
	4 (14)		3.00	3	0.88	2	4
	5 (51)		3.25	3	0.59	2	4
	HU (58)		3.22	3	0.68	2	4
	NL (63)		3.29	3	0.55	2	4
Number of Children							
	1 (121)		1.23	1	0.86	0	4
	2 (70)		1.33	1	0.89	0	4
	3 (56)		1.40	1	0.93	0	4
	4 (14)		1.07	1	0.62	0	2
	5 (51)		1.10	1	0.82	0	3
	HU (58)		1.29	1	0.77	0	3
	NL (63)		1.17	1	0.94	0	4
Number of Planned Children							
	1 (121)		0.48	0	0.73	0	3
	2 (70)		0.35	0	0.61	0	2
	3 (56)		0.25	0	0.44	0	1
	4 (14)		0.71	0	0.99	0	2
	5 (51)		0.65	0	0.84	0	3
	HU (58)		0.52	0	0.66	0	2
	NL (63)		0.44	0	0.80	0	3
Elderly Family Members		The number of close family members (mother, father, mother-in-law, father-in-law, sibling) aged 60 or older who remained at home is recorded. If there are four or more such family members, the code number is set to 4.					
	1 (121)		1.92	2	1.46	0	4
	2 (70)		1.91	2	1.45	0	4
	3 (56)		1.82	2	1.42	0	4
	4 (14)		2.29	2.5	1.59	0	4
	5 (51)		1.92	2	1.48	0	4
	HU (58)		1.88	2	1.50	0	4
	NL (63)		1.95	2	1.43	0	4

Has Partner (Voluntary Question)	Non-responses (NAs) are not included in calculations. No partner: 0 Has partner: 1				
1 (110)	0.67	1	0.47	0	1
2 (63)	0.65	1	0.48	0	1
3 (50)	0.72	1	0.45	0	1
4 (13)	0.38	0	0.51	0	1
5 (47)	0.70	1	0.46	0	1
HU (52)	0.73	1	0.45	0	1
NL (58)	0.62	1	0.49	0	1
Partner in Ukraine (Voluntary Question)	If a respondent did not answer the previous question or this question, the answer became NA. NAs were not included in the statistics below. Partner is not in Ukraine: 0 Partner in Ukraine: 1				
1 (121)	0.25	0	0.44	0	1
2 (70)	0.24	0	0.43	0	1
3 (56)	0.25	0	0.44	0	1
4 (14)	0.20	0	0.45	0	1
5 (51)	0.27	0	0.45	0	1
HU (52)	0.25	0	0.44	0	1
NL (58)	0.26	0	0.44	0	1