Ukrainians' Emigration and Return Intentions in the Face of Conflict

Joop Adema[a], Cevat Giray Aksoy[b], Yvonne Giesing[c], Panu Poutvaara[d]

July 14, 2023

Abstract

Throughout history, conflicts have led to significant migration waves. In 2022, around eight million Ukrainians fled or were forcibly displaced outside Ukraine. Using Gallup World Poll and new panel data on Ukrainian refugees in Europe, we investigate whether Russia's full-scale attack could demographically undermine Ukraine. Our findings are contrary to what traditional migration theories and previous literature predict. Ukrainians became 25 percentage points less likely to desire to permanently emigrate in 2022 compared to 2021. Furthermore, less than 10% of Ukrainian refugees plan to settle abroad. This share does not depend on time spent abroad, and only increases with fierce conflict in one's home region. Ukrainians' resilience can be explained by their increased confidence in the government and military, boosted optimism, and stronger national identity.

Keywords: Conflict, Ukraine, Migration, Refugees, Return Migration

[a]Contact: adema@ifo.de, ifo Institute, University of Munich.
[b]Contact: cevat.aksoy@kcl.ac.uk, King's College London and EBRD.
[c]Contact: giesing@ifo.de, ifo Institute, University of Munich.
[d]Contact: poutvaara@ifo.de, ifo Institute, University of Munich.

1 Introduction

Russia's full-scale invasion of Ukraine has triggered the largest refugee crisis in Europe since the Second World War; with around 8 million refugees (including those forcibly relocated to Russia) UNHCR (2023*b*), and several million internally displaced persons within Ukraine IOM Global Data Institute Displacement Tracking Matrix (2023). Following major setbacks on the battlefield, the Russian strategy turned toward breaking the morale of Ukrainian people by targeting residential areas and crucial civilian infrastructure Stepanenko et al. (2023). Ukraine's population was already shrinking fast prior to Russia's large-scale invasion, and if a large share of Ukrainian refugees decides to remain abroad, emigration could increase Ukraine's vulnerability to further military aggression and thwart reconstruction in the aftermath of war. In this study, we analyze whether the large-scale Russian attack threatens to demographically undermine Ukraine by driving a large share of Ukrainians to emigrate and settle abroad.

Research on previous refugee crises has concluded that refugees' return rates following conflict are very low and those who return do so with a significant delay Camarena and Hägerdal (2020); Beaman, Onder and Onder (2022). Destroyed housing, worsening safety conditions back home, and the personal experience of violence have been identified as relevant deterrents of return migration Beaman, Onder and Onder (2022); Alrababa'h et al. (2023); Serdar and Orchard (2020); Balcilar and Nugent (2019). However, this evidence concerns refugees fleeing undemocratic countries or civil wars, and in many cases being persecuted by their own government. Ukraine is a democracy under attack. This makes the nature of the conflict very different, leaving it open as to whether patterns established in previous literature hold. In addition, most of the previous studies rely on cross-sectional data only, making it difficult for researchers to separate causal effects of conflict on return intentions from selection into emigration based on unobservable characteristics. We contribute to this literature by showing how Ukrainian refugees' return intentions differ from those of refugees who mostly fled from civil wars or government persecution. Little is known about whether refugees from democratic countries would like to return, as there have been no large-scale refugee flows from

democracies under external attack since the Second World War.

Previous literature has highlighted the importance of return migration for the development and reconstruction of the country of origin in terms of innovation Choudhury (2016) and entrepreneurship Massey and Parrado (1998); Demurger and Xu (2011); Krasniqi and Williams (2019). Return migration and contacts with the diaspora can also foster trade Bahar et al. (2022); Parsons and Vézina (2018), investment Mayda et al. (2022), and political change Chauvet and Mercier (2014); Barsbai et al. (2017). Hence, policymakers both in Ukraine and in refugees' destination countries urgently need evidence on the return intentions of Ukrainian refugees.

2 Conceptual framework

Whether to emigrate is a complex decision that depends on many factors "pushing" potential migrants out of their country of origin or "pulling" them to a potential destination country. Theoretical models and empirical analyses in migration literature identify conflicts and poor economic conditions as push factors and high earnings as a pull factor Adhikari (2013); Massey et al. (1994); Bohra-Mishra and Massey (2011). Most refugees who fled previous conflicts do not plan to return (see Camarena and Hägerdal (2020) and SI Appendix, text 2.2 and Fig. S15). Therefore, theoretical arguments and studies of previous conflicts would suggest that Russia's full-scale war threatens to demographically undermine Ukraine.

There are several reasons why predictions based on theoretical arguments and previous conflicts might not hold for Ukrainians. First, external threats tend to forge a stronger national identity Kulyk (2016); Gehring (2021). A stronger national identity may directly increase the psychological cost of living abroad. Second, Ukraine's success in repelling the Russian invasion can be expected to have increased confidence in its government and military. This would make staying more attractive. Furthermore, confidence in the government and military institutions may increase optimism about future life in Ukraine. Third, international support and the prospect of potential EU accession and NATO membership could further increase optimism about life in Ukraine. The war can also generate a rally-around-the-flag effect Mueller (1970); Dinesen and Jæger (2013); Yam et al. (2020). The

Figure 1: **The expected overall effect of the Russian invasion on the desire to emigrate from Ukraine or return there is ambiguous.**

rally-around-the-flag effect is defined as an increased short-run popular support of a country's government or political leaders during periods of international crisis or war Goldstein and Pevehouse (2008). This effect may be driven by increases in national identity or by the pivotal role played by the government in responding to the conflict Baker and Oneal (2001). We conjecture that it could reinforce the outlined mechanisms that reduce desire to emigrate and encourage refugees to return. If these effects are sufficiently strong, they could overturn predictions from traditional migration literature so that Ukrainians would become more determined to live in Ukraine. Fig. 1 illustrates these competing forces. The red arrow highlights the traditional view that suggests an increasing desire to emigrate and low willingness to return, while the blue arrows depict counteracting forces. Although Fig. 1 is tailored for Ukraine, national identity, confidence in government and military as well as optimism could be counteracting conflict exposure also in other settings.

3 Data

3.1 Gallup World Poll

The Gallup World Poll (GWP) are nationally representative surveys that are repeated cross-sections fielded on an annual basis in more than 150 countries and interview approximately 1,000 individuals in each country on a wide range of topics. It includes questions on migration aspirations, perceptions and attitudes concerning the government and background information. In particular, we probe the desire to emigrate by the following question: *Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?*. We recode the desire to emigrate to 1 if the respondent answers "yes", to 0 if the respondent answers "no" or "don't know", and to missing if the respondent answers "prefer not to answer". For our analysis in Fig. 2, we limit the sample to the 53 countries that were visited by Gallup in 2012 and in 2022 between 24 February and 21 September 2022. We aggregate all other countries but Ukraine in five mutually exclusive country groups (SI Appendix, Table S1). As GWP does not visit every country every year, missing values are interpolated on the country level before aggregation to the country group. For Ukraine, the desire to emigrate in 2020 was the only missing question. For further information about the GWP and its questions and descriptive statistics, see SI Appendix, text 1.1.

3.2 Kantar Public

We cooperated with the Kantar Public survey company to roll out a panel survey among Ukrainian refugees throughout Europe. The first wave survey includes questions concerning migrants' background, the municipality (*Hromada* in Ukrainian) one lived before 24 February 2022, current situation and return migration intentions. In particular, we probe the intention to return by the following question: *What are your plans regarding returning back to Ukraine?* The answer options are *I intend to go back very soon*, *I intend to go back at some point later when I feel it is safe to return*, *I do not intend to go back and plan to settle outside Ukraine*, *Do not know yet*, and *Prefer not to answer*. In the first wave, respondents are recruited primar-

ily through Facebook Ads, while respondents are contacted for follow-up waves by email. The first wave was administered between 14 June 2022 and 22 December 2022. A total of 62,896 people clicked on the advertisements. The first wave survey was completed by 11,783 respondents, 5,852 of whom agreed to be contacted for future waves. All first wave respondents, including those who returned to Ukraine, were asked to fill out the follow-up survey via email between 21 September 2022 and 23 January 2023 and 2,065 individuals completed the survey. Participation was incentivized to reduce attrition rates. The follow-up wave additionally probed respondents' current location, expectations about the war, and personal conflict exposure. For Fig. 4, we use the sample of first wave respondents and for Fig. 3 and 5 we use the smaller sample of panel respondents. For all main text analyses, we disregard the small share of respondents (101 in the first wave sample, 13 in the panel sample) who are not Ukrainian citizens. In addition, we omit 220 individuals from the panel sample as they have answered the second wave within 30 days of the first wave interview. Moreover, we omit respondents who answer *Prefer not to answer* to the return intention question in further analyses. This concerns 370 individuals (3.1%) in the first wave and 11 individuals in the second wave (0.6%). To match respondents to local measures of conflict from ACLED and ISW (see below), we parse the fill-in field for municipality of origin and match 82% of respondents to a unique municipality of origin. For further information about the Kantar Public survey and descriptive statistics, see SI Appendix, text 1.2.

3.3 ACLED

To obtain measures of local conflict intensity, we use the Armed Conflict Location Event Data Project (ACLED) database. ACLED contains geocoded event-level data in a conflict, including the primary actor and the number of reported casualties. We restrict the ACLED sample as follows. First, we categorize the primary actor to be Russian-sided, Ukrainian-sided or unknown. We drop the 22% of events where the primary actor is not Russian-sided, as these are unequivocally from a Ukrainian point of view. We drop 54 events that are not geolocated. We link the geographic location of each event to Ukraine's administrative divisions. To calculate a mea-

sure of local conflict intensity, we sum up the total number of events in the home municipality and all municipalities within a 25 kilometer radius. We prefer this approach to aggregating casualties only within the same municipality, as some municipalities are small and close to larger population centers that are the target of Russian attacks. For the analysis in Fig. 5 we calculate the number of events per day between the two interview dates. For further information about ACLED and descriptive statistics, see SI Appendix, text 1.3.

3.4 ISW

We construct a daily dataset of the position of the frontline using the maps created by the Institute for the Study of War (ISW) between 01 June 2022 and 31 January 2023. ISW's maps visualize the state of the war based on publicly available information sourced from news outlets, social media and satellite imagery. Importantly, these maps include a line approximately indicating the frontline of the conflict. We categorize a district (*Raion* in Ukrainian) as either *under Ukrainian control*, *on the frontline* or *occupied*. For the analysis in Fig. 5 we calculate changes in the frontline status between the two interview dates for each respondent. For further information about the ISW and descriptive statistics, see SI Appendix, text 1.4.

4 Empirical Strategy

4.1 Employment and return intentions over time since arrival

To show the non-parametric relation between the number of days since arrival in the current host country and return intentions, we perform the following procedure. First, we assign all observations to 20 equal-sized bins over the number of days since arrival. We residualize the outcome by regressing it on a comprehensive set of individual-level controls (SI appendix, text S3.2.1), and destination and day of leave fixed effects. We perform this procedure for 100 bootstrap samples drawn at individual level in order to obtain smoothened 90% confidence intervals. We draw markers for (i) the mean value for each of the 20 equal-sized bins, (ii) a predicted

mean value for each number of days since arrival in the sample (iii) a 90% confidence interval around the predicted mean value. We perform this procedure for the binary indicator for started working and a binary indicator for planning to settle outside Ukraine on the sample of individuals without missing information for both these variables and the covariates. We show the results in Fig. 4.

4.2 Causal effects of local conflict on return intentions

To identify the causal effect of local conflict on return intentions, we run the following regression:

$$y_{imt_1t_2} = \alpha F_{idt_1t_2} + \beta C_{im(d)t_1t_2} + \gamma C_{im(d)t_0t_1} + \delta' X_{it_1} + \theta_{id} + \phi_{il} + \psi_{iw_1} + \xi_{iw_2} + \varepsilon_{imt_1t_2} \tag{1}$$

Here, $y_{imt_1t_2}$ is one of three changes in return intentions between the two survey waves (see below for details) for respondent i originating from municipality m, $F_{idt_1t_2}$ is the change in frontline status between the first and second interview in district d from ISW, $C_{im(d)t_1t_2}$ is the conflict intensity in and around municipality m between the first and second interview from ACLED, $C_{im(d)t_0t_1}$ is the conflict intensity between the start of the war and the first wave. Timing of the interview dates varies from one individual to the next (see SI appendix, figs. S1 and S4). The models include a large set of control variables (X_{it_1}, see SI appendix, S3.2.2), destination (θ_d), week of leaving Ukraine (ϕ_{il}), week of wave 1 interview (ψ_{w_1}) and week of wave 2 interview (ξ_{w_2}) fixed effects. As the most aggregate measure (changes in occupation status) is assigned at the district-level, we cluster standard errors on the district level.

Each column in Fig. 5 shows the results of this regression for the following three outcome variables: "Returned to Ukraine" is 1 if someone has returned to Ukraine, 0 otherwise. "No longer plans to settle outside Ukraine" is 1 if someone planned to settle outside Ukraine during wave 1 but stated a different intention in wave 2, 0 otherwise. "Started to plan to settle outside Ukraine" is 1 if someone planned to settle outside Ukraine in wave 2 but stated a different option in wave 1,

0 otherwise.

5 Results

5.1 Desire to emigrate

Fig. 2A shows the share of individuals who desire to permanently emigrate over time in the Gallup World Poll (GWP), for Ukraine and five country groups (SI Appendix, text 1.1). Between 2015 and 2021, the share of the population who desired to emigrate was higher for Ukraine than for European country groups. It is remarkable how Ukrainians' emigration intentions have changed following the large-scale Russian attack: the share of Ukrainians wanting to permanently emigrate declined from 34.9% in July 2021 to 9.4% in September 2022. In 2022, a lower percentage wanted to emigrate from Ukraine than from Western and Northern European countries. Further analysis shows that the desire to emigrate has decreased among both women and men and in all six macro-regions in Ukraine (see SI Appendix, Figs. S19 and S20). Importantly, only a very small part of the reduction in Ukrainians' desire to emigrate can be explained by selective out-migration of those with a stronger desire to emigrate (SI Appendix, text 3.1.3 and Fig. S17 and S18). At the same time, optimism, confidence in government, and confidence in the military have increased considerably (Fig. 2B, 2C and 2D).

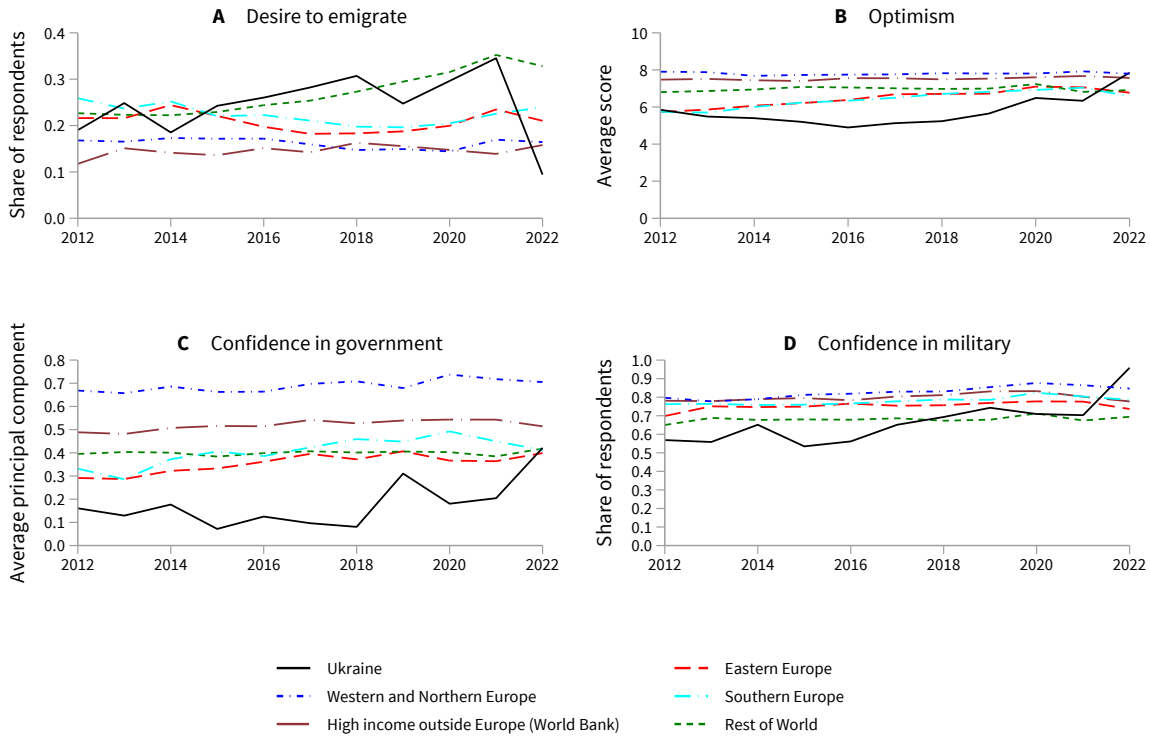

Figure 2: **Desire to emigrate, optimism, and confidence in government and military in Ukraine and five country groups between 2012 and 2022.**

Notes: (A) illustrates the share of respondents desiring to emigrate. (B) shows the average optimism score which measures how good the respondent expects their life to be in absolute terms in five years (ranging from 0 for the worst possible to 10 for the best possible life). Importantly, this is asked in absolute terms, not relative to the current situation. (C) shows the measure of confidence in the government as constructed in Guriev, Melnikov and Zhuravskaya (2021). The separate components of this measure are shown in the SI Appendix, Fig. S22. (D) shows the share of respondents who have confidence in the military. The survey did not cover regions in Ukraine partially or fully occupied by Russia in September 2022. SI Appendix, text 1.1 describes the methodology and underlying survey questions; Table S1 shows the available countries in each comparison group.

5.2 Mechanisms explaining the drop in the desire to emigrate

The finding that Ukrainians have drastically reduced their desires to permanently emigrate lies in stark contrast to the theories of international migration based on conflict being a major push factor to emigrate. Instead, the pattern in Fig. 2A can be explained by higher levels of confidence in government and military, optimism, and national identity (Fig. 2B, 2C and 2D). The year-on-year decrease in the desire

to emigrate is larger in Ukraine in 2022 than in any other country from 2012 to 2022, while increases in optimism, confidence in government, and confidence in the military are exceptionally large, too (SI Appendix, text 3.1.1 and Fig. S16). An Oaxaca-Blinder decomposition of the difference in the desire to emigrate between 2021 and 2022 reveals that increases in confidence in government, confidence in the military, and optimism explain 41% of the gap, whereas other covariates explain only 5% of the gap, leaving an unexplained gap of 54% (see SI Appendix, text 3.1.2 and Table S6). The residual gap could be partially explained by a stronger national identity: additional survey data shows that 55% of Ukrainians were very proud to be Ukrainian in August 2022, up from 27% in 2021 (see SI Appendix, text 2.1 and Fig. S12). In the same survey, national identity is strongly correlated with plans to build a future in Ukraine. If we assume a constant relationship between national identity and plans to build a future in Ukraine, the increase in national identity can explain 22% of the drop in desire to emigrate (see SI Appendix, text 2.1.1 and Figs. S12-S14).

5.3 Return Intentions

In cooperation with Kantar Public, we rolled out an online panel survey among Ukrainian refugees in various European countries (for details on the survey, see SI Appendix, text 1.2) to study return intentions and their determinants. The first wave (11,783 respondents) was collected between 15 June 2022 and 22 December 2022 and the follow-up wave (1,832 respondents) was collected between 21 September 2022 and 23 January 2023 (SI Appendix, Figs. S1 and S4 for the timing of each interview). Although the online survey may not be fully representative of the Ukrainian population, we match age, gender, and destination country distributions reasonably well (SI Appendix, text 1.2.3 provides a discussion and Fig. S5 compares the age, gender, and country distribution to administrative data).

Fig. 3A illustrates the return intentions according to gender during the first survey wave for the full sample and the panel sample. In the full sample, only 8.3% plan to settle outside Ukraine and the vast majority plan to go back very soon (7.6%) or when it is safe (59.0%). These percentages are remarkably similar

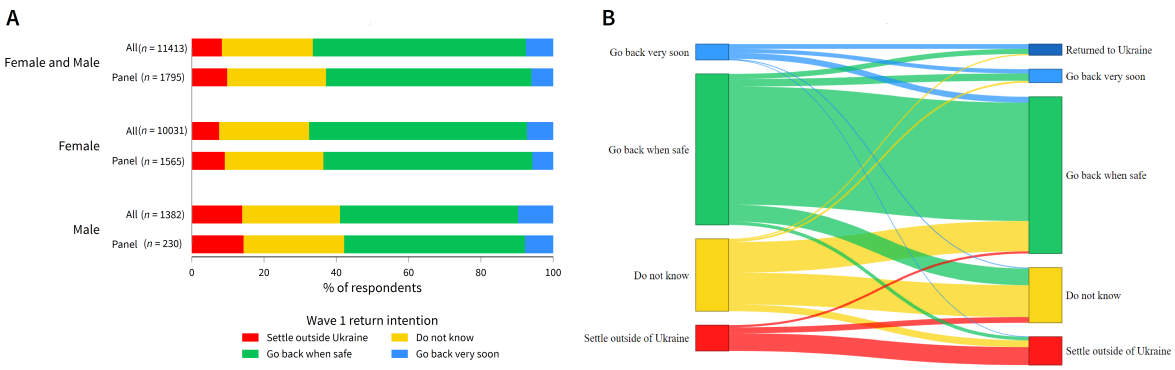

Figure 3: **Most refugees plan to return and return intentions predict actual return.**

Notes: (A) shows the return intentions of first wave respondents, for all respondents, and for the panel respondents. The number of observations per category is indicated left of the bar. (B) shows individual-level changes in return intentions between the two waves. The average number of days between interviews is 81 and the minimum is 30. N = 1,784. See Table S7 for the full transition Table between survey waves. Respondents who preferred not to answer this question in either wave (N = 370 in (A) and N = 11 in (B)) are excluded from the figure.

when it comes to respondents' education and whether their district of origin (for an overview of Ukraine's administrative divisions, see SI Appendix, text 1.2.1) was fully under Ukrainian control, on the frontline, or fully occupied by Russian forces (see Fig. S2 and S3 and text 1.2.2). Men are slightly more likely than women to plan to settle outside Ukraine or to go back very soon. When comparing the full and panel samples, we find that those with more definite return intentions are less likely to participate in the second wave (SI Appendix, text 1.2.4 and Table S5 provide a discussion and analysis of attrition). Hence, the following results are somewhat biased towards less specific return intentions in the second wave. Fig.3B shows a Sankey diagram of return intentions and realized return to Ukraine between the first and second wave. Return intentions in the first wave are strongly indicative of return: 29% of those planning to return soon in the first wave have returned, compared with an average return rate of 4%. Re-weighting Fig. 3 with inverse probability weights does not change these results substantially (see SI Appendix, Fig. S6).

