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Beyond the Battlefield: The Impact of War on Expatriates' Health and Livelihoods

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Beyond the Battlefield: The Impact of War on Expatriates' Health and Livelihoods*

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Abstract

We study how expatriates cope when conflict breaks out in their homeland. Using Russia's 2022 Ukraine invasion and a matched difference-in-differences design, comparing incumbent Ukrainian migrants in Sweden with migrants of other origins, we find a persistent increase in psychiatric medication alongside higher labor earnings. Ukrainians work more months and take on second jobs, and job seekers exit unemployment faster but accept lower wages at lower-paying firms. The earnings effects are concentrated among migrants from more war-exposed regions, while medication effects attenuate in municipalities receiving more Ukrainian refugees. The results replicate in European and US survey data.

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1 Introduction

"at first glance every bombed house in the photo
looks like your own

every child sleeping in the kyiv metro
has the face
of your daughter"
— Iryna Shuvalova (2022)[1]

How do expatriates cope when armed conflict erupts in their homeland? The question is increasingly salient. An estimated 304 million people live outside their country of birth (UN-DESA, 2024), while state-based armed conflicts have reached a record high since systematic data collection began in 1946 (Rustad et al., 2025). Emigrants maintain deep ties to their origin countries: global remittance flows to low- and middle-income countries surpass both foreign direct investment and official development assistance combined (Kim et al., 2024; World Bank, 2024). A large literature has documented the devastating consequences of conflict for populations who directly experience violence (Blattman and Miguel, 2010; Mueller, 2013; Federle et al., 2026), and a growing body of work examines the health and economic trajectories of refugees who flee (Fazel et al., 2005; Steel et al., 2009; Becker and Ferrara, 2019). Yet, we know remarkably little about the millions of expatriates who are already settled abroad when conflict arises in the home country—individuals who are physically safe but remain bound to affected regions through family, financial obligations, and emotional attachment.

This article studies how war in the country of origin affects expatriates' health and economic outcomes in the short and medium term. To do so, we focus on the Russian invasion of Ukraine in February 2022. Before the invasion, millions of Ukrainians and individuals with Ukrainian ancestry lived in countries such as the United States, Canada, Poland, and Russia.[2] News reports following the invasion describe Ukrainian expatriates' intense stress and anxiety in the immediate aftermath of the invasion, detailing how they experience the war through close and regular contact with family members still in Ukraine.[3]

We focus on Sweden, home to more than 10,000 Ukrainians before the 2022 invasion, and study how the war affects their mental health and labor market outcomes through the

[1] From "Kyiv-Nanjing," translated from Ukrainian by Amelia Glaser and Yuliya Ilchuk. Published in *Literary Hub*, March 24, 2022.

[2] In 2020, around 6.1 million individuals born in Ukraine lived abroad (UN, 2020). Extending the group to individuals with Ukrainian ancestry, the number is considerably larger. In the US alone, there are more than 1 million Americans of Ukrainian descent (Rodriguez and Batalova, 2022).

[3] Figure A.1 displays a selection of newspaper headlines written about Ukrainians living abroad.

end of 2024. To structure our analysis, we use a simple conceptual framework in which war affects expatriates' labor market outcomes through two channels. On the one hand, concern for the safety of family and friends (Kristensen et al., 2012), as well as collective trauma from observing one's home country under attack (Hirschberger, 2018), worsen mental health and raise the marginal disutility of work, potentially reducing employment and earnings (Lundborg et al., 2014; Lund et al., 2024).[4] On the other hand, war creates displacement, diminishes earnings, and destroys assets in affected regions, creating financial pressure that raises the value of earning income in order to compensate for the economic shock or provide transfers. Reduced return intentions may similarly increase migrants' earnings as an investment in their future career or to maintain residency status (Adda et al., 2022; Bassetto and Freitas Monteiro, 2025). The net effect on labor supply is therefore ambiguous.

To measure the mental health status of Ukrainian expatriates, we use administrative data covering all medical prescriptions for anxiety, insomnia, and depression. An advantage of our setting is that the Swedish healthcare system provides universal health coverage at low out-of-pocket expense for residents regardless of nationality. To analyze labor market outcomes, we rely on high-frequency register data on employment, earnings, wages and job characteristics. We identify the causal effect of home-country conflict on expatriates by using a matched difference-in-differences design, comparing the outcomes of incumbent Ukrainian migrants to a matched subset of migrants from other countries. Given the possibility of immigration from Ukraine in response to the invasion or selective migration in anticipation of the war, we restrict attention to a balanced sample of migrants residing in Sweden for at least three years before the invasion and follow them until the end of 2024.[5] For all practical purposes, however, the invasion was sudden and unexpected. Despite the significant deployment of troops near Ukraine in the months leading up to February 2022, there was considerable uncertainty about whether an invasion would in fact take place (Driedger and Polianskii, 2023).

We find that Russia's invasion prompts an immediate increase in mental health prescription uptake among Ukrainian expatriates in Sweden. In the first quarter of 2022, the probability of filling a prescription for any mental health drug increases by 1.6 percentage points, a 30 percent increase over the pre-invasion mean. The increase is driven by a rise in prescriptions for anxiety and insomnia, which are typically used to treat sudden and acute

[4] A related concept, *secondary trauma*, occurs when individuals experience distress from learning about a traumatic event experienced by others, such as through friends or media exposure (Cieslak et al., 2013). Those who share a social identity with victims are especially likely to follow media coverage of such events (Relihan et al., 2023), which can amplify their distress (Neria and Sullivan, 2011).

[5] In robustness tests, we show results using the unmatched sample, using an unbalanced sample that allows individuals to emigrate post-invasion, as well as using a synthetic difference-in-differences design.

symptoms of mental stress. Prescriptions of anti-depressants, on the other hand, start to increase in the second half of 2022. This delay is consistent with a substitution away from medications used to treat acute symptoms to those that are used for more chronic mental health conditions (National Board of Health and Welfare, 2021). In line with this, we find that the increase in anti-depressants is driven mostly by individuals having previously received drugs for acute symptoms.

The increase in Ukrainians' prescription uptake is persistent. In late 2024, nearly three years after the invasion, prescriptions for mental health drugs remain significantly higher. The incidence of polypharmacy—the simultaneous use of multiple types of mental health drugs—also increases, consistent with strong and lasting symptoms. Supporting this interpretation, we also find an increase in specialist mental health visits.

Turning to labor market effects, we observe a short-term decline in earnings in the first quarter of the invasion, followed by significantly higher earnings through to the end of 2024. Both previously employed and non-employed Ukrainians increase their months in employment after the invasion. We also observe a rise in holding multiple jobs, with second jobs being at firms with lower mean earnings, suggesting that Ukrainians may be willing to take on lower-paid work.

As a sharper test of willingness to accept lower wages, we examine migrants who became unemployed before the invasion, studying their speed of exit from unemployment and the quality of jobs accepted upon exit. Following the invasion, Ukrainian job seekers exit unemployment significantly faster: the quarterly exit hazard rises by 6.2 percentage points in 2022, a relative increase of roughly 20 percent compared to the pre-invasion mean. They take on jobs at firms paying lower wages and themselves earn lower full-time equivalent wages. When accounting for potential selective exit from unemployment using a Mincerian wage-residual approach, we find even larger decreases in accepted wages. The results are thereby consistent with lower reservation wages among unemployed Ukrainians.

Swedish labor market and healthcare institutions may shape how expatriates respond to conflict, so it is not clear that the patterns we document would generalize to other settings. To address external validity, we apply a similar sample definition and identification strategy to two additional datasets. Using the American Community Survey, we find large increases in earnings and an increased likelihood of working 40 or more hours per week among Ukrainian expatriates in the United States. Data from the European Social Survey similarly corroborate our mental health findings, showing significant reductions in self-reported happiness and life satisfaction following the invasion.

We next examine a distinct source of variation in expatriates' local environment: the arrival of Ukrainian refugees across Swedish municipalities. Upwards of 50,000 Ukrainians

arrived during 2022, most of them in the immediate aftermath of the invasion. Using data on municipal refugee placements made by the Swedish Migration Agency, we find that higher refugee reception attenuates the adverse mental health effects of the invasion. This result holds with municipality-by-quarter fixed effects and is consistent with closer contact with conationals improving mental health among expatriates. Refugee reception does not change the earnings effects, suggesting that local refugee arrivals did not raise labor demand for incumbent Ukrainians, for example as interpreters.

Turning to mechanisms, we study heterogeneous effects by conflict intensity in the region of birth. We use newly assembled text data on the birth towns of migrants to match Ukrainian expatriates to their region (oblast) of origin. Since some regions experience a large number of fatalities, while others have close to none, this provides variation in individuals' direct war exposure. We find significant mental health effects across both high- and low-exposure regions, consistent with the invasion providing a broad mental health shock across all Ukrainians. Labor market effects, by contrast, are driven by expatriates from more war-exposed origins.

The increase in earnings is consistent with both reduced return intentions and greater financial pressure from economic shocks to migrants themselves or their families. The qualitative character of the labor market response is difficult to reconcile with a pure integration-investment channel due to reduced return intentions (Dustmann and Görlach, 2016; Adda et al., 2022): rather than moving into better firms or steeper career paths, Ukrainians increase labor supply through margins consistent with immediate income generation — multiple job holding, faster exit from unemployment, and acceptance of lower-wage jobs. Moreover, we find similar labor market effects among Ukrainians who are Swedish citizens and have Swedish-born spouses, a group that has low emigration post-invasion. This suggests that changed return intentions cannot alone explain the labor market behavior we observe, although we do not rule out that it plays a role among Ukrainians with weaker pre-invasion attachment to Sweden. Increased financial pressure caused by conflict exposure in the area of origin is therefore a plausible explanatory mechanism.

We consider and assess three alternative mechanisms for our results. First, the uptake for prescriptions due to mental illness could be explained by reduced stigma for seeking care. We find that both new and prior users increase their usage, and the effects are thereby not simply explained by decreased stigma among new users. Second, physicians may have become more willing to prescribe to Ukrainians after the invasion. However, we also observe an increase in mental health-related primary care visits, indicating that the rise in prescriptions at least partly reflects increased care-seeking rather than only changes in prescribing behavior. Third, looking at the labor market effects, it is possible that the invasion led to positive

discrimination by employers, such that labor *demand* rather than labor supply drives the increase in earnings and employment. We show, however, that the labor market effects are very similar across Ukrainians who were actively searching for work, as measured by registration with the Public Employment Service before the invasion, and those who were not in the labor force. This indicates that effects are due to changes in labor supply, rather than preferential treatment by employers.

Lastly, turning to Russian expatriates, we find an increase in mental health prescriptions that is smaller in both absolute and relative terms compared to the effects we observe among Ukrainians. We observe no effect on labor market outcomes. This is consistent with Russians also experiencing distress from the war, potentially due to a combination of stigma, sympathies with Ukraine, and fear of war exposure among their families, but with no added financial burden affecting their labor market outcomes.

Our findings relate to several strands of literature. Prior research has found a link between mental health and labor market outcomes (e.g. Lundborg et al., 2014; Banerjee et al., 2017; Ridley et al., 2020; Lund et al., 2024), raising the possibility that exposure to home-country shocks may contribute to native-immigrant gaps in labor market outcomes (Brell et al., 2020).[6] Our results show the opposite, indicating that migrants may exhibit *higher* employment and earnings despite being exposed to conflict-induced stress. This pattern is consistent with a transnational "added worker effect" (Fadlon and Nielsen, 2021), in which expatriates adjust labor supply in response to shocks affecting dispersed household members, connecting our findings to the literature on intra-household risk sharing and remittances (Townsend, 1994; Amuedo-Dorantes and Pozo, 2006; Yang and Choi, 2007; Yang, 2008; Amuedo-Dorantes and Pozo, 2011; Nekoei, 2013; Bettin et al., 2025; Mota, 2025).

We also contribute to the literature on immigrant skill mismatch, which has emphasized the imperfect transferability of foreign human capital (Mattoo et al., 2008; Chiswick and Miller, 2009). We find that, after a shock in the origin country, incumbent migrant job seekers accept jobs paying less than their education and experience predict, suggesting that mismatch may also reflect migrants' external circumstances.

To our knowledge, this is the first paper to study the causal effects of the outbreak of war on members of the diaspora. A large literature studies the individual, firm, and country-level impacts of direct conflict exposure.[7] Fewer studies examine the effects of indirect exposure. Korovkin and Makarin (2023) show that conflict affects trade patterns in areas that do not

[6] Studies of the economic effects of bereavement also find that the loss of parents or children has substantial negative effects on labor market outcomes (Van den Berg et al., 2017; Jensen and Zhang, 2026).

[7] See for example Bundervoet et al. (2009), Shemyakina (2011), Voors et al. (2012), Currie and Vogl (2013), Adelaja and George (2019), Vesco et al. (2025), Guidolin and La Ferrara (2007), and Abadie and Gardeazabal (2003).

experience violence directly. A recent literature has also studied how migrants respond to violent attacks in their home country. This work finds that such attacks can reactivate refugees' past traumatic experiences (Keita and Schewe, 2021; Sønderskov et al., 2021) and lengthen immigrants' intentions to stay in the host country, which in turn affects their integration investments (Adema et al., 2026; Aksoy et al., 2024; Bassetto and Freitas Monteiro, 2025).[8]

We depart from the literature in three ways. First, we study voluntary migrants in the international diaspora. They globally outnumber refugees by a factor of six (UNDESA, 2024), yet remain closely tied to their home countries. Compared with refugees, they are also less likely to have pre-existing mental health issues (Carroll et al., 2023).

Second, our setting and research design allow us to study (i) the onset of a sustained, large-scale war, as opposed to discrete violent events, (ii) health and labor market outcomes jointly, using high-quality, high-frequency administrative data, (iii) short- and medium-run dynamic responses to a sustained war over up to three years, and (iv) the distinct effects of fatal conflict events in the home region versus overall exposure to the war. These differences are central to our findings. Effects persist for at least three years, mental health and labor market outcomes move in opposite directions, and the two sets of outcomes respond differently to violence in the home region compared to the broader shock of the war's onset.

Third, we show that changed return intentions alone are unlikely to explain our results. A plausible reason is that war, unlike isolated violent events, disrupts the home economy and displaces families, which can strengthen diaspora members' incentive to compensate economically. Because Swedish administrative data do not record international transfers or remittances, we interpret our results as consistent with this motive rather than as providing direct evidence of it.

The remainder of the paper is organized as follows. Section 2 provides background on the Russian invasion and presents the conceptual framework. Section 3 describes the data, sample construction, and empirical strategy. Section 4 presents our main results on mental health and labor market outcomes, along with robustness checks. Section 5 assesses external validity using data from the United States and Europe. Section 6 looks at the impact of local refugee resettlement. Section 7 examines mechanisms, including heterogeneity by conflict exposure, return intentions, and alternative explanations. Section 8 studies effects on Russian expatriates and Section 9 concludes.

[8] A set of studies also examines how non-conflict events affect migrants' well-being or labor market outcomes, for example Akay et al. (2017), Nguyen and Connelly (2018), Bharadwaj et al. (2025), and Yarkin (2025).

2 Background

2.1 The Russian Invasion of Ukraine

Ukraine and Russia have ties that go back centuries. After the dissolution of the Soviet Union in 1991, Ukraine declared its independence and, in the following years, developed a relationship with Russia that had elements of both cooperation and tension. The relationship took a dramatic turn with Russia's annexation of Crimea in 2014, a move that was widely condemned by the international community and considered illegal under international law. This was followed by the conflict in the Donbas region, where Russian-backed separatists declared independence, leading to an ongoing conflict with Ukrainian forces (Plokhy, 2015).

Starting in March of 2021, Russia led a significant buildup of military forces along the Ukrainian border. Despite these signs, there was considerable uncertainty and debate among international observers and governments about whether Russia would indeed proceed with an invasion (Zwack et al., 2021; Astrov et al., 2022; Driedger and Polianskii, 2023). This uncertainty was partly due to mixed messages from the Russian government, which consistently denied any intention to invade, while simultaneously engaging in aggressive rhetoric and military posturing (Kiely and Farley, 2022). According to Russia, the military buildup was motivated by the desire to prevent Ukraine from moving closer to Western institutions, primarily NATO (Mearsheimer, 2022). In the months preceding the invasion, Russia requested guarantees that Ukraine would not join NATO, and intense efforts of diplomacy attempted to dissuade an invasion. Despite the accumulating evidence of imminent military action, the exact intentions of the Kremlin remained difficult to ascertain (Fox and Isachenkov, 2022), and Ukraine and the international community were therefore largely unprepared for the invasion. On February 11, 2022, thirteen days before Russia's invasion, the US national security advisor declared that there was an immediate threat of invasion, and several Western embassies began to evacuate from Kyiv in the following days (Walker, 2022).

The Russian invasion on February 24, 2022, unfolded rapidly, with Russian forces launching a multi-pronged offensive that aimed to seize key Ukrainian cities and military installations. The initial phase of the invasion saw a combination of air strikes, missile attacks, and ground operations, targeting military facilities as well as critical infrastructure. The war had immediate and devastating effects: urban areas, especially in the east, witnessed severe damage or destruction of residential neighborhoods, hospitals, and power plants. Civilians remaining in conflict zones faced dire circumstances, with access to food, water, medical care, and electricity severely limited (Roy, 2023).

The conflict has had a profound humanitarian impact, triggering one of the largest refugee crises in Europe since World War II. Neighboring countries, including Poland, Slovakia,

Hungary, Romania, and Moldova, opened their borders to Ukrainian refugees, who sought safety and shelter. The EU activated the Temporary Protection Directive for the first time since its establishment, providing immediate and collective protection measures for displaced people fleeing from Ukraine (IOM, 2024b). According to the latest estimates, there are 6.5 million Ukrainian refugees and 3.7 million internally displaced individuals in Ukraine (UNHCR, 2024).[9] Since the start of the war, over 14,000 Ukrainian civilians have been killed, and more than 35,000 injured (UN, 2025).[10] Moreover, 28,000 have been claimed to be held captive by Russia against their will (Kyiv Post, 2023). Military deaths have been estimated at 73,000–140,000 for the Ukrainian forces, and 190,000–350,000 on the Russian side (Economist, 2025). It is important to note that there is significant uncertainty in these estimates, as numbers vary widely by source. The invasion also inflicted severe damage on Ukraine's economy, leading to a significant GDP contraction of 29% in 2022, as well as destruction of infrastructure and exports (Reuters, 2023b).

Ukrainians abroad have continued to support family members affected by the war after the invasion. In Poland, the largest EU host of Ukrainian migrants before the invasion (Eurostat, 2025), around 60 percent of Ukrainians who had arrived before the war sent money to Ukraine in 2022–2024, and a similar share reported sending in-kind aid, mostly to family members (National Bank of Poland, 2024). Among Ukrainians granted temporary protection in Sweden, 15 percent reported in 2024 that support from family or their community was one of their main sources of income (IOM, 2024a).

2.2 Conceptual Framework

To guide the empirical investigation, we provide a simple conceptual framework for understanding how home-country conflict affects expatriates. Home-country conflict can affect expatriates' labor supply through two competing channels. Concern for family safety, exposure to distressing news, and collective trauma may worsen mental health and increase the marginal disutility of work. At the same time, lost income, displacement, and asset destruction can increase the financial needs of relatives who remain in the country of origin or are displaced within the country or abroad. Together with potential losses to migrants' own assets at home, the financial pressure can strengthen the incentive to earn income to compensate. When financial pressure outweighs the increased cost of work, migrants may increase employment and earnings despite worsening mental health, including by accepting lower-paid jobs or taking additional work.

War may also reduce migrants' intentions to return home, extending the horizon over

[9] See statistics on applications based on the Temporary Protection Directive in Sweden in Figure A.2.
[10] See also Figure A.3 for statistics on Ukrainian civilian casualties over time.

which investments in the host country pay off. Dustmann and Görlach (2016) and Adda et al. (2022) show that temporary migrants may have lower reservation wages and invest less in host-country-specific human capital than permanent migrants. A shift toward permanent settlement would then encourage investment and greater selectivity in job acceptance, potentially working against the willingness to accept lower-paid jobs induced by financial pressure.

The net effect of home-country conflict on labor supply is therefore ambiguous. The channels do, however, differ in what they imply for the jobs migrants are willing to accept. Worse mental health makes work more costly and, if anything, should make migrants more selective about the jobs they take. A shift toward permanent settlement may have a similar effect, as discussed above, unless continued residence depends on being employed (Bassetto and Freitas Monteiro, 2025). Financial pressure, by contrast, may lead migrants to accept jobs they would otherwise have turned down. Faster exit from unemployment into lower-paid jobs would therefore be more consistent with financial pressure than with the other two channels. Financial needs are also likely to be greatest for migrants originating from the most war-exposed regions.

3 Empirical Strategy

3.1 Data

We use full-population Swedish administrative data covering 2019 to 2024. The data include demographic information, monthly income sources (earnings, sick leave, and UI), medical drug prescriptions, and specialist out-patient visits. For 2019 to 2023, we also observe full-time equivalent wages and contracted hours for a subsample of workers, and unique firm-plant employer identifiers for all workers. These identifiers allow us to determine whether individuals hold multiple jobs and to characterize their employers and jobs.

Our main outcomes are prescriptions and earnings, which we aggregate to the quarterly level. In extensions, we supplement earnings with wages and contracted hours, available annually.[11] We use medical prescriptions, rather than diagnoses, because prescriptions are recorded for all dispensed medications, regardless of which provider issued them. By contrast, the diagnoses in our data are only recorded for out-patient specialist visits. Since primary care centers are the first point of contact for most health problems, the specialist visits are likely to mainly capture more severe cases.

[11] Wages and contracted hours are from the Wage Structure Statistics, an annual survey conducted by Statistics Sweden. It covers the full public sector and, in the private sector, all firms with 500 or more employees together with a fraction of smaller firms.

The prescriptions cover all medical drugs prescribed and *collected* at a pharmacy in Sweden, classified according to the Anatomical Therapeutic Chemical (ATC) system. Importantly, the Swedish healthcare system provides universal health coverage for residents regardless of their nationality, meaning that foreign nationals are covered as long as they have formal residency. A price subsidy ensures that a patient in 2024 paid at most 2,850 SEK (≈$290) for medication over a 12-month period. After reaching this limit, the patient gets all additional medication at no out-of-pocket expense. Thus, access to medications is less likely to be mediated by socioeconomic status than in settings where individuals rely on employer-sponsored or private health insurance.