5.4 Dynamics of Return intentions

To further assess the resilience of the widely shared desire to return, we study how the time since arriving in the destination affects return intentions. As the first wave of the survey includes 11,783 observations between mid-June and December 2022, we can assess whether Ukrainians integrate into their destination country and start to exclude return as they spend more time in the destination. Fig. 4 shows the non-parametric relationship between labor market integration and intention to settle outside Ukraine and the number of days since arrival. As we control for the day of arrival, variation is only driven by differential timing of the interviews. We find that despite strong labor market integration over time (an increase in the employment rate of about 20 percentage points over the full length of 250 days), the share of individuals planning to settle outside Ukraine does not increase in days since arrival.

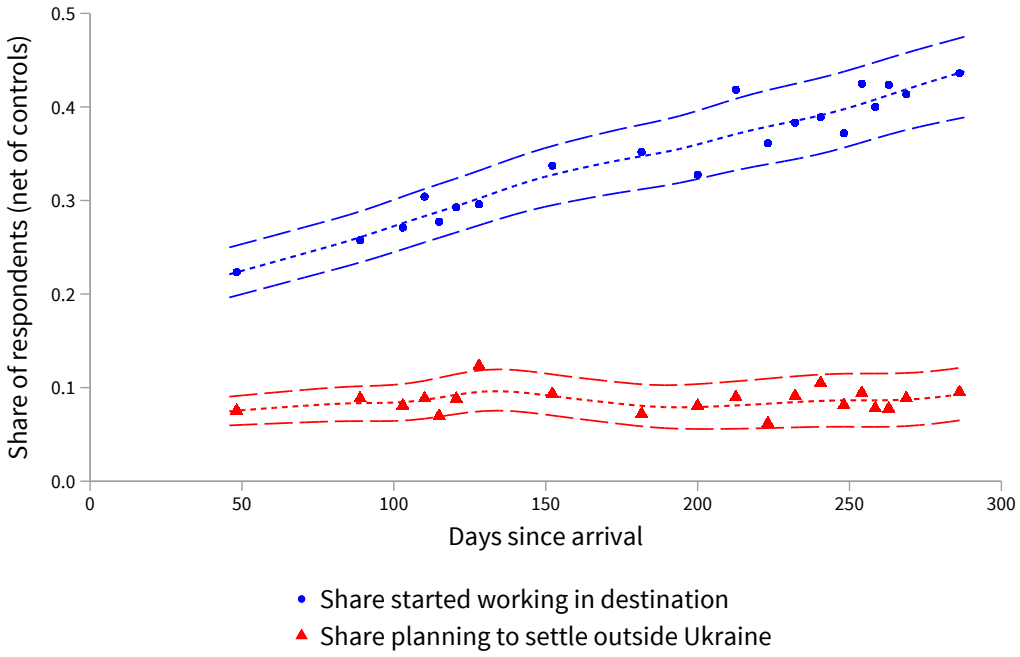

Figure 4: **Employment and return intentions over time since arrival in the destination.**

Notes: Binned scatterplot by 20 equal-sized bins by time since arrival, net of demographic controls, destination country, and date-of-leaving Ukraine fixed effects. Markers indicate the bin-level average net of controls; short, dashed lines indicate the smoothened mean and long dashed lines indicate a bootstrapped 90% confidence interval around this mean. N = 9,871. See SI Appendix, text 3.2.1 for details on the procedure and control variables and Fig. S23 for a similar analysis for the other three levels of return intentions.

5.5 Local conflict intensity and return intentions

The majority of Ukrainian refugees would like to return when it is safe. Therefore, we study whether conflict intensity in refugees' place of origin in Ukraine reduces return intentions. To analyze the causal effects, we leverage the survey's panel data structure to study how changes in military occupation status and local conflict intensity between the first and the second interview relate to changes in return intentions. Changes in military occupation status are obtained from the Institute for the Study of War (ISW) and local conflict intensity is obtained from the Armed Conflict Location and Event Data project (ACLED) (SI Appendix, text 1.3 and 1.4 and Figs. S7-S11 describe these data sources in detail). We estimate a linear probability model by regressing changes in return intentions on individual-level and conflict-related variables. The results (Fig. 5) show that refugees who left with a partner are less likely to have returned to Ukraine and more likely to have started plans to settle outside Ukraine. We further find that Ukraine regaining control of someone's home district between interviews makes returning and planning to return more likely and coming from a municipality with very high conflict intensity increases the probability of planning to settle outside Ukraine. Refugees from districts where Ukraine regained control are 4 percentage points more likely to have returned and 3 percentage points less likely to start planning to settle outside Ukraine (both significant at a 10% level). Refugees from municipalities in the 90th percentile of conflict intensity or higher (average: 4.52 events/day) are 3 percentage points less likely to no longer plan to settle outside Ukraine and 3 percentage points more likely to start planning to settle outside Ukraine. Although those from the 75th-90th percentile of conflict intensity are less likely to have returned, there is no effect on changes in plans (at the 10 level). We also analyze how direct personal losses due to conflict, or indirect losses through family and friends, affected return intentions. Neither personal conflict losses nor conflict losses of family and friends are predictors of plans to settle outside Ukraine, as a further indication of resilience to return (see SI Appendix, Fig. S26).

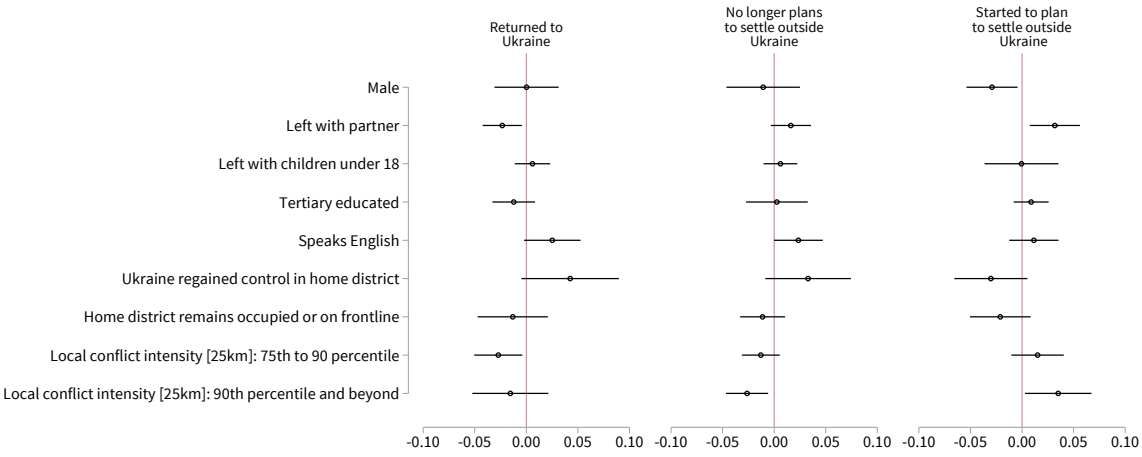

Figure 5: **Determinants of changes in return intentions between interviews.**

Notes: Coefficient plots with 95% confidence intervals based on standard errors clustered on the district level of three multivariate OLS regressions of actual return and changes in return intentions on personal characteristics and conflict-related variables. Average local conflict intensity up to the 75th percentile are 0.15 events per day, between 75th and 90th percentile 1.32 events per day and beyond the 90th percentile 4.52 events per day. Each regression includes a wide set of demographic and other control variables, as well as fixed effects of the week of leave, week of first wave interview and week of second wave interview. The first column also controls for the levels of first wave return intentions. The reference category comprises individuals from districts that have always been under Ukrainian control and municipalities that are up to the 75th percentile in conflict intensity. N = 1,508. See SI Appendix, text 3.2.2 for a full description of these regressions, Table S8 for the underlying regression coefficients and Fig. S24 for a similar analysis using the number of fatalities rather than the number of recorded events.

5.6 Return Intentions by Education

Even though average return intentions are high, a potential concern is that those with highest earnings potential could be least likely to return. We do not find evidence supporting this. Having tertiary education is neither predictive of levels of return intentions (SI Appendix, fig. S21) nor of changes in return plans (Fig. 5). And while those speaking English should be best positioned to find a job and build a life outside of Ukraine, those speaking English have been somewhat more likely to return to Ukraine between the two surveys, and more likely to no longer plan to settle outside Ukraine (Fig. 5).

5.7 Return intentions by expectations about the outcome and duration of the war

Pessimistic expectations about the outcome and duration of the war could lower return intentions. To test this, we asked respondents in the second wave what they expect the outcome of the war to be by the end of 2024, as well as how long they expect it to continue. 72% expect Ukraine to win without making any territorial concessions. Since the number of respondents expecting a Russian win (only 4 respondents), peace agreement with Ukraine ceding some territory (73 respondents) or ceasefire (28 respondents) was small, we aggregate these to the category "Ukraine cedes territory or ceasefire" (6% of respondents). 8% expect the war to continue and the rest said that they do not know. Return intentions are strongly correlated with the expected outcome of the war: the share of respondents planning to settle outside Ukraine is only 9% of those who expect Ukraine to win, whereas 21% of those who expect territorial concessions or ceasefire, and 24% of those who expect the war to continue until 2025 or longer plan to settle outside Ukraine (see SI Appendix, Fig. S25A and Table S10). We also analyzed return plans according to expected duration of war among those who expect Ukraine to win without ceding any territory; other groups are too small for subgroup analysis. Return plans are somewhat lower among those expecting the war to last more than a year, yet even in that group, only 13% plan to settle outside Ukraine (see SI Appendix, Fig. S25B and Table S11). Ukrainian refugees' will to return lies in stark contrast to findings from previous refugee waves. As an example, only 7% of Syrian refugees registered in the Middle East and North Africa have voluntarily returned to Syria by March 2023 UNHCR (2023*a*), and just 14% of Syrian refugees in Germany want to return to Syria if it becomes as safe as before the civil war Al Husein and Wagner (2023).

6 Conclusion

Our analysis has highlighted that the vast majority of Ukrainians in Ukraine plan to stay and most Ukrainian refugees in Europe plan to return. Ukrainians are there-

fore showing remarkable determination to live in Ukraine, which contrasts with high pre-war emigration desires. Realized levels of return migration will play a crucial role in the reconstruction when a significant number of human resources are required. In our panel survey, we find that close to 2% of Ukrainian refugees returned every month (see SI Appendix, Table S9). What explains Ukrainians' exceptional determination to return? Ukrainians' confidence in their government and optimism have reached exceptionally high levels in international comparison (Fig. 2). This positive sentiment, combined with a stronger national identity, has acted as a counterforce against traditional push and pull factors, bolstering the determination of Ukrainians to live in their country. However, significant challenges persist in ensuring long-term prosperity for Ukraine. Confidence in the judiciary remains low, and corruption is perceived to be high (Fig. S22A and B). Can Ukraine successfully transition to a low corruption environment when the conflict is over? Historically, external conflict has often boosted investment in state capacity Tilly (1985, 1990); Besley and Persson (2009). Yet, fiscal capacity also relies on citizens' quasi-voluntary compliance with their tax obligations Levy (1988). Citizens are likely to be more willing to pay taxes when they perceive that the revenues are used in their interest Besley (2020). The key challenge for Ukraine is to harness the shared purpose during the wartime to a broader institutional and cultural change. By doing so, Ukraine can weaken the push factors driving emigration, even as the rally-around-the-flag effect might diminish.

References

Adhikari, P. 2013. "Conflict-induced displacement, understanding the causes of flight." *American Journal of Political Science*, 57: 82–89.

Al Husein, N., and N. Wagner. 2023. "Determinants of intended return migration among refugees: A comparison of Syrian refugees in Germany and Turkey." *International Migration Review*. https://doi.org/10.1177/01979183221142780.

Alrababa'h, A., D. Masterson, M. Casalis, D. Hangartner, and J. Weinstein. 2023. "The dynamics of refugee return: Syrian refugees and their migration intentions." *British Journal of Political Science*, 1–24.

Bahar, D., C. Özgüzel, A. Hauptmann, and H. Rapoport. 2022. "Migration and post-conflict reconstruction: The effect of returning refugees on export performance in the former Yugoslavia." *Review of Economics and Statistics*. https://doi.org/10.1162/rest_a_01165.

Baker, W. D., and J. R. Oneal. 2001. "Patriotism or opinion leadership?: The nature and origins of the "Rally 'Round the Flag" effect." *The Journal of Conflict Resolution*, 45: 661–687.

Balcilar, M., and J. B. Nugent. 2019. "The migration of fear: An analysis of migration choices of Syrian refugees." *The Quarterly Review of Economics and Finance*, 73: 95–110.

Barsbai, T., H. Rapoport, A. Steinmayr, and C. Trebesch. 2017. "The effect of labor migration on the diffusion of democracy: Evidence from a former Soviet Republic." *American Economic Journal: Applied Economics*, 9: 36–69.

Beaman, L., H. Onder, and S. Onder. 2022. "When do refugees return home? Evidence from Syrian displacement in Mashreq." *Journal of Development Economics*, 155: 102802.

Besley, T. 2020. "State capacity, reciprocity, and the social contract." *Econometrica*, 88: 1307–1335.

Besley, T., and T. Persson. 2009. "The origins of state capacity: Property rights, taxation, and politics." *American Economic Review*, 99: 1218–1244.

Bohra-Mishra, P., and D. S. Massey. 2011. "Individual decisions to migrate during civil conflict." *Demography*, 48: 401–424.

Camarena, K. R., and N. Hägerdal. 2020. "When do displaced persons return? Postwar migration among Christians in Mount Lebanon." *American Journal of Political Science*, 64: 223–239.

Chauvet, L., and M. Mercier. 2014. "Do return migrants transfer political norms to their origin country? Evidence from Mali." *Journal of Comparative Economics*, 42: 630–651.

Choudhury, P. 2016. "Return migration and geography of innovation in MNEs:

A natural experiment of on-the-job learning of knowledge production by local workers reporting to return migrants." *Journal of Economic Geography*, 16: 585–610.

Demurger, S., and H. Xu. 2011. "Return migrants: The rise of new entrepreneurs in rural China." *World Development*, 39: 1847–1861.

Dinesen, P., and M. Jæger. 2013. "The effect of terror on institutional trust: New evidence from the 3/11 Madrid terrorist attack." *Political Psychology*, 34: 917–926.

Gehring, K. 2021. "Can external threats foster a European Union identity? Evidence from Russia's invasion of Ukraine." *The Economic Journal*, 132: 1489–1516.

Goldstein, J. S., and J. C. Pevehouse. 2008. *International Relations: Eighth Edition.* Pearson Longman.

Guriev, S., N. Melnikov, and E. Zhuravskaya. 2021. "3G internet and confidence in government." *The Quarterly Journal of Economics*, 136: 2533–2613.

IOM Global Data Institute Displacement Tracking Matrix. 2023. "Registered IDP area baseline assessment Ukraine - Round 23." *https://dtm.iom.int/ukraine*.

Krasniqi, B. A., and N. Williams. 2019. "Migration and intention to return: Entrepreneurial intentions of the diaspora in post-conflict economies." *Post-Communist Economies*, 31: 464–483.

Kulyk, V. 2016. "National identity in Ukraine: Impact of Euromaidan and the war." *Europe-Asia Studies*, 68: 588–608.

Levy, J. S. 1988. "Domestic politics and war." *The Journal of Interdisciplinary History*, 18: 653–673.

Massey, D. S., and E. A. Parrado. 1998. "International migration and business formation in Mexico." *Social Science Quarterly*, 79: 1–20.

Massey, D. S., J. Arango, G. Hugo, A. Kouaouci, A. Pellegrino, and J. E. Taylor. 1994. "Theories of international migration: A review and appraisal." *Population and Development Review*, 19: 431–466.

Mayda, A.-M., C. Parsons, H. Pham, and P.-L. Vézina. 2022. "Refugees and foreign direct investment: Quasi-experimental evidence from US resettlements." *Journal of Development Economics*, 156: 102818.

Mueller, J. 1970. "Presidential popularity from Truman to Johnson." *American Political Science Review*, 64: 18–34.

Parsons, C., and P.-L. Vézina. 2018. "Migrant networks and trade: The Vietnamese boat people as a natural experiment." *The Economic Journal*, 128: F210–F234.

Serdar, K., and P. Orchard. 2020. "Prospects of Return: The Case of Syrian Refugees in Germany." *Journal of Immigrant & Refugee Studies*, 18(1): 95–112.

Stepanenko, K., R. Bailey, A. Howard, and M. Clark. 2023. "Russian offensive campaign assessment, January 14, 2023." *https://www.understandingwar.org/sites/default/files/Russian%20Operations%20Assessments%20January%2014%202023.pdf*.

Tilly, C. 1985. "War making and state making as organized crime." In *Bringing the State Back In.* , ed. P. B. Evans, D. Rueschemeyer and T. Skocpol, 169–191. Cambridge University Press.

Tilly, C. 1990. *Coercion, Capital and European States, AD 990–1992.* Blackwell.

UNHCR. 2023*a*. "Syria Regional Refugee Response: Durable solutions." https://data.unhcr.org/en/situations/syria_durable_solutions.

UNHCR. 2023*b*. "Ukraine Situation - 2022 Final Report Regional Refugee Response Plan (March – December 2022)." *https://data2.unhcr.org/en/documents/details/99791*.

Yam, K. C., J. C. Jackson, C. M. Barnes, J. Lau, X. Qin, and H. Y. Lee. 2020. "The rise of COVID-19 cases is associated with support for world leaders." *Proceedings of the National Academy of Sciences*, 117: 25429–25433.

Supporting Information for

Ukrainians' Emigration and Return Intentions in the Face of Conflict

Joop Adema, Cevat Giray Aksoy, Yvonne Giesing, Panu Poutvaara

Panu Poutvaara.
E-mail: poutvaara@ifo.de

This PDF file includes:

Supporting Information Text

1. Detailed Description of Data

1.1. Gallup World Poll. Our data on the desire to emigrate across countries originate from the 2012-2022 Gallup World Polls (GWP) obtained on 18 November 2022 from Gallup, including surveys up to and including 21 September 2022 (1). These nationally representative surveys are repeated cross-sections fielded on an annual basis in more than 150 countries and interview approximately 1,000 individuals in each country on a wide range of topics. Surveys span several days. Importantly, GWP includes the following question on the desire to emigrate in most country-years:
Desire to emigrate *Ideally, if you had the opportunity, would you like to move permanently to another country, or would you prefer to continue living in this country?* With the following answer options:

- Move permanently
- Prefer to stay
- Don't know
- Refused to answer

In addition to the aforementioned question and various demographic variables, we use several other questions from GWP:
Optimism *Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. Just your best guess, on which step do you think you will stand in the future, say about five years from now?*
Confidence in Government We follow (28) and perform a Principal Components Analysis (PCA) and obtain the first principal component of the following four questions with yes, no, do-not-know, and refuse-to-answer as answer options:

- *In this country, do you have confidence in each of the following, or not? How about national government?*
- *In this country, do you have confidence in each of the following, or not? How about judicial system and courts?*
- *In this country, do you have confidence in each of the following, or not? How about honesty of elections?*
- *Is corruption widespread throughout the government in this country, or not?*

Confidence in Military *In this country, do you have confidence in each of the following, or not? How about the military?* with yes, no, do-not-know, and refuse-to-answer as answer options.

Furthermore, we use the following question on corruption in business, which serves as a robustness test in the decomposition analysis in text S3.1.2:
Corruption in Businesses *Is corruption widespread within businesses located in this country, or not?* with yes, no, do-not-know, and refuse-to-answer as answer options.

1.1.1. Data cleaning and processing. In further analysis, we code the desire to emigrate as 1 if the answer is "Move permanently", 0 if the answer is "Prefer to stay" or "Don't know" and we omit the individual when "Refused to answer" is chosen. In the full sample described in the next paragraph, 1.6% of individuals indicate "Don't know" and less than 0.2% of individuals indicate "Refused to answer". We adhere to the same procedure for all other variables with such an answer option structure.

For our analysis of changes by country groups in the desire to emigrate in Fig. 2, we limit the sample to the 53 countries that were visited by Gallup in 2012 and in 2022 after 24 February and up to 21 September 2022. We divide all countries but Ukraine in 5 groups, shown in table S1.

As GWP does not visit every country each year and the question on the desire to emigrate is not included in all country-years, we linearly interpolate the share of respondents who would like to emigrate on the country level for the 96 missing observations (out of 583) in Fig. 2, fig. S17 and fig. S22. To obtain yearly averages for each country group, we take the unweighted mean of the (interpolated) country-level averages. For Ukraine, only the 2020 values are interpolated in Fig. 2 and figs. S17-S22 because the question on the desire to emigrate was not asked.

The method of contacting respondents changed over the years in Ukraine. Until 2019 surveys were conducted face-to-face, in 2020 and 2021 by landline or mobile phone, and in 2022 only by mobile phone. In 2019, 90.4% of respondents either had a landline connection or a mobile phone and in 2021 99.2% of respondents indicated that they used a mobile phone for making phone calls. This suggests that a mobile phone-based sampling approach is able to reach a closely comparable sample of respondents as in 2021. As in 2022 respondents were contacted via mobile phone, also Internally Displaced Persons (IDPs) are included, although we have no way of identifying them. In all years, respondents could answer the survey in either Ukrainian or Russian.

In all analyses, we weight observations by nationally representative weights supplied by Gallup to calculate statistics as representative as possible. Gallup's weights variable reflects the inverse probability of selection, calculated using respondents' information and (among others) national demographics, number of phone connections per household and the number of household members.

As some explaining factors used in the Oaxaca-Blinder (OB) decomposition in table S6 have missing responses (e.g., because of answering "don't know" or "refused to answer" on some items), the sample is limited to those respondents without missing responses for the respective questions.

1.1.2. Descriptives. Table S2 provides an overview of the unweighted characteristics of survey respondents in 2021 and 2022, for the full sample and for the restricted sample used in the OB decomposition in text S3.1.2. The full sample respondents in 2022 are somewhat more likely to be female and are somewhat older than those in 2021. We observe a strong decrease in the desire to emigrate and strong decreases in optimism, confidence in government and military and a slight decrease in the perception of corruption in businesses. The full and OB samples are very similar in demographic characteristics, only the desire to emigrate is somewhat larger in the OB sample.

1.2. Kantar Public Survey "Voice of Ukraine" . We cooperated with the Kantar Public survey company to roll out a survey among Ukrainian refugees throughout Europe. Importantly, the survey is a panel survey aiming to keep following Ukrainian refugees after returning to Ukraine. In the first wave, respondents are recruited primarily through Facebook Ads, while respondents are contacted for follow-up waves by email. As Facebook Ads may not reach the whole demography of Ukrainian refugees, we discuss representativeness of the survey in text S1.2.3.

The first wave was administered between 14 June 2022 and 22 December 2022. A total of 62,896 people clicked on the advertisements. The first wave survey was completed by 11,783 respondents, 5,852 of whom agreed to be contacted for future waves. Respondents were asked to fill out the follow-up survey via email between 21 September 2022 and 23 January 2023 and 2,065 completed the survey. Both first and second wave surveys lasted between 10 and 15 minutes. Participation was incentivized to reduce attrition rates. Respondents could receive a 3-euro voucher or give it to a Ukraine-related charity.

The survey includes a wide range of background variables relating to demographics, employment status, region of origin and conditions and reasons for stay in the host country. Importantly, to elicit return intentions we ask individuals the following question on return intentions in every wave:

Return intentions *What are your plans regarding returning back to Ukraine?* With the following answer options:

- I intend to go back very soon
- I intend to go back at some point later when I feel it is safe to return
- I do not intend to go back and plan to settle outside Ukraine
- Do not know yet
- Prefer not to answer

In addition to aforementioned question and various demographic variables, we use several other questions directly in the main text:
Started working *Did you start working in the country you are currently residing in, yes or no?*

Current location and return *In which country are you currently located?* [fill in country]
To which respondents can answer from a list of countries. In the second wave, this list also includes Ukraine, which enables us to identify those who have returned to Ukraine.

In the second wave, we ask several additional questions:
Expectations about the outcome of the war *What do you find the most likely outcome of the war by the end of 2024?* With the following answer options:

- Ukraine wins and Russia withdraws from all territory it currently occupies
- Ukraine cedes some territory to Russia as part of peace agreement
- There is ceasefire
- Russia wins and annexes big parts of Ukraine
- The war continues
- Do not know
- Prefer not to answer

Expectations about the duration of the war *When do you expect the war in Ukraine to end?* With the following answer options:

- Within 3 months
- In 4 to 6 months
- In 7 to 12 months
- In 1-2 years
- I expect the war to continue more than 2 years
- Do not know
- Prefer not to answer

1.2.1. Data cleaning and processing. To determine an individual's place of living before they left during the war, the first wave of the survey asks (i) which region (oblast in Ukrainian) someone lived before 24 February 2022 and (ii) which locality they lived through a write-in field. 18% of respondents did not answer the latter question. To match individuals to the location of the municipality (hromada) of residence before the war, we use geospatial information on Ukraine's administrative divisions as of 2020 from the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA) (2). The average municipality has 30,800 inhabitants, while the median has 13,200. Larger cities always consist of a single municipality. The spatial files contain all 1,764 municipalities (hromada), nested in 137 districts (raions) in 27 regions (oblasts) and six macro-regions. These localities mostly coincided with administrative divisions, but in the case of 550 individuals the localities had to be manually matched to municipalities within the oblast individuals indicated. Localities were classified into municipalities using the Ukrainian government website https://gromada.info/. Given that not all region-municipality pairs are unique, we cannot assign a unique municipality for 12 respondents and therefore set the municipality to missing. Every dot in Fig. S7 indicates a municipality with at least one geolocated respondent in the first wave. The size of the dot is proportional to the log of the number of respondents plus one. In the following, we describe the construction of two distinct samples used in the analysis in the main text: the first wave cross-sectional sample (the "first wave sample") and the two-wave panel sample (the "panel sample"). For both samples we focus on Ukrainian citizens by excluding all individuals who are not Ukrainian citizens. This applies to 101 individuals in the first wave sample and 13 individuals in the panel sample. As 220 respondents answered the second wave only several days following the first wave, we omit from the panel sample those observations with less than 30 days between the interviews. In individual analyses we discard respondents who answered "prefer not to answer" to any of the survey questions used.

1.2.2. Descriptives. Figs S1 and S4A show the interview dates of both surveys. Variation in survey timing in the first wave is driven by the roll-out of Facebook Ads across countries and response to those Ads, and variation in the second wave is driven by email response. As the second wave was rolled out to a part of first wave respondents before January 2023, 20% of second wave respondents answered prior to 01 January 2023. Fig S4B shows the distribution of the number of days between the two interviews.

Table S3 and S4 show descriptive statistics of both samples. This includes several conflict-related variables from ACLED and ISW (see text S3 and S4). Our first wave respondents are mostly female and on average 45 years old. About 20% of respondents left together with a partner and 55% of respondents left with children under 18. 45% of respondents have a master's degree. There are no large demographic differences between the two samples. Panel respondents are somewhat younger and more likely to have left with children.

Fig. S2 shows the distribution of return intentions over demographic characteristics. As men between 18 to 60 are not allowed to leave Ukraine (although there are some exceptions), there are many split families. Men are more likely to plan to settle outside Ukraine. This can be related to the travel ban. Younger individuals are more likely to plan returning very soon than middle-aged individuals. In none of the age groups the share planning to settle outside Ukraine exceeds 12%, with the share being lowest among those older than 55. Return intentions are very similar across levels of educational attainment. Family situation and whether the respondent fled out of Ukraine together with family members matter for future plans. Those who left with children and with their partner are most likely to plan to settle outside of Ukraine and least likely to want to return soon, especially compared to those who have a partner left behind in Ukraine.

Fig. S3 shows the distribution of return intentions over geographic characteristics, including destination country, origin region and conflict in the place of origin. Return intentions vary somewhat over destination countries, which may reflect sorting of refugees. Those in Western European countries are more likely to plan to settle outside Ukraine. Return intentions are comparable across macro-regions, except for the West of Ukraine (see notes to Fig. S20 for the regions within each macro-region). Unsurprisingly, those from home districts fully occupied by Russia are most likely to plan to settle outside Ukraine.

Respondents from the West of Ukraine have larger intentions to settle outside Ukraine, as well as to go

back very soon. As they are less likely to be forcibly displaced than Ukrainians from other parts of the country, those who left from the West of Ukraine may have weaker ties to Ukraine than other Ukrainians. We find that conflict intensity before the first wave does not strongly relate to return intentions. This may be due to opposing effects of selection and conflict. On the one hand, those forcibly displaced due to conflict are more likely to have strong ties to Ukraine than those that left from relatively safer areas (see the explanation for the West of Ukraine above). On the other hand, those from higher conflict areas may update their beliefs about living in Ukraine because of death and destruction in their home region, which may spur intentions to settle outside Ukraine. In fact, plans to settle outside Ukraine are highest among the respondents below the 75 percentile in conflict intensity, suggesting an important role for differential selection in long-run migration plans. Hence, estimating the causal effect of conflict on return intentions requires panel data, as in Fig. 5.

1.2.3. Representativeness of full sample. As the baseline survey is fielded through Facebook Ads, the survey may not be representative of the full Ukrainian population. Nevertheless, more than 15 million Ukrainians used Facebook on a monthly basis in early 2022 (3), reaching more than 41.2% of the population over 13 years old. Women are slightly overrepresented on Facebook. Facebook Ads have also been successfully used to trace population displacements of Ukrainians in real-time (4).

To examine the demographic representativeness of our sample, we compare observable characteristics of our sample to administrative data of Ukrainians who received a Temporary Protection Status (TPS) from Eurostat (5). Fig. S5 shows the gender, age and destination country distribution of the Kantar Public survey respondents, those in the Kantar Public survey stating that they applied for TPS and those who received TPS in 2022 according to Eurostat.

Even though survey respondents are more likely to be female, somewhat older and less likely to be from Poland and Czechia than the overall recipients of Temporary Protection Status, fig. S6 shows that reweighting respondents to match the observed distribution of country of residence, gender, and age does not change the overall picture of return intentions. For example, the share of first-wave respondents who received TPS planning to return either soon or when it is safe lies at 66.9%, compared with 66.5% in the unweighted sample in Fig. 3, and the share planning to settle outside Ukraine lies at 8.9%, compared with 8.3% in Fig. 3. All survey respondents used for this analysis are aged 18 or older to match the age bins in the TPS data. Only 0.4% of the full Kantar sample were younger than 18.

1.2.4. Sample Attrition. Although our main estimates in Panel B of Fig. 3. and Fig. 5. are based on a panel of respondents, they could underestimate the share of respondents who returned to Ukraine if returnees are less likely to take part in follow-up interviews. A potential mechanism could be that those planning to return soon or have just returned may not have found time to answer or they deemed the survey to be less relevant to them. To study this, we run the following regression:

$$y_i = \sum_j \beta_j \delta_{ij} + \gamma' \mathbf{X_i} + \epsilon_\mathbf{i} \quad [1]$$

Here, y_i takes value 1 if the respondent completes the second wave interview and 0 if not, and δ_{ij} takes value 1 if respondent i has return intention j. Then, the β_j's capture the differential probability to return for return intention j with respect to planning to go back soon (the reference category). X_i include demographic controls (see text S3.2.1 for all controls) and fixed effects for day of leave, day of first wave and destination country.

We present the results in table S5. On average, 16.3% of respondents take part in the second wave. We indeed find that those with less concrete return intentions are more likely to answer in the second wave. Those planning to settle outside Ukraine are 5.5 percentage points more likely to answer the follow-up survey compared to those planning to go back very soon.

If we assume that actual return is the only reason why those planning to return soon are less likely to answer the second wave than those planning to settle outside of Ukraine, the return rate of individuals

planning to return soon would be 47% instead of 29% (by assuming the "missing" 5.5 percentage points are returnees unable to answer). Although this constitutes an extreme case, the bias introduced by differential response rates is likely to affect the results in Fig. 3. towards underestimating the share of returnees. Furthermore, if a similar type of bias affected first wave responses, we would also underestimate the baseline levels of willingness to return to Ukraine. In absence of such bias, the results throughout the Article would in fact show a stronger resilience on the part of Ukrainian refugees.

1.3. ACLED: measuring local conflict. To obtain measures of local conflict intensity, we use the Armed Conflict Location Event Data Project (ACLED) database (6). ACLED contains event-level data containing armed battles, airstrikes, protests and non-conventional violence. For every event, ACLED categorizes the event in one of 6 main and 25 sub-event categories, provides the exact coordinates where it happened, the date, the estimated number of deaths, the primary and possibly secondary actor in the event and a note containing details about what happened from verified media reports. Since the beginning of the invasion of Ukraine on 24 February 2022, ACLED recorded over 38,000 events up to and including 31 January 2023. Using the information on the municipality of origin, we can calculate the number of events or casualties per day in each municipality within a given radius from the focal municipality's center. We use a radius of 25 km. We prefer this approach to aggregating deaths only within the same municipality, as some municipalities are small and close to larger population centers that are the target of Russian attacks.

We restrict the ACLED sample as follows. First, we categorize the primary actor to be Russian-sided, Ukrainian-sided or unknown. We drop the 22% of events where the primary actor is not Russian-sided. Furthermore, we drop 54 events that are not geolocated. We link the geographic location of the event to Ukraine's administrative divisions, which enables us to link the respondents of the Kantar survey to local conflict intensity.

1.3.1. Descriptives. Fig. S7 shows the distribution of Kantar respondents across Ukraine's municipalities and the number of events in our dataset between 24 February 2022 and 31 January 2023 and fig. S8 shows the number of fatalities according to municipality. The areas with highest intensity of conflict are those in the South and the East. The figures show that the Kantar respondents originate from across Ukraine but are more likely to originate from areas with higher conflict intensity.

1.4. ISW: determining the frontline. To capture whether an individual's home region is under Ukrainian control, contested by fighting, or occupied by Russian forces, we construct a daily dataset of the position of the frontline. To construct the dataset, we draw on the (almost) daily updated maps of the war in Ukraine provided by the Institute for the Study of War (ISW) between 01 June 2022 and 31 January 2023 (7). Since the start of the war, ISW has been providing reports with maps visualizing the state of the war based on publicly available information sourced from news outlets, social media and satellite imagery. Importantly, these maps include a line approximately indicating the frontline of the conflict. Fig. S9 demonstrates an example of such a map. The constructed dataset is on the district level (average size of 4,406 km2) rather than the municipality level (average size of 342 km2). This makes it possible to realistically capture meaningful changes in the position of the frontline with respect to the locality of origin. As municipalities are relatively small, a municipality may be liberated but an adjacent municipality could still be on the frontline. By using the district as the level of analysis, we are better able to capture whether localities' status changes from the zone of conflict to being firmly under Ukrainian control. For instance, upon the withdrawal of Russian forces and advancements achieved by the Ukrainian military, several districts in the Kharkiv region were liberated (light blue in fig. S8).

We proceed by classifying districts in one of the following three categories:

1. The district is marked as "Under Ukrainian Control" if the full district is colored in light gray, meaning that the Ukrainian government fully controls it. This category also includes the districts bordering the frontline but separated with a large watercourse, such as the Dnipro River.

2. The district is marked as "On the Frontline" if any area inside includes the solid red line such as in fig. S8.

3. The district is marked as "Occupied" if the full district is colored in red. This includes areas occupied prior to 24 February 2022 (outlined by a solid black line in fig. S8) as well as areas that were first occupied by Russia following 24 February 2022 (outlined by a solid red line in fig. S8).

Fig. S10 illustrates the share of districts in each of the three categories between 01 June 2022 and 31 January 2023. Despite the majority of districts having been under Ukrainian control during the period, Ukraine recaptured several districts between September and December 2022. Fig. S11 shows an example of the variation used in the empirical analysis. Between 01 July and 01 November 2022, three districts in the Kharkiv region were liberated and thus labeled as "Ukraine regained control".

2. Additional data and supplementary results

2.1. IKDIF/Razumkov Center survey: measuring national identity. To probe the strength of the Ukrainians' national identity, we draw on publicly available data from a survey conducted by the Ilko Kucheriv Democratic Initiatives Foundation (IKDIF) together with the Razumkov Center in 2022 and several previous years (8, 9). Interviews were conducted in-person. The relevant questions and answer options as follows:

National Identity *To what extent are you proud or not proud to be a citizen of Ukraine?* With the following answer options:

- Very proud
- Rather proud
- Hard to answer
- Rather not proud
- Not proud at all

Future plans *Would you like to build your future life in Ukraine* With the following answer options:

- Yes, definitely
- Rather yes
- Hard to answer
- Rather not
- Definitely not

55% of Ukrainians were very proud to be Ukrainian in August 2022, up from 27% in 2021 (see fig. S12). At the same time, only 12% do not plan to build a future in Ukraine in 2022 (see fig. S14), which aligns with the answers to the GWP question on desire to emigrate displayed in Fig. 2.

2.1.1. How much of the change in future plans can be explained by national identity?. We consider those who answer "Rather yes" and "Yes, definitely" as not having desires to emigrate. In 2022, this applied to 88.1% of all interviewed individuals, closely reflecting the share of individuals that do not desire to emigrate in the GWP (91.6%). Assuming that the relation between pride to be Ukrainian and desire to emigrate is the same in 2021 as in 2022 (see fig. S13), and using the distribution of pride to be Ukrainian in 2021 (see fig. S12) we can approximate counterfactual migration intentions due to the shift in pride. This exercise estimates intentions to build a future in Ukraine would be 82% in 2021. Hence, changes in national identity explain 6.1 percentage points of the decrease in migration intentions by this question alone, which is 22% of the gap found in table S6 (see also text S3.1.2).

2.2. German Socio-Economic Panel (SOEP): Prior refugee groups' intention to stay in Germany. To place the Ukrainians' return intentions into context, we study the return intentions of earlier refugees in one of the major hosting countries in the Kantar data, Germany. We rely on the German Socio-Economic Panel (SOEP), which is a longitudinal survey of households running since 1984 (10–13). The SOEP includes immigrant respondents and includes a question on whether the respondent wants to stay in Germany:
Plans to stay *Do you want to stay in Germany forever?* With the following answer options:

- No, I want to return within a year
- No, I want to stay several years, specifically... [fill-in field]
- Yes, I want to stay in Germany permanently

We recoded the outcome to 1 if someone wants to permanently stay in Germany and 0 otherwise. This outcome can be compared to the share of respondents who plan to settle outside Ukraine from the Kantar Public survey, with the only caveat being that the SOEP question does not capture intentions to migrate to a third country. However, as very few refugees in Germany plan to move to a third country, this is likely to be a minor issue (14).

Fig. S15 shows that more than 95% of refugees intend to stay in Germany. The share wanting to permanently stay in Germany is 95.4% of those interviewed during the first year since arrival, 95.7% of those in the second to fifth year since arrival and 95.8% of those in the sixth to tenth year since arrival. Figs. S15A-C show that the intention to stay is above 90% among refugees from all prominent origin countries for each bin of time since arrival.

3. Additional results using GWP and Kantar

3.1. Gallup World Poll.

3.1.1. Yearly changes in desire to emigrate, optimism, confidence in military and government in GWP. Fig. S16 illustrates how extreme the changes in Ukraine in 2022 are compared to the year-on-year changes in the same variables across the GWPs. The 25.1 percentage points decrease in Ukrainians' desire to emigrate is the greatest absolute change in the desire to emigrate ever recorded for any country, the increase in confidence in the military is the largest absolute change ever recorded, and the increases in optimism and confidence in government both fall in the 99th percentile of the distribution of year-on-year changes.

3.1.2. Decomposition of drop in desire to emigrate. To study the drivers behind the large drop in desire to emigrate, we perform an Oaxaca-Blinder (OB) decomposition (15, 16). The decomposition enables us to study how much of the gap between the 2021 and 2022 responses is driven by shifts in covariate values (the explained part) and how much is not. Although the OB decomposition can be based on the relation between covariates and outcomes for both years, we only use the 2021 responses as a base for the decomposition. Hence, the coefficients of the explaining factors should be interpreted as how much of the change in desire to emigrate from 2021 to 2022 is driven by changes in that covariate if the relation between the explaining factor and desire to emigrate were to have stayed the same as in 2021.

We use basic demographic factors such as gender, age, their interaction, a binary indicator for having children and tertiary education; this is because the large out-migration in response to the Russian invasion may have shifted Ukraine's demographic composition. Furthermore, we include other factors that we hypothesized to affect migration intentions in the main text as well as a question on perceptions of corruption in businesses, as a placebo test.

The results in table S6 show that a bit less than half of the gap of 27.2 percentage points is explained by the explaining factors. Increased optimism, confidence in the government and confidence in the military each explain 3 to 4 percentage points in the drop in the desire to emigrate. This corresponds to around 12 to 14% of the whole drop in the desire to emigrate. On the contrary, the demographic covariates do

not explain the gap between 2021 and 2022. This further alleviates concerns that changing demographics may have explained the change in the desire to emigrate from Ukraine. Moreover, we find that changing perceptions of corruption in businesses do not explain the difference, highlighting the importance of national institutions rather than private businesses.

3.1.3. Selective out-migration and the drop in desire to emigrate. The large drop in desire to emigrate could be driven by selective out-migration of Ukrainians on observable and unobservable factors that (directly) affect migration intentions.

On observables To illustrate how the desire to emigrate, optimism, confidence in government and confidence in the military in Ukraine would have altered in 2022 if the composition in terms of age-by-gender and education-by-gender would not have changed, we residualize the outcome. For each of the four outcomes, we regress the outcome on the covariates, obtain the residuals from that regression and plot the residuals over time in fig. S17. The change in Ukraine in 2022 with respect to the five country groups in fig. S17 are comparable to Fig. 2.

On unobservables To understand what part of the drop could be explained by out-migration selected on unobservables, we perform a back of the envelope calculation based on the observed migration intentions in Ukraine in GWP, observed return intentions in the Kantar Public surveys as well as UNHCR data on population movements. As the Gallup World Poll was fielded in early September and participation was restricted to those residing in Ukraine at the time of survey, we take the information available on refugee populations on the midpoint of the interviews on 05 September 2022.

We proxy the size of the refugee populations on 05 September 2022 by the gross number of 2.4 million of border crossings to Russia and Belarus (there is no information about movements from Russia and Belarus into Ukraine) and by the 4.2 million net border crossings from Ukraine to the rest of Europe from UNHCR (17). We have no information on the return intentions of 2.4 million Ukrainians who crossed the border to Russia and Belarus.

We assume that the share of minors in both refugee populations is 37%, in line with the share of minors among those who were granted Temporary Protection Status by 31 August 2022 (5). The pre-war adult population of Ukraine was 33.9 million of whom an estimated 12.3% left the country before the GWP was fielded (4.5% to Russia and Belarus; 7.8% to the rest of Europe).