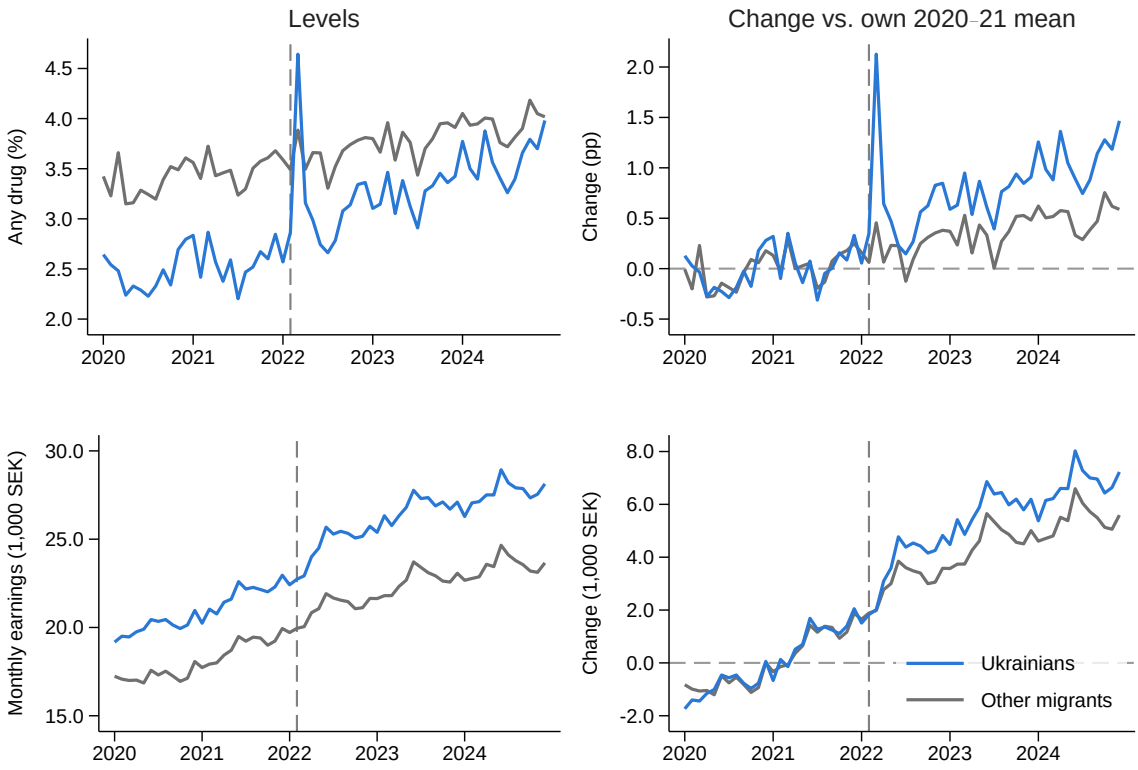
The analysis of mental health focuses on prescriptions for medications treating anxiety, insomnia, and depression. Physicians follow national guidelines for treating patients with these ailments (National Board of Health and Welfare, 2021). Medications for insomnia and anxiety typically have an instant effect and are usually prescribed for short-term or need-based usage. Due to their addictive nature, these drugs are ill-suited for longer-term use. Anti-depressants, on the other hand, are only given to individuals with persistent issues and may take months to reach full effect (Harmer et al., 2017; WHO, 2009). Table A.1 lists all medications included in our analysis. For each condition, we include the most commonly prescribed drugs in Sweden.

3.2 Sample

The sample consists of immigrants in Sweden aged 15–65 in 2021, the year before the invasion, and includes all origin countries that have at least 30 migrants per year. Immigrants' country of origin is defined as their country of birth. To avoid issues of selection into the sample, we only include individuals who have resided in Sweden since 2019, three years before the invasion, and remain in the country until the end of 2024. To avoid capturing spillover effects on war-adjacent countries, we exclude migrants from Russia and European countries that share a border with either Ukraine or Russia. Our results are not sensitive to this exclusion, however.[12] We study the effects on Russian expatriates separately in Section 8. Less than 6% of Ukrainians in our sample immigrated since 2014 and were born in Crimea or Donbas. We show in Section 4.3 that our results are robust to dropping individuals born in either region.

[12]Test shown in Section 4.3. Excluded countries are Russia, Poland, Belarus, Finland, Norway, Estonia, Latvia, Lithuania, Czechoslovakia (Slovakia and the Czech Republic), Hungary, Romania, and Moldova, as well as individuals born in the former Soviet Union.

FIGURE 1: RAW DATA: MENTAL HEALTH PRESCRIPTIONS AND EARNINGS BY MONTH



Notes: This figure shows monthly means of the two main outcomes for Ukrainian-born migrants (blue) and all other migrants (gray), 2020–2024. The left column shows levels. The right column subtracts each group's own mean over 2020–2021. The top row shows the probability of filling at least one prescription for any mental health medication in a month, in percent (range: 0-100). The bottom row shows average monthly earnings in thousands of nominal SEK. The sample includes migrants aged 15–65 in 2021 who resided in Sweden in at least one year between 2019 and 2021; unlike in the main analysis, they are not required to remain in Sweden through 2024. The comparison group is not matched: it includes migrants from all countries of birth except Russia, the former Soviet Union, and European countries bordering Ukraine or Russia, with country means weighted by the number of migrants from each country. The vertical dashed line indicates the month of the invasion (February 2022). Figure A.4 shows the raw data for the matched sample.

Figure 1 shows the raw data for our two main outcomes by month, comparing Ukrainian-born migrants with all other migrants. The left column shows levels, and the right column subtracts each group's own mean over 2020–2021, so that the vertical distance between the two lines after the invasion shows how much more the outcome changed for Ukrainians than for other migrants. Although the two groups differ in levels, both outcomes move in parallel before 2022, and their trends diverge sharply after the invasion. Ukrainians' mental health prescriptions spike in the first full month of the war and stay further above their

pre-invasion level than those of other migrants through 2024. Ukrainians' earnings also start to grow faster than those of other migrants in the spring of 2022, and the divergence persists through 2024.

To increase the similarity between the treatment and control group, our main analysis uses a matched sample of Ukrainians and migrants from other countries. To construct a comparison group of non-Ukrainian migrants who resemble Ukrainian-born migrants in their pre-invasion characteristics and local contexts, we use exact matching combined with nearest-neighbor propensity score matching. We first stratify observations by county of residence and gender, restricting potential matches of Ukrainians and other migrants within the exact county–gender cell.[13] This ensures that all comparisons occur within identical local labor market environments and gender-specific contexts. Within each exact-match stratum, we then estimate a propensity score using a probit model predicting the probability of being Ukrainian-born. The model includes the following baseline covariates measured in 2020: age, presence of children in the household, marital status (married to a Swedish-born partner, married to another migrant), visa type (family reunification, work, student, other, or refugee status), Swedish citizenship, years in Sweden, any university education, and mean family and individual income for the years 2020–2021. The model is used to perform nearest-neighbor matching without replacement, selecting up to two control units for each treated unit, subject to a caliper restriction of 0.01 on the propensity score. In other words, matches are only formed if the absolute difference in propensity scores between a Ukrainian and a potential control is less than 0.01.

Table 1 displays descriptive statistics for the matched sample, with 8,771 Ukrainians and 17,348 individuals in the control group. As expected, the matching procedure produces balance on the included pre-invasion characteristics. The distribution of origin countries in the control group is displayed in Table A.2. Figure A.4 shows raw data comparisons using the matched sample, by quarter and by year, indicating a similar pattern as Figure 1. As a robustness test, we also show results using the full, unmatched sample in Section 4.3, as well as other alternative sample definitions.[14]

3.3 Estimation

To estimate the impact of the invasion on the outcomes of Ukrainian expatriates, we use the following event-study specification:

[13] Sweden is divided into 21 counties (known in Swedish as *län*), which serve as regional administrative subdivisions responsible for the management and funding of healthcare services.

[14] Table A.3 provides descriptive statistics for the unmatched sample, and the corresponding distribution of countries is displayed in Table A.4.

$$Y_{it} = \alpha_i + \lambda_t + \sum_{\substack{k=-7 \\ k\neq 0}}^{12} \beta_k \times \text{Ukraine}_i \times \mathbb{1}[t = k] + \varepsilon_{it}, \tag{1}$$

where we regress the outcome variable Y_{it} of individual i in quarter t on individual fixed effects α_i and a series of quarter fixed effects λ_t interacted with the *treated* group Ukraine_i. We normalize the coefficients relative to the quarter before the start of the war, setting $t = 0$ as the reference period and Q1 of 2022 as $t = 1$. The parameters of interest are β_t, $t \in (1, 12)$. Considering that the treatment is at the level of one's country of origin, we cluster the standard errors at the country level.

Alongside the event-study specification, we estimate a difference-in-differences model that aggregates effects to the annual level:

$$Y_{ity} = \alpha_i + \lambda_t + \sum_{k=2022}^{2024} \beta_k \times \text{Ukraine}_i \times \mathbb{1}[y = k] + \varepsilon_{ity}, \tag{2}$$

where y indexes years ($y \in \{2022, 2023, 2024\}$) and effects are estimated relative to the pre-invasion mean (2020–2021).

Our primary labor market outcome is average monthly earnings within each quarter. For mental health, we use *Any drug*, a dummy variable indicating whether an individual picks up any prescription treating anxiety, insomnia or depression in a given quarter. Patients actively undergoing treatment are expected to fill their prescriptions at least once per quarter.[15]

In Section 4.3, we consider several extensions and alternative approaches to test the robustness of our results, such as using the full, unmatched sample, and including post-invasion emigrants in the sample. We also show robustness to using Synthetic Difference-in-Differences (Arkhangelsky et al., 2021) and permutation inference at the country level using the unmatched sample (Abadie et al., 2010).

4 Main results

4.1 Mental health

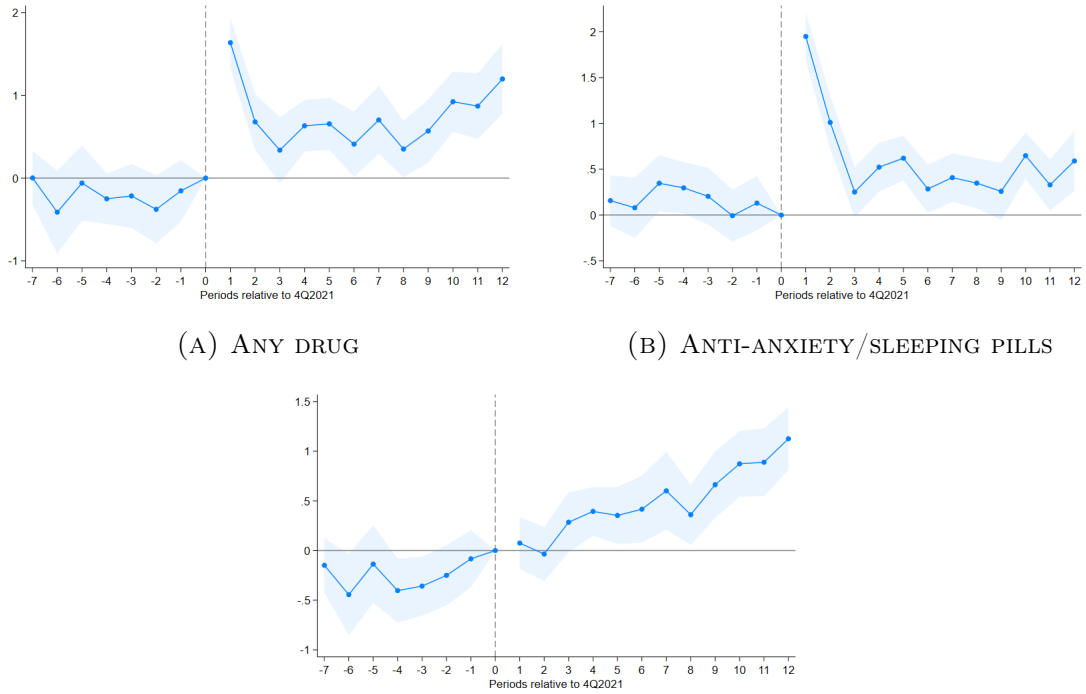
Figure 2 shows event-study estimates for the mental health effects of the invasion. Panel A shows that the likelihood of picking up any mental health prescription increases sharply in the same quarter as the invasion. Relative to the pre-invasion mean of 5.6 percent among

[15] In Sweden, a single prescription allows patients to collect the same medication multiple times, with each pickup limited to a 90-day supply. The price subsidy requires that patients have used at least two-thirds of their current supply before collecting a refill.

Ukrainians, the point estimate of 1.6 represents a relative increase of nearly 30 percent. Prior to the invasion, Ukrainians and matched controls do not show statistically significant differences in prescription levels, nor any diverging trends that would indicate that Ukrainians were otherwise trending towards having higher prescriptions.

The mental health effects are persistent. While prescription levels moderate somewhat in the second quarter after the invasion, they remain significantly elevated relative to the control group across the full three-year sample period. Table 2, column 1, displays the corresponding yearly estimates, showing that the effect on prescriptions is as high in 2024 as in 2022.

FIGURE 2: MENTAL HEALTH EFFECTS



(A) ANY DRUG

(B) ANTI-ANXIETY/SLEEPING PILLS

(C) ANTI-DEPRESSANTS

Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on mental health prescription uptake among Ukrainian migrants in Sweden. Panel A shows the probability of filling at least one prescription for any mental health medication per quarter. Panel B shows prescriptions for anti-anxiety or sleeping pills. Panel C shows prescriptions for anti-depressants. All outcomes are measured in percentage points (range: 0–100%). The sample includes Ukrainian migrants and matched control migrants. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level. Table 2 displays yearly estimates.

To examine whether the increase in mental health prescriptions is driven by the extensive

or intensive margin, we first split the sample into those who had any prescription in 2018–2021 and those who did not. Figure A.5 displays event-study plots within each sample split, showing positive responses on both margins. To determine their relative weight for the overall result, we perform a decomposition exercise using a simple difference-in-differences specification. The extensive margin (i.e., new users) accounts for about two thirds of the overall effect.[16] Interestingly, while the intensive margin has a smaller contribution to the overall effect due to the lower number of prior users, the treatment effect in this group is over twice as large. This may, for example, be driven by an increased sensitivity to mental health shocks in this group, as well as lower barriers to access prescriptions given the history of mental health treatment.

We next consider which types of mental health drugs underlie our results. Panel B of Figure 2 shows that the initial spike in prescriptions is entirely driven by an increase in prescriptions for immediate relief, defined as anti-anxiety and sleeping medication. The effect of 1.95 percentage points at the onset of the invasion translates to a relative increase of over 62 percent compared to the pre-invasion level. The rate declines in the following quarters, but remains significant at around 0.5 percentage points until the end of 2024.

Anti-anxiety medication and sleeping pills provide immediate relief, but are unsuitable for long-term use due to addiction risks. Anti-depressants, by contrast, are prescribed for persistent conditions, making their trajectory informative about whether the mental health shock endures. Looking at Panel C of Figure 2, we observe a steady increase in anti-depressant prescriptions over time. The effect becomes significant in the latter half of 2022. Three years after the invasion, in Q4 of 2024, the effect reaches 1.2 percentage points, corresponding to a relative increase of 35 percent over the pre-invasion mean. The sustained increase points to a long-lasting rather than transient mental health deterioration.

Our results suggest that anti-depressants are increasingly used as treatment among those who initially received immediate-relief drugs. Figure A.6 shows that the largest increases in anti-depressant use occur among individuals previously prescribed medication for anxiety and insomnia, consistent with a substitution from acute to chronic treatment. The persistence and growth of these effects over time indicate that the mental health shock does not dissipate. Persistence could be explained by anti-depressants often being prescribed for long periods of time, but this by itself would not explain the growth in prescriptions.

[16] We estimate the model $Y_{it} = \alpha_i + \lambda_t + \beta \times \text{Ukraine}_i \times \text{Post}_t + \varepsilon_{it}$, as shown in Table A.5. Column 1 shows the full-sample estimate, column 2 shows the estimate on the subsample with no mental health prescriptions between 2018 and 2021, and column 3 shows the estimate for those with prior mental health prescriptions between 2018–2021. For Ukrainians with and without prior prescriptions, $k \in \{0, 1\}$, let s_k be the share of Ukrainians in the subgroup and τ_k be their treatment effect. Then, the share of the overall effect driven by prior non-users is $s_0\tau_0/(s_0\tau_0 + s_1\tau_1)$. Note here that $s_0 = 0.815$.

Severity. We next explore the question of the severity of mental illness in multiple ways. Polypharmacy, the simultaneous use of multiple mental health drug types, increases in all years (column 1 of Table A.8), as does the total number of prescription pickups (column 2). There is also an increase in antipsychotic prescriptions in 2022, a class reserved for severe conditions such as psychosis and treatment-resistant depression (column 3).

Next, we analyze out-patient specialist visits. Column 1 of Table A.9 shows an increase in specialist visits for mental health conditions. The effect is significant in all post-invasion years. Due to the rarity of specialist mental health care visits, column 2 also shows aggregated results for all post-invasion years, showing a relative increase of 12 percent over the pre-invasion mean.

Lastly, due to the intense and long-lasting mental stress that Ukrainian expatriates experience after the invasion, we investigate the impact on specialist health care for burnout. Burnout is typically observed as a result of long-term work-related stress. The diagnosis of burnout requires individuals to display prolonged periods of fatigue and a substantial lack of mental energy or stamina, among other criteria (The National Board of Health and Welfare, 2003). In column 3 of Table A.9, we find that specialist treatment for burnout also increases after the invasion. In particular, the pooled estimate in column 4 indicates that treatment for burnout among Ukrainians increases by 25 percent over the pre-invasion mean (significant at the 10 percent level).[17]

4.2 Labor market outcomes

In our conceptual framework, war has an ambiguous effect on labor market outcomes. If the mental health shock raises the disutility of work, we expect lower employment and earnings. By contrast, if war increases financial pressure or decreases return intentions, earnings may instead increase. We first document effects on earnings, employment, and multiple job holding, and examine who responds. We then study the jobs accepted by job seekers and the jobs held by those already employed.

Earnings. Panel A of Figure 3 shows a decline in the average monthly earnings of Ukrainian expatriates of about 500 SEK in the first quarter of the invasion. This negative effect quickly switches sign, however, and Ukrainians' earnings increase by about 1,000 SEK by the end of 2022, a four percent increase relative to their pre-invasion mean. Similar to the dynamics in mental health, this effect is persistent, with Ukrainians' earnings remaining significantly higher until the end of 2024. Mirroring the earnings pattern, moreover, Figure A.7 shows

[17] Figure A.18 presents the event studies for specialist visits and burnout.

that sickness absence rises sharply in the invasion quarter, coinciding with the spike in anti-anxiety and sleeping pill prescriptions, after which absence rates fall significantly below pre-invasion levels.

FIGURE 3: LABOR MARKET OUTCOMES



(A) MONTHLY EARNINGS (SEK)

(B) EMPLOYMENT

(C) MULTIPLE JOB HOLDING

Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on labor market outcomes among Ukrainian migrants in Sweden. Panel A shows average monthly earnings per quarter, measured in 2024 SEK value (100 SEK ≈ $10). Panel B shows employment, measured as the share of months with positive earnings within each quarter. Panel C shows the probability of having multiple jobs, defined as having more than one employer in a quarter. Information about the number of employers is not available for 2024. Panels B and C are measured in percentage points (range: 0–100%). The sample includes Ukrainian migrants and matched control migrants. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level. Table 2 displays yearly estimates.

The rise in earnings could reflect more employment, longer hours, or higher wages. We show below that it is driven by more employment and multiple job holding, among both the previously employed and the non-employed. Ukrainians who were unemployed before the invasion exit unemployment faster but accept lower wages at lower-paying firms, while the previously employed show no significant changes in wages or contracted hours.

Employment and multiple jobs. Panel B of Figure 3 shows that Ukrainians' employment rate rises by approximately 2 percentage points during the first two years after the invasion. There is also a sharp increase in the likelihood of holding multiple jobs, as shown in Panel C.[18] Multiple job holding rises by approximately 1 percentage point, relative to a pre-invasion mean of 10.5 percent, and is not driven by job-to-job transitions.[19] These second jobs are at lower-paying firms: Table A.12, Panel B, shows that Ukrainians' second employers pay significantly lower mean earnings per employee after the invasion, and that Ukrainians also earn less in their second job.[20]

Table A.10 splits the sample by labor market status in the last quarter before the invasion. Column 1 shows that earnings rise both for the previously employed and for the non-employed, with the largest gains in the latter group. Column 2 shows that employment also rises in both groups. This indicates that the effects are not driven by labor market entrants alone, and that those already employed maintained a stronger labor market attachment post-invasion. Moreover, multiple job-holding rises among both the previously employed and the previously unemployed (column 3).

Job seekers. Lower reservation wages should be most visible among job seekers, whose wages and job characteristics are more flexible than those of workers in ongoing jobs. We therefore study migrants who became unemployed before the invasion, between 2020Q3 and 2021Q4, and follow their speed of exit from unemployment and accepted job characteristics.[21] Panel A of Figure 4 shows flat and insignificant pre-trends in the quarterly exit hazard for Ukrainians and controls leading up to the invasion, supporting the parallel trends assumption. Following the invasion, Ukrainian job seekers exit unemployment significantly faster than control migrants: the exit hazard rises by 6.2 percentage points in 2022, a relative increase of approximately 20 percent over the pre-invasion mean of 30.9 percent (column 1 of Table A.13). Using the annual Wage Structure Statistics (WSS), which record full-time equivalent wages and contracted hours for a subsample of workers, Panel A of Table 3 shows

[18] Tables A.19, A.20, A.21, and A.22 display the most common sectors and occupations before and after the invasion for the treatment and control group.

[19] Figure A.8 and Table A.11 show similar results when looking at being paid by two employers in the same month, in at least two months, or in all three months of a quarter. By contrast, transitions between employers without overlap do not change.

[20] Multiple job holding is associated with financial pressure and hours constraints in the primary job (Campion et al., 2020). Table A.22 shows that cleaners and personal assistants top the list of most common second occupations for both Ukrainian migrants and other migrants.

[21] We define a quarter of unemployment as a quarter with no months of employment and positive unemployment benefits. A spell ends in the last quarter of unemployment, and we measure the accepted job in the first subsequent quarter with employment. We start the entry window in 2020Q3 so that migrants who arrived in Sweden in late 2019 have spent at least half a year in the country before their unemployment spell begins.

a similar increase of 5.7 percentage points (column 1).[22]

The jobs that Ukrainian job seekers accept pay less. Column 2 of Table 3, Panel A, shows that they exit into firms that pay significantly lower full-time equivalent wages per employee, and column 3 shows that their own full-time equivalent wages are 6.8 percent lower than those of other migrants exiting unemployment. The lower wages could reflect lower-skilled Ukrainians being induced to find work. To test for this, we construct Mincerian residual wages that account for age, gender, years in Sweden, education, and county of residence. Column 4 shows that the estimated reduction is 40 percent *larger* in residual wages, so the lower accepted wages are not explained by a shift toward Ukrainians with less favorable observable characteristics. Since the invasion is unlikely to have changed these migrants' skills, this suggests greater mismatch between their skills and the jobs they accept. Finally, Column 5 shows no change in contracted hours upon exit. Panels B–D of Figure 4 show a similar, gradual decline in the firm earnings, own earnings, and earnings residuals of accepted jobs, using the comprehensive earnings data that cover all exits (Table A.13, columns 2–4).