Using these numbers, we can adjust the numbers in Fig. 2A for potentially selective out-migration by making various assumptions about the counterfactual desire to emigrate of the refugee population based on return intentions in the Kantar Public survey. In the following, we analyze the following four cases:

- **Case 1** We assume that the Kantar Public survey is representative of the adult refugee population (including those who crossed the border with Russia and Belarus) and that only those refugees who want to settle outside Ukraine are those who would have otherwise desired to emigrate.
- **Case 2** We assume that the Kantar Public survey is representative of the adult refugee population (including those who crossed the border with Russia and Belarus) and that those who want to settle outside Ukraine and those who do not know where to live are those who would have otherwise desired to emigrate.
- **Case 3** We assume that the Kantar Public survey is representative of the adult refugee population only in the countries it covers and that those who want to settle outside Ukraine and those who do not know where to live are those who would have otherwise desired to emigrate. Furthermore, we assume that no individuals who crossed the border with Russia and Belarus plan to settle outside of Ukraine.
- **Case 4** We assume that the Kantar Public survey is representative of the adult refugee population only in countries it covers and that those who want to settle outside Ukraine and those who do not

know where to live are those who would have otherwise desired to emigrate. Furthermore, we assume that all individuals who crossed the border with Russia and Belarus plan to settle outside Ukraine.

Cases 3 and 4 represent polar opposites on desire to emigrate among Ukrainians who fled or were forcibly displaced to Russia and Belarus. Fig. S18 demonstrates how the change in desire to emigrate between 2021 and 2022 would have looked for these four scenarios. We find that the observed drop of 25.1 percentage points increased to 25.2 pp in Case 1, and decreased to 22.1 pp in Case 2, 23.6 pp in Case 3 and 19.1 pp in Case 4. Even in the very conservative case 4, the drop in return intentions would still be in the 99th percentile of year-year changes shown in Fig. S16.

3.2. Kantar Public.

3.2.1. Return intentions over time in destination. To show the non-parametric relation between the number of days since arrival in the current host country and return intentions, we perform the following procedure. First, we assign all observations to 20 equal-sized bins over the number of days since arrival. We residualize the outcome by regressing it on a comprehensive set of individual-level controls (sex, 7 age bins (16-24; 25-34; 35-44; 45-54; 55-59; 60-64; 65 and older, partnership status, whether someone left with their partner, whether someone left with children under 18, degree of urbanity of home location (Kyiv city, Kharkiv city, other city with more than 500,000 inhabitants, between 100,001-500,000 inhabitants, between 50,000 and 100,000 inhabitants, up to 50,000 inhabitants, a village, or not specified), 4 educational attainment bins (secondary education or lower, vocational education, Bachelor's, Master's or higher), whether the respondents speaks English, whether the respondent answered the survey in Russian, employment status in Ukraine prior to 24 February 2022 (employed, unemployed, out of labor force or student), whether someone continued their job in Ukraine remotely and whether someone left before 24 February 2022), and destination and day of leave fixed effects. We perform this procedure for 100 bootstrap samples drawn at individual level in order to obtain smoothened 90% confidence intervals. We draw markers for (i) the mean value for each of the 20 equal-sized bins, (ii) a predicted mean value for each number of days since arrival in the sample (iii) a 90% confidence interval around the predicted mean value.

To illustrate the level differences between the variables in Fig. 3 we add back the mean of each of the respective variables. We also find that the other levels of return intentions do not significantly change as a function of time in the destination (fig. S23). Only the share of those planning to return soon slightly decreases over time, which could be explained by the return migration of some of those who initially planned to return soon (not significant at a 10% level).

3.2.2. The causal effect of conflict on return intentions. To arrive at the results in Fig. 5 we estimate the following regression equation by OLS:

$$y_{imt_1t_2} = \alpha F_{idt_1t_2} \ + \beta C_{im(d)t_1t_2} + \gamma C_{im(d)t_0t_1} + \delta^{'} X_{it_1} + \theta_{id} + \ \phi_{il} + \psi_{iw_1} + \xi_{iw_2} + \epsilon_{imt_1t_2} \qquad [2]$$

Here, $y_{imt_1t_2}$ is one of three changes in return intentions between the two survey waves (see below for details) for respondent i originating from municipality m, $F_{idt_1t_2}$ is the change in frontline status between the first and second interview in district d from ISW, $C_{im(d)t_1t_2}$ is the conflict intensity in and around municipality m between the first and second interview from ACLED, $C_{im(d)t_0t_1}$ is the conflict intensity between the start of the war and the first wave. α and β are the coefficients of interest measuring the causal effect of conflict intensity and changes in occupation status between the two survey waves. As indicated in fig. S1 and S4, timing of the interview dates varies from one individual to the next. The models include destination (θ_d), week of leaving Ukraine (ϕ_{il}), week of wave 1 interview (ψ_{w_1}) and week of wave 2 interview (ξ_{w_2}) fixed effects. As the most aggregate measure (changes in occupation status) is assigned at the district-level, we cluster standard errors on the district level.

We use the following three outcome variables in Fig. 5: "Returned to Ukraine" is 1 if someone has returned to Ukraine, 0 otherwise. "No longer plans to settle outside Ukraine" is 1 if someone planned to

settle outside Ukraine during wave 1 but stated a different intention in wave 2, 0 otherwise. "Started to plan to settle outside Ukraine" is 1 if someone planned to settle outside Ukraine in wave 2 but stated a different option in wave 1, 0 otherwise.

Local conflict intensity is proxied by the number of events recorded in ACLED between the two survey dates in the municipality of origin and in a radius of 25 km around the center of the municipality (see text S1.3 for details on ACLED). Changes in occupation of the home district are constructed by comparing the occupation status of the district at both dates of survey (see text S1.4 for details on the frontline and occupation status determination of ISW).

The control variables registered in wave 1 (X_{it_1}) include a comprehensive set of individual-level controls (sex, 7 age bins (16-24; 25-34; 35-44; 45-54; 55-59; 60-64; 65 and older, partnership status, whether someone left with their partner, whether someone left with children under 18, degree of urbanity of home location (Kyiv city, Kharkiv city, other city with more than 500,000 inhabitants, between 100,001-500,000 inhabitants, between 50,000 and 100,000 inhabitants, up to 50,000 inhabitants, a village, or not specified), 4 educational attainment bins (secondary education or lower, vocational education, bachelor's, master's or higher), whether the respondent speaks English, whether the respondent answered the survey in Russian, employment status in Ukraine before 24 February 2022 (employed, unemployed, out of labor force or student), whether one continued their job in Ukraine remotely, whether someone left before 24 February 2022, whether someone started working in the destination, whether one's home district was occupied before 24 February 2022 and the distance to Russia in 100s of kilometers. Furthermore, we include destination, week of leave, week of first interview and week of second interview fixed effects.

Instead of using the number of conflict events in ACLED we can also use the number of deaths based on ACLED events. Fig. S24 shows the result of this analysis. The point estimates on local conflict intensity are qualitatively similar to Fig. 5, although the results of very intense conflict are not significant at a 5% level anymore. This may be driven by few events with a large number of casualties.

3.2.3. Return rate between survey waves. In order to assess the rate of return over time, we regress a binary indicator for return on the time difference between survey waves. Most of the variation is driven by differential timing of responses during the first wave of the survey as displayed in fig. S1. By regressing a binary indicator on the time since the first wave, we find that per additional month, the probability of return is almost 2 percentage points higher (table S9). This suggests that the rate of return is almost 6% after 3 months. This is considerably higher than return rates in other recent conflicts (18). A limitation of this analysis is that our result is limited to the time window between the interviews. However, as no reliable data on return is available from other sources, this is the best estimate for refugees' return available.

3.2.4. Return intentions by conflict experience. As traumatizing experiences are one aspect of conflict that could affect migration intentions, we study the relation between specific conflict experiences and return intentions of second wave respondents who have answered after 01 January 2023. We regress return intentions on conflict experiences and demographic factors, destination, week of arrival, week of first interview, and week of second interview fixed effects. Fig. S26 shows the relation between various personal conflict experiences and return intention. As we do not know when the conflict experience took place, we estimate the model without and with controlling for the four levels of return intentions in the first wave. Although the confidence intervals are quite wide, we can exclude that personal conflict experiences are strongly related to intentions to settle outside of Ukraine.

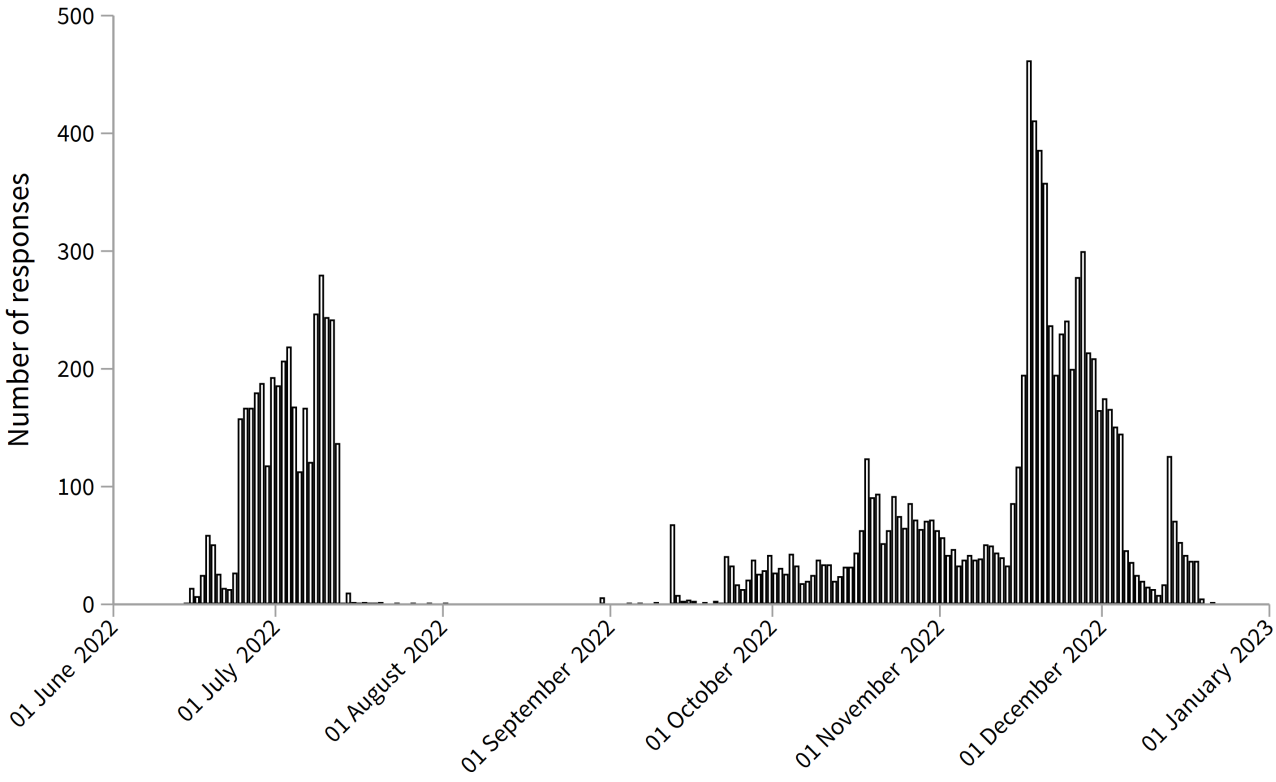

Fig. S1. Timing of first wave surveys. N= 11,783.

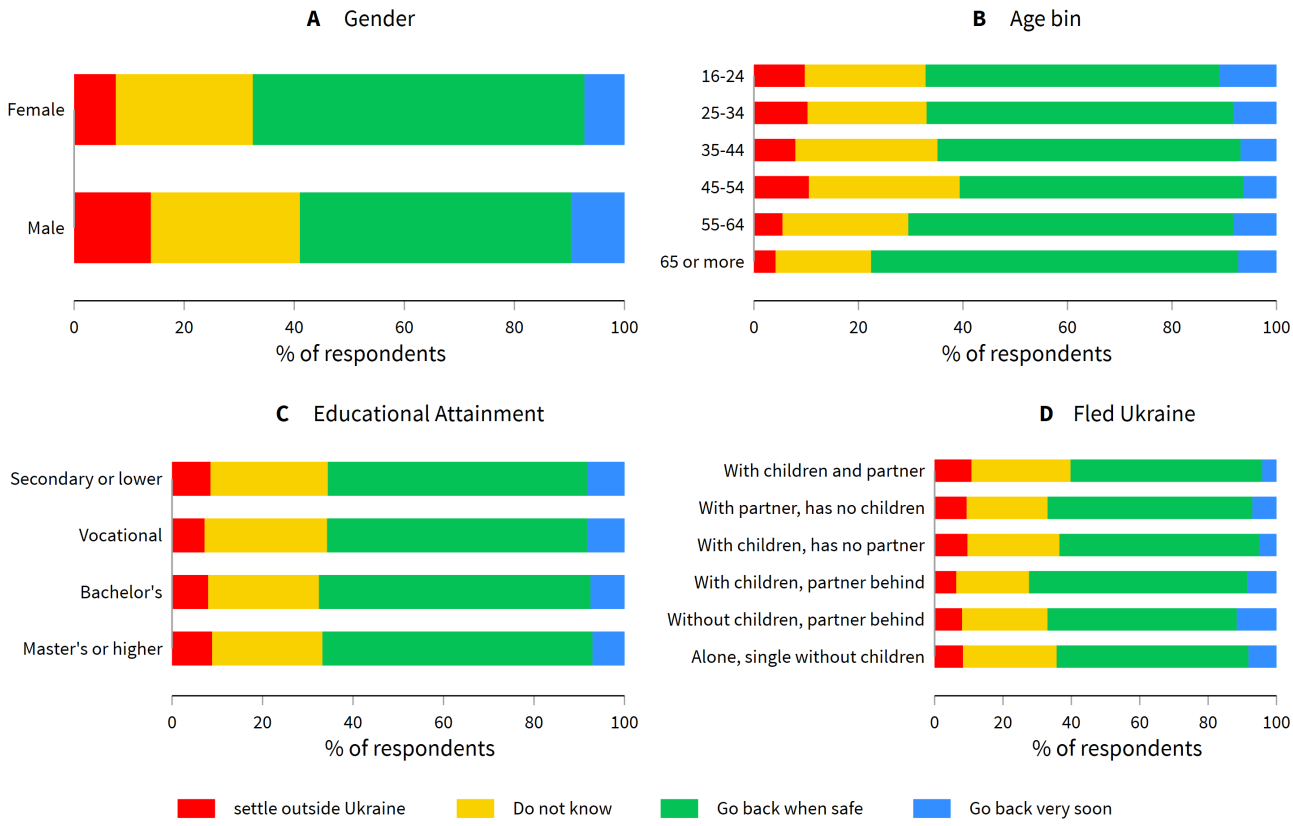

Fig. S2. First-wave return intentions according to demographic factors. N= 11,783.

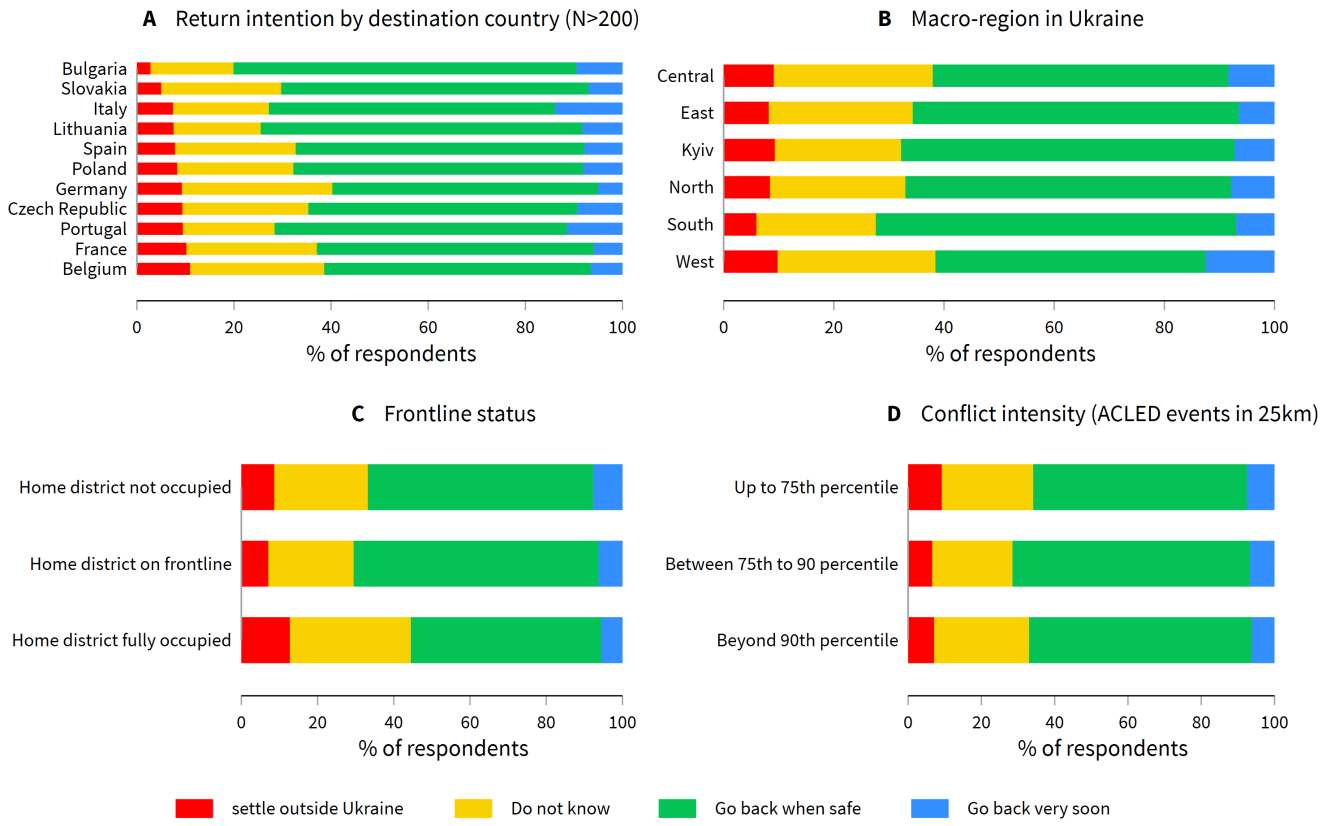

Fig. S3. First-wave return intentions according to the receiving country, macro-region of origin and conflict in the district of origin. (A) N= 9,796 (B) N=11,358, (C) N = 9,391, and (D) N = 9,391. (C) In case a district was partially under the control of Ukrainian forces or partially occupied by Russian forces, we code the district as "on the frontline". Thus, this classification does not take the intensity of conflict into account but rather the position with respect to the frontline. (D) Conflict intensity is measured as the number of events per day in ACLED between 24 February 2022 and the date of first interview.

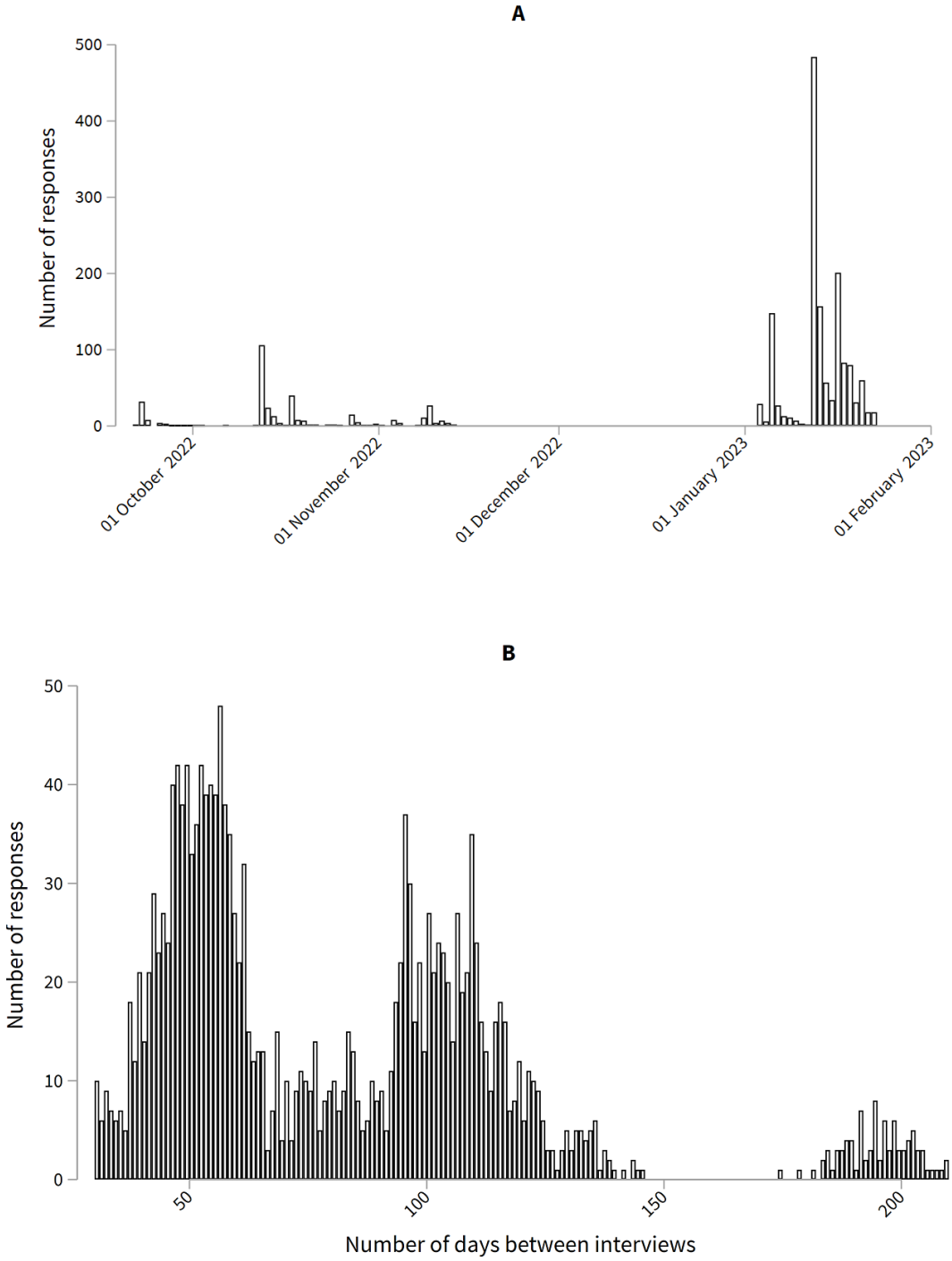

Fig. S4. Timing of follow-up survey and time since first survey. (A) shows the timing of wave 2 responses and (B) shows the number of days between both survey waves. Both (A) and (B) only include those respondents that have answered at least 30 days apart. Every bar represents one day. N = 1,832.

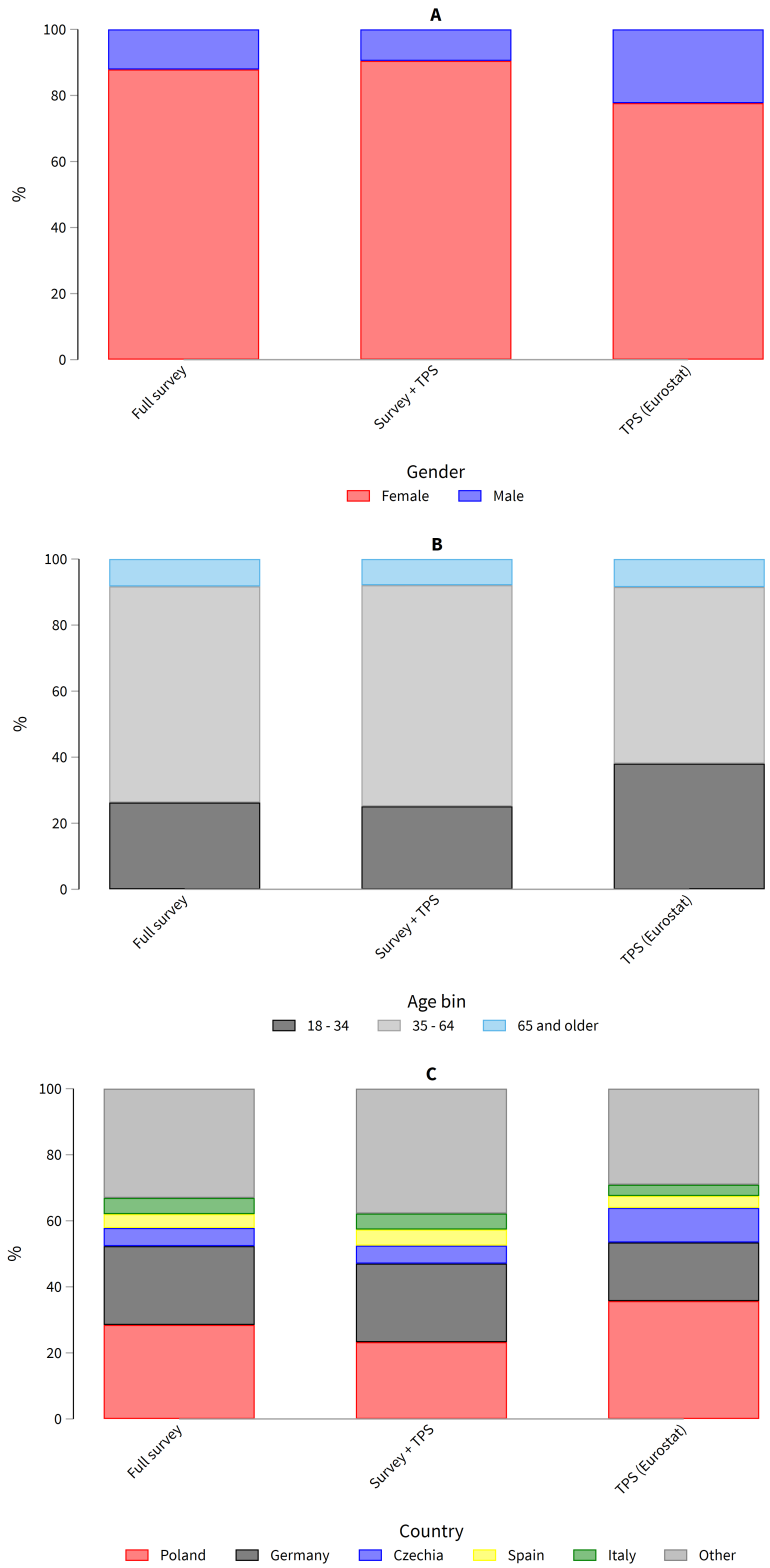

Fig. S5. Fig. S5. Distribution of gender, age and destination country of Kantar public survey and Eurostat TPS data. "Full survey" indicates the whole first wave sample, "Survey + TPS" indicates all individuals from the first wave sample who were granted Temporary Protection Status (TPS) (73% of the full sample), and "TPS (Eurostat)" indicates all Ukrainians granted TPS in 2022 by EU countries plus Iceland, Norway, and Switzerland. Not all countries report granular data by demographic characteristics, which are excluded in the respective analyses (A) Eurostat reports sex instead of age. As only 0.5% of respondents in the Kantar survey report a gender different from male or female, we compare gender in the Kantar survey to sex in the Eurostat data. (B) Age bins are constructed in the Kantar survey to match the three available bins in the Eurostat data. (C) The five destinations with the most TPS applications in 2022 are shown, as well as a category including all other countries. Those five destinations cover 71% of all recorded applications in 2022. From the left to the right bar in (A) N = 11,783, N = 8,660, and N = 3,725,845; (B) N = 11,783, N = 8,660, and N = 3,744,310; (C) N = 8869, N = 6299, and N = 3,647,100.

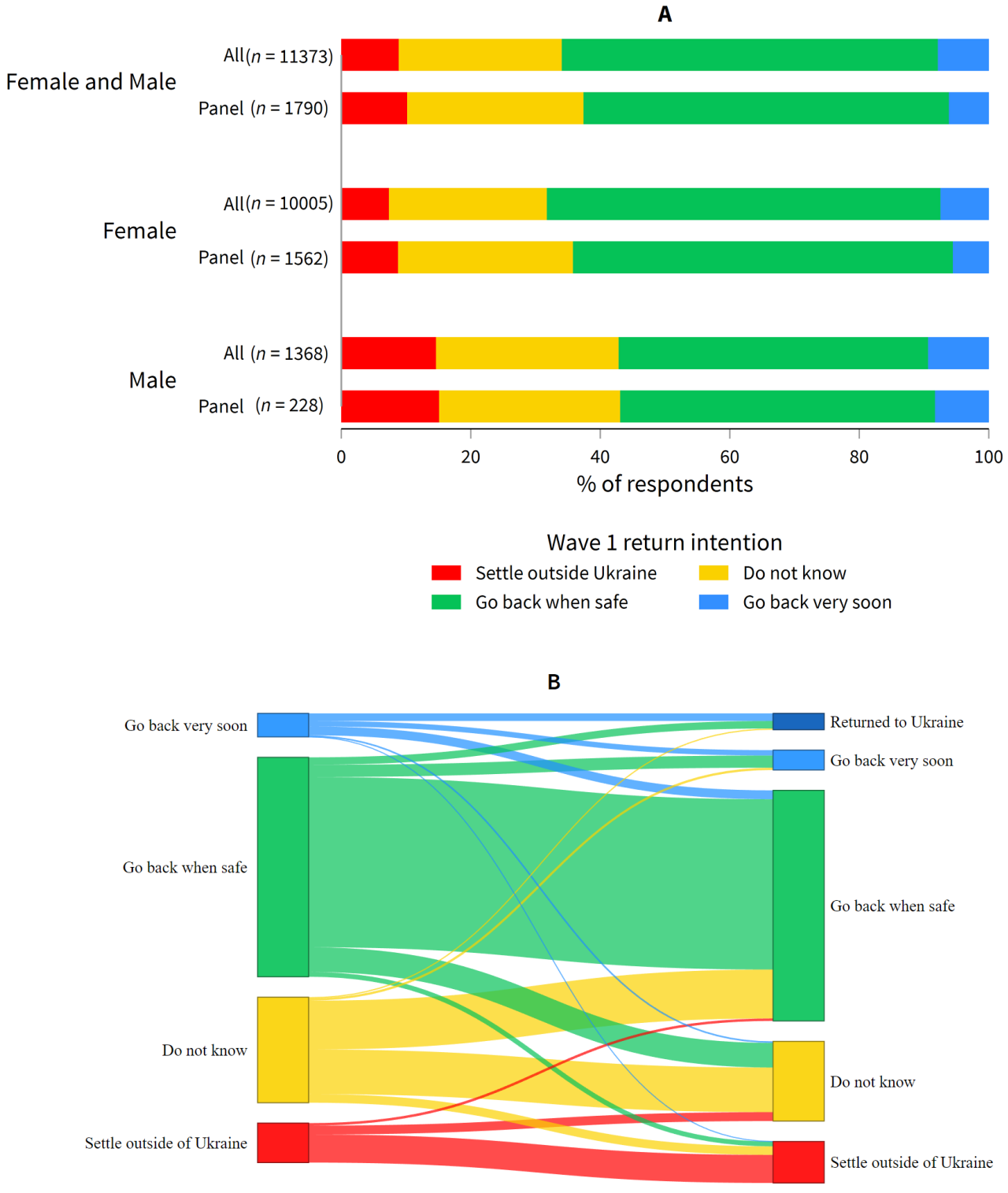

Fig. S6. Weighted return intentions and individual-level changes in return intentions. See Fig. 3 for the construction of (A) and (B). Compared to Fig. 3., we weight observations based on the inverse probability of being surveyed. Weights are calculated by age bin (18-34, 35-64, 65+)-gender-country cell that matches the most granular Eurostat data on the number of individuals who received Temporary Protection Status in 2022 (5). For France, Hungary and Ireland only aggregated numbers are available. For the United Kingdom and Moldova, the total number of Ukrainian refugees was obtained from government websites. For these two groups of countries, we calculate weights on the country level. 40 respondents in the first wave and 5 respondents in the second wave did not indicate their country of residence and are therefore omitted from the analysis. For (B), N=1,779.

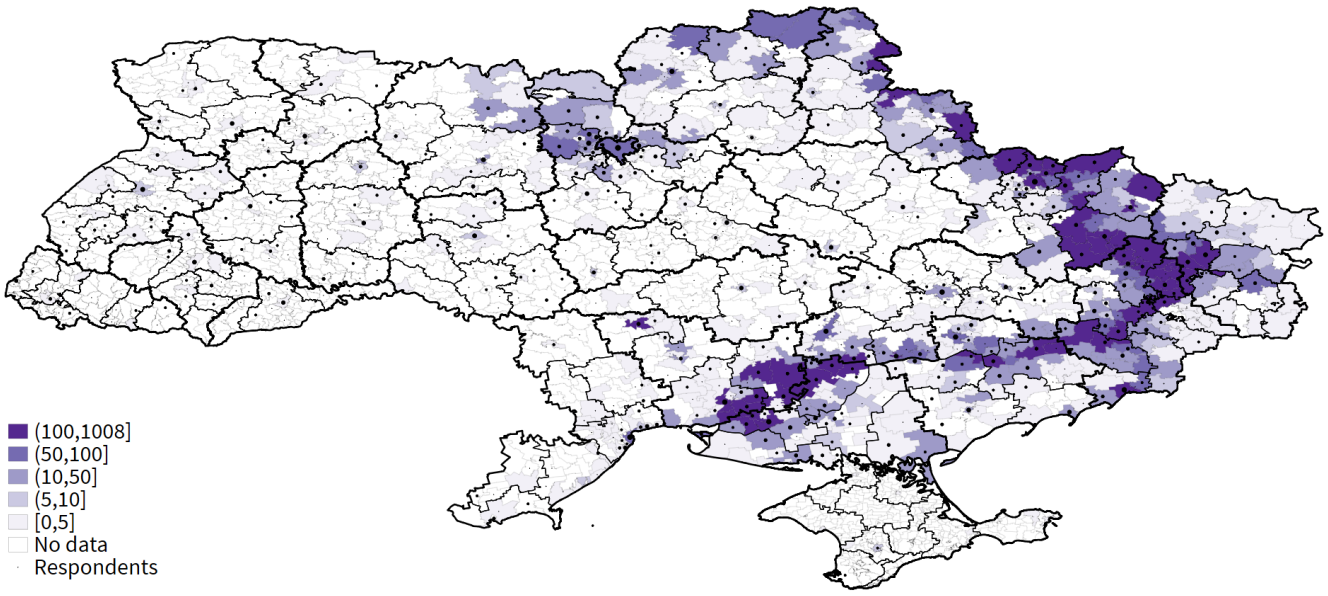

Fig. S7. Respondents' location before leaving Ukraine and Russian-inflicted events. The map shows the municipality of origin of first wave respondents, the number of Russian-inflicted events per municipality from 24 February 2022 to 31 January 2023 and the highest three administrative divisions in Ukraine. The thickest black lines indicate region (oblast) boundaries, the thinner black lines district (raion) boundaries and the thin gray lines municipality (hromada) boundaries. The size of black dots is proportional to the log of the number of respondents plus one, with smallest dots corresponding to one respondent and the largest (in the city of Kyiv) to 2,175.

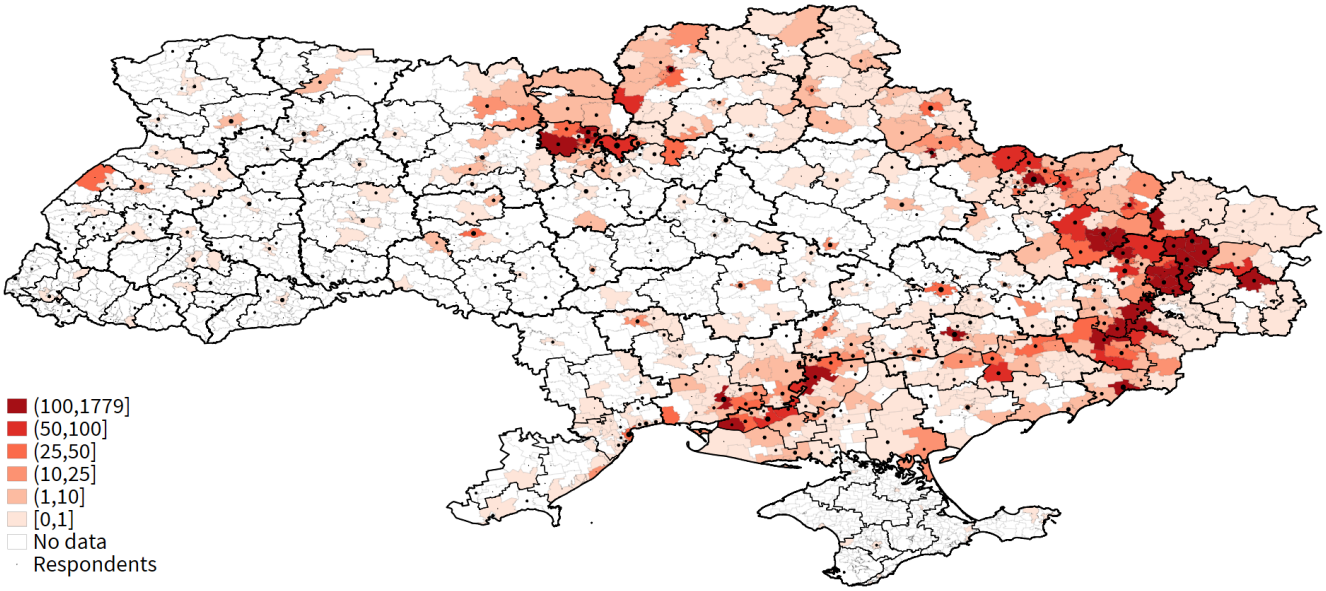

Fig. S8. Respondents' location and Russian-inflicted fatalities. The map shows the municipality of origin of first wave respondents, the number of Russian-inflicted fatalities per municipality from 24 February 2022 to 31 January 2023 and the highest three administrative divisions in Ukraine.

Fig. S9. Assessed control of terrain in Ukraine. Example of a map from ISW from 11 November 2022 (19).

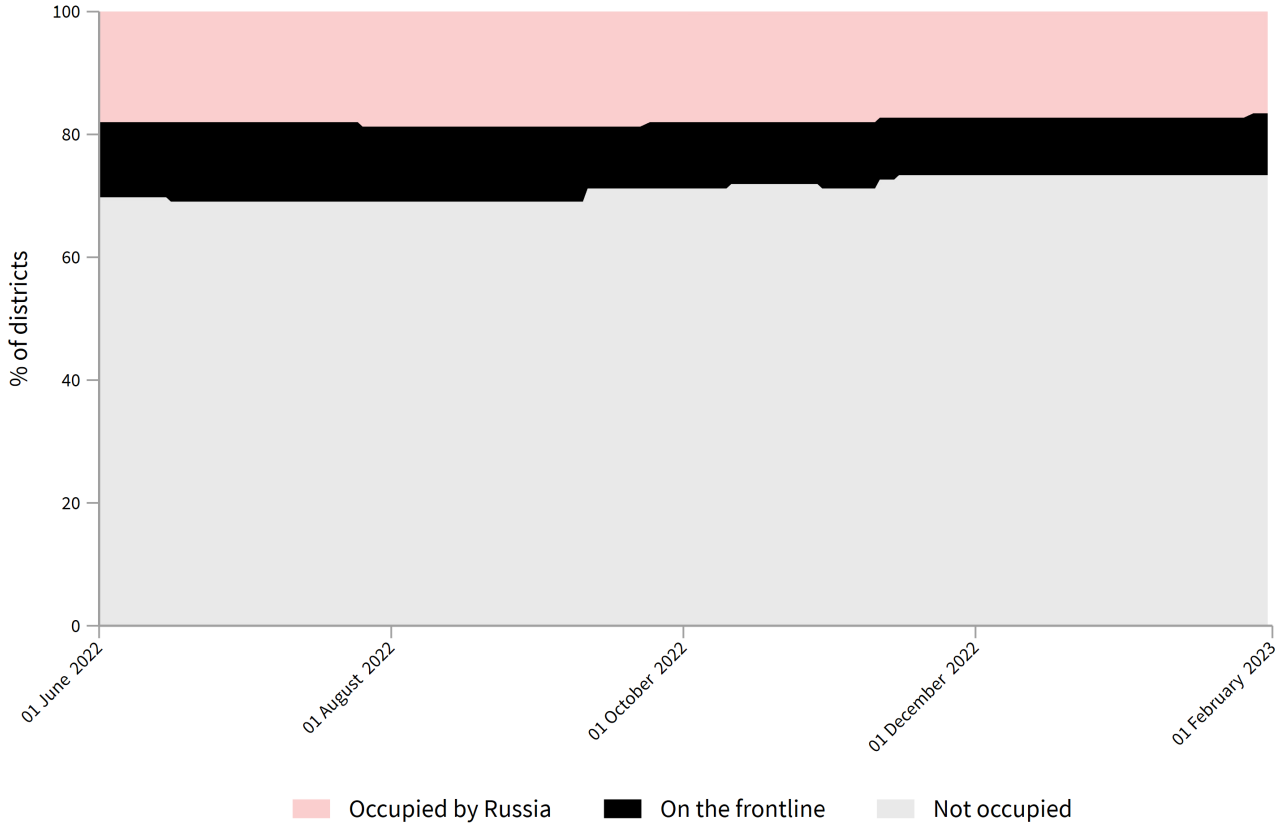

Fig. S10. Share of districts by occupation status. The figure shows the share of the Ukrainian districts that fall into one of the three occupation statuses for the period between 01 June 2022 and 01 February 2023 based on ISW. For a discussion about the construction of this data, see text S1.4.

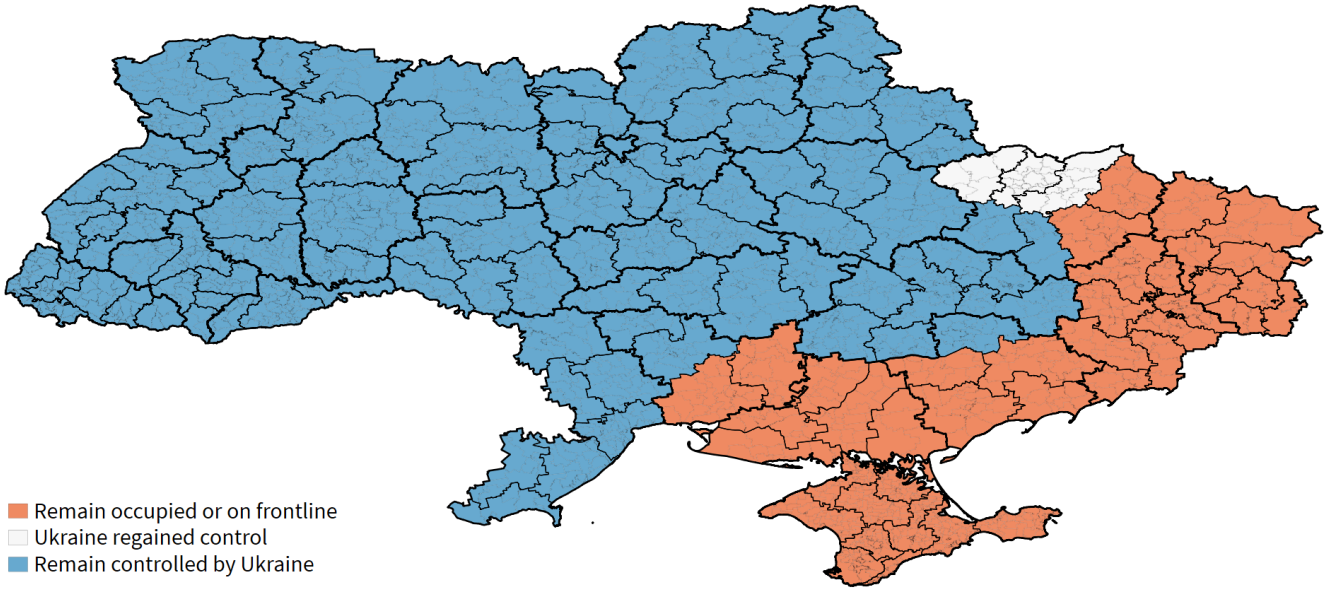

Fig. S11. Changes in occupation status between 01 July and 01 November 2022. Example of changes in occupation status between July and November 2022. For a discussion about the construction of this data, see text S1.4.