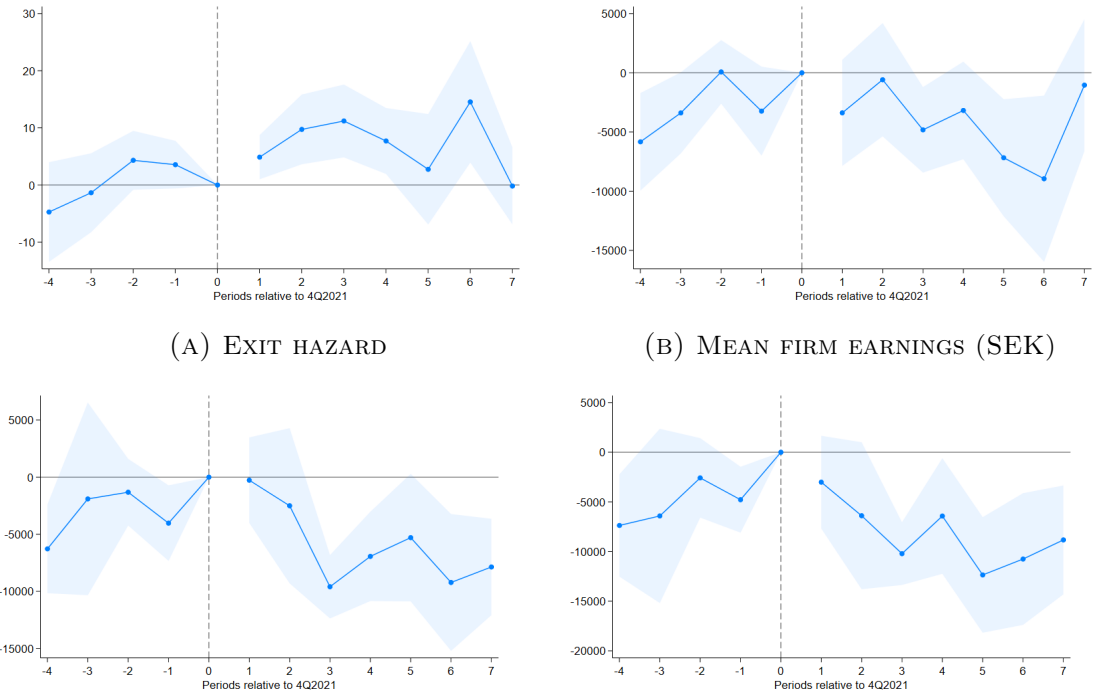
Previously employed. Panel B of Table 3 follows individuals who were employed before the invasion. The average wage at their workplace does not change significantly (column 2), nor does their full-time equivalent wage (column 3). Their contracted hours are also unchanged, apart from a marginally significant decrease of less than one percent in 2023 (column 5). Similarly, among all employed individuals, Table A.12, Panel A, shows no change in mean earnings at the firm of the main job. The previously employed thus raise their earnings by working more months and taking on second jobs, rather than through higher wages or longer hours in their main job.

Medical prescriptions and earnings. Lastly, as a descriptive exercise, Table A.14 compares Ukrainians with controls separately among individuals who start anti-depressants after the invasion and among all others. Among those starting treatment after the invasion, Ukrainians' earnings rise by about 2,100–2,500 SEK per month relative to controls. This is substantially higher than the estimated increase among all others, which is about 600–900 SEK. This is evidence against the possibility that Ukrainians' mental health and labor market responses occur in completely different groups. [23]

[22]The WSS data are available until 2023. We pool 2022 and 2023 in Table 3 as only six unemployment exits are observed in 2023.

[23]Furthermore, the absence of treatment does not imply the absence of a mental health response, as many individuals experiencing mental distress do not seek care (Andrade et al., 2014). Although those starting treatment constitute a small share of Ukrainians, a substantially larger share has therefore likely experienced a decline in mental health that is not reflected in prescription data.

FIGURE 4: EXIT HAZARD AND JOB QUALITY OUTCOMES: UNEMPLOYED BETWEEN 3Q2020 AND 4Q2021



(A) EXIT HAZARD

(B) MEAN FIRM EARNINGS (SEK)

(C) EARNINGS (SEK)

(D) EARNINGS RESIDUAL

Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on exit from unemployment and accepted job quality. The sample consists of Ukrainian migrants and matched control migrants with unemployment spells beginning between 2020Q3 and 2021Q4. Panel A shows the quarterly exit hazard in percentage points. Panels B through D show measures in the first quarter of employment following exit, conditional on exiting. Panel B shows mean earnings at the exit firm, defined as the leave-one-out average earnings across all workers at the firm. Panel C shows the individual's own earnings at exit. Panel D shows earnings residuals from a Mincer regression controlling for age, gender, years in Sweden, education, and county of residence. Earnings are measured in 2024 SEK value (100 SEK $\approx$ \$10). All specifications control for spell duration and entry cohort fixed effects. To maintain precision, the last two quarters are pooled as the sample of active spells diminishes toward the end of the follow-up window. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

4.3 Robustness

Alternative sample definitions. The main analysis conditions on a matched sample of individuals with similar pre-invasion characteristics. Here, we examine whether results are sensitive to this restriction.

Figure A.9 replicates the analysis using the full, unmatched sample. Results are similar in pattern and magnitude to the main analysis, with little evidence of pre-trends across both drug prescriptions and earnings. Figure A.10 and Table A.15 show that excluding war-adjacent countries from the control group does not drive our results, as including migrants from Poland, the Baltic states, and other border countries produces similar results.

The main analysis restricts the sample to individuals who remain in Sweden through 2024, which could introduce bias if the invasion triggered differential emigration across origin groups. Figure A.11 and Table A.16 address this by relaxing the restriction to require only continuous residence between 2019 and 2021, allowing individuals to emigrate at any point thereafter. This change produces results that are very similar to our main specification.

To avoid capturing interaction effects associated with the 2014 annexation of Crimea and separatism in Donbas, Table A.17 reproduces our main specification when dropping individuals born in either region, finding similar results.

Placebo test. Next, we use drugs for non-mental health conditions as a placebo test. If Ukrainians begin spending a larger share of their time in Sweden after the invasion, we may expect a mechanical increase in health care usage. Figure A.12 shows that there are no effects for conditions that are unlikely to be affected by the invasion using drugs for cardiovascular and other chronic conditions.[24] This also supports the identification strategy by ruling out general health deterioration or increased healthcare contact among Ukrainians as alternative explanations.

Synthetic difference-in-differences. As an alternative to the two-way fixed effects specification, we estimate a Synthetic Difference-in-Differences (SDID) event study following Arkhangelsky et al. (2021), treating Ukraine as a single treated unit in a panel of origin countries. SDID relaxes the parallel trends assumption by optimally reweighting units and time periods to align pre-treatment dynamics between treated and control groups. For inference, we re-estimate SDID with each of the 95 control countries as the treated unit and compare Ukraine's estimate with these placebo estimates, after scaling each estimate by the country's pre-invasion root mean squared prediction error (Abadie et al., 2010; Abadie, 2021). This accounts for placebo estimates being noisier for countries that are smaller or

[24] Table A.18 displays corresponding estimates at the yearly level.

less well matched before the invasion than Ukraine (Ferman and Pinto, 2019; MacKinnon and Webb, 2020). Figure A.13 and Table A.23 present the results. These estimates are similar to our main specification for both mental health prescriptions and earnings, in terms of magnitudes, pre-trends, and temporal pattern after the invasion, and are significant at the 5-percent level in all years, except for immediate-relief drug prescriptions in 2024 ($p = 0.062$). Results are similar using an alternative test that scales placebo estimates by their predicted variation given country size and pre-invasion fit.

Permutation inference. As a further check on inference, we apply country-level permutation inference to the unmatched sample following Abadie et al. (2010). We assign the treatment indicator in turn to each origin country, estimate the same two-way fixed effects specification as in the main analysis for each placebo assignment, and compare Ukraine's estimate with the distribution of placebo estimates. Figure A.14 and Table A.24 present the results. The effects on any mental health prescription are significant at the 5-percent level in all years, and the effects on earnings are significant at the 5-percent level in 2023 and 2024 and at the 10-percent level in 2022. The timing of the effects on specific drugs mirrors the main analysis: the effect on immediate-relief prescriptions is significant in 2022 and weakens thereafter (significant at the 10-percent level in 2023 and insignificant in 2024), while the effect on anti-depressants is insignificant in 2022 and significant at the 5-percent level in 2023 and 2024.

5 External validity: Evidence from Europe and the United States

Having established the main results for Sweden, we assess whether they generalize to other settings. For labor market outcomes, we use data from the American Community Survey (ACS) for the years 2018–2024, applying analogous sample restrictions and event-study specifications to those in the main analysis.[25] We then estimate event-study specifications analogous to Equation 1, regressing labor market outcomes on interactions between a Ukrainian-origin indicator and year dummies, with origin country and state-by-year fixed effects. Standard errors are clustered at the origin country level.

Figure 5 displays the event-study results for three labor market outcomes. Panel A shows that Ukrainian expatriates in the United States experience a large and significant increase in annual earnings after the invasion, on the order of 3,000–4,000 SEK per month in PPP

[25] Full details are provided in Section B.1. The 2020 survey year is excluded due to data collection disruptions caused by the COVID-19 pandemic.

terms. Panel B shows weeks worked per year, which increase modestly but imprecisely. Panel C shows the probability of working 40 or more hours per week, which increases by approximately 1 percentage point in 2022 and 2024. Across outcomes, the pre-trends are reassuringly flat, with no evidence of diverging trajectories prior to the invasion.[26]

FIGURE 5: EXTERNAL VALIDITY: EVENT-STUDY ESTIMATES



(A) US: MONTHLY EARNINGS (PPP SEK)

(B) US: WEEKS WORKED

(C) US: WORKED 40+ HOURS/WEEK

(D) EUROPE: WELL-BEING INDEX

Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine. Panels A–C show labor market outcomes among Ukrainian migrants in the United States, using data from the American Community Survey (ACS) 2018–2024 (excluding 2020). Panel A shows monthly earnings in 2024 PPP SEK (100 SEK ≈ $10). Panel B shows weeks worked per year (using interval midpoints for 2018, exact values thereafter). Panel C shows the probability of usually working 40 or more hours per week (range: 0–100%). Panel D shows the Anderson well-being index (in sd) using Ukrainian migrants in the European Social Survey (ESS). The sample consists of foreign-born individuals who immigrated before 2019 (ACS) or 2022 (ESS). ACS specifications include country-of-origin and state-by-year fixed effects, and ESS specifications include host-country and year fixed effects. The vertical dashed line indicates the base year (2021 for ACS or 2019–2021 for ESS). Standard errors are clustered by country of origin. The shaded areas show the confidence intervals at the 95% level.

[26]Table B.1 presents the corresponding yearly difference-in-differences estimates. Since the ACS is a repeated cross-section, the sample composition may change over time. Table B.2 shows that there are no significant differences in age, citizenship or years since migration after the invasion, although there are small increases in the share of females and college-educated. Table B.3 shows that the earnings results are robust to the inclusion of individual-level covariates and to restricting the sample to a balanced set of origin countries.

Since the ACS does not contain information on mental health or subjective well-being, we turn to the European Social Survey (ESS) to assess whether the mental health effects documented in Sweden extend to other countries.[27] Using an event-study specification with host country[28] and year fixed effects, Panel D of Figure 5 shows effects on a well-being index, a composite of four standardized variables following Anderson (2008): happiness, life satisfaction, satisfaction with health, and self-reported health status. The result indicates a significant reduction in this well-being index. In particular, the self-reported well-being of Ukrainians is reduced by approximately one-half of a standard deviation by 2024.

These results are highly consistent with our Swedish findings, indicating that Ukrainian expatriates across the United States and Europe are similarly affected by Russia's full-scale invasion. Moreover, they provide direct evidence on self-reported mental health and well-being, which is not available in Swedish register data.

6 Local refugee reception

In this section, we ask whether incumbent Ukrainians' mental health and labor market outcomes are affected by the arrival of Ukrainian refugees. Upwards of 50,000 Ukrainians arrived in Sweden following the invasion, most of them in the first half of 2022.[29] Ukrainians already living in Sweden played an active role in welcoming compatriots displaced by the invasion, providing practical and social support individually and through diaspora organizations (Shmulyar Gréen and Odynets, 2024). In Linköping and Malmö, for example, established Ukrainian residents organized to help refugees, distributing food and clothing, translating, and explaining how Swedish society works (Lindskog, 2022; Wallén-Widung, 2022). Areas with greater arrival of refugees may also have seen increased demand for interpreters with Russian and Ukrainian language skills. It is therefore of interest to understand how closer proximity to refugees may have mediated mental health and labor market responses.

To identify how refugee arrivals affected incumbent Ukrainians, we face two design challenges. First, a larger refugee arrival may have indirect impacts on mental health and labor market outcomes, for example by lengthening health care wait times or inducing a labor

[27] Full details are provided in Section B.2. Due to small sample sizes, we pool ESS rounds into five groups. We restrict the sample to host countries where Ukrainian migrants are observed in both the pre- and post-invasion periods, and require a minimum of three observations per group in each country-period cell. These restrictions yield a sample of approximately 830 migrants, of whom 186 are Ukrainian.

[28] We include host-country and period fixed effects rather than origin-country fixed effects, since the ESS contains few respondents from any given origin country within each host country. The estimates therefore compare Ukrainian and other migrants living in the same host country.

[29] Ukrainian refugees were initially not given Swedish ID numbers, meaning that it is not possible to identify family links or see who cohabits. Ukrainian refugees were not able to register in the population register and receive an ID number until June 2024.

supply shock. To circumvent this issue, we include municipality-by-quarter fixed effects that absorb the impact of refugees shared by all immigrants. Second, the location of refugees is unlikely to be as good as randomly allocated. Refugees may self-select in areas in which incumbent Ukrainians are doing better in the labor market, or where access to health care is simpler. We mitigate concerns about endogenous location choice by exploiting the fact that a large share of Ukrainian refugees were assigned to host municipalities by the Swedish Migration Agency upon arrival. Municipal allocation quotas were determined by aggregate local characteristics, such as population size and the number of asylum seekers already residing in the municipality.[30]

To measure local exposure to refugees, we define *Refugees* as the number of Ukrainian refugee arrivals in a municipality during 2022 divided by the number of Ukrainians already residing there in 2021. *Assigned refugees* instead uses the number of refugees assigned to a municipality by the Swedish Migration Agency. Table 5 displays our results. Column 1 shows that higher refugee reception attenuates the adverse mental health effects of the invasion. Column 2 shows that this also holds for assigned refugees. In 2022, a one standard deviation increase in assigned refugee arrivals reduces the impact on prescriptions by 0.345 percentage points, a 32% reduction compared to the effect at the mean. The estimate is similar but less precise in the following two years. For earnings, however, we observe no statistically significant heterogeneous effect, as seen in columns 3 and 4. This indicates that local refugee arrivals did not substantially increase demand for incumbent Ukrainian workers, for example to serve as interpreters or in other paid refugee-related services.

These findings indicate that greater exposure to conational refugees alleviates the mental health burden, possibly through greater contact leading to less isolation and providing comfort among the incumbent expatriate population.

7 Mechanisms

This section explores potential mechanisms behind our results. First, it evaluates the role of exposure to conflict in the region of origin. Second, we ask if changed return intentions can explain the increase in earnings. Lastly, we assess additional alternative mechanisms.

7.1 Exposure to conflict

Individuals born in more war-exposed areas may face a greater mental health shock due to the risk of close ones being displaced or put in harm's way, as well as greater risk to their own

[30] See details in the Swedish government bill 2021/22:250 (Regeringen, 2022).

wealth in the area. If such exposure raises the value of earnings in order to compensate close ones or lost property, it may also explain our labor market results. We therefore match our sample of Ukrainian expatriates to their region (oblast) of origin using newly collected birth town data from residency permit applications, covering 90% of Ukrainians in our sample. We then use data from ACLED (Raleigh et al., 2023) to compute war-related fatalities by oblast.[31]

For the main analysis, we measure conflict intensity using fatalities in the first quarter of 2022, which captures the regional spread of conflict at the earliest and arguably most exogenous stage of the invasion. Nevertheless, due to the spatial concentration of the conflict, this measure strongly predicts long-run conflict intensity. Oblasts with above-median fatalities in Q1 2022 continue to account for the vast majority of fatalities through 2024, while oblasts with below-median early fatalities see close to zero fatalities by 2024 (see Figure A.15). As shown in Figure A.16, conflict events are heavily concentrated in eastern oblasts bordering Russia and Belarus, and largely coincide with areas of Russian territorial advance.

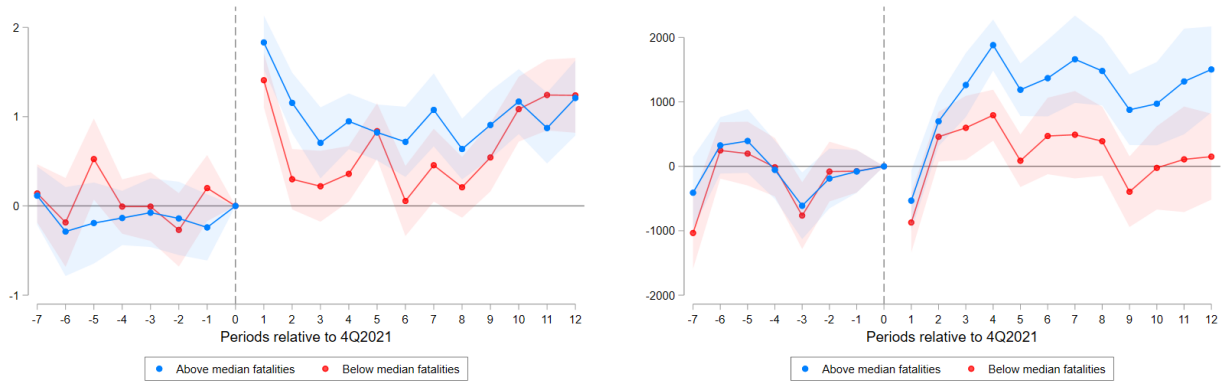
The stark regional variation in conflict fatalities means that the direct war exposure of expatriates varies substantially by region of birth. Figure 6 displays event-study estimates separately for Ukrainians from oblasts with above-median fatalities in 2022Q1 (blue) and those from oblasts with below-median fatalities (red). Panel A shows that both groups experience significant increases in mental health prescriptions at the onset of the invasion. This is followed by somewhat larger effects in the more exposed group, but the groups then converge in 2024. The pattern is confirmed in Table 4, column 1, which shows a significant difference between more and less affected birth regions in 2022, after which the difference becomes smaller and insignificant.

By contrast, Panel B of Figure 6 shows that earnings increases are concentrated among migrants from the most war-exposed oblasts. Individuals from less exposed regions display a smaller increase during 2022 that drops close to zero throughout the rest of the sample period. The differences are statistically significant: Table 4, column 3, shows that individuals from more war-exposed oblasts have significantly higher earnings throughout 2022–2024 relative to the low-exposure group. Individuals from low-exposure oblasts display no significant earnings increase, whereas the earnings estimates for high-fatality oblasts are close to the baseline estimate in column 4 of Table 2. Tables A.25 and A.26 show that the results are robust to specifying fatalities in logs and to measuring conflict intensity over the full 2022–2024 period rather than Q1 2022 alone.

A potential concern with these results is that individuals from high-fatality oblasts may

[31] Other relevant measures, such as civilian fatalities or the number of displaced persons, are highly correlated with total combat fatalities.

Figure 6: Effects by exposure to war fatalities



(a) Any drug (b) Earnings

Notes: This figure shows event-study estimates of heterogeneous treatment effects by exposure to war fatalities in the home region (oblast). The Ukrainian sample is restricted to those for whom we can match birth town to the oblast of origin using residency permit application data. Blue lines show Ukrainians originating from oblasts with above-median war fatalities in the first quarter of 2022 (corresponding to 20 or more deaths). Red lines show Ukrainians from oblasts with below-median fatalities. Panel A shows the probability of filling at least one prescription for any mental health medication per quarter, measured in percentage points. Panel B shows average monthly earnings per quarter, measured in 2024 SEK value (100 SEK $\approx$ \$10). The control group consists of matched migrants from other countries. Standard errors clustered by oblast of origin for Ukrainians and by country of origin for controls. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

differ from other Ukrainians in ways that could explain the heterogeneous effects of the invasion. However, Table A.27 shows that pre-war characteristics are broadly balanced across exposure groups: most individual correlations are insignificant, as is the F-test of joint significance. The main exception is that individuals from high-exposure oblasts are more likely to be Swedish citizens and to have been in Sweden longer. Columns 2 and 4 of Table 4 address this with horse-race regressions that add interactions between the Ukraine indicator, post-invasion year dummies, and indicators for Swedish citizenship and above-median years of residence. Reassuringly, the inclusion of these factors does not affect our conclusions.

Taken together, these results show that mental health effects are partly shared across the Ukrainian diaspora regardless of regional origin, consistent with a collective trauma that transcends geographic proximity to the fighting. By contrast, earnings effects are concentrated among migrants from the most war-exposed regions. This is consistent with war exposure raising the returns to earning income in order to provide transfers or recover from

economic shocks in the origin region. Moreover, greater war exposure may also affect return intentions, which may affect labor supply decisions. We consider this possibility in the next section.

7.2 Return intentions

Recent work has shown that conflict in home regions may influence migrants' return intentions, which in turn affects their investment in host-country integration (Aksoy et al., 2024; Bassetto and Freitas Monteiro, 2025). Under this channel, drawing on Dustmann and Görlach (2016), reduced return intentions would raise the perceived returns to host-country labor market investment, potentially explaining the earnings increase we document.

The qualitative character of the labor market response is difficult to reconcile with a pure integration-investment channel. The literature on temporary migration (Dustmann and Görlach, 2016; Adda et al., 2022) predicts that migrants who come to expect a longer stay in the host country should have higher reservation wages and accept fewer job offers, implying slower exits from unemployment and higher wages in the jobs they accept. Instead, we observe that Ukrainians exit unemployment faster and accept lower wages at lower-wage firms upon exit. They also increase multiple job holding, at firms with lower earnings per employee. This pattern is more consistent with immediate income generation than investment with a longer planning horizon.

Another possibility is that Ukrainians work and lower their reservation wage to maintain their residency status (Bassetto and Freitas Monteiro, 2025). Below, we show that we observe significant impacts even among individuals with permanent residency and high attachment to Sweden.

As we do not observe return intentions, in order to provide a quantitative test, we focus on individuals with high attachment to Sweden as a proxy. We define high attachment as being a Swedish citizen with a Swedish-born spouse. This group arguably had low return intentions before the invasion and, given Swedish citizenship, do not need to work to maintain residency. Table A.28 shows that this group has low realized emigration rates after the invasion, with small differences between Ukrainians and similar control migrants, consistent with stable return plans.[32] By contrast, Ukrainians with lower attachment to Sweden display a larger decrease in emigration after the invasion. Columns 1–2 of Table A.29 show no statistically significant difference in earnings or employment effects between Ukrainians with higher and lower attachment. Columns 3–4 narrow the comparison to individuals born in more war-exposed regions, where conflict may particularly affect return intentions, and again show

[32]The difference is significant in one year, 2022, but smaller and insignificant in 2023 and 2024.

no significant differences. Table A.30 reports split-sample estimates, which indicate large positive estimates for earnings and employment among Ukrainians with high attachment, particularly those from more war-exposed regions.

These results show meaningful economic responses among migrants with both low and high attachment to Sweden. The high-attachment group has low realized emigration rates and no visa-related incentive to increase earnings, suggesting that a mechanism other than changed return intentions drives its earnings increase. Among migrants with lower attachment, whose emigration behavior responded strongly, changed return intentions remain a plausible explanation for the effects we observe.

7.3 Alternative mechanisms

This section considers three alternative explanations for our results, two for the mental health effects and one for the labor market effects.

The mental health results could in principle reflect reduced stigma around seeking care rather than genuine deterioration in mental health. Under this interpretation, the effects would be driven by individuals who already had latent mental health issues but had previously avoided treatment. This predicts no or minimal effect among individuals who had already sought treatment before the invasion, since they had already overcome the stigma barrier. Figure A.5 contradicts this: prior users display a large spike in prescriptions at the onset of the invasion—2.5 percentage points, compared to the baseline of 1.6—which fades in subsequent quarters but rises again by the end of the sample period. The pattern of reacting immediately at the invasion and again toward the end of the sample is difficult to attribute to stigma reduction. Moreover, the initial increase is driven by immediate-relief drugs rather than anti-depressants (Figure 2), consistent with individuals seeking treatment for new acute symptoms rather than previously unmet long-term needs.

It is also possible that Ukrainians' care-seeking behavior remained unaffected, and that the increase in prescriptions simply reflects the fact that physicians became more lenient in prescribing medication to Ukrainians after the Russian invasion. Prescription data capture treatment but not the underlying care-seeking decisions that precede it. To explore this, we use primary care visit data from Skåne, the third largest Swedish region. Table A.6 shows a clear increase in primary care visits with a mental health diagnosis among Ukrainians after the invasion.[33] Ukrainians thus actively sought care, suggesting that the rise in prescriptions at least partly reflects increased care-seeking rather than only more lenient prescribing. To test if the Skåne sample is representative of our full sample, Table A.7 replicates our main

[33] A corresponding event-study plot is shown in Figure A.17.

results using Skåne, finding very similar effects.