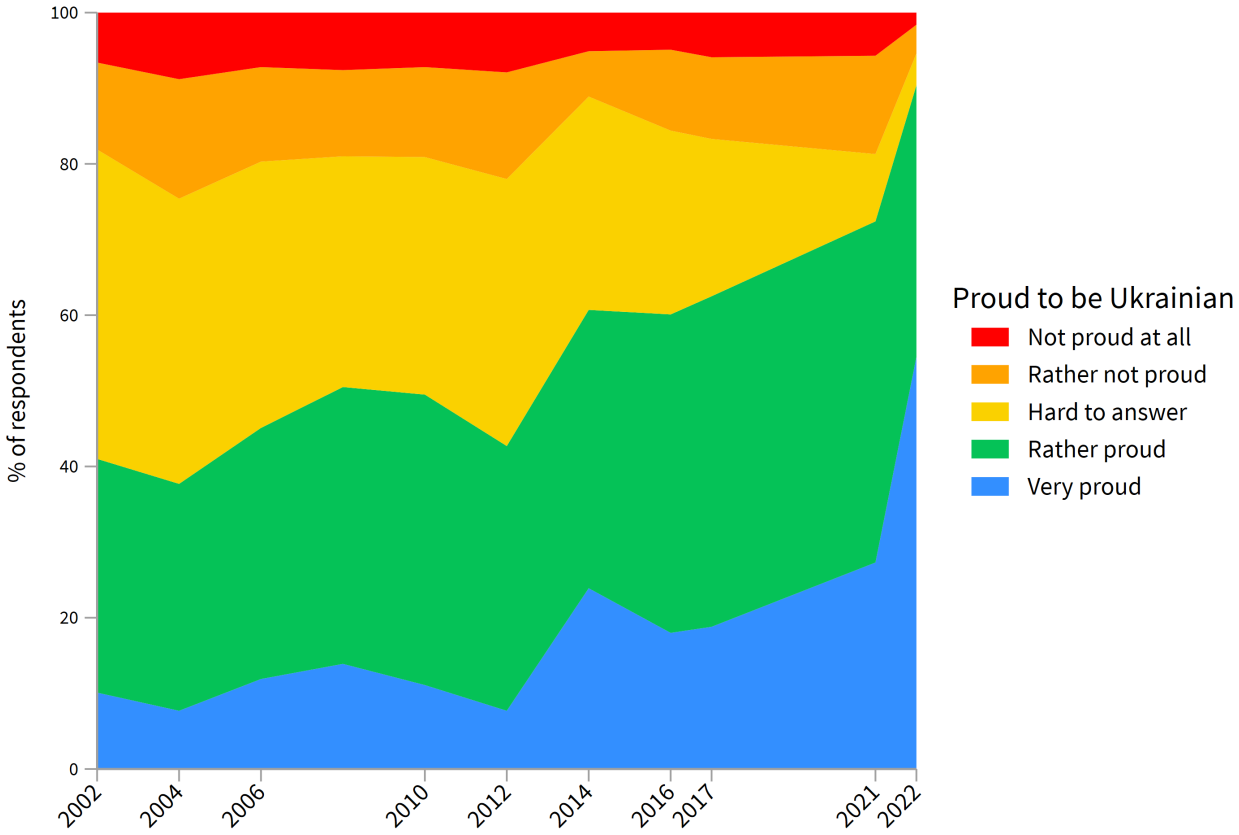

Fig. S12. Proud to be Ukrainian between 2002 and 2022. Interviews were conducted in person by the Ilko Kucheriv Democratic Initiatives Foundation in cooperation with the Razumkov Centre (9). Interviews in 2022 were conducted 05-12 August 2022. In the Zaporizhzhya, Mykolaiv, Kharkiv regions the survey was conducted only in the territories controlled by the Ukrainian government and where there are no combative actions. Every year about 2,000 respondents are interviewed.

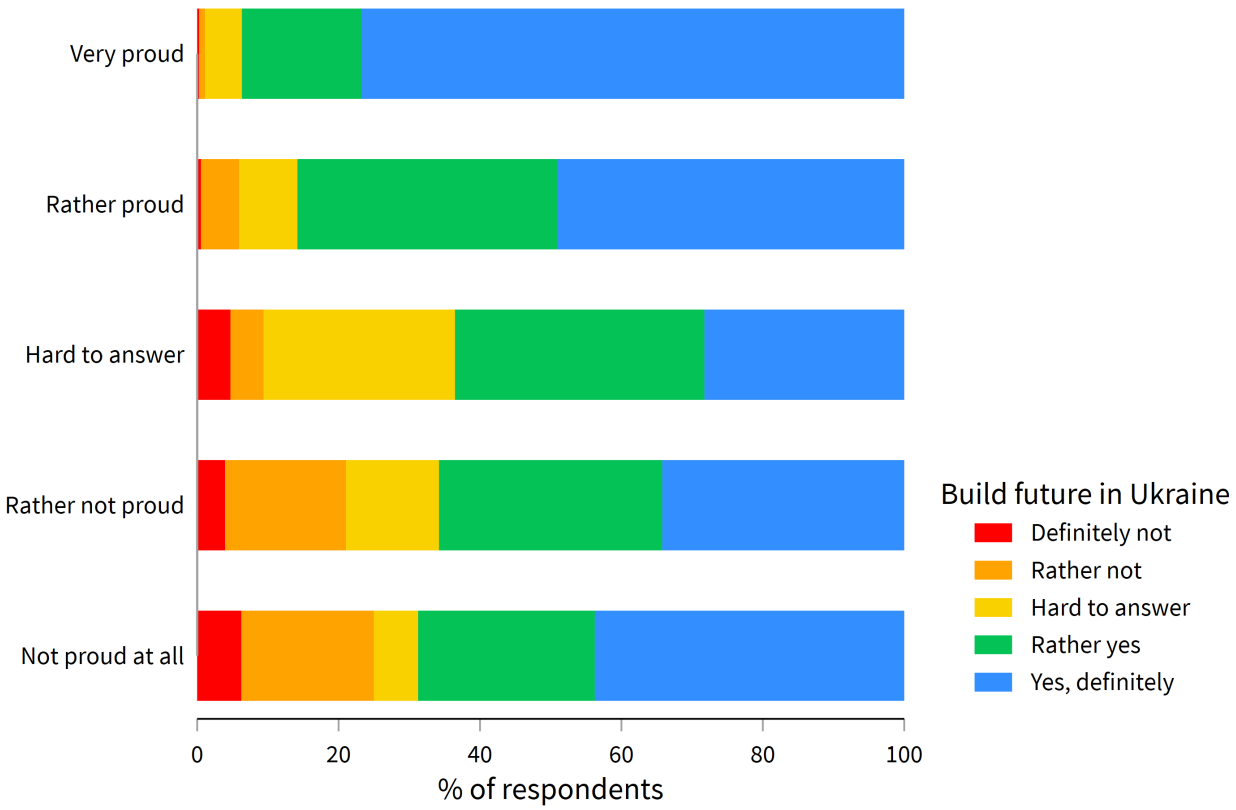

Fig. S13. Plans to build a future in Ukraine in 2022 over pride to be Ukrainian. See notes to fig. S12 about the survey, of which this figure only uses the 2022 data. N = 2,024.

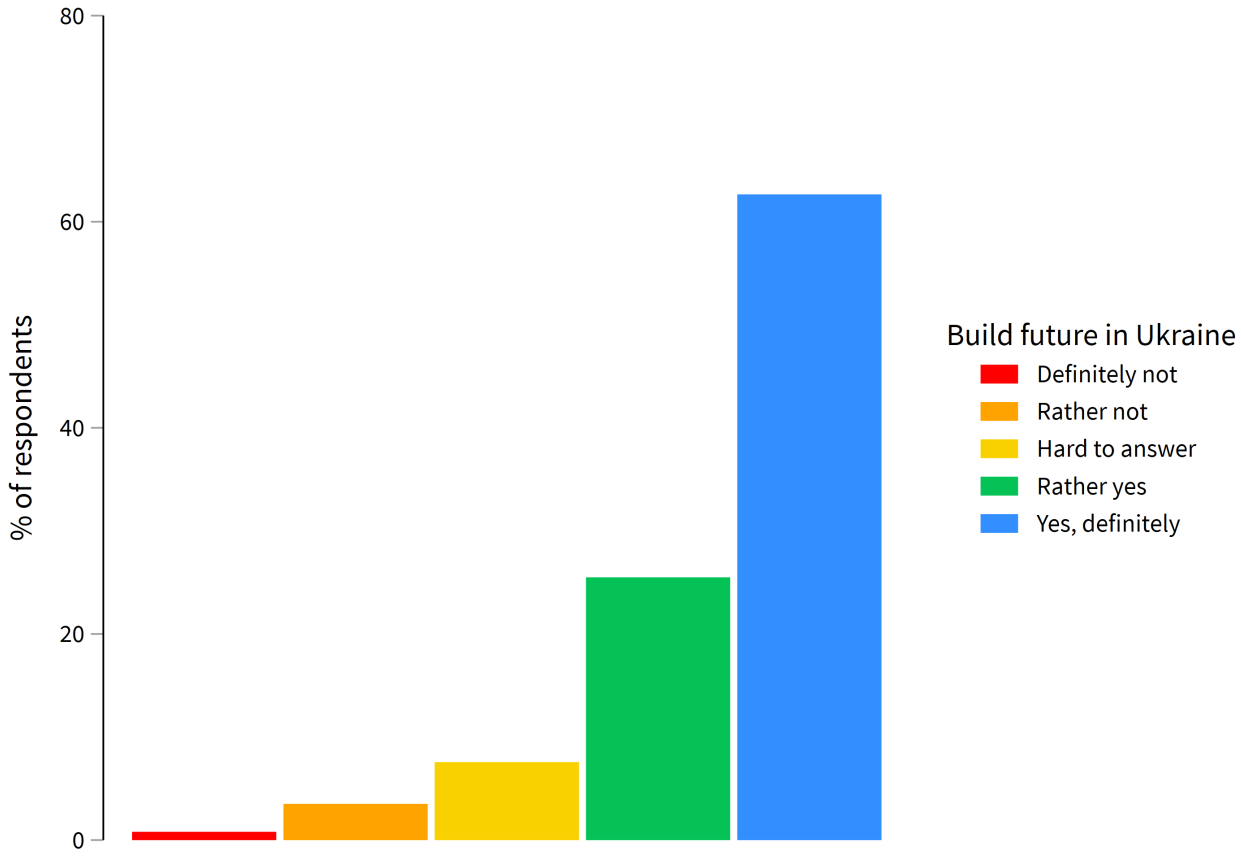

Fig. S14. Distribution of plans in 2022 to build a future in Ukraine. See notes to fig. S12 about the survey, of which this figure only uses the 2022 data. N = 2,024.

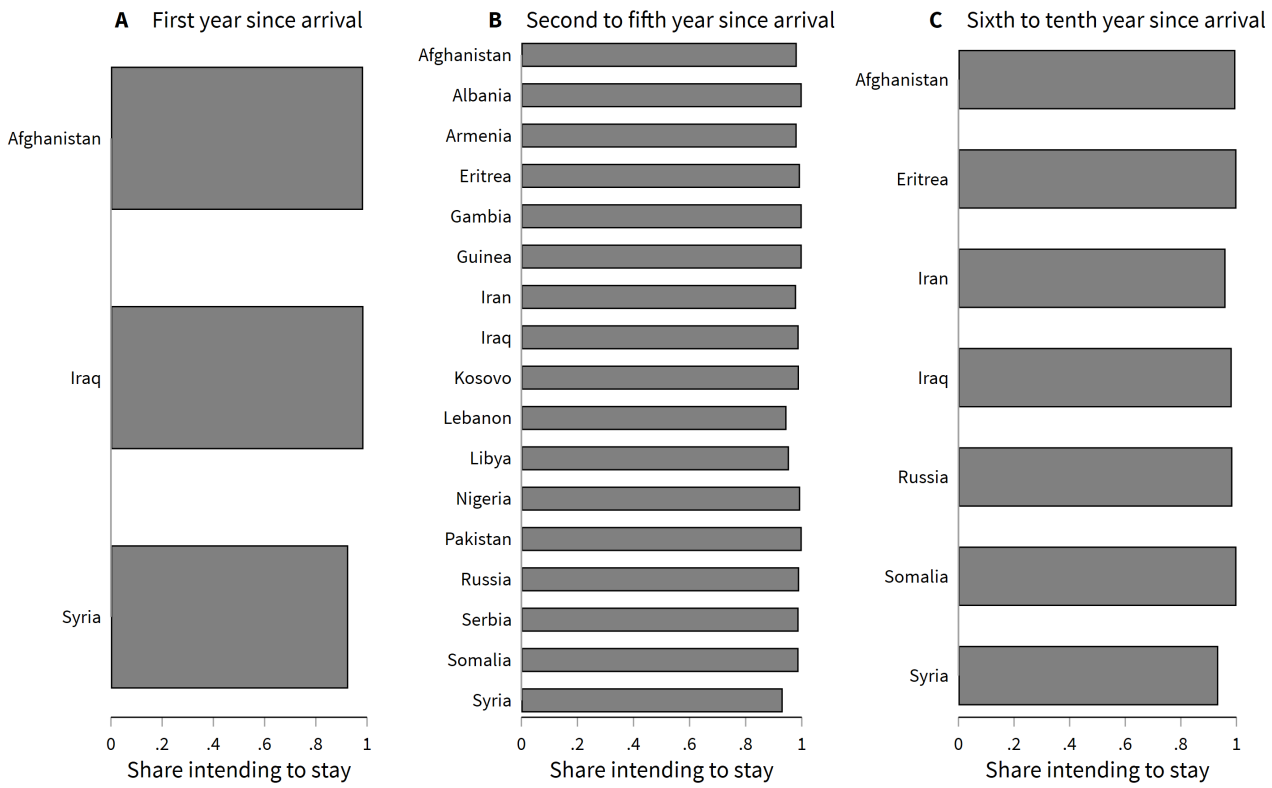

Fig. S15. Return Intentions of refugees in Germany by time since arrival. Countries with less than 50 respondents have been omitted. Refugees are identified based on their self-reported reason to immigrate to Germany (10–13). (A) N = 1,041 (B) 15,835 (C) 2,423.

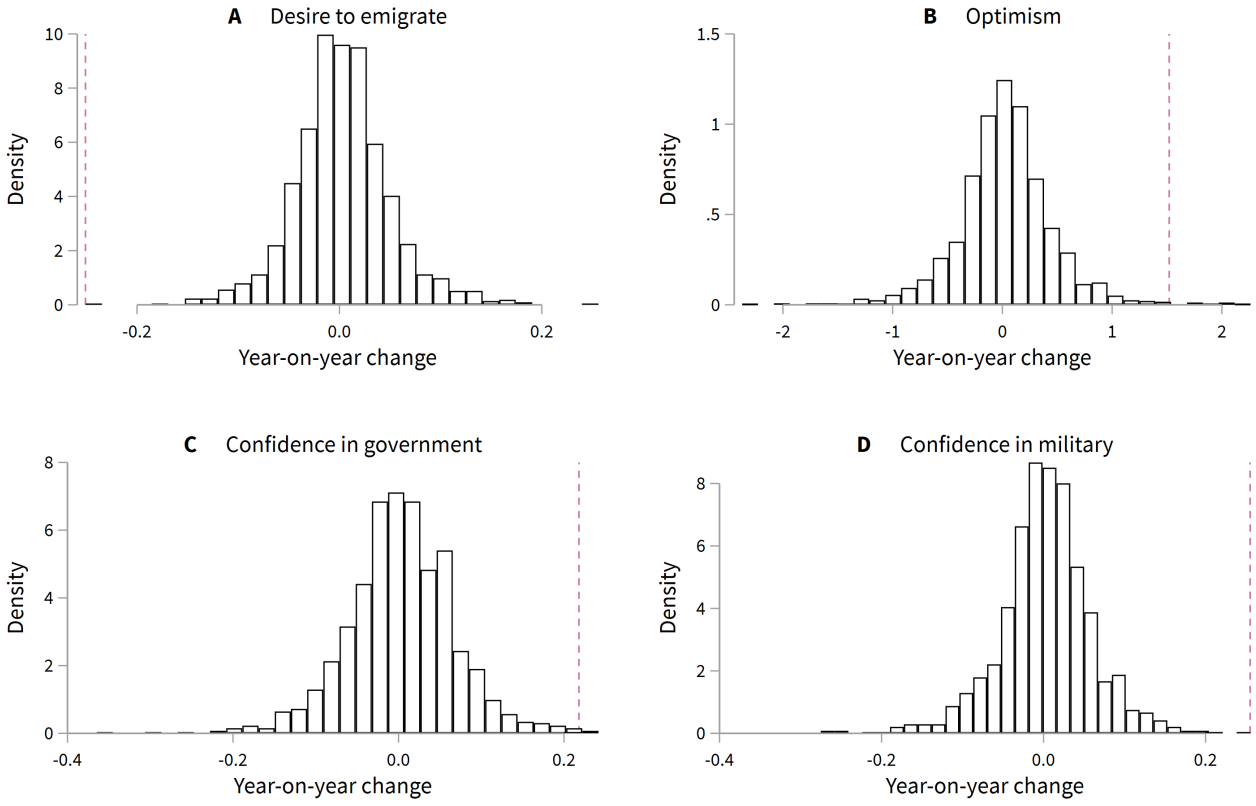

Fig. S16. Yearly changes in the outcomes of Fig. 2. throughout the 2006-2022 GWP. Based on the sample of all country-years for which the country was surveyed by GWP as well as the year before and the respective question(s) are included. We omit observations with less than 500 valid observations in either the focal year or the year before. The dashed vertical line refers to the change in Ukraine between 2021 and 2022. The number of observations starting from the upper left are (clockwise) N = 1,286, N = 1,620, N =1,401, N = 1,344.

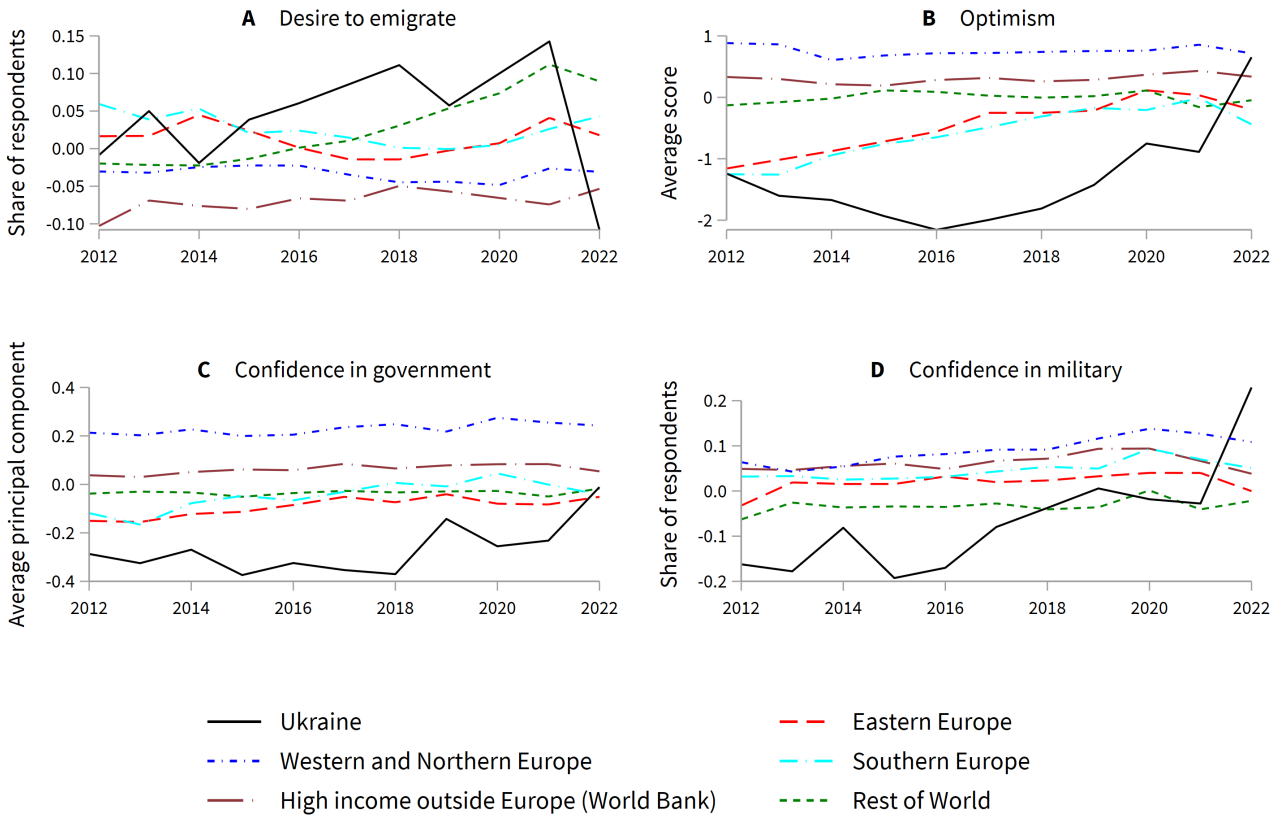

Fig. S17. Desire to emigrate, optimism, confidence in government and military in Ukraine and five country groups, controlling for demographic factors. See notes to Fig. 2 for information about the underlying sample and questions. Here, we show the residuals of each of the four outcomes after controlling for demographic factors. We obtain the residuals of the respective variables after regressing each of them on (1) age, age squared, dummies for secondary and tertiary educational attainment and (2) a binary indicator for being female, and all interactions of (1) with (2).