The labor market effects could alternatively reflect positive discrimination by employers: changes in labor demand rather than supply. A positive demand shock, however, would affect only those already in the labor force, leaving individuals not actively seeking work unaffected. Table A.10 shows that earnings and employment effects are positive across all three pre-invasion labor market groups: the employed, registered job seekers, and those not in the labor force. Table A.31 further shows no statistically significant differences between the latter two groups, ruling out employer favoritism as the primary explanation. Additionally, the fact that the effects vary with the conflict intensity in individuals' home regions is inconsistent with effects being driven by positive discrimination.

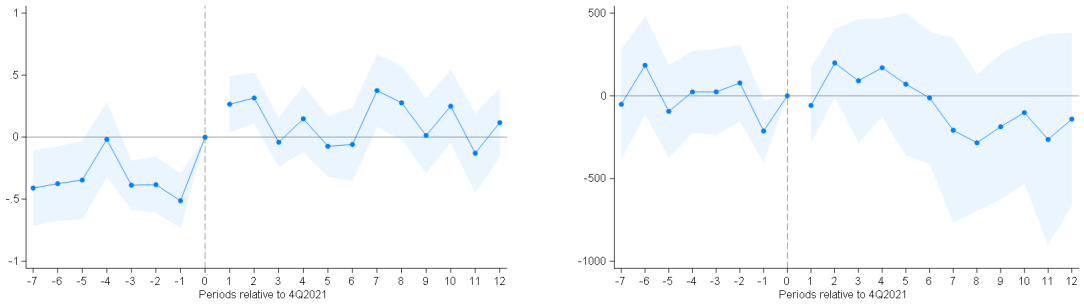
8 Effects on Russian expatriates

Finally, we study how the invasion affected Russian expatriates in Sweden, who experienced the shock under very different circumstances than Ukrainians. For Russians living abroad, the invasion dramatically altered the prospects of maintaining family ties and returning home: men faced the risk of conscription upon return, while family members remaining in Russia could be enlisted.[34] The EU's full suspension of its visa facilitation agreement with Russia in September 2022 further restricted the movement of Russian nationals, cutting off a key channel for family visits.

Applying the same sample restrictions and matching procedure as for Ukrainians, we construct a matched sample of the approximately 18,000 Russians living in Sweden in 2022. Figure 7 and Table A.32 present the results. We find an increase in mental health prescriptions following the invasion, though the effect is smaller in both absolute and relative terms than for Ukrainians. The effect is persistent over time. In contrast to Ukrainians, however, we observe no effect on earnings. This is consistent with Russians experiencing mental stress from the war, but without direct conflict exposure in origin areas.

[34]The maximum age for conscription in Russia increased from 27 to 30 years in January 2024 (Reuters, 2023a).

FIGURE 7: OUTCOMES FOR RUSSIANS



(A) ANY MENTAL HEALTH PRESCRIPTION (B) MONTHLY EARNINGS (SEK)

Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on outcomes among Russian migrants in Sweden. Panel A shows the probability of filling at least one prescription for any mental health medication per quarter, measured in percentage points. Panel B shows average monthly earnings per quarter, measured in 2024 SEK value (100 SEK $\approx$ \$10). The sample includes Russian migrants and matched control migrants from other countries, constructed using the same matching procedure as the main analysis. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

9 Conclusion

This paper studies how war shapes the lives of expatriates. With growing international migration, millions of individuals globally find themselves both physically far from danger and directly tied to conflicts through family, financial obligations, and emotional attachment. Studying incumbent Ukrainian migrants in Sweden during Russia's 2022 full-scale invasion, we document an immediate and persistent deterioration in mental health alongside a sustained increase in employment and earnings. The coexistence of worsening mental health and rising earnings, which persists for three years after the invasion, highlights a previously understudied margin of adjustment to conflict. These patterns replicate in European and US data, suggesting that wars may have global reverberations through their effects on diasporas, which has important implications for population health and labor market functioning.

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Table 1: Descriptive statistics: Ukrainian and Matched Comparison Migrants

	Rest of Countries			Ukraine			
	n	mean	sd	n	mean	sd	Diff
Female	17348	0.67	0.47	8771	0.67	0.47	-0.000
Age	17348	38.19	12.26	8771	37.65	11.36	-0.541
Married with Swedish	17348	0.13	0.33	8771	0.12	0.32	-0.012
Married with other	17348	0.21	0.41	8771	0.21	0.41	-0.001
Had children	17348	0.56	0.50	8771	0.56	0.50	0.001
Years in Sweden	17348	9.83	8.46	8771	9.50	7.18	-0.329
Had Swedish citizenship	17348	0.54	0.50	8771	0.55	0.50	0.009
Had relative visa	17348	0.23	0.42	8771	0.23	0.42	-0.004
Had work visa	17348	0.13	0.34	8771	0.12	0.33	-0.009
Had student visa	17348	0.01	0.10	8771	0.01	0.11	0.003
Refugee	17348	0.02	0.14	8771	0.02	0.14	0.000
No university education	17348	0.24	0.43	8771	0.24	0.42	-0.005
Mean annual family income (2020-21)	17348	4865.29	16149.84	8771	4811.81	5579.14	-53.483
Mean annual wage income (2020-21)	17348	2538.44	2992.44	8771	2578.28	2336.17	39.842

Notes: This table presents descriptive statistics for the matched sample used in the main analysis. The sample includes Ukrainian migrants (treatment group) and matched control migrants from countries other than Russia and European countries bordering Ukraine or Russia. Matching was performed using exact matching on county of residence and gender, combined with nearest-neighbor propensity score matching (caliper = 0.01) on 2020 characteristics: age, presence of children, marital status, visa type, Swedish citizenship, years in Sweden, university education, and mean annual family and individual income for 2020–2021 (nominal; in 100 SEKs). The last column reports the difference in means between Ukrainian and control migrants. ** p<0.1, ** p<0.05, *** p<0.01.*

Table 2: Mental health and labor market outcomes: Yearly estimates

	Any drug	Immediate relief drug	Anti depressant	Earnings	Employment	Multiple jobs
	(1)	(2)	(3)	(4)	(5)	(6)
Ukraine × 2022	1.00***	0.78***	0.41***	749.54***	1.90***	1.25***
	(0.10)	(0.08)	(0.08)	(173.99)	(0.60)	(0.19)
Ukraine × 2023	0.71***	0.26***	0.66***	984.83***	2.26***	1.04***
	(0.11)	(0.09)	(0.09)	(266.61)	(0.81)	(0.27)
Ukraine × 2024	1.07***	0.31***	1.12***	813.51***	1.22	
	(0.14)	(0.09)	(0.12)	(304.91)	(1.08)	
Observations	522380	522380	522380	522380	522380	417904
Individuals (Ukraine)	8771	8771	8771	8771	8771	8771
Individuals (Control)	17348	17348	17348	17348	17348	17348
Mean (Ukraine)	5.60	3.13	3.49	26611	69.23	10.49
Mean (Control)	5.95	2.86	4.17	25829	64.13	9.34

Notes: This table shows difference-in-differences estimates of the effect of the 2022 Russian invasion of Ukraine on mental health and labor market outcomes among Ukrainian migrants in Sweden. Column 1 shows the probability of filling at least one prescription for any mental health medication per quarter. Column 2 shows prescriptions for anti-anxiety medication or sleeping pills (immediate relief). Column 3 shows prescriptions for anti-depressants. Column 4 shows average monthly earnings per quarter, measured in 2024 SEK value (100 SEK ≈ $10). Column 5 shows employment, measured as the share of months with positive earnings within each quarter (range: 0–100%). Column 6 shows the rate of having more than one employer in the same quarter. Data on multiple jobs is not available in 2024. Mean values are measured during the pre-period. The sample includes Ukrainian migrants and matched control migrants. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE 3: JOB QUALITY WITH FULL-TIME-EQUIVALENT WAGES: ACCEPTED JOBS AND EXISTING JOBS

	Exit hazard (pp) (1)	Mean firm FTE wage (2)	FTE wage (3)	FTE wage residual (4)	Work % (5)
Panel A: Jobs accepted on exiting unemployment (unemployed between 3Q2020 and 4Q2021)					
Ukraine × Post	5.74***	-2058.76**	-2420.75***	-3374.11***	5.98
	(1.70)	(957.54)	(804.01)	(1147.70)	(4.26)
Observations	6112	441	441	441	441
Individuals (Ukraine)	426	152	152	152	152
Individuals (Control)	936	287	287	287	287
Mean (Ukraine)	22.27	40574	35767	-6348	83.87
Mean (Control)	20.66	39299	33544	-6599	85.25
Panel B: Jobs of individuals employed before the invasion					
Ukraine × 2022		-20.07	-57.45	-43.95	0.02
		(66.25)	(154.53)	(158.45)	(0.42)
Ukraine × 2023		15.78	-49.27	19.25	-0.76*
		(121.85)	(152.74)	(156.49)	(0.43)
Observations		30521	30521	30521	30521
Individuals (Ukraine)		2735	2735	2735	2735
Individuals (Control)		5829	5829	5829	5829
Mean (Ukraine)		46730	44362	-1194	93.81
Mean (Control)		47146	45744	703	94.50

Notes: This table shows the effect of the 2022 Russian invasion of Ukraine on the quality of jobs accepted on exiting unemployment (Panel A) and of the jobs held by individuals employed before the invasion (Panel B), using full-time-equivalent (FTE) wages from the wage structure statistics (WSS), which record each employment at covered employers in a measurement month in the autumn. All WSS jobs held by an individual at the measurement are combined: the wage measures are averages across these jobs weighted by the contracted employment rate, so that the FTE wage equals total monthly pay divided by the total employment rate, and the employment rate is the sum across jobs, which can exceed 100. In Panel A, the sample consists of Ukrainian migrants and matched control migrants with unemployment spells beginning between 2020Q3 and 2021Q4, followed through 2023Q3. Column 1 reports the quarterly exit hazard, measured in percentage points; estimated on all spell quarters with individual and quarter fixed effects. Columns 2–5 are estimated on spells that exit unemployment into a job observed in the WSS, with country-of-origin and quarter fixed effects. Jobs are measured at the first WSS measurement after the start of employment, in the autumn of the same year for jobs starting in the first three quarters and in the autumn of the following year for jobs starting in the fourth quarter; jobs starting in 2021Q4, which would be measured after the invasion, are excluded. All specifications in Panel A control for spell duration and entry cohort fixed effects, and Ukraine × Post pools 2022 and 2023. In Panel B, the sample consists of individuals with positive earnings and not registered as unemployed in 2021Q4, with a main employer in 2021Q4 (the organization with the highest earnings in October–December 2021 in the employer register), who are observed in the WSS at least once in 2020–2021 and at least once in 2022–2023. The models include individual and year fixed effects, so that the coefficients reflect changes for the same individual relative to 2020–2021. Column 2 shows the leave-one-out mean FTE wage at the workplace. Column 3 shows the FTE wage, i.e., the monthly wage converted to full time. Column 4 shows FTE wage residuals from a Mincer regression controlling for age, education, years in Sweden, gender, and county, estimated on the WSS jobs of control migrants. Column 5 shows the contracted employment rate. Wages are measured in 2024 SEK value (100 SEK ≈ $10). Mean values refer to the pre-period (2020–2021): spell quarters in column 1, exits in columns 2–5 of Panel A, and person-years in Panel B. In column 1, the number of individuals refers to the estimation sample, which excludes singleton spell quarters. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

Table 4: Effects by above/below median exposure to war fatalities

	Any drug		Earnings	
	(1)	(2)	(3)	(4)
Ukraine × 2022	0.522*	0.477	377.808	339.550
	(0.287)	(0.318)	(265.545)	(340.947)
Ukraine × 2023	0.340	0.652**	472.554	796.749
	(0.288)	(0.319)	(384.345)	(552.206)
Ukraine × 2024	0.978***	1.267***	109.617	449.749
	(0.288)	(0.359)	(431.484)	(598.232)
Ukraine × Above median fatalities 2022Q1 × 2022	0.758**	0.761**	566.926**	801.550***
	(0.328)	(0.330)	(236.305)	(246.265)
Ukraine × Above median fatalities 2022Q1 × 2023	0.593	0.652	839.736***	1254.742***
	(0.412)	(0.428)	(303.364)	(366.654)
Ukraine × Above median fatalities 2022Q1 × 2024	0.181	0.238	1070.714***	1511.298***
	(0.350)	(0.353)	(344.777)	(418.535)
Horse-race interactions	No	Yes	No	Yes
Observations	501500	501500	501500	501500
Individuals (Ukraine)	8771	8771	8771	8771
Individuals (Control)	17348	17348	17348	17348
Mean	5.83	5.83	26092	26092
Mean (Ukraine)	5.60	5.60	26611	26611
Mean (Control)	5.95	5.95	25829	25829

Notes: This table shows estimates depending on exposure to conflict fatalities in the home region. Ukrainian migrants are classified based on their oblast of origin using birth town data from residency permit applications. *Above median fatalities 2022Q1* takes the value one if a Ukrainian originates from an oblast that experienced above-median number of war fatalities during the first quarter of 2022 (corresponding to 20 or more deaths), and zero otherwise. *Any drug* is an indicator for filling at least one prescription for a mental health medication in a quarter. *Earnings* denotes average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). *Horse-race interactions* indicate inclusion of the triple interaction between *Ukraine*, post-invasion year dummies, and indicators for being a Swedish citizen and for having above-median years in Sweden. Standard errors are clustered by country of origin for non-Ukrainian origins, and by birth oblast for Ukrainians. ** p<0.1, ** p<0.05, *** p<0.01.*

Table 5: Effects by refugee reception

	Any drug		Earnings	
	(1)	(2)	(3)	(4)
Ukraine × 2022	1.059***	1.068***	716.069***	717.369***
	(0.138)	(0.141)	(191.745)	(192.697)
Ukraine × 2023	0.759***	0.774***	929.631***	927.454***
	(0.152)	(0.152)	(293.249)	(293.685)
Ukraine × 2024	1.132***	1.123***	801.864**	796.604**
	(0.162)	(0.162)	(321.567)	(321.568)
Ukraine × 2022 × Refugees	-0.326**		179.481	
	(0.128)		(145.839)	
Ukraine × 2023 × Refugees	-0.311*		5.096	
	(0.184)		(179.858)	
Ukraine × 2024 × Refugees	-0.198		57.960	
	(0.179)		(212.582)	
Ukraine × 2022 × Assigned refugees		-0.345**		250.633
		(0.138)		(174.141)
Ukraine × 2023 × Assigned refugees		-0.339*		32.807
		(0.198)		(178.716)
Ukraine × 2024 × Assigned refugees		-0.393*		41.795
		(0.208)		(222.188)
Observations	520900	521860	520900	521860
Individuals (Ukraine)	8771	8771	8771	8771
Individuals (Control)	17348	17348	17348	17348
Mean (Ukraine)	5.60	5.60	26611.03	26611.03
Mean (Control)	5.95	5.95	25829.25	25829.25

Notes: This table shows heterogeneous treatment effects depending on the reception of Ukrainian refugees in the individual's municipality in 2022. *Refugees* is measured as the number of Ukrainian refugees hosted by the municipality by the end of 2022 relative to the number of Ukrainians already living in the municipality in 2021. Columns 1 and 3 use all refugees arriving in the municipality. Columns 2 and 4 use only refugees who were centrally assigned by the Swedish Migration Agency. Columns 1–2 show the probability of filling at least one prescription for any mental health medication. Columns 3–4 show average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). All models control for individual and municipality-by-quarter fixed effects. The sample includes Ukrainian migrants and matched control migrants. Standard errors are clustered by country of origin and municipality. * *p<0.1, ** p<0.05, *** p<0.01.*

Online Appendix
Beyond the Battlefield: The Impact of War on Expatriates' Health and Livelihoods

A.1 Figures

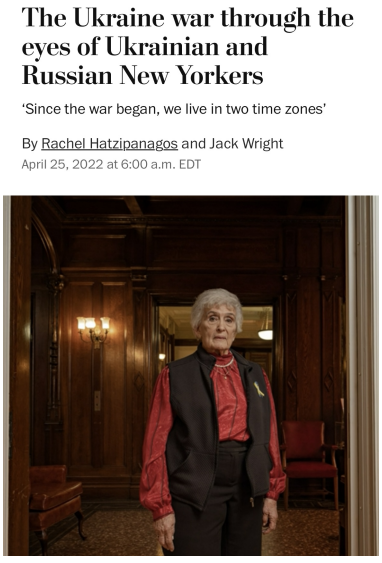
FIGURE A.1: NEWSPAPER ARTICLES ON THE REACTIONS OF UKRAINIANS LIVING ABROAD



(A) NBC NEWS, FEBRUARY 28TH 2022

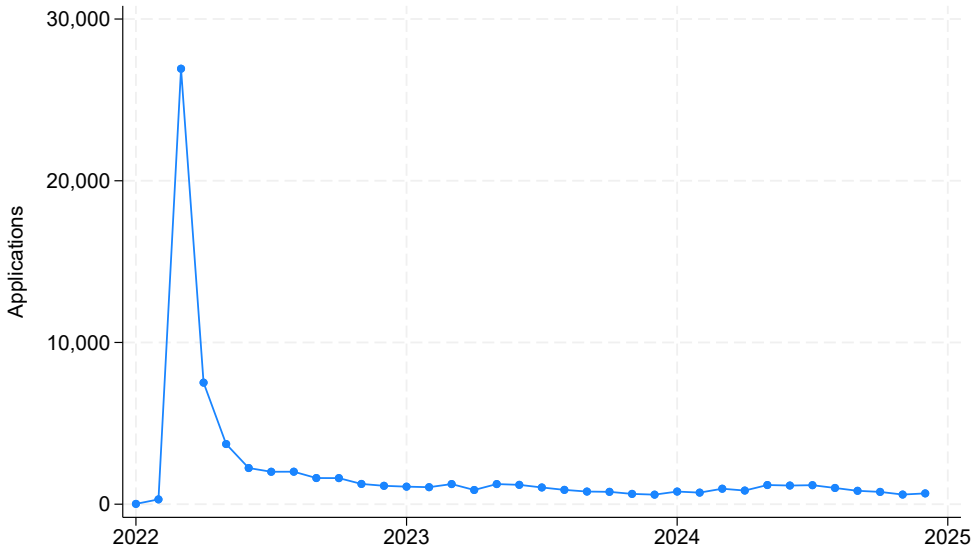


(B) CBC NEWS, FEBRUARY 24TH 2022



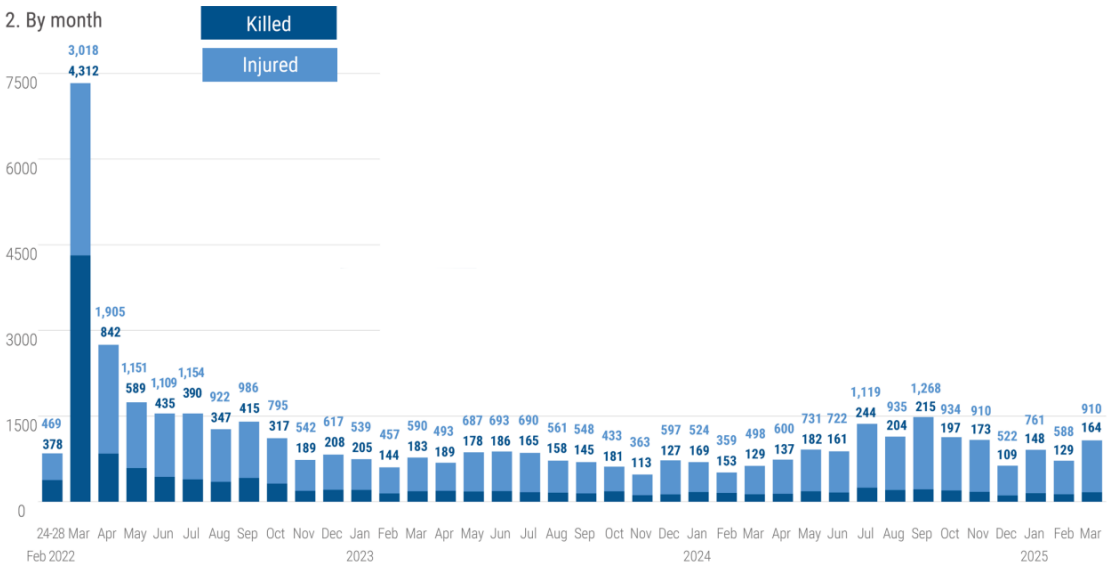
(C) THE WASHINGTON POST, APRIL 25TH 2022

FIGURE A.2: APPLICATIONS UNDER THE TEMPORARY PROTECTION DIRECTIVE, SWEDEN



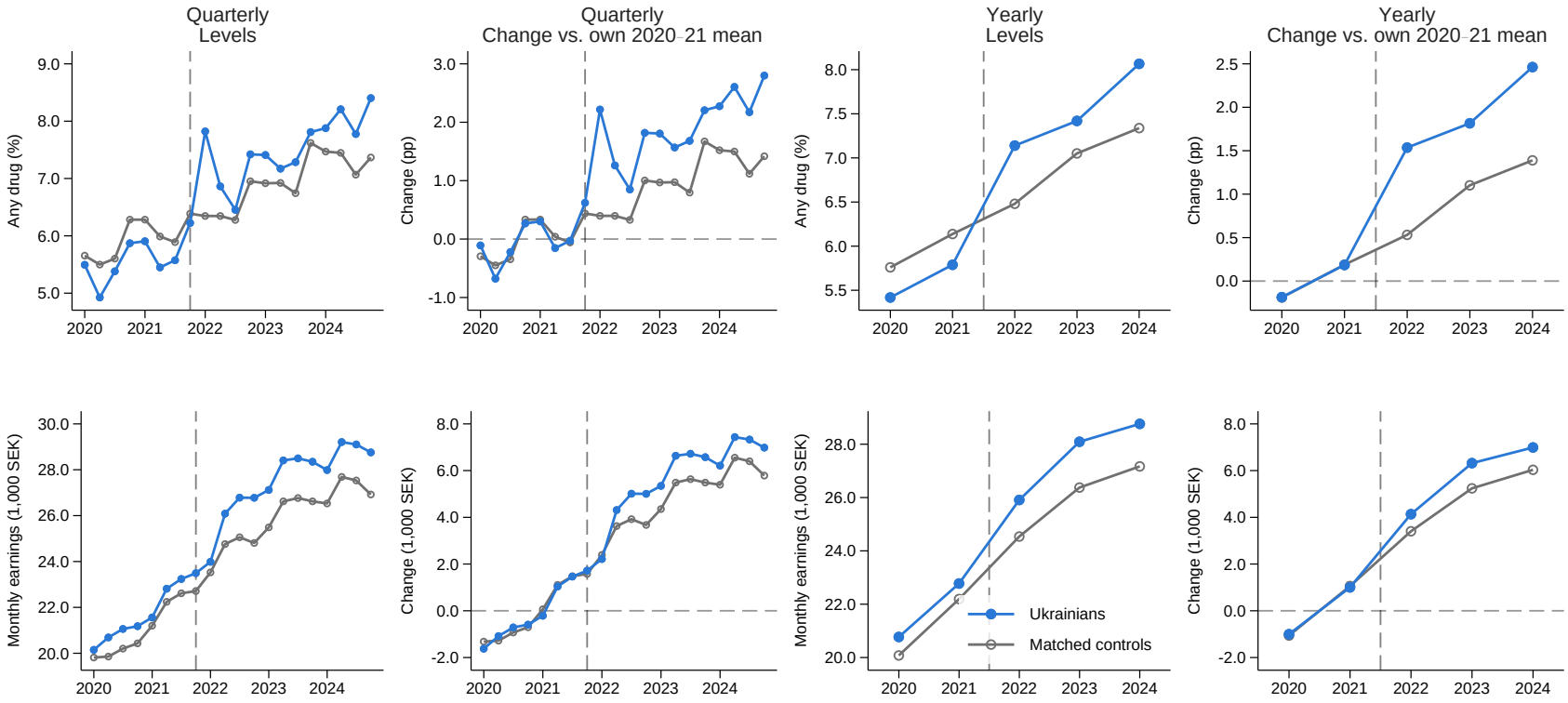
Notes: This figure shows monthly applications for asylum in Sweden under the European Union's Temporary Protection Directive, which was activated for the first time in March 2022 to provide immediate protection to individuals fleeing Ukraine. The directive grants temporary residence permits without requiring a full asylum process. The large spike in applications occurred in the immediate aftermath of the invasion, with the majority arriving between March and June 2022. Source: Swedish Migration Agency

FIGURE A.3: UKRAINIAN CIVILIAN CASUALTIES



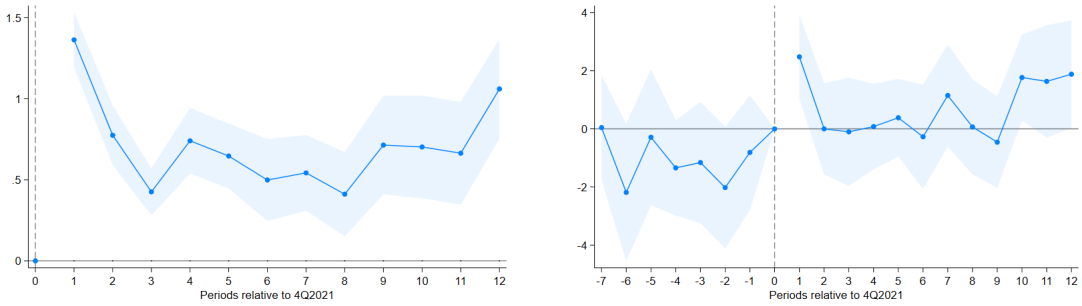
Notes: This figure shows monthly Ukrainian civilian casualties (killed and injured) from the start of the Russian invasion in February 2022 through March 2025. Individual cases are verified by the Office of the United Nations High Commissioner for Human Rights (OHCHR) and the United Nations Human Rights Monitoring Mission in Ukraine (HRMMU). Actual numbers are likely higher due to delays in verification and ongoing difficulties in documenting casualties in active conflict zones. Source: OHCHR, HRMMU

FIGURE A.4: RAW DATA: MATCHED SAMPLE, QUARTERLY AND YEARLY MEANS



Notes: This figure shows mean outcomes for Ukrainian migrants (blue) and matched control migrants (gray), 2020–2024. The first two columns show quarterly means, and the last two columns show yearly means, computed as the average of the four quarterly means. The second and fourth columns subtract each group's own mean over 2020–2021, so that after the invasion the vertical distance between the two lines equals the raw difference-in-differences. The top row shows the probability of filling at least one prescription for any mental health medication in a quarter, in percent; the yearly panels show the average of the quarterly rates. The bottom row shows average monthly earnings in thousands of nominal SEK. Because the matched sample is a balanced panel, the raw differences in yearly changes equal the yearly estimates in Table 2, which measure earnings in 2024 prices. The sample includes Ukrainian migrants and matched control migrants. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021) in the quarterly panels and falls between 2021 and 2022 in the yearly panels.

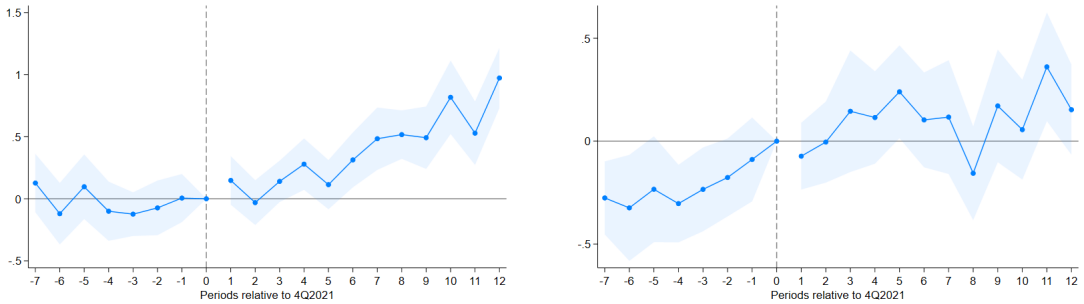
FIGURE A.5: EXTENSIVE AND INTENSIVE MARGIN RESPONSES IN MENTAL HEALTH



(A) EXTENSIVE MARGIN (B) INTENSIVE MARGIN

Notes: This figure decomposes the mental health effects by prior treatment status. Panel A shows the extensive margin, restricting the sample to individuals who did not fill any prescriptions for mental health medications during 2018–2021. This captures new users initiating treatment after the invasion. Panel B shows the intensive margin, restricting the sample to individuals who filled at least one mental health prescription during 2018–2021. This captures changes in treatment among those with prior mental health issues. By construction, there are no differences in outcomes in the pre-period for Panel A. Both panels show the probability of filling at least one prescription for any mental health medication per quarter, measured in percentage points. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

FIGURE A.6: ANTI-DEPRESSANTS BY PREVIOUS USAGE OF IMMEDIATE DRUGS

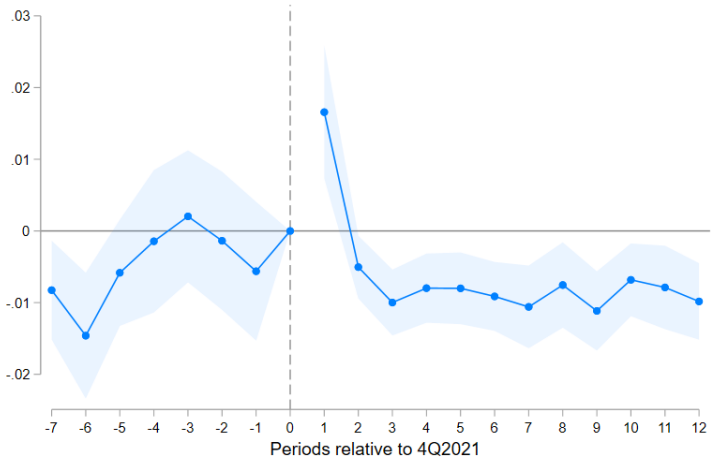


(A) ANTI-DEPRESSANTS, PREVIOUSLY ON IMMEDIATE DRUGS

(B) ANTI-DEPRESSANTS, PREVIOUSLY NOT ON IMMEDIATE DRUGS

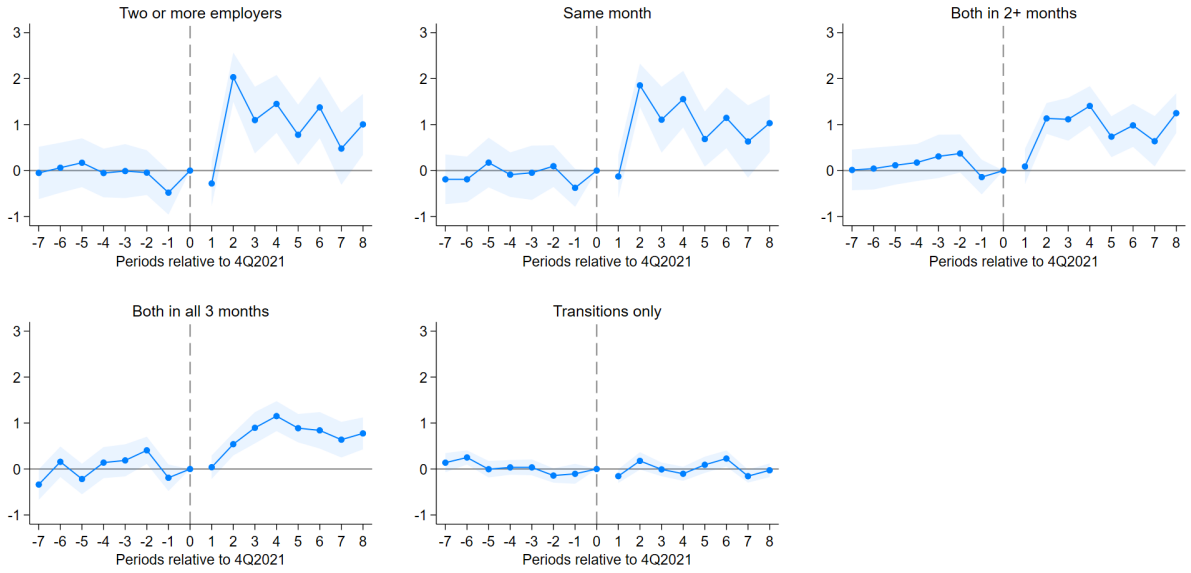
Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on the likelihood of filling a prescription for anti-depressants in a given quarter, conditional on having previously picked up an immediate-relief drug for insomnia or anxiety (Panel A) or not (Panel B). The sample includes Ukrainian migrants and matched control migrants. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

FIGURE A.7: SICKNESS ABSENCE



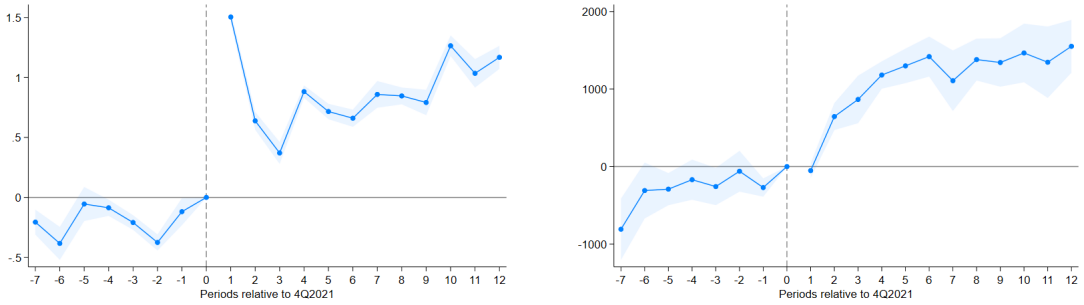
Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on sickness absence among Ukrainian migrants in Sweden, measured as receiving any sick leave benefits in a given quarter, in percentage points (range: 0–100%).The sample includes Ukrainian migrants and matched control migrants. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

FIGURE A.8: MULTIPLE JOB HOLDING: CONCURRENT JOBS AND TRANSITIONS



Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on five measures of multiple job holding, which separate jobs held at the same time from transitions between jobs. The measures are based on monthly earnings by employer, with employers defined by workplace, and equal 100 if, in a given quarter: at least two employers pay the individual (*Two or more employers*); at least two employers pay the individual in the same month (*Same month*); at least two employers each pay the individual in at least two of the three months (*Both in 2+ months*); at least two employers each pay the individual in all three months (*Both in all 3 months*); or at least two employers pay the individual, but never in the same month (*Transitions only*). *Two or more employers* equals the sum of *Same month* and *Transitions only*. All outcomes are measured in percentage points. Employer data are not available for 2024. The sample includes Ukrainian migrants and matched control migrants. All specifications include individual and quarter fixed effects. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level. Table A.11 displays yearly estimates.

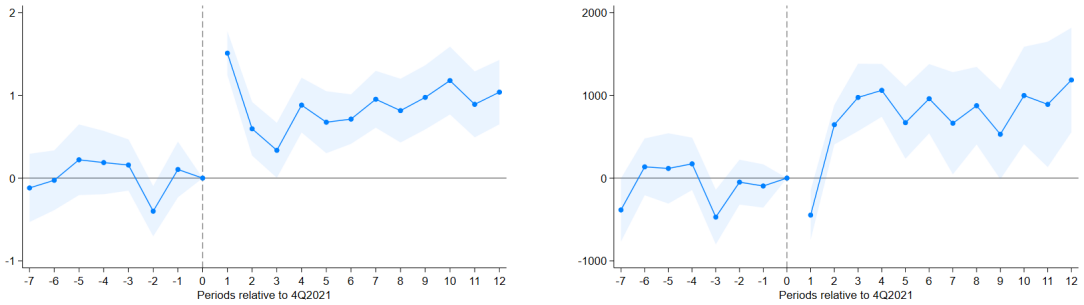
FIGURE A.9: UNMATCHED SAMPLE



(A) ANY MENTAL HEALTH PRESCRIPTION (B) MONTHLY EARNINGS (SEK)

Notes: This figure shows event-study estimates using the full, unmatched sample as a robustness check. The sample includes all Ukrainian migrants and all other migrants (excluding those from Russia and European countries bordering Ukraine or Russia) aged 15–65 in 2021, who resided in Sweden continuously from 2019–2024. Panel A shows the probability of filling at least one prescription for any mental health medication per quarter, measured in percentage points. Panel B shows average monthly earnings per quarter, measured in 2024 SEK value (100 SEK ≈ $10). Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

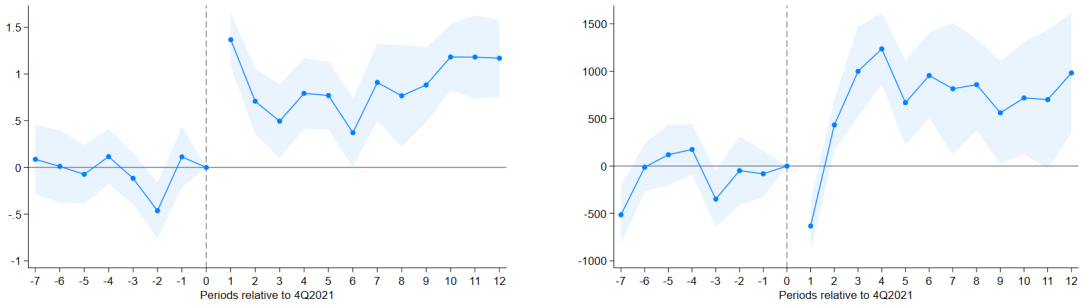
FIGURE A.10: MATCHED SAMPLE USING ADJACENT-COUNTRY MIGRANTS



(A) ANY MENTAL HEALTH PRESCRIPTION (B) MONTHLY EARNINGS (SEK)

Notes: This figure shows event-study estimates using a matched sample that includes migrants from European countries adjacent to the conflict (Poland, Baltic states, and other countries bordering Ukraine or Russia) in the control group. The main analysis excludes these countries to avoid capturing spillover effects. The matching procedure is identical to the main analysis. Panel A shows the probability of filling at least one prescription for any mental health medication per quarter, measured in percentage points. Panel B shows average monthly earnings per quarter, measured in 2024 SEK value (100 SEK ≈ $10). Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

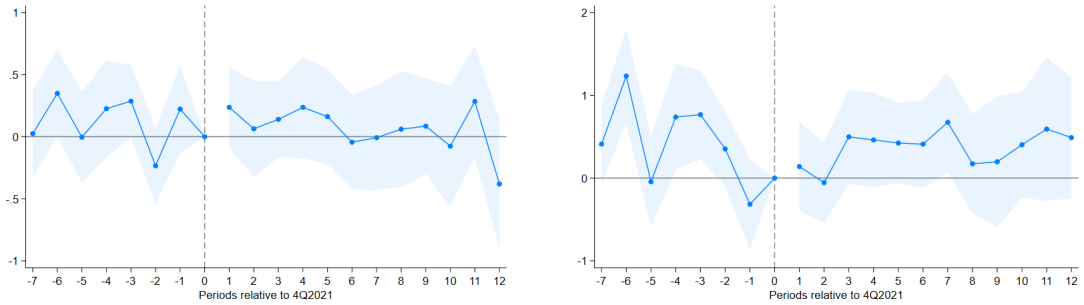
FIGURE A.11: INCLUDING OUT-MIGRANTS



(A) ANY MENTAL HEALTH PRESCRIPTION (B) MONTHLY EARNINGS (SEK)

Notes: This figure shows event-study estimates using an unbalanced panel that includes individuals who emigrate from Sweden after the invasion. The main analysis restricts the sample to individuals who remain in Sweden through 2024. This robustness check requires only that individuals resided in Sweden continuously from 2019–2021, allowing them to emigrate at any point after the invasion. Panel A shows the probability of filling at least one prescription for any mental health medication per quarter, measured in percentage points. Panel B shows average monthly earnings per quarter, measured in 2024 SEK value (100 SEK ≈ $10). Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

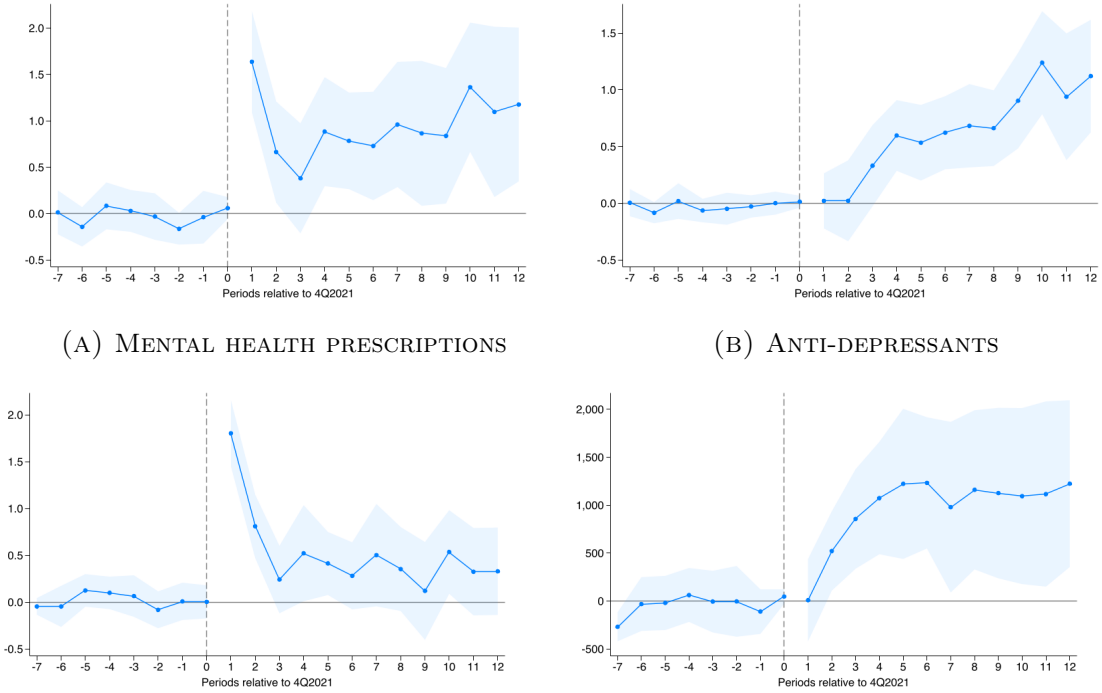
FIGURE A.12: OTHER DRUGS



(A) CARDIOVASCULAR PRESCRIPTIONS (B) OTHER CHRONIC CONDITION DRUGS

Notes: This figure shows placebo tests using prescriptions for medications unrelated to mental health. If Ukrainians were generally seeking more healthcare or experiencing deteriorating health across multiple dimensions, we would expect to see increases in these medications as well. Panel A shows prescriptions for cardiovascular medications (ATC codes C01–C10). Panel B shows prescriptions for other chronic conditions, including diabetes, respiratory conditions, and musculoskeletal disorders. Both outcomes measure the probability of filling at least one prescription per quarter, in percentage points. The sample includes Ukrainian migrants and matched control migrants. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

FIGURE A.13: SYNTHETIC DIFFERENCE-IN-DIFFERENCES



(A) MENTAL HEALTH PRESCRIPTIONS

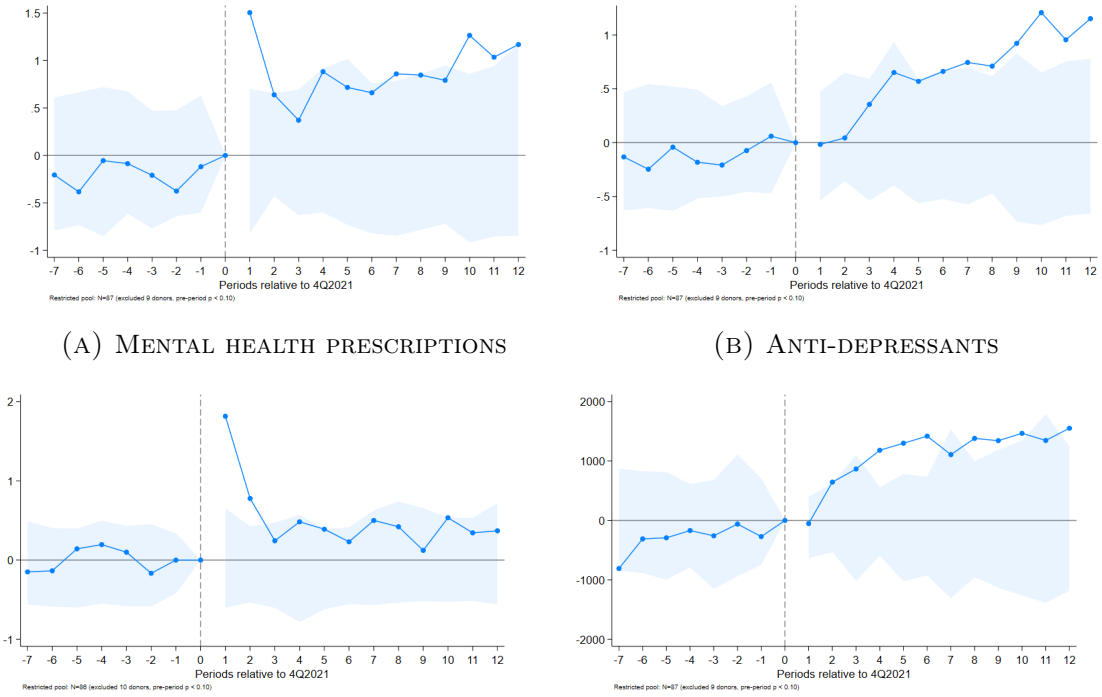
(B) ANTI-DEPRESSANTS

(C) ANTI-ANXIETY/SLEEPING PILLS

(D) MONTHLY EARNINGS

Notes: This figure shows event-study estimates from synthetic difference-in-differences (SDID) (Arkhangelsky et al., 2021), estimated on a panel of origin countries by quarter, 2020–2024, built from the unmatched sample, with Ukraine as the treated unit and the 95 other origin countries with at least 1,000 migrants as controls. SDID weights control countries and pre-invasion quarters to match Ukraine's pre-invasion outcomes. Post-invasion coefficients are the differences between Ukraine and its synthetic control relative to the weighted pre-invasion baseline; pre-invasion coefficients are the corresponding differences in each pre-invasion quarter. Panel A shows the probability of filling at least one prescription for any mental health medication per quarter. Panel B shows prescriptions for anti-depressants. Panel C shows prescriptions for anti-anxiety medication or sleeping pills (immediate relief). These three outcomes are measured in percentage points. Panel D shows average monthly earnings per quarter (SEK). The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show 95% confidence intervals obtained by inverting, for each quarter, the studentized placebo test in Table A.23: the set of effects that are not rejected at the 5% level when Ukraine's estimate, divided by its pre-invasion root mean squared prediction error (RMSPE), is compared with the corresponding placebo estimates of the 95 control countries. For pre-invasion coefficients, the RMSPE excludes the quarter being tested.