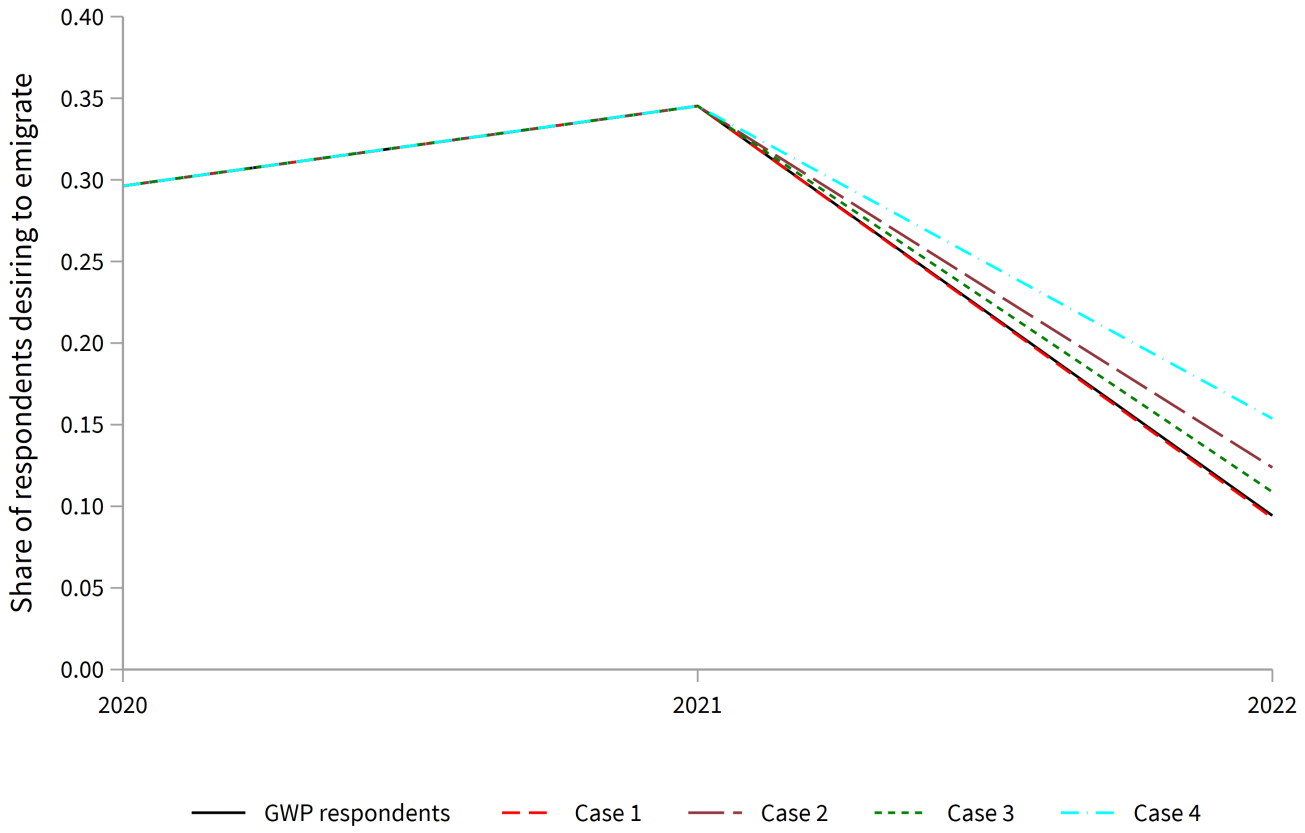

Fig. S18. Desire of Ukrainians to live outside Ukraine under four scenarios. This figure shows how Ukrainians' desire to emigrate would have changed from 2021 to 2022 when approximating refugees' desire to live outside Ukraine under different assumptions. We take the values for desire to emigrate for Ukrainians in Ukraine from GWP and use results from the full first wave Kantar Public sample to evaluate counterfactual desire to emigrate of Ukrainian refugees in case they would still be in Ukraine. The number of Ukrainians in Ukraine, in European countries covered by Kantar Public and in Russia and Belarus are based on data from Eurostat from 31 August 2022. See text S3.1.3 for a discussion of the four cases.

Fig. S19. Changes in the desire to emigrate over time by sex. N = 10,029.

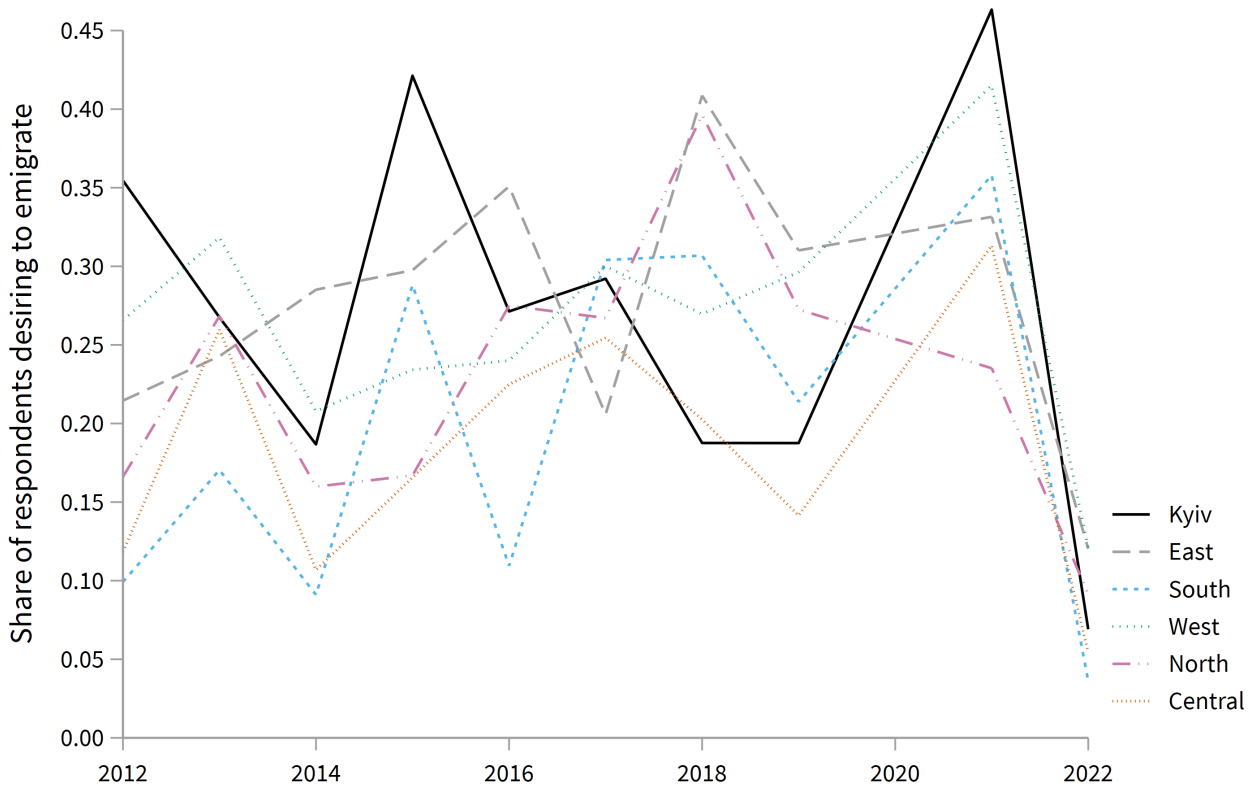

Fig. S20. Changes in the desire to emigrate over time by macro-region. Kyiv includes the city of Kyiv, East includes Dnipro and Kharkiv oblasts, South includes Mykolaiv and Odessa oblasts, West includes Chernivtsi, Ivano-Frankivsk, Khmelnytskiy, Lviv, Rivne, Ternopil, Volyn, and Zakarpattya oblasts, North includes Chernihiv, Kyiv, Sumy and Zhytomyr oblasts, and Center includes Cherkasy, Kirovograd, Poltava and Vinnitsya oblasts. The 2022 survey only includes the macro-region and not the region. Given that the Eastern oblasts of Luhansk and Donetsk and Southern oblast of Crimea were not targeted by the GWP in 2021 and 2022 and Luhansk, Kherson and Zaporizhzhya were not targeted by GWP in 2022, we do not include observations from these regions in this analysis. N = 8,313.

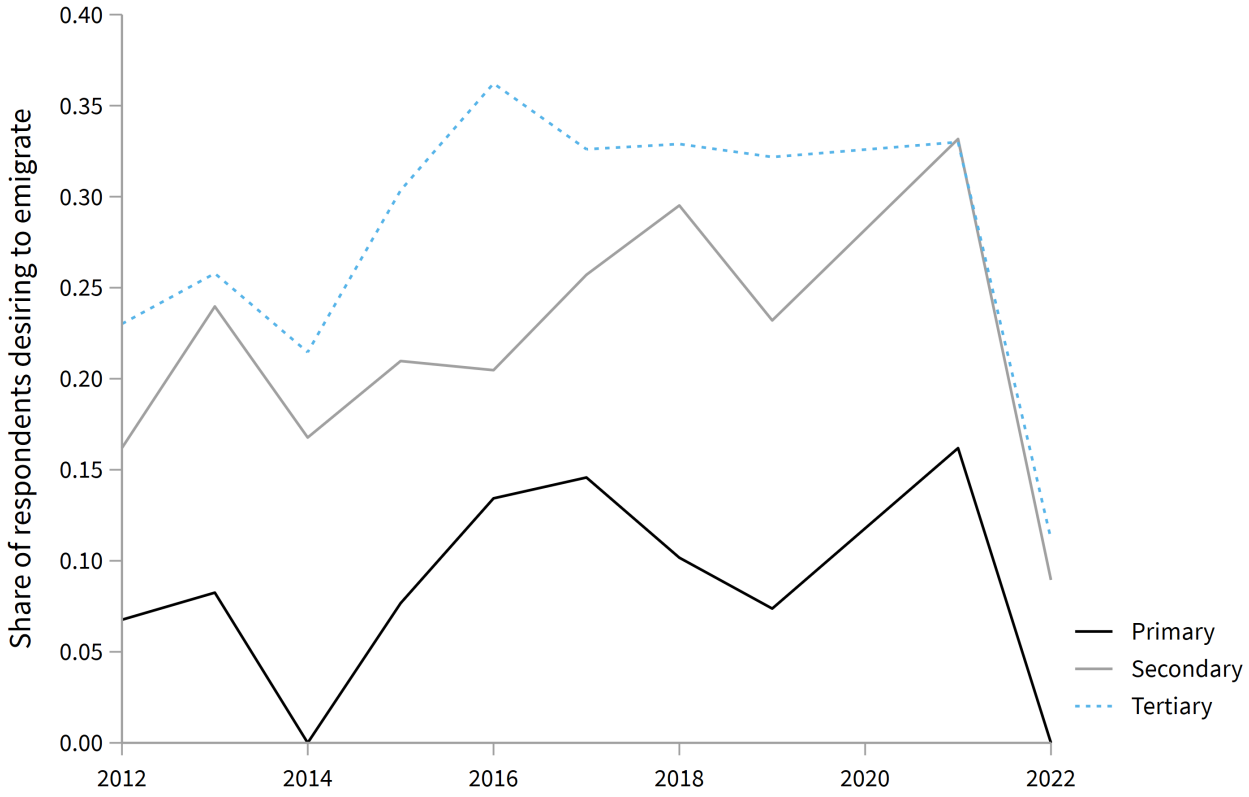

Fig. S21. Changes in the desire to emigrate over time by educational attainment. The sample is restricted to those 25 and older, as younger individuals may still be in education. Across all years, 5.6% of respondents are primary educated, 54.4% secondary educated and 40.0% tertiary educated. N = 9,057.

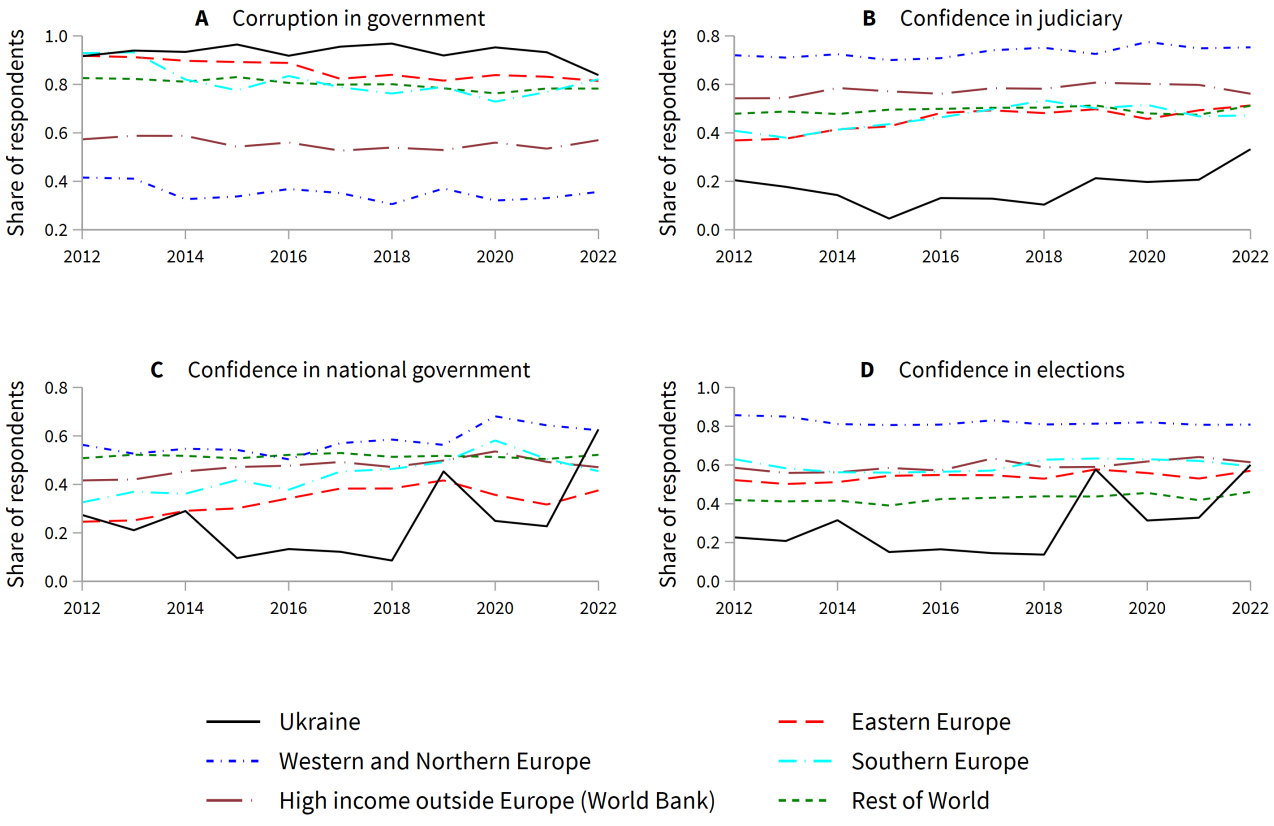

Fig. S22. Changes in the four components of confidence in government. See notes to Fig. 2 for construction of the sample.

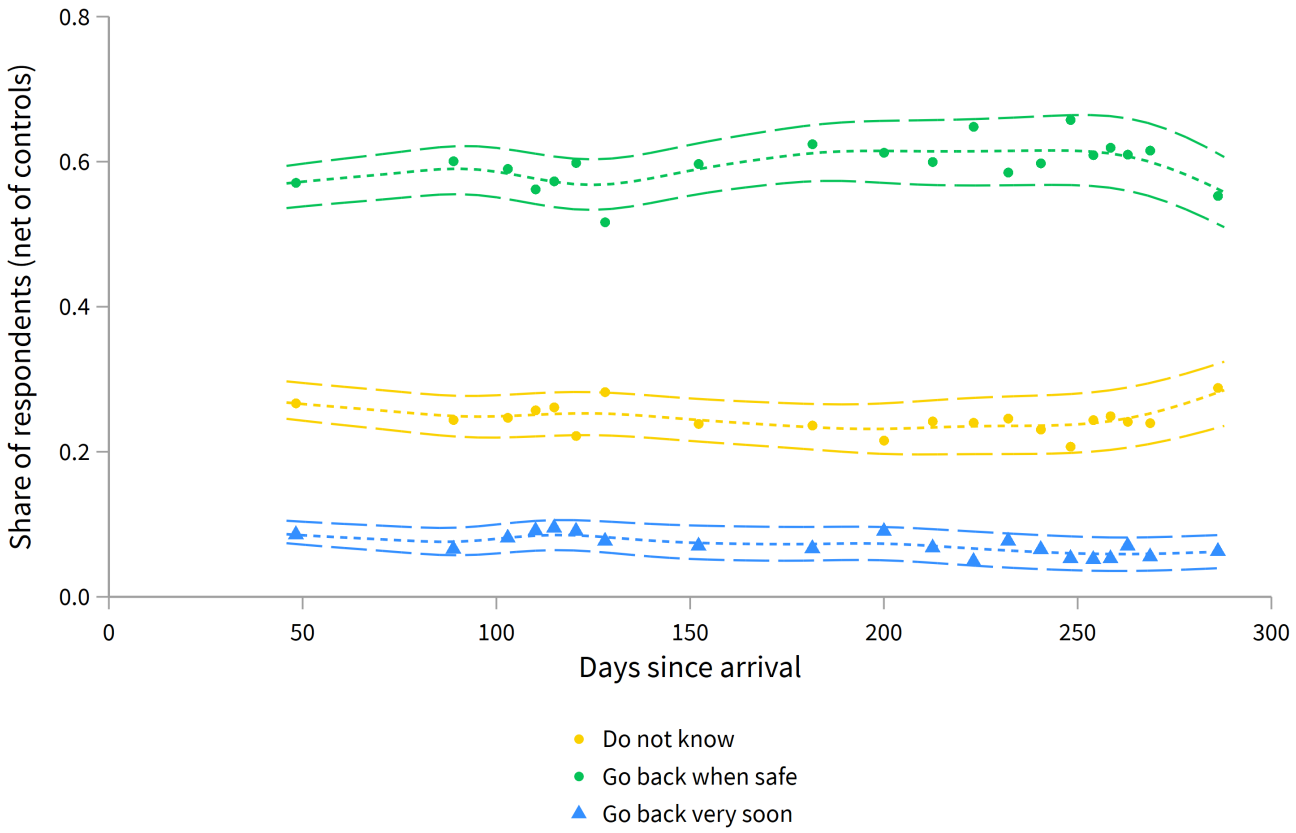

Fig. S23. Additional return intentions over time in the destination. Binned scatterplot by 20 equal-sized bins by time since arrival, net of individual-level controls, destination country- and date-of-leaving-Ukraine fixed effects for the three residual levels of return intentions. Markers indicate the bin-level average net of controls, short, dashed lines indicate the smoothened mean and long dashed lines indicate a bootstrapped 90% confidence interval around this mean. The inclusion of individual-level controls, destination country- and date-of-leaving-Ukraine fixed effects accounts for differences in responses arising from differences in the composition of respondents in interviews according to days since arrival. N = 9,871.

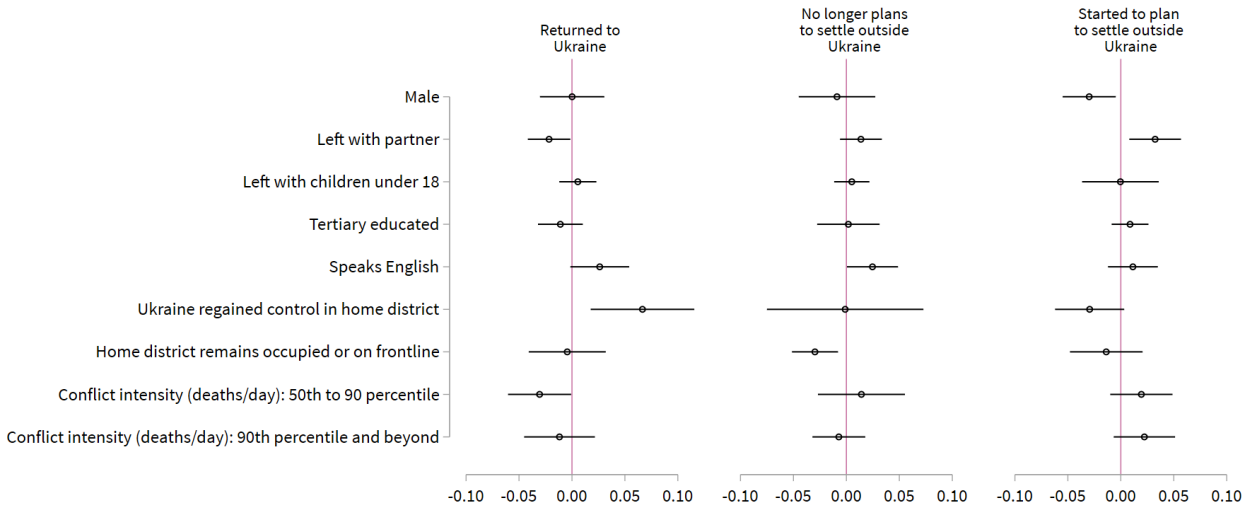

Fig. S24. Coefficient plots with 95% heteroskedasticity-robust confidence intervals of three multi-variate OLS regressions of actual return and changes in return intentions on personal characteristics and conflict-related variables. Average local conflict intensity up to the 75th percentile are 0.06 fatalities per day, between 75th and 90th percentile 0.55 fatalities per day and beyond the 90th percentile 1.92 fatalities per day. Each regression includes a wide set of demographic and other control variables, as well as fixed effects of the week of leave, week of first wave interview and week of second wave interview. The first column also controls for the levels of first wave return intentions. The reference category comprises individuals from places that have always been under Ukrainian control and are up to the 75th percentile in conflict intensity. N = 1,508. See text S3.2.2 for a full description of these regressions.