FIGURE A.14: PERMUTATION INFERENCE USING THE UNMATCHED SAMPLE



(A) MENTAL HEALTH PRESCRIPTIONS

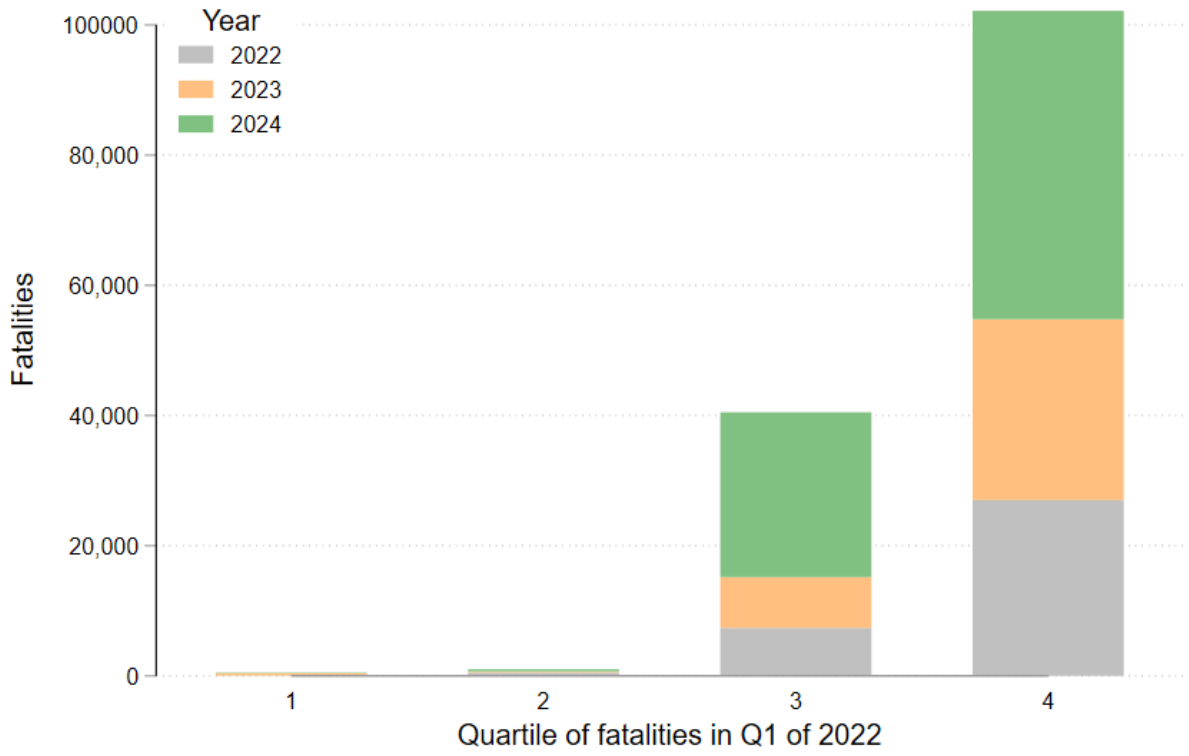
(B) ANTI-DEPRESSANTS

(C) ANTI-ANXIETY/SLEEPING PILLS

(D) MONTHLY EARNINGS

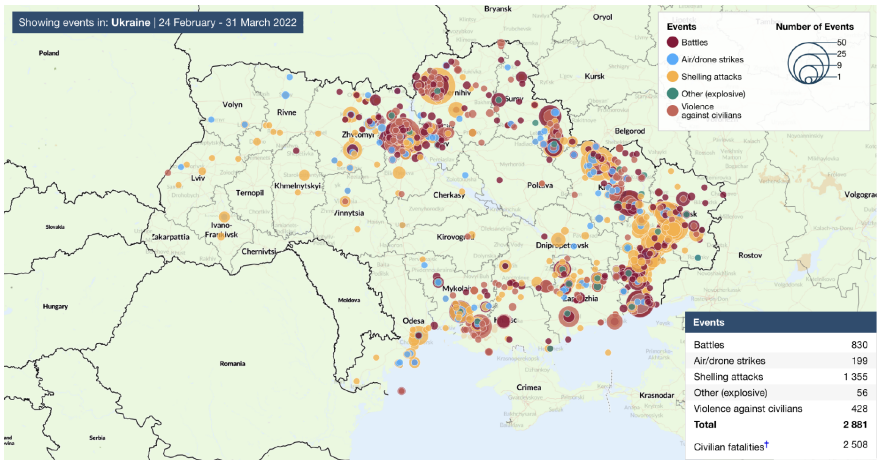
Notes: This figure shows event-study estimates using country-level permutation inference. Following Abadie et al. (2010), we assign the treatment indicator in turn to each origin country in the sample, estimate the same two-way fixed effects specification as in the main analysis for each placebo assignment weighted by country-quarter cell size, and record the resulting coefficients. The donor pool is restricted to countries with at least 1,000 migrants who were registered as residing in Sweden throughout 2019–2024, excluding war-adjacent countries as in the main analysis. To further ensure valid counterfactuals, we exclude any country that displays a statistically significant pre-period association between its outcomes and a placebo treatment indicator assigned over 2021 ($p < 0.10$); Ukraine is never excluded. The donor pool is constructed separately for each outcome. Panel A shows the probability of filling at least one prescription for any mental health medication per quarter. Panel B shows prescriptions for anti-depressants. Panel C shows prescriptions for anti-anxiety medication or sleeping pills (immediate relief). These three outcomes are measured in percentage points. Panel D shows average monthly earnings per quarter. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded area represents the permutation reference band showing the 5th and 95th percentiles of the distribution of placebo effects across origin countries in the donor pool.

FIGURE A.15: DISTRIBUTION OF FATALITIES OVER TIME

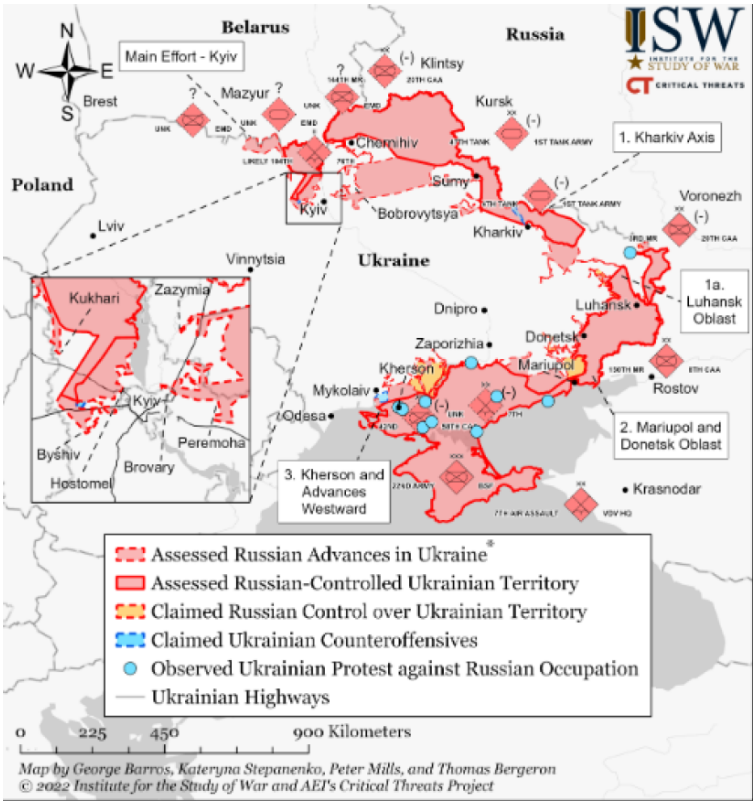


Notes: This figure shows the temporal persistence of conflict intensity across Ukrainian oblasts. Oblasts are grouped into quartiles based on the number of war-related fatalities during the first quarter of 2022 (February–March). The bars show total fatalities in each quartile for 2022, 2023, and 2024 separately. The figure demonstrates that oblasts with the highest fatality counts early in the war (Q1 2022) continued to experience the most fatalities in subsequent years, justifying the use of Q1 2022 fatalities as a measure of long-term conflict exposure. Fatality data are from the Armed Conflict Location & Event Data Project (ACLED).

FIGURE A.16: GEOGRAPHICAL DISTRIBUTION OF CONFLICT



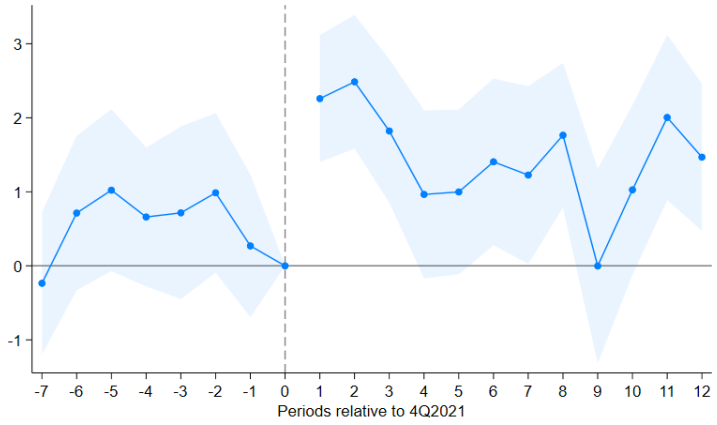
(A) CONFLICT EVENTS



(B) OCCUPIED TERRITORIES

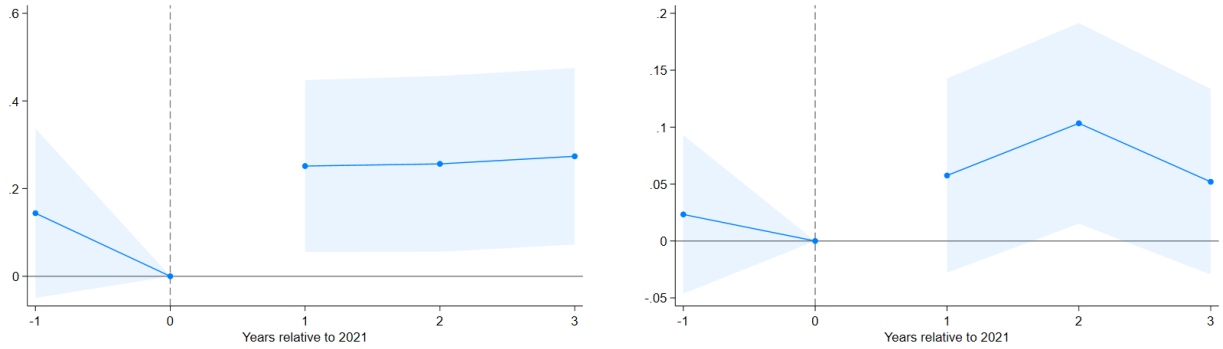
Notes: This figure shows the geographical distribution of conflict intensity during the first quarter of 2022. Panel A displays conflict events by type (battles, airstrikes, shelling, violence against civilians) from ACLED data for February–March 2022. Conflict is heavily concentrated in eastern oblasts bordering Russia (Donetsk, Luhansk, Kharkiv) and southern coastal regions near the Black Sea (Kherson, Zaporizhzhia). Panel B shows Russian territorial advances and occupied areas as of March 2022 from the Institute for the Study of War (ISW). The overlap between high-fatality areas in Panel A and territorial occupation in Panel B indicates that fatalities serve as a valid proxy for overall conflict exposure.

FIGURE A.17: PRIMARY CARE VISITS WITH MENTAL HEALTH DIAGNOSIS IN SKÅNE



Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on any primary care visit with a mental health diagnosis among Ukrainian migrants in Skåne, Sweden, in a quarter. It is expressed in percentage points (range: 0–100). Mental health diagnoses are ICD-10 codes F32 (depressive episode), F33 (recurrent depressive disorder), F41 (other anxiety disorders), and F43 (reaction to severe stress and adjustment disorders), recorded as any of the diagnoses of the contact. Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

FIGURE A.18: SPECIALIST VISITS FOR MENTAL HEALTH AND BURNOUT DIAGNOSIS



(A) ANY SPECIALIST VISIT RELATED TO MENTAL HEALTH

(B) BURNOUT

Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on the probability of a specialist visit related to mental health (Panel A), and on a burnout diagnosis (Panel B). A visit is classified as a mental health visit if any of its diagnoses has ICD-10 code F32 (depressive episode), F33 (recurrent depressive disorder), F41 (other anxiety disorders), or F43 (reaction to severe stress and adjustment disorders). Burnout is defined by the Swedish ICD-10 code F43.8A (exhaustion disorder). Outcomes are measured at the yearly level for better precision given the rarity of the related events. The vertical dashed line indicates the last year preceding the invasion (2021). Standard errors clustered by country of origin. The vertical dashed line indicates the last quarter preceding the invasion (4Q2021). The shaded areas show the confidence intervals at the 95% level.

A.2 Tables

Table A.1: Medical drugs for mental health issues

Anti-depressant	ATC	Anti-anxiety	ATC	Sleeping pills	ATC	Antipsychotic	ATC
Clomipramine	N06AA04	Pregabalin	N02BF02	Nitrazepam	N05CD02	Haloperidol	N05AD01
Amitriptyline	N06AA09	Diazepam	N05BA01	Melatonin	N05CH01	Clozapine	N05AH02
Nortriptyline	N06AA10	Oxazepam	N05BA04	Zopiclone	N05CF01	Olanzapin	N05AH03
Fluoxetine	N06AB03	Lorazepam	N05BA06	Zolpidem	N05CF02	Quetiapin	N05AH04
Citalopram	N06AB04	Alprazolam	N05BA12	Propiomazine	N05CM06	Risperidon	N05AX08
Paroxetine	N06AB05	Hydroxyzine	N05BB01			Aripiprazol	N05AX12
Sertraline	N06AB06					Paliperidon	N05AX13
Fluvoxamine	N06AB08					Lithium	N05AN01
Escitalopram	N06AB10					Ziprasidon	N05AE04
Moklobemide	N06AG02					Amisulprid	N05AL05
Mianserin	N06AX03					Melperon	N05AD03
Mirtazapin	N06AX11					Klorprotixen	N05AF03
Bupropion	N06AX12					Levomepromazin	N05AA02
Venlafaxin	N06AX16						
Agomelatin	N06AX22						
Duloxetin	N06AX21						
Vortioxetin	N06AX26						

Notes: This table lists the most commonly used medications in Sweden for treating anxiety, insomnia, depression, and psychosis, organized by therapeutic category. The Anatomical Therapeutic Chemical (ATC) classification system assigns codes to medications based on the organ or system on which they act and their therapeutic properties. Anti-depressants (ATC codes beginning with N06A) are used for long-term treatment of depression and anxiety disorders. Anti-anxiety medications and sleeping pills (ATC codes beginning with N02B, N05B, and N05C) provide immediate symptom relief but carry addiction risks with long-term use. Antipsychotics (ATC codes beginning with N05A) are prescribed for severe mental health conditions, including schizophrenia, bipolar disorder, and treatment-resistant depression (WHO, 2009; Zhou et al., 2015; Harmer et al., 2017). Our main mental health outcome includes all medications from the first three categories (anti-depressants, anti-anxiety, and sleeping pills).

TABLE A.2: NUMBER OF INDIVIDUALS IN THE SAMPLE BY COUNTRY OF ORIGIN: MATCHED SAMPLE OF CONTROL MIGRANTS

Country	N	Share (%)
Syria	1,531	8.83
Iraq	1,332	7.68
Thailand	971	5.60
Iran	837	4.82
China	710	4.09
India	669	3.86
Germany	533	3.07
Somalia	513	2.96
USA	466	2.69
Turkey	417	2.40
United Kingdom	414	2.39
Bosnia and Herzegovina	403	2.32
Afghanistan	398	2.29
Philippines	367	2.12
Eritrea	335	1.93
Serbia	324	1.87
Brazil	261	1.50
Ethiopia	243	1.40
Pakistan	228	1.31
Greece	209	1.20
Yugoslavia	209	1.20
Vietnam	200	1.15
Lebanon	197	1.14
Chile	186	1.07
Italy	181	1.04
Colombia	176	1.01
Other countries	5,038	29.04
Total	17,348	100.00

Notes: This table shows the number of individuals per country of origin in the matched sample of control migrants. The sample is restricted to individuals age 15-65 who reside in Sweden 2019-2024.

TABLE A.3: DESCRIPTIVE STATISTICS: UKRAINIAN MIGRANTS COMPARED TO NON-ADJACENT (FULL SAMPLE)

	Rest of Countries			Ukraine			
	n	mean	sd	n	mean	sd	Diff
Female	1209554	0.48	0.50	8964	0.66	0.47	0.183***
Age	1209554	38.64	13.04	8964	37.77	11.36	-0.874
Married with Swedish	1209554	0.08	0.28	8964	0.12	0.32	0.033**
Married with other	1209554	0.38	0.49	8964	0.21	0.40	-0.175***
Had children	1209554	0.60	0.49	8964	0.55	0.50	-0.047***
Years in Sweden	1209554	15.12	12.06	8964	9.36	7.17	-5.762***
Had Swedish citizenship	1209554	0.63	0.48	8964	0.54	0.50	-0.091**
Had relative visa	1209554	0.12	0.33	8964	0.23	0.42	0.110***
Had work visa	1209554	0.03	0.18	8964	0.13	0.34	0.099***
Had student visa	1209554	0.01	0.09	8964	0.01	0.11	0.004
Refugee	1209554	0.13	0.33	8964	0.02	0.14	-0.106***
No university education	1209554	0.56	0.50	8964	0.23	0.42	-0.329***
Mean annual family income (2020-21)	1209554	4525.21	6370.59	8964	4794.42	5530.15	269.218
Mean annual wage income (2020-21)	1209554	2171.49	2426.79	8964	2592.86	2331.73	421.369***

Notes: This table presents descriptive statistics for the full, unmatched sample. The sample includes all Ukrainian migrants and all other migrants (excluding those from Russia and European countries bordering Ukraine or Russia) aged 15–65 in 2021, who resided in Sweden from 2019–2024. The last column reports the difference in means between Ukrainian and other migrants, with statistical significance indicated as: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.4: NUMBER OF INDIVIDUALS IN THE SAMPLE BY COUNTRY OF ORIGIN: FULL SAMPLE

Country of birth	N	Share (%)
Syria	142,311	11.77
Iraq	120,717	9.98
Iran	63,158	5.22
Somalia	56,337	4.66
Afghanistan	51,537	4.26
Bosnia and Herzegovina	47,434	3.92
Yugoslavia	44,246	3.66
Turkey	40,000	3.31
Eritrea	38,985	3.22
Thailand	37,881	3.13
India	27,515	2.27
Germany	27,351	2.26
China	24,309	2.01
Lebanon	23,650	1.96
Chile	20,733	1.71
Denmark	19,653	1.62
United Kingdom	19,324	1.60
Ethiopia	17,897	1.48
Vietnam	16,593	1.37
Pakistan	13,712	1.13
USA	13,706	1.13
Philippines	12,805	1.06
Serbia	12,367	1.02
Other countries	317,333	26.24
Total	1,209,554	100.00

Notes: This table shows the number of individuals per country of origin for other migrants in the full sample, excluding migrants from Russia and European countries bordering Ukraine or Russia. The sample is restricted to individuals aged 15–65 who reside in Sweden 2019–2024.

TABLE A.5: DECOMPOSITION OF MENTAL HEALTH USAGE BY PRIOR PRESCRIPTIONS

	Any drug		
	(1)	(2)	(3)
	Full sample	No prior drugs	Prior drugs
Ukraine × Post-2022	0.93***	0.77***	1.69***
	(0.10)	(0.12)	(0.43)
Observations	522380	426040	96340
Individuals (Ukraine)	8771	7145	1626
Individuals (Control)	17348	14157	3191
Share of Ukrainians		0.81	0.19
Mean (Ukraine)	5.60	0.00	30.23
Mean (Control)	5.95	0.00	32.34

Notes: This table decomposes the overall mental health effect by prior treatment status to determine the relative contributions of the extensive margin (new users) versus the intensive margin (existing users). Column 1 shows the baseline effect in the full sample. Column 2 restricts to individuals with no mental health prescriptions during 2018–2021, capturing the extensive margin. Column 3 restricts to individuals with at least one mental health prescription during 2018–2021, capturing the intensive margin. The extensive margin accounts for approximately two thirds of the overall effect, calculated as: $s_0\tau_0/(s_0\tau_0 + s_1\tau_1)$ where $s_0 = 0.815$ is the share of Ukrainians with no prior prescriptions, τ_0 is the treatment effect for this group from Column 2, and τ_1 is the treatment effect for prior users from Column 3. The intensive margin shows a larger treatment effect in percentage points but contributes less to the aggregate due to the smaller number of individuals with prior prescriptions. All models control for individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.6: PRIMARY CARE VISITS WITH MENTAL HEALTH DIAGNOSIS IN SKÅNE

	Any mental health visit
	(1)
Ukraine × 2022	1.37***
	(0.29)
Ukraine × 2023	0.83**
	(0.34)
Ukraine × 2024	0.61*
	(0.35)
Observations	66820
Individuals (Ukraine)	1186
Individuals (Control)	2381
Mean (Ukraine)	4.70
Mean (Control)	4.30

Notes: This table shows difference-in-differences estimates of the effect of the 2022 Russian invasion of Ukraine on any primary care visit with a mental health diagnosis among Ukrainian migrants in Skåne, Sweden, in a quarter. It is expressed in percentage points (range:0-100). Mental health diagnoses are ICD-10 codes F32 (depressive episode), F33 (recurrent depressive disorder), F41 (other anxiety disorders), and F43 (reaction to severe stress and adjustment disorders), recorded as any of the diagnoses of the contact. The sample is restricted to migrants registered in the Skåne region. All specifications include individual and quarter fixed effects. Mean values are measured during the pre-invasion period. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.7: MENTAL HEALTH AND LABOR MARKET EFFECTS IN SKÅNE

	Any drug	Immediate relief drug	Anti depressant	Earnings	Employment	Multiple jobs	Sickness absence
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ukraine × 2022	1.07***	0.88***	0.87***	1083.73***	2.36***	1.62***	-1.02*
	(0.26)	(0.23)	(0.24)	(327.07)	(0.82)	(0.42)	(0.53)
Ukraine × 2023	1.04***	0.04	1.50***	1587.02***	3.18***	3.43***	-3.18***
	(0.30)	(0.25)	(0.30)	(389.87)	(0.91)	(0.48)	(0.62)
Ukraine × 2024	0.66*	-0.48	1.54***	2375.46***	2.41**		-3.00***
	(0.37)	(0.30)	(0.29)	(475.92)	(1.18)		(0.68)
Observations	66820	66820	66820	66820	66820	53340	66820
Individuals (Ukraine)	1186	1186	1186	1186	1186	1186	1186
Individuals (Control)	2381	2381	2381	2381	2381	2381	2381
Mean (Ukraine)	6.21	3.52	3.71	25026.22	67.73	9.14	12.98
Mean (Control)	6.04	3.01	4.29	22639.74	58.70	7.19	10.77

Notes: This table shows difference-in-differences estimates of the effect of the 2022 Russian invasion of Ukraine on mental health and labor market outcomes among Ukrainian migrants in Skåne, Sweden. Columns (1)–(3) examine mental-health related prescription outcomes: any psychotropic drug, immediate-relief medication, and anti-depressants. Column (4) reports average monthly earnings, measured in 2024 SEK value (100 SEK $\approx$ \$10). Column (5) measures employment rate, column (6) indicates holding multiple jobs, and column (7) captures sickness absence. Multiple job holding is not reported for 2024 as employer-level data are unavailable for that year. All specifications include individual and quarter fixed effects. Mean values are measured during the pre-invasion period. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

Table A.8: Mental health prescriptions: Severity

	Polypharmacy (1)	Number of pickups (2)	Antipsychotic (3)
Ukraine × 2022	0.276***	0.018***	0.083***
	(0.053)	(0.004)	(0.026)
Ukraine × 2023	0.154**	0.007	0.049
	(0.060)	(0.004)	(0.038)
Ukraine × 2024	0.294***	0.012***	0.050
	(0.053)	(0.004)	(0.041)
Observations	522380	522380	522380
Individuals (Ukraine)	8771	8771	8771
Individuals (Control)	17348	17348	17348
Mean (Ukraine)	1.25	0.11	0.68
Mean (Control)	1.27	0.13	0.69

Notes: This table examines indicators of mental health severity. Column 1 shows polypharmacy, defined as filling prescriptions for multiple types of mental health medications simultaneously (e.g., both anti-anxiety and anti-depressants) within the same quarter. Column 2 shows the total number of prescription pickups per quarter, where patients can pick up medications multiple times within a quarter but are limited to a 90-day supply per pickup. Column 3 shows the probability of filling at least one prescription for antipsychotic medications, which are typically prescribed for severe conditions, including schizophrenia, bipolar disorder, and treatment-resistant depression. The sample includes Ukrainian migrants and matched control migrants. All models control for individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.9: SPECIALIST VISITS AND BURNOUT DIAGNOSIS

	Any visit (1)	Any visit (2)	Burnout (3)	Burnout (4)
Ukraine × 2022	0.18*		0.05	
	(0.09)		(0.03)	
Ukraine × 2023	0.18*		0.09**	
	(0.10)		(0.04)	
Ukraine × 2024	0.20**		0.04	
	(0.10)		(0.04)	
Ukraine × Post		0.19**		0.06*
		(0.09)		(0.03)
Observations	130595	130595	130595	130595
Individuals (Ukraine)	8771	8771	8771	8771
Individuals (Control)	17348	17348	17348	17348
Mean (Ukraine)	1.63	1.63	0.24	0.24
Mean (Control)	1.69	1.69	0.16	0.16

Notes: This table shows difference-in-differences estimates of the effect of the 2022 Russian invasion of Ukraine on the probability of visiting a specialist for mental health (columns 1-2) and on the probability of a burnout diagnosis (columns 3-4). A visit is classified as a mental health visit if any of its diagnoses has ICD-10 code F32 (depressive episode), F33 (recurrent depressive disorder), F41 (other anxiety disorders), or F43 (reaction to severe stress and adjustment disorders). Burnout is defined by the Swedish ICD-10 code F43.8A (exhaustion disorder). Outcomes are measured at the yearly level for better precision given the rarity of the related events. All specifications include individual and year fixed effects. Mean values are measured during the pre-invasion period. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.10: EFFECTS BY PRE-INVASION LABOR MARKET STATUS

	Earnings (1)	Employment (2)	Multiple jobs (3)
Ukraine × 2022	351.237	1.042*	1.028***
	(230.676)	(0.551)	(0.256)
Ukraine × 2023	648.005**	1.521***	1.081***
	(315.766)	(0.493)	(0.338)
Ukraine × 2024	724.741**	1.469**	
	(329.192)	(0.595)	
Ukraine × No earnings 2021Q4 × 2022	1148.365***	3.012***	-0.748**
	(260.275)	(0.616)	(0.291)
Ukraine × No earnings 2021Q4 × 2023	1758.179***	5.308***	-0.905**
	(316.981)	(1.026)	(0.394)
Ukraine × No earnings 2021Q4 × 2024	1467.080***	3.984***	
	(316.808)	(1.164)	
Ukraine × Unemployed 2021Q4 × 2022	1084.276***	3.905***	3.597***
	(309.124)	(1.075)	(0.714)
Ukraine × Unemployed 2021Q4 × 2023	1651.576***	5.804***	2.718***
	(422.936)	(1.689)	(0.940)
Ukraine × Unemployed 2021Q4 × 2024	601.983	2.612	
	(518.243)	(1.813)	
Observations	522380	522380	417904
Individuals (Ukraine)	8771	8771	8771
Individuals (Control)	17348	17348	17348
Mean	26092	65.84	9.73
Mean (Ukraine)	26611	69.23	10.49
Mean (Control)	25829	64.13	9.34

Notes: This table examines heterogeneous treatment effects by pre-invasion labor market attachment. Individuals are classified into three groups based on their status in Q4 2021: (1) Employed (benchmark group: positive earnings in Q4 2021), (2) *Unemployed 2021Q4* (registered with the Public Employment Service in November 2021), and (3) *No earnings 2021Q4* (zero earnings in Q4 2021). Multiple job holding is not reported for 2024 as employer-level data are unavailable for that year. The sample includes Ukrainian migrants and matched control migrants. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.11: MULTIPLE JOB HOLDING: CONCURRENT JOBS AND TRANSITIONS

	Two or more employers	Same month	Both in two or more months	Both in all three months	Transitions only
	(1)	(2)	(3)	(4)	(5)
Ukraine × 2022	1.13***	1.17***	0.83***	0.64***	-0.05
	(0.20)	(0.19)	(0.17)	(0.14)	(0.05)
Ukraine × 2023	0.96***	0.95***	0.79***	0.77***	0.01
	(0.29)	(0.27)	(0.21)	(0.16)	(0.05)
Observations	417904	417904	417904	417904	417904
Individuals (Ukraine)	8771	8771	8771	8771	8771
Individuals (Control)	17348	17348	17348	17348	17348
Mean (Ukraine)	11.23	10.38	6.79	4.30	0.85
Mean (Control)	9.94	9.25	6.06	3.95	0.69

Notes: This table separates jobs held at the same time from transitions between jobs, using monthly earnings by employer, with employers defined by workplace. The outcomes equal 100 if, in a given quarter, at least two employers pay the individual (column 1); at least two employers pay the individual in the same month (column 2); at least two employers each pay the individual in at least two of the three months (column 3); at least two employers each pay the individual in all three months (column 4); or at least two employers pay the individual, but never in the same month (column 5). Column 1 equals the sum of columns 2 and 5, and matches the measure of multiple job holding in Figure 3 in 99 percent of person-quarters. Column 4 also rules out that a final payment from a previous employer, such as holiday compensation paid after a job ends, makes a transition appear as two concurrent jobs. Employer data are not available for 2024. Mean values are measured in 2020–2021. The sample includes Ukrainian migrants and matched control migrants. All models control for individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.12: JOB QUALITY EFFECTS BY PRIMARY AND SECONDARY JOB

	Mean firm earnings (1)	Earnings (2)	Earnings Residual (3)	Same sector (4)
Panel A: First job				
Ukraine × 2022	-291.71	-232.90	-288.42*	
	(264.88)	(182.99)	(159.51)	
Ukraine × 2023	39.15	8.10	-170.45	
	(201.94)	(245.08)	(209.96)	
Observations	287387	287387	287387	
Individuals (Ukraine)	7840	7840	7840	
Individuals (Control)	14863	14863	14863	
Mean (Ukraine)	39401	38184	-3178	
Mean (Control)	40265	40608	-0	
Panel B: Second job				
Ukraine × 2022	-899.70***	-695.47**	-488.45*	-0.18
	(278.33)	(275.95)	(261.51)	(0.80)
Ukraine × 2023	-573.44*	-633.28**	-463.03	-0.78
	(325.58)	(299.01)	(280.94)	(0.90)
Observations	41044	41044	41044	41040
Individuals (Ukraine)	3707	3707	3707	3707
Individuals (Control)	6548	6548	6548	6547
Mean (Ukraine)	27386	11842	-560	14.75
Mean (Control)	27419	12438	0	16.33

Notes: This table shows the effect of the 2022 Russian invasion of Ukraine on job quality measures for first and second jobs (defined by share of earnings) among Ukrainian migrants in Sweden. Panel A examines the primary (first) job. Panel B examines the secondary (second) job. Column 1 shows mean firm earnings, defined as the leave-one-out average earnings of all workers at the individual's workplace. Column 2 shows the individual's own earnings. Column 3 shows earnings residuals from a Mincer regression controlling for age, gender, years in Sweden, education, and county of residence. Earnings are measured in 2024 SEK value (100 SEK ≈ $10). Column 4 (Panel B) shows whether the individual's second job is in the same sector as their first job (range: 0–100%). All models control for country and quarter fixed effects. The sample includes Ukrainian migrants and matched control migrants employed in a given quarter. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.13: JOB QUALITY EFFECTS: UNEMPLOYED BETWEEN 3Q2020-4Q2021

	Exit hazard (pp) (1)	Mean firm earnings (2)	Earnings (3)	Earnings Residual (4)
Ukraine × 2022	6.23***	-890.16	-1399.82	-2476.16
	(1.66)	(1129.41)	(1617.18)	(1852.72)
Ukraine × 2023	3.13	-4660.52***	-4963.58***	-7476.21***
	(2.59)	(1626.83)	(1863.22)	(1891.91)
Observations	6112	1489	1489	1489
Individuals (Ukraine)	572	474	474	474
Individuals (Control)	1259	978	978	978
Mean (Ukraine)	30.85	30197.72	21026.10	-16123.55
Mean (Control)	29.35	28754.74	19029.42	-17350.32

Notes: This table shows the effect of the 2022 Russian invasion of Ukraine on exit from unemployment and accepted job quality among Ukrainian migrants in Sweden. The sample consists of Ukrainian migrants and matched control migrants with unemployment spells beginning between 2020Q3 and 2021Q4, followed through 2023Q3. Column 1 reports the quarterly exit hazard, defined as the probability of transitioning out of unemployment in a given quarter, measured in percentage points, estimated on the full sample of unemployment spell quarters with individual and quarter fixed effects. Columns 2–4 report job quality outcomes measured in the first quarter of employment following exit, estimated on the subsample of exiting spells with country-of-origin and quarter fixed effects. Column 2 shows mean earnings at the exit firm, defined as the leave-one-out average earnings across all workers at the firm. Column 3 shows the individual's own earnings. Column 4 shows earnings residuals from a Mincer regression controlling for age, gender, years in Sweden, education, and county of residence. Earnings are measured in 2024 SEK value (100 SEK ≈ $10). All specifications control for spell duration and entry cohort fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.14: DECOMPOSITION OF EARNINGS BY NEW TAKE-UP OF ANTI-DEPRESSANTS POST-INVASION

	Earnings (1)
Ukraine × 2022	636.50***
	(174.27)
Ukraine × 2023	880.35***
	(267.53)
Ukraine × 2024	759.10**
	(300.84)
Ukraine × New User × 2022	1683.35***
	(383.52)
Ukraine × New User × 2023	1650.86***
	(499.64)
Ukraine × New User × 2024	1318.82***
	(471.59)
Observations	522380
Individuals (Ukraine)	8771
Individuals (Control)	17348
Mean (Ukraine: New anti-depressant users)	26538
Mean (Control: New anti-depressant users)	24926
Mean (Ukraine: Others)	26618
Mean (Control: Others)	25889

Notes: This table decomposes the earnings effect by whether Ukrainian migrants initiated anti-depressant use after the invasion. "New User" indicates individuals who had no anti-depressant prescriptions in 2020–2021 but filled at least one anti-depressant prescription during 2022–2024. Earnings are measured in 2024 SEK value (100 SEK ≈ $10). All models control for individual and quarter fixed effects. Standard errors are clustered by country of origin. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.15: ESTIMATES INCLUDING ADJACENT COUNTRY MIGRANTS

	Any drug (1)	Earnings (2)
Ukraine × 2022	0.82***	630.41***
	(0.11)	(173.88)
Ukraine × 2023	0.77***	863.84***
	(0.12)	(255.84)
Ukraine × 2024	1.01***	973.10***
	(0.14)	(325.32)
Observations	524120	524120
Individuals (Ukraine)	8798	8798
Individuals (Control)	17408	17408
Mean (Ukraine)	5.59	26684
Mean (Control)	5.95	26328

Notes: This table shows robustness checks, including migrants from European countries adjacent to the conflict (Poland, Baltic states, and other countries bordering Ukraine or Russia) in the control group. Column 1 shows the probability of filling at least one prescription for any mental health medication per quarter. Column 2 shows average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). All models control for individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.16: ESTIMATES INCLUDING OUT-MIGRANTS

	Any drug (1)	Earnings (2)
Ukraine × 2022	0.88***	598.39***
	(0.11)	(178.22)
Ukraine × 2023	0.75***	913.64***
	(0.13)	(274.91)
Ukraine × 2024	1.15***	830.22**
	(0.14)	(324.69)
Observations	543488	543488
Individuals (Ukraine)	9347	9347
Individuals (Control)	18512	18512
Mean (Ukraine)	5.40	25838
Mean (Control)	5.80	24778

Notes: This table shows robustness checks using an unbalanced panel that allows for emigration after the invasion. The main analysis restricts the sample to individuals who remain in Sweden through 2024. This specification requires only that individuals reside in Sweden continuously from 2019–2021, allowing them to emigrate at any point thereafter. Results are very similar to the main estimates, suggesting that differential emigration does not drive the findings. Column 1 shows the probability of filling at least one prescription for any mental health medication per quarter. Column 2 shows average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). All models control for individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.17: ESTIMATES EXCLUDING INDIVIDUALS BORN IN CRIMEA OR DONBAS

	Any drug (1)	Earnings (2)
Ukraine × 2022	1.027***	768.6***
	(9.88)	(4.42)
Ukraine × 2023	0.912***	1013.1***
	(8.30)	(3.80)
Ukraine × 2024	1.161***	801.2***
	(8.20)	(2.63)
Observations	496660	496660
Individuals (Ukraine)	7487	7487
Individuals (Control)	17346	17346
Mean	5.83	26092
Mean (Ukraine)	5.60	26611
Mean (Control)	5.95	25829

Notes: This table shows results when dropping individuals born in Crimea or Donbas. Column 1 shows the probability of filling at least one prescription for any mental health medication per quarter. Column 2 shows average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). All models control for individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.18: OTHER CHRONIC-CONDITION DRUGS

	Cardiovascular (1)	Other chronic conditions (2)
Ukraine × 2022	0.060	-0.132
	(0.110)	(0.149)
Ukraine × 2023	-0.066	0.028
	(0.138)	(0.159)
Ukraine × 2024	-0.131	0.028
	(0.175)	(0.278)
Observations	522380	522380
Individuals (Ukraine)	8771	8771
Individuals (Control)	17348	17348
Mean (Ukraine)	4.72	11.79
Mean (Control)	6.97	16.89

Notes: This table shows the difference-in-differences estimates for prescriptions for medications unrelated to mental health. Column 1 shows prescriptions for cardiovascular medications (ATC codes C01–C10), which treat conditions including heart disease, hypertension, and high cholesterol. Column 2 shows prescriptions for other chronic conditions, including diabetes (ATC A10), respiratory conditions (ATC R03), and musculoskeletal disorders (ATC M01–M05). All models control for individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

Table A.19: Top 10 Employment Sectors by Migrant Group and Time Period (First Job)

Panel A: Ukrainian Migrants

2020-2021 (1)		2022-2023 (2)	
Education	12.02	Education	12.75
Human health activities	7.59	Human health activities	7.85
Specialised construction activities	6.77	Specialised construction activities	6.24
Services to buildings and landscape activities	5.90	Residential care activities	5.21
Social work activities without accommodation	5.36	Social work activities without accommodation	5.07
Residential care activities	5.11	Services to buildings and landscape activities	4.90
Computer programming, consultancy and related activities	4.48	Public administration and defence; compulsory social security	4.63
Public administration and defence; compulsory social security	4.12	Computer programming, consultancy and related activities	4.19
Retail trade, except of motor vehicles and motorcycles	4.07	Retail trade, except of motor vehicles and motorcycles	4.16
Construction of buildings	3.82	Construction of buildings	3.30
Sum of Top 10	59.24	Sum of Top 10	58.31

Panel B: Other Migrants

2020-2021 (1)		2022-2023 (2)	
Education	13.49	Education	12.94
Social work activities without accommodation	7.20	Residential care activities	7.60
Human health activities	7.17	Human health activities	7.41
Residential care activities	7.01	Social work activities without accommodation	6.79
Computer programming, consultancy and related activities	6.07	Food and beverage service activities	6.01
Food and beverage service activities	5.90	Computer programming, consultancy and related activities	5.63
Services to buildings and landscape activities	4.44	Services to buildings and landscape activities	4.18
Retail trade, except of motor vehicles and motorcycles	4.06	Retail trade, except of motor vehicles and motorcycles	3.94
Public administration and defence; compulsory social security	3.70	Public administration and defence; compulsory social security	3.80
Wholesale trade, except of motor vehicles and motorcycles	3.41	Wholesale trade, except of motor vehicles and motorcycles	3.50
Sum of Top 10	62.47	Sum of Top 10	61.79

Notes: Table shows the top 10 employment sectors for first job by migrant group and time period. Each column displays sectors ranked by their share within that specific group-period. Percentages represent share of total employment within each group-period. Sector classifications based on SNI 2007 (Swedish Standard Industrial Classification) 2-digit codes. Sample includes all employed individuals in respective groups and periods.

Online Appendix – Not intended for publication

Table A.20: Top 10 Employment Sectors by Migrant Group and Time Period (Second Job)

Panel A: Ukrainian Migrants

2020-2021 (1)		2022-2023 (2)	
Social work activities without accommodation	13.51	Social work activities without accommodation	11.52
Education	9.87	Education	11.44
Services to buildings and landscape activities	9.47	Other professional, scientific and technical activities	9.81
Human health activities	7.35	Human health activities	6.83
Residential care activities	5.62	Services to buildings and landscape activities	6.12
Employment activities	3.86	Residential care activities	6.12
Food and beverage service activities	3.78	Food and beverage service activities	3.99
Retail trade, except of motor vehicles and motorcycles	3.64	Accommodation	3.48
Specialised construction activities	3.46	Employment activities	3.27
Sports activities and amusement and recreation activities	3.43	Public administration and defence; compulsory social security	3.00
Sum of Top 10	64.00	Sum of Top 10	65.58

Panel B: Other Migrants

2020-2021 (1)		2022-2023 (2)	
Social work activities without accommodation	15.85	Social work activities without accommodation	15.32
Education	9.64	Residential care activities	9.96
Residential care activities	9.46	Education	8.40
Services to buildings and landscape activities	9.24	Services to buildings and landscape activities	8.39
Food and beverage service activities	6.96	Food and beverage service activities	8.33
Human health activities	6.73	Human health activities	6.36
Employment activities	4.81	Employment activities	5.45
Land transport and transport via pipelines	3.17	Retail trade, except of motor vehicles and motorcycles	3.96
Retail trade, except of motor vehicles and motorcycles	3.09	Accommodation	2.97
Accommodation	2.73	Land transport and transport via pipelines	2.80
Sum of Top 10	71.69	Sum of Top 10	71.94

Notes: Table shows the top 10 employment sectors for the second job by migrant group and time period. Each column displays sectors ranked by their share within that specific group-period. Percentages represent share of total employment within each group-period. Sector classifications based on SNI 2007 (Swedish Standard Industrial Classification) 2-digit codes. Sample includes all individuals with a second job in respective groups and periods.

Table A.21: Top 10 Occupations by Migrant Group and Time Period (First Job)

Panel A: Ukrainian Migrants

2020-2021 (1)		2022-2023 (2)	
ICT architects, systems analysts and test managers	7.45	ICT architects, systems analysts and test managers	7.09
Cleaners and helpers	6.84	Cleaners and helpers	6.00
Personal care workers in health services	5.11	Primary- and pre-school teachers	5.42
Office assistants and other secretaries	4.22	Personal care workers in health services	5.24
Primary- and pre-school teachers	4.18	Office assistants and other secretaries	4.06
Carpenters, bricklayers and construction workers	4.10	Carpenters, bricklayers and construction workers	4.06
Attendants, personal assistants and related workers	3.16	Attendants, personal assistants and related workers	3.21
Shop staff	2.80	Shop staff	3.01
Child care workers and teachers aides	2.73	Child care workers and teachers aides	2.98
University and higher education teachers	2.73	Engineering professionals	2.64
Sum of Top 10	43.32	Sum of Top 10	43.72

Panel B: Other Migrants

2020-2021 (1)		2022-2023 (2)	
ICT architects, systems analysts and test managers	7.62	ICT architects, systems analysts and test managers	7.38
Cleaners and helpers	6.65	Cleaners and helpers	6.34
Personal care workers in health services	5.81	Personal care workers in health services	6.14
Primary- and pre-school teachers	4.75	Primary- and pre-school teachers	4.75
Fast-food workers, food preparation assistants	4.01	Child care workers and teachers aides	4.10
Child care workers and teachers aides	4.00	Fast-food workers, food preparation assistants	4.00
Attendants, personal assistants and related workers	3.58	Attendants, personal assistants and related workers	3.64
Engineering professionals	3.36	Engineering professionals	3.38
Health care assistants	2.97	Health care assistants	3.21
Physical and engineering science technicians	2.65	Shop staff	2.41
Sum of Top 10	45.40	Sum of Top 10	45.36

Notes: Table shows the top 10 occupations for first job by migrant group and time period. Each column displays occupations ranked by their share within that specific group-period. Percentages represent share of total employment within each group-period. Occupation classifications based on SSYK 2012 (Swedish Standard Classification of Occupations) 3-digit codes. Sample includes all employed individuals in respective groups and periods.

Table A.22: Top 10 Occupations by Migrant Group and Time Period (Second Job)

Panel A: Ukrainian Migrants			
2020–2021 (1)		2022–2023 (2)	
Cleaners and helpers	13.83	Cleaners and helpers	10.77
Attendants, personal assistants and related workers	7.45	Attendants, personal assistants and related workers	8.17
Personal care workers in health services	6.20	Primary- and pre-school teachers	5.85
Primary- and pre-school teachers	5.04	Personal care workers in health services	5.21
ICT architects, systems analysts and test managers	4.50	Health care assistants	3.63
Athletes, fitness instructors and recreational workers	3.43	Office assistants and other secretaries	3.49
Office assistants and other secretaries	3.17	Fast-food workers, food preparation assistants	3.42
Shop staff	3.03	Shop staff	2.99
Nursing professionals	2.63	Nursing professionals	2.89
Client information clerks	2.27	ICT architects, systems analysts and test managers	2.89
Sum of Top 10	51.56	Sum of Top 10	49.30
Panel B: Other Migrants			
2020–2021 (1)		2022–2023 (2)	
Cleaners and helpers	15.12	Cleaners and helpers	12.57
Attendants, personal assistants and related workers	10.44	Attendants, personal assistants and related workers	9.90
Personal care workers in health services	9.89	Personal care workers in health services	8.23
Health care assistants	5.35	Health care assistants	5.86
ICT architects, systems analysts and test managers	4.71	Fast-food workers, food preparation assistants	5.48
Fast-food workers, food preparation assistants	3.79	Primary- and pre-school teachers	3.81
Primary- and pre-school teachers	3.60	Shop staff	3.77
Nursing professionals	3.03	ICT architects, systems analysts and test managers	3.22
Shop staff	2.44	Nursing professionals	2.55
Heavy truck and bus drivers	2.41	Heavy truck and bus drivers	2.37
Sum of Top 10	60.77	Sum of Top 10	57.77

Notes: Table shows the top 10 occupations for the second job by migrant group and time period. Each column displays occupations ranked by their share within that specific group-period. Percentages represent share of total employment within each group-period. Occupation classifications based on SSYK 2012 (Swedish Standard Classification of Occupations) 3-digit codes. Sample includes all individuals with a second job in respective groups and periods.