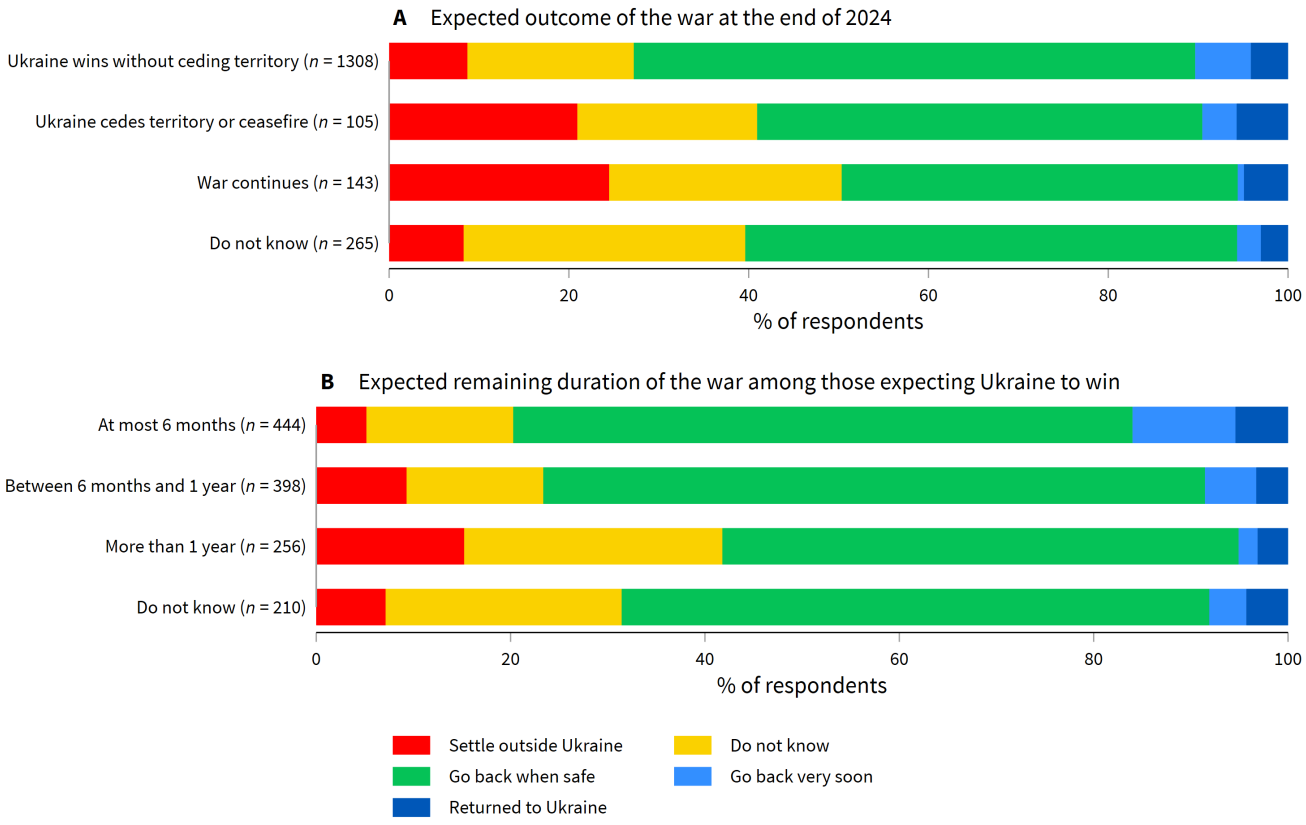

Fig. S25. Return intentions by expectations about the war. (A) shows the distribution of return intentions by expectations about the outcome of the war elicited in the second wave. (B) shows the distribution of return intentions by expectations about the duration of the war, contingent on expecting Ukraine to win the war without ceding territory.

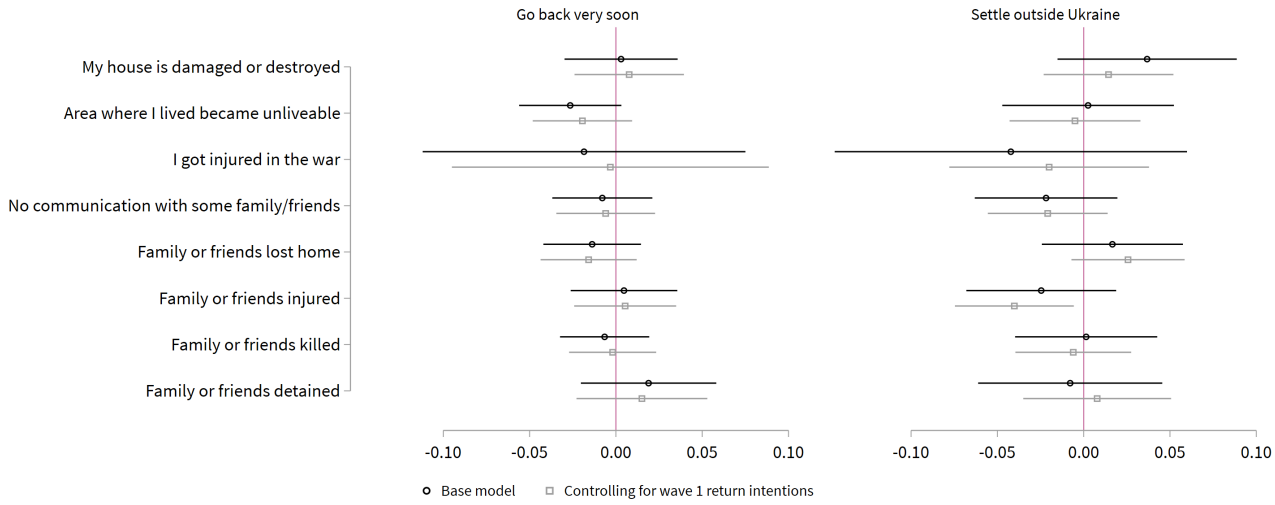

Fig. S26. Return intentions by personal conflict experience. Based on all second wave responses recorded after 01 January 2023. Coefficient plot with 95% heteroskedasticity-robust confidence intervals obtained by regressing a binary indicator for the respective return intention on binary indicators concerning experiencing specific consequences on conflict. We control for the same individual-level controls and fixed effects as in Fig. 5 in all four specifications. We restrict the sample to those individuals who reported a non-missing return intention in the first wave. The specifications with gray markers and confidence intervals also include the four levels of return intentions in wave 1 as covariates. N = 1,327.

Table S1. Country groups and countries included in GWP in 2012 and 2022. The group of High-income countries outside of Europe is based on the definition by the World Bank in 2022 (20).

Group	Countries
Eastern Europe	Czechia, Hungary, Poland, Romania, Slovenia
Western and Northern Europe	Belgium, Denmark, Finland, Iceland, Netherlands, Norway, Sweden
Southern Europe	Cyprus, Greece, Malta, Portugal
High-income Non-Europe (World Bank)	Australia, Canada, Japan, New Zealand, Saudi Arabia, Taiwan, United Arab Emirates, United States
Rest of World	Afghanistan, Argentina, Bangladesh, Bolivia, Brazil, Cameroon, Colombia, Congo Brazzaville, Costa Rica, Dominican Republic, Ecuador, Gabon, Ghana, Guatemala, Indonesia, Iran, Kenya, Lebanon, Madagascar, Malawi, Mexico, Morocco, Nepal, Nicaragua, Panama, Tanzania, Tunisia, Uzbekistan

Table S2. Descriptive statistics of 2021 and 2022 for unrestricted sample and sample used for the Oaxaca-Blinder (OB) decomposition. The 2021 full sample includes between 837 and 1,000 observations and the 2022 full sample between 794 and 1,000 because of missing values.

	2021 full	2021 KOB	2022 full	2022 KOB
	Mean	Mean	Mean	Mean
Desire to emigrate	0.34	0.38	0.10	0.11
Female	0.55	0.53	0.59	0.57
24 or younger	0.10	0.12	0.07	0.07
25 to 34	0.20	0.23	0.19	0.22
35 to 44	0.24	0.24	0.27	0.29
45 to 59	0.26	0.26	0.29	0.28
60 or older	0.21	0.15	0.17	0.14
Tertiary educated	0.57	0.61	0.58	0.61
Optimism	6.78	6.86	8.02	8.00
Confidence in Government	0.20	0.20	0.41	0.41
Confidence in Military	0.70	0.69	0.97	0.96
Corruption in Business	0.93	0.93	0.87	0.88

Table S3. Descriptive statistics of first wave sample. For all binary variables, reference categories are omitted. For all categorical variables with more than two categories the reference category is included. For an overview of the regions per macro-region see notes to fig. S20. About 0.5% of the respondents indicate a gender different from male or female, which we categorize into the reference category. In case the frontline crosses through a district, we code the district as "on the frontline". Russian-inflicted events and fatalities have been counted since 24 February 2022.

	Mean	SD	N
Age	44.61	13.46	11,308
Female	0.88	0.33	11,783
Married or with partner	0.56	0.50	11,783
Left with partner	0.19	0.39	11,783
Left with children under 18	0.55	0.50	11,783
Secondary education or lower	0.16	0.37	11,783
Vocational education	0.19	0.39	11,783
Bachelor's	0.17	0.38	11,783
Master's or higher	0.45	0.50	11,783
Speaks English	0.38	0.49	11,783
Central Ukraine	0.06	0.24	11,726
East	0.38	0.49	11,726
Kyiv	0.19	0.39	11,726
North	0.13	0.34	11,726
South	0.14	0.35	11,726
West	0.10	0.30	11,726
Home district on the frontline	0.19	0.39	9,655
Home district occupied by Russia	0.06	0.24	9,655
Home district not occupied	0.75	0.43	9,655
Russian-inflicted events per day before first interview [25km]	0.90	1.02	9,655
Russian-inflicted fatalities per day before first interview [25km]	1.23	1.77	9,655
Intention: go back very soon	0.08	0.26	11,413
Intention: go back when safe	0.59	0.49	11,413
Intention: do not know	0.25	0.43	11,413
Intention: settle outside Ukraine	0.08	0.28	11,413

Table S4. Descriptive statistics of panel sample. For all binary variables, reference categories are omitted. For all categorical variables with more than two categories the reference category is included. For an overview of the regions per macro-region see notes to fig. S20. In case the frontline crosses through a district, we code the district as "on the frontline". Russian-inflicted events and fatalities have been counted since 24 February 2022.

	Mean	SD	N
Age	43.15	12.40	1,786
Female	0.87	0.33	1,832
Married or partner	0.57	0.50	1,832
Left with partner	0.21	0.41	1,832
Left with children under 18	0.60	0.49	1,832
Secondary education or lower	0.13	0.34	1,832
Vocational education	0.17	0.37	1,832
Bachelor's	0.18	0.39	1,832
Master's or higher	0.51	0.50	1,832
Speaks English	0.45	0.50	1,832
Central	0.05	0.22	1,831
East	0.39	0.49	1,831
Kyiv	0.21	0.41	1,831
North	0.13	0.34	1,831
South	0.14	0.35	1,831
West	0.07	0.26	1,831
Home district remains unoccupied	0.72	0.45	1,666
Ukraine regained control in home district	0.09	0.29	1,666
Home district remains occupied or on frontline	0.19	0.39	1,666
Russian-inflicted events per day before first interview [25km]	0.92	1.05	1,666
Russian-inflicted events per day between interview dates [25km]	0.75	1.60	1,666
Russian-inflicted fatalities per day before first interview [25km]	1.36	1.93	1,666
Russian-inflicted fatalities per day between interview dates [25km]	0.32	0.78	1,666
Returned to Ukraine [wave 2]	0.04	0.20	1,832
Returned to the Oblast of origin [wave 2]	0.03	0.18	1,832
Intention: go back very soon [wave 2]	0.05	0.22	1,829
Intention: go back when safe [wave 2]	0.59	0.49	1,829
Intention: do not know [wave 2]	0.21	0.41	1,829
Intention: settle outside Ukraine [wave 2]	0.11	0.31	1,829

Table S5. Predictors of wave 2 response. OLS regression of a binary indicator for participating in the second wave on the five levels of first wave return intentions and a comprehensive set of individual-level controls and day of leave, day of first wave interview and destination fixed effects. All explanatory variables included are the same as those discussed in text S3.2.2. The sample of analysis includes all first wave respondents without missing covariate values. The reference category is "Go back very soon". Heteroskedasticity-robust standard errors are given in parentheses.

	(1)
	Wave 2 participation
Go back very soon	0.000
	(.)
Go back when safe	0.027*
	(0.014)
Settle outside Ukraine	0.055***
	(0.019)
Do not know	0.043***
	(0.015)
Prefer not to answer	0.007
	(0.025)
Observations	10500
R^2	0.09
Average dependent variable	0.163

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S6. Oaxaca-Blinder decomposition of the gap in desire to emigrate between 2021 and 2022. Based on all observations without missing responses for the desire to emigrate and for the explaining factors due to "don't know" and prefer not to answer" responses in Ukraine in 2021 and 2022. The middle column in Panel A gives the level in 2021 and 2022, the difference and the explained and unexplained part. The middle column in Panel B gives the percentage of the gap explained by each of the explaining covariates. As the Oaxaca-Blinder approach decomposes the difference in desire to emigrate between 2021 and 2022 into contributions due to shifts in covariate values between 2021 and 2022, the contribution of each of the explaining factors can take negative values. The rightmost column gives the standard deviations of the estimates in the middle column.

Panel A: Levels and explained and unexplained changes in desire to emigrate		
	Value	S.E.
2021	.383***	.019
2022	.111***	.012
Difference	.272***	.023
Explained	.125***	.019
Unexplained	.147***	.028
Panel B: Explaining factors (%)		
	Explained percentage of the gap	S.E.
Female	-3.1	2.7
Age	1.7	1.7
Female $\times$ age	4.2	3.2
Children	0.1	0.4
Tertiary education	0.0	0.3
Optimism	12.7***	3.6
Confidence in Government	14.2**	6.0
Confidence in Military	13.7**	4.3
Corruption in Business	2.6	1.6
Number of observations		1,329

Table S7. Full transition table of return intentions. N = 1,784.

	Return and return intention [wave 2]					
	Returned	Go back very soon	Go back when safe	Do not know	Settle outside Ukraine	Total
Return intention [wave 1]						
Go back very soon	31	28	40	6	1	106
Go back when safe	35	50	796	113	23	1,017
Do not know	9	13	205	214	46	487
Settle outside Ukraine			15	39	120	174
Total	75	91	1,056	372	190	1,784

Table S8. Full regression table of Fig. 5. Results of an OLS regression of changes in return intention on demographic variables. Each regression includes a wide set of demographic and other control variables, as well as fixed effects of the week of leave, week of first wave interview and week of second wave interview. The first column also controls for the levels of first wave return intentions. Standard errors are clustered at the district level and given in parentheses. See text S3.2.2 for details on these regressions. * p < 0.10, ** p < 0.05, *** p < 0.01

	(1) Returned to Ukraine [wave 2]	(2) No longer plans to settle outside Ukraine	(3) Started to plan to settle outside Ukraine
Male	0.000	-0.011	-0.029**
	(0.016)	(0.018)	(0.012)
Left with partner	-0.023**	0.016	0.032**
	(0.010)	(0.010)	(0.012)
Left with children under 18	0.006	0.006	-0.001
	(0.009)	(0.008)	(0.018)
Tertiary educated	-0.012	0.003	0.009
	(0.010)	(0.015)	(0.009)
Speaks English	0.025*	0.023*	0.011
	(0.014)	(0.012)	(0.012)
Ukraine regained control in home district	0.043*	0.033	-0.030*
	(0.024)	(0.021)	(0.018)
Home district remains occupied or on frontline	-0.013	-0.011	-0.021
	(0.017)	(0.011)	(0.015)
Local conflict intensity [25km]: up to 75th percentile	0.000	0.000	0.000
	(.)	(.)	(.)
Local conflict intensity [25km]: 75th to 90 percentile	-0.027**	-0.013	0.015
	(0.012)	(0.009)	(0.013)
Local conflict intensity [25km]: 90th percentile and beyond	-0.015	-0.026**	0.035**
	(0.019)	(0.010)	(0.016)
Go back very soon	0.000		
	(.)		
Go back when safe	-0.245***		
	(0.032)		
Do not know	-0.251***		
	(0.030)		
Settle outside Ukraine	-0.281***		
	(0.031)		
Observations	1508	1508	1508
R^2	0.19	0.10	0.08
Average dependent variable	0.040	0.032	0.041

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S9. Likelihood of return over time. Linear probability model of return to Ukraine regressed on the number of elapsed months (calculated as the number of days between survey waves divided by 30) between both survey waves. See text S3.2.3 for a discussion of the results. Heteroskedasticity-robust standard errors are given in parentheses.

	(1) Returned to Ukraine
Months since first wave	0.019***
	(0.005)
Observations	1817
R^2	0.01
Average dependent variable	0.043

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table S10. Cross-tabulations underlying fig. S25A

	Expected outcome of the war				
	Ukraine wins without ceding territory	Ukraine cedes territory or ceasefire	War continues	Do not know	Total
Return and return intention [wave 2]					
Settle outside Ukraine	114	22	35	22	193
Do not know	242	21	37	83	383
Go back when safe	817	52	63	145	1,077
Go back very soon	81	4	1	7	93
Returned	54	6	7	8	75
Total	1,308	105	143	265	1,821

Table S11. Cross-tabulations underlying fig. S25B

	Expected remaining duration of the war				
	At most 6 months	Between 6 months and 1 year	More than 1 year	Do not know	Total
Return and return intention [wave 2]					
Settle outside Ukraine	23	37	39	15	114
Do not know	67	56	68	51	242
Go back when safe	283	271	136	127	817
Go back very soon	47	21	5	8	81
Returned	24	13	8	9	54
Total	444	398	256	210	1,308

References

1. The Gallup Organization, Gallup World Poll (accessed Nov 18, 2022) (2022).
2. United Nations Ukraine - Subnational Administrative Boundaries (accessed Apr 28, 2023) (2023) https://data.humdata.org/dataset/cod-ab-ukr?
3. Digital 2022: Ukraine (2022) https://datareportal.com/reports/digital-2022-ukraine.
4. D Leasure, et al., Nowcasting daily population displacement in Ukraine through social media advertising data. *Popul. Dev. Rev.* (2023) https://doi.org/10.1111/padr.12558.
5. Eurostat Decisions Granting Temporary Protection by Citizenship, Age and Sex - Annual Data (accessed Apr 28, 2023) (2023) https://ec.europa.eu/eurostat/databrowser/view/MIGR_ASYTPFA/default/table?lang=en&category=migr.migr_asy.migr_asytp.
6. C Raleigh, A Linke, H Hegre, J Karlsen, Introducing acled: An armed conflict location and event dataset: Special data feature. *J. Peace Res.* **47**, 651–660 (2010).
7. Institute for the Study of War, The Critical Threats Project, Russian offensive campaign assessment (2023) https://understandingwar.org/publications.
8. The Political Mood in Ukraine (Ilko Kucheriv Democratic Initiatives Foundation), version 1.2 (2022) https://doi.org/10.48320/90CC86CA-C465-4416-9961-AFEC2250288E.
9. Razumkov Center, Independence Day of Ukraine (2022) https://razumkov.org.ua/napriamky/sotsiologichni-doslidzhennia/den-nezalezhnosti-ukrainy-serpen-2022.
10. Socio-Economic Panel (SOEP), data from 1984-2019, EU Edition, SOEP-Core v36 (2021) https://doi.org/10.5684/soep.core.v36eu.
11. IAB-SOEP Migration Samples (M1, M2), data of the years 2013-2019 (2021) https://doi.org/10.5684/soep.iab-soep-mig.2019.
12. H Brücker, et al., The new iab-soep migration sample: an introduction into the methodology and the contents. *SOEP Surv. Pap. Ser. C* (2014).
13. IAB-BAMF-SOEP Survey of Refugees 2019 (2021) https://doi.org/10.5684/soep.iab-bamf-soep-mig.2019.
14. Y Giesing, T Panchenko, P Poutvaara, Anpassung und Integrationsstrategien von Geflüchteten aus der Ukraine in Deutschland [Adaptation and integration strategies of refugees from Ukraine in Germany]. *ifo Forschungsberichte* (2022).
15. R Oaxaca, Male-female wage differentials in urban labor markets. *Int. Econ. Rev.* **14**, 693–709 (1973).
16. AS Blinder, Wage discrimination: Reduced form and structural estimates. *J. Hum. Resour.* **8**, 436–455 (1973).
17. UNHCR Ukraine Refugee Situation (accessed Sep 12, 2022) (2023) https://data2.unhcr.org/en/situations/ukraine.
18. N Al Husein, N Wagner, Determinants of intended return migration among refugees: A comparison of Syrian refugees in Germany and Turkey. *Int. Migr. Rev.* (2023) https://doi.org/10.1177/01979183221142780.
19. Institute for the Study of War, The Critical Threats Project, Russian offensive campaign assessment, november 11 (2022) https://www.understandingwar.org/backgrounder/russian-offensive-campaign-assessment-november-11.
20. N Hamadeh, CV Rompaey, E Metreau, SG Eapen, New World Bank country classifications by income level: 2022-2023 (2022) https://blogs.worldbank.org/opendata/new-world-bank-country-classifications-income-level-2022-2023.