TABLE A.23: COUNTRY-LEVEL INFERENCE: SYNTHETIC DIFFERENCE-IN-DIFFERENCES BY YEAR

	Any drug (1)	Immediate (2)	Anti-depressant (3)	Earnings (4)
Ukraine × 2022				
Primary specification	1.00	0.78	0.41	749.54
SDID	0.89	0.84	0.24	615.61
p, studentized	0.010	0.010	0.031	0.010
p, size and pre-fit	0.010	0.010	0.062	0.010
Ukraine × 2023				
Primary specification	0.71	0.26	0.66	984.83
SDID	0.84	0.39	0.63	1148.86
p, studentized	0.010	0.021	0.010	0.010
p, size and pre-fit	0.021	0.062	0.021	0.010
Ukraine × 2024				
Primary specification	1.07	0.31	1.12	813.51
SDID	1.12	0.33	1.05	1140.97
p, studentized	0.010	0.062	0.010	0.010
p, size and pre-fit	0.021	0.115	0.010	0.021
Placebo countries (SDID)	95	95	95	95

Notes: This table compares the primary specification with synthetic difference-in-differences (SDID) estimates and country-level placebo inference. *Primary specification* reports the yearly estimates in Table 2, from the matched sample. *SDID* reports SDID estimates (Arkhangelsky et al., 2021) on a panel of origin countries by quarter, 2020–2024, built from the unmatched sample and restricted to origin countries with at least 1,000 migrants, with Ukraine as the treated unit; yearly estimates are averages of the quarterly estimates in each year. The p-values are exact placebo p-values, (1 + number of placebo countries with a test statistic at least as large as Ukraine's)/(J + 1), where each of the $J = 95$ placebos re-estimates SDID with one control country as the treated unit, excluding Ukraine. The smallest attainable p-value is 0.010. Both tests compare absolute estimates divided by a country-specific scale. The *studentized* test (main) divides by the country's pre-invasion root mean squared prediction error (RMSPE) (Abadie et al., 2010; Abadie, 2021). The *size and pre-fit* test divides by the absolute placebo estimate predicted from a regression, across control countries, of log absolute placebo estimates on log pre-invasion RMSPE and log number of migrants (building on Ferman and Pinto, 2019). Columns 1–3 are measured in percentage points; column 4 shows average monthly earnings (SEK).

Table A.24: Permutation inference using the unmatched sample

	Any drug	Immediate	Anti-depressant	Earnings
	(1)	(2)	(3)	(4)
Ukraine × 2022	1.028	0.832	0.362	931.385
p-value	0.011	0.012	0.161	0.057
Placebo range (2.5th–97.5th pctile)	[-0.522, 0.781]	[-0.472, 0.735]	[-0.406, 0.651]	[-976.707, 1026.615]
Ukraine × 2023	0.950	0.387	0.775	1573.156
p-value	0.034	0.093	0.034	0.011
Placebo range (2.5th–97.5th pctile)	[-0.660, 1.177]	[-0.446, 0.582]	[-0.466, 0.796]	[-1554.801, 1333.210]
Ukraine × 2024	1.244	0.344	1.162	1698.220
p-value	0.034	0.174	0.011	0.046
Placebo range (2.5th–97.5th pctile)	[-0.808, 1.202]	[-0.469, 0.625]	[-0.732, 1.032]	[-1676.940, 1657.988]

Notes: Each column reports yearly treatment effect estimates using country-level permutation inference as an alternative inference procedure to the cluster-robust standard errors reported in the main analysis. We assign the treatment indicator in turn to each origin country in the sample, estimate the same two-way fixed effects specification as in the main analysis for each placebo assignment weighted by country-quarter cell size, and record the resulting coefficients. The donor pool is restricted to countries with at least 1,000 migrants who were registered as residing in Sweden throughout 2019–2024, excluding war-adjacent countries, as in the main analysis. To further ensure valid counterfactuals, we exclude any country that displays a statistically significant pre-period association between its outcomes and a placebo treatment indicator assigned over 2021 ($p < 0.10$); Ukraine is never excluded. The donor pool is constructed separately for each outcome. Columns (1)–(3) report results for mental health prescription outcomes: any mental health drug, immediate-relief drugs (anti-anxiety medications and sleeping pills), and anti-depressants, respectively, measured in percentage points. Column (4) reports results for average monthly earnings. For each outcome and year, we report the treatment effect estimate (Ukraine × Year), the two-tailed permutation p-value defined as the fraction of placebo statistics with absolute value at least as large as the observed statistic, and the placebo range showing the 2.5th and 97.5th percentiles of the permutation distribution. The effective numbers of donor countries used for the four outcomes are 87, 87, 86, and 87, respectively.

TABLE A.25: MEASURING FATALITIES IN LOGS

	Any drug		Earnings	
	(1)	(2)	(3)	(4)
Ukraine × 2022	0.454	0.410	106.522	47.549
	(0.347)	(0.371)	(234.439)	(295.647)
Ukraine × 2023	0.412	0.706**	150.433	425.275
	(0.324)	(0.334)	(352.099)	(529.266)
Ukraine × 2024	1.335***	1.589***	-376.569	-76.993
	(0.325)	(0.399)	(394.625)	(561.802)
Ukraine × Fatalities 2022Q1 × 2022	0.130**	0.130**	148.612***	192.936***
	(0.065)	(0.065)	(30.123)	(26.584)
Ukraine × Fatalities 2022Q1 × 2023	0.073	0.083	201.611***	280.406***
	(0.075)	(0.078)	(42.973)	(54.592)
Ukraine × Fatalities 2022Q1 × 2024	-0.055	-0.046	274.594***	357.762***
	(0.061)	(0.063)	(46.031)	(63.385)
Horse-race interactions	No	Yes	No	Yes
Observations	501500	501500	501500	501500
Individuals (Ukraine)	8771	8771	8771	8771
Individuals (Control)	17348	17348	17348	17348
Mean	5.83	5.83	26092	26092
Mean (Ukraine)	5.60	5.60	26611	26611
Mean (Control)	5.95	5.95	25829	25829

Notes: This table shows robustness checks using log-transformed fatality measures instead of the above/below median indicator. *Fatalities 2022Q1* is defined as the log of one plus war fatalities in the individual's oblast of origin during the first quarter of 2022. *Any drug* is an indicator for filling at least one prescription for a mental health medication in a quarter. *Earnings* denotes average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). *Horse-race interactions* indicate inclusion of the triple interaction between *Ukraine*, post-invasion year dummies, and indicators for being a Swedish citizen and for having above-median years in Sweden. Standard errors are clustered by country of origin for non-Ukrainians, and by birth oblast for Ukrainians. ** p<0.1, ** p<0.05, *** p<0.01.*

Table A.26: Measuring fatalities in logs 2022 to 2024

	Any drug		Earnings	
	(1)	(2)	(3)	(4)
Ukraine × 2022	0.323	0.290	145.194	-9.787
	(0.438)	(0.494)	(238.682)	(315.188)
Ukraine × 2023	0.515	0.782	88.690	197.548
	(0.484)	(0.508)	(407.199)	(577.850)
Ukraine × 2024	1.171***	1.415***	-468.535	-339.314
	(0.428)	(0.473)	(476.302)	(634.964)
Ukraine × Fatalities × 2022	0.108	0.108	93.618***	138.981***
	(0.067)	(0.065)	(21.529)	(25.889)
Ukraine × Fatalities × 2023	0.033	0.043	144.790***	226.416***
	(0.083)	(0.086)	(42.558)	(54.621)
Ukraine × Fatalities × 2024	-0.012	-0.001	198.430***	284.102***
	(0.066)	(0.067)	(53.203)	(67.140)
Horse-race interactions	No	Yes	No	Yes
Observations	501500	501500	501500	501500
Individuals (Ukraine)	8771	8771	8771	8771
Individuals (Control)	17348	17348	17348	17348
Mean	5.83	5.83	26092	26092
Mean (Ukraine)	5.60	5.60	26611	26611
Mean (Control)	5.95	5.95	25829	25829

Notes: This table shows robustness checks using cumulative fatalities over the entire 2022–2024 period instead of only Q1 2022. *Fatalities* is defined as the log of one plus total war fatalities in the individual's oblast of origin during 2022–2024. Columns 2 and 4 restrict the sample to Ukrainians only. Columns 1–2 show the probability of filling at least one prescription for any mental health medication per quarter. Columns 3–4 show average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). Standard errors are clustered by country of origin for non-Ukrainians, and by birth oblast for Ukrainians. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A.27: Balance test for exposure to conflict fatalities

	(1) Low exposure		(2) High exposure		(1)-(2) Pairwise t-test	
Variable	N/Clusters	Mean/(SE)	N/Clusters	Mean/(SE)	N/Clusters	Beta coefficient
Female	2704	0.655	5023	0.680	7727	-0.025
	13	(0.028)	12	(0.009)	25	
Age	2704	37.385	5023	37.680	7727	-0.295
	13	(0.208)	12	(0.370)	25	
Has children	2704	0.560	5023	0.563	7727	-0.003
	13	(0.007)	12	(0.007)	25	
Married	2704	0.531	5023	0.514	7727	0.017
	13	(0.019)	12	(0.011)	25	
Married to Ukrainian	2704	0.209	5023	0.180	7727	0.029
	13	(0.026)	12	(0.012)	25	
Swedish citizen	2704	0.494	5023	0.603	7727	-0.108**
	13	(0.041)	12	(0.015)	25	
Above-median years in Sweden	2704	0.416	5023	0.514	7727	-0.098**
	13	(0.033)	12	(0.014)	25	
No university education	2704	0.239	5023	0.240	7727	-0.001
	13	(0.008)	12	(0.011)	25	
Earnings 2020	2704	25020.048	5023	26085.975	7727	-1065.926
	13	(397.026)	12	(681.048)	25	
Earnings 2021	2704	26946.847	5023	27949.098	7727	-1002.252
	13	(506.501)	12	(710.218)	25	
F-test of joint significance (F-stat)						1.625
F-test, number of observations						7727
F-test, number of clusters						25

Notes: This table shows a balance test of exposure to conflict fatalities in the birth oblast with respect to pre-invasion characteristics. All time-varying characteristics are measured in 2020. *No university education* is an indicator for not having a university degree. *Earnings 2020* and *Earnings 2021* are mean monthly earnings in each year, respectively, measured in SEK. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.28: OUTMIGRATION BY ATTACHMENT TO SWEDEN

	Out-migration	
	(1)	(2)
	High attachment	Low attachment
2022	0.73***	1.71***
	(0.24)	(0.18)
2023	1.54***	4.42***
	(0.32)	(0.41)
2024	2.49***	8.43***
	(0.47)	(0.83)
Ukraine × 2022	-0.60**	-0.60***
	(0.24)	(0.18)
Ukraine × 2023	-0.37	-1.65***
	(0.32)	(0.41)
Ukraine × 2024	-0.42	-2.60***
	(0.47)	(0.83)
Observations	6420	77157
Individuals (Ukraine)	773	8574
Individuals (Control)	1367	17145
Mean migration (Ukraine)	1.12	3.24
Mean migration (Control)	1.58	4.86

Notes: This table examines post-invasion emigration patterns among Ukrainian and matched control migrants, split by degree of attachment to Sweden. The sample consists of migrants who resided in Sweden at least during 2019–2021, after which we allow individuals to leave the sample. *Out-migration* is a binary indicator equal to one if the individual is no longer registered as residing in Sweden in a given year. *High attachment* identifies individuals who are Swedish citizens and married to a Swedish-born spouse. *Low attachment* comprises all remaining individuals. Year dummies capture general post-invasion emigration trends common to all migrants. The Ukraine interactions capture the Ukraine-specific deviation from these trends. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.29: EFFECT BY ATTACHMENT TO SWEDEN

	Earnings (1)	Employment (2)	Earnings (3)	Employment (4)
Ukraine × 2022	821.073***	1.611**		
	(176.873)	(0.670)		
Ukraine × 2023	979.921***	1.866**		
	(266.662)	(0.928)		
Ukraine × 2024	842.958***	1.013		
	(299.015)	(1.204)		
Ukraine × 2022 × High attachment	-445.740	0.448		
	(378.859)	(0.832)		
Ukraine × 2023 × High attachment	55.799	0.485		
	(446.462)	(1.079)		
Ukraine × 2024 × High attachment	-122.090	0.497		
	(613.194)	(1.352)		
Fatalities 2022Q1 × 2022			924.387***	1.862***
			(190.010)	(0.657)
Fatalities 2022Q1 × 2023			1260.498***	2.242**
			(272.072)	(0.921)
Fatalities 2022Q1 × 2024			1182.213***	1.724
			(314.654)	(1.220)
Fatalities 2022Q1 × 2022 × High attachment			227.489	1.241
			(560.783)	(1.105)
Fatalities 2022Q1 × 2023 × High attachment			261.074	0.711
			(646.411)	(1.496)
Fatalities 2022Q1 × 2024 × High attachment			138.062	0.389
			(864.994)	(2.140)
Observations	479980	479980	460880	460880
Individuals (Ukraine)	8056	8056	7101	7101
Individuals (Control)	15943	15943	15943	15943
Pre-invasion mean (Ukraine)	26611	73	26611	73
Pre-invasion mean (Control)	25829	68	25829	68

Notes: This table examines heterogeneous labor market effects by degree of attachment to Sweden. Earnings refers to average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). *High attachment* is an indicator for individuals who are Swedish citizens and married to a Swedish-born spouse. *Fatalities 2022Q1* is an indicator for being born in an oblast experiencing above-median conflict fatalities in the first quarter of 2022. The sample in columns 3–4 is restricted to Ukrainians for whom the birth oblast can be matched, and includes matched control migrants. All specifications include individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.30: EFFECT BY ATTACHMENT TO SWEDEN: SPLIT SAMPLES

	High attachment		Low attachment		High attachment		Low attachment	
	(1) Earnings	(2) Employed	(3) Earnings	(4) Employed	(5) Earnings	(6) Employed	(7) Earnings	(8) Employed
Ukraine × 2022	375.332	2.059***	821.073***	1.611**				
	(356.371)	(0.699)	(176.884)	(0.671)				
Ukraine × 2023	1035.720**	2.351***	979.921***	1.866**				
	(437.667)	(0.770)	(266.678)	(0.929)				
Ukraine × 2024	720.868	1.510*	842.958***	1.013				
	(568.159)	(0.825)	(299.032)	(1.204)				
Ukraine × Fatalities 2022Q1 × 2022					1151.876**	3.103***	924.387***	1.862***
					(563.893)	(0.895)	(190.019)	(0.657)
Ukraine × Fatalities 2022Q1 × 2023					1521.573**	2.954***	1260.498***	2.242**
					(610.269)	(1.092)	(272.083)	(0.921)
Ukraine × Fatalities 2022Q1 × 2024					1320.275*	2.113	1182.213***	1.724
					(792.381)	(1.488)	(314.667)	(1.220)
Observations	43180	43180	436800	436800	41980	41980	418900	418900
Individuals (Ukraine)	756	756	7300	7300	696	696	6405	6405
Individuals (Control)	1403	1403	14540	14540	1403	1403	14540	14540
Pre-invasion mean (Ukraine)	29638.12	80.820	26940.17	72.911	29391.89	80.496	26957.39	72.683
Pre-invasion mean (Control)	36871.93	84.230	24884.96	66.773	36871.93	84.230	24884.96	66.773

Notes: This table examines heterogeneous labor market effects by degree of attachment to Sweden. Earnings refers to average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). *High attachment* is an indicator for individuals who are Swedish citizens and married to a Swedish-born spouse. *Low attachment* = 1 - *High attachment*. *Fatalities 2022Q1* is an indicator for being born in an oblast experiencing above-median conflict fatalities in the first quarter of 2022. The sample in columns 5–8 is restricted to Ukrainians for whom the birth oblast can be matched, and includes matched control migrants. All specifications include individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

Table A.31: Effects among the non-employed

	Earnings (1)	Employment (2)	Multiple jobs (3)
Ukraine × 2022	1574.516***	4.110***	0.294
	(185.066)	(0.895)	(0.210)
Ukraine × 2023	2559.800***	6.805***	-0.095
	(247.595)	(1.192)	(0.315)
Ukraine × 2024	2370.903***	5.652***	
	(284.642)	(1.503)	
Ukraine × Unemployed 2021Q4 × 2022	524.847	2.390*	4.043***
	(351.131)	(1.261)	(0.711)
Ukraine × Unemployed 2021Q4 × 2023	522.289	2.570	3.398***
	(395.186)	(1.806)	(0.857)
Ukraine × Unemployed 2021Q4 × 2024	-468.552	-0.508	
	(478.207)	(1.907)	
Observations	173420	173420	138736
Individuals (Ukraine)	2513	2513	2513
Individuals (Control)	6158	6158	6158
Mean	4883.941	19.781	2.428
Mean (Ukraine)	5312.932	21.220	2.840
Mean (Control)	4708.876	19.194	2.259

Notes: This table further examines the distinction between active job seekers and individuals outside the labor force by restricting the sample to only these two groups. The sample excludes individuals who were employed in Q4 2021. *Unemployed* are individuals registered with the Public Employment Service in November 2021. The sample includes Ukrainian migrants and matched control migrants. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE A.32: EFFECTS ON RUSSIAN MIGRANTS

	Any drug (1)	Earnings (2)
Russia × 2022	0.48***	106.26
	(0.08)	(177.51)
Russia × 2023	0.43***	-102.50
	(0.11)	(269.69)
Russia × 2024	0.37***	-167.21
	(0.11)	(292.69)
Observations	1082000	1082000
Individuals (Russia)	18077	18077
Individuals (Control)	36023	36023
Mean (Russia)	7.89	26947
Mean (Control)	7.13	25741

Notes: This table examines effects on Russian migrants in Sweden using the same matched difference-in-differences design as the main analysis. Column 1 shows the probability of filling at least one prescription for any mental health medication per quarter. Column 2 shows average monthly earnings, measured in 2024 SEK value (100 SEK ≈ $10). All models control for individual and quarter fixed effects. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

Appendix B: External validity

B.1 Evidence from the American Community Survey

To assess whether the labor market patterns documented in Sweden generalize to other settings, we use data from the American Community Survey (ACS) for the years 2018–2024. The ACS is an annual cross-sectional survey covering approximately 1% of the U.S. population. We restrict the sample to foreign-born non-citizens and naturalized citizens who immigrated before 2019 and were of working age (15–65) in 2021. To avoid capturing spillover effects, we exclude migrants from Russia and countries sharing a border with Ukraine or Russia. The 2020 survey year is excluded due to data collection disruptions caused by the COVID-19 pandemic.

We estimate event-study specifications analogous to those in the main analysis, regressing labor market outcomes on interactions between a Ukrainian-origin indicator and year dummies, with country-of-origin and state-by-year fixed effects. Standard errors are clustered at the country-of-origin level.

Figure 5 displays the event-study results for three labor market outcomes. Panel A shows that Ukrainian expatriates in the United States experience a large and significant increase in annual earnings after the invasion, on the order of 3,000–4,000 SEK per month in PPP terms. Panel B shows weeks worked per year, which increase modestly but imprecisely. Panel C shows the probability of working 40 or more hours per week, which increases by approximately 1 percentage point in 2022 and 2024. Across all three outcomes, the pre-trends are reassuringly flat, with no evidence of diverging trajectories before the invasion.

Table B.1 presents the corresponding yearly difference-in-differences estimates. Earnings increase significantly in 2022 and 2023, with point estimates that remain positive but lose precision in 2024 as confidence intervals widen. The probability of working 40 or more hours per week increases significantly in 2022. Table B.2 shows that the composition of the Ukrainian sample does not change meaningfully after the invasion: there are no significant differences in age or years since immigration, though the sample becomes slightly more female and more educated in the post-period. Table B.3 shows that the earnings results are robust to the inclusion of individual-level covariates and to restricting the sample to a balanced set of origin countries.

These results are broadly consistent with the Swedish findings, showing that Ukrainian expatriates increased their labor supply following the invasion.

Table B.1: Labor market outcomes: Yearly estimates (ACS)

	Earnings	Weeks worked	Worked 40+ hours/week
	(1)	(2)	(3)
Ukraine × 2022	3980.47***	0.27	1.43***
	(1100.13)	(0.23)	(0.41)
Ukraine × 2023	4189.19***	0.18	0.53
	(1502.28)	(0.33)	(0.58)
Ukraine × 2024	3114.10	0.35	1.08*
	(2061.28)	(0.36)	(0.63)
Observations	1667117	1667117	1667117
Individuals (Ukraine)	14959	14959	14959
Individuals (Control)	1652158	1652158	1652158
Mean (Ukraine)	32411	37.12	57.36
Mean (Control)	26203	35.66	57.20

Notes: This table shows difference-in-differences estimates of the effect of the 2022 Russian invasion of Ukraine on labor market outcomes among Ukrainian migrants in the United States, using data from the American Community Survey (ACS) 2018–2024 (excluding 2020). Column 1 shows monthly earnings in 2024 PPP SEK (100 SEK ≈ $10). Column 2 shows weeks worked per year. Column 3 shows the probability of usually working 40 or more hours per week (range: 0–100%). The sample consists of foreign-born individuals who immigrated before 2019. All specifications include country-of-origin and state-by-year fixed effects. Mean values are measured during the pre-invasion period. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

Table B.2: Composition changes (ACS)

	Age	Years since immigration	Female	Citizen	Any college
	(1)	(2)	(3)	(4)	(5)
Ukraine × Post-invasion	-0.01	-0.07	0.20**	0.91	1.85***
	(0.10)	(0.12)	(0.08)	(0.88)	(0.14)
Observations	1667117	1667117	1667117	1667117	1667117
Individuals (Ukraine)	14959	14959	14959	14959	14959
Individuals (Control)	1652158	1652158	1652158	1652158	1652158
Mean (Ukraine)	40.45	18.49	54.52	72.07	72.27
Mean (Control)	42.61	20.87	51.73	52.02	50.58

Notes: This table tests for compositional changes in the Ukrainian migrant sample after the invasion using the American Community Survey (ACS) 2018–2024 (excluding 2020). Each column reports the coefficient on the interaction of being Ukrainian with a post-invasion indicator. Column 1: age; Column 2: years since immigration; Column 3: female (range: 0–100%); Column 4: U.S. citizen (range: 0–100%); Column 5: any college education (range: 0–100%). The sample is restricted to foreign-born individuals who immigrated before 2019. All specifications include country-of-origin and state-by-year fixed effects. Mean values are measured during the pre-invasion period. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

TABLE B.3: LABOR MARKET OUTCOMES: ROBUSTNESS (ACS)

	Earnings			Weeks worked			Worked 40+ hours/week		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ukraine × 2022	3980.47***	3432.11***	3408.22***	0.27	0.07	0.06	1.43***	0.99**	1.00**
	(1100.13)	(1131.04)	(1232.08)	(0.23)	(0.22)	(0.25)	(0.41)	(0.42)	(0.46)
Ukraine × 2023	4189.19***	3813.77**	3853.69**	0.18	0.06	0.08	0.53	0.43	0.45
	(1502.28)	(1468.06)	(1598.42)	(0.33)	(0.32)	(0.36)	(0.58)	(0.58)	(0.64)
Ukraine × 2024	3114.10	2770.82	2617.31	0.35	0.24	0.22	1.08*	0.86	0.88
	(2061.28)	(2034.91)	(2209.93)	(0.36)	(0.35)	(0.38)	(0.63)	(0.61)	(0.67)
Observations	1667117	1667117	1537260	1667117	1667117	1537260	1667117	1667117	1537260
Individuals (Ukraine)	14959	14959	14959	14959	14959	14959	14959	14959	14959
Individuals (Control)	1652158	1652158	1522301	1652158	1652158	1522301	1652158	1652158	1522301
Mean (Ukraine)	32411	32411	32411	37.12	37.12	37.12	57.36	57.36	57.36
Mean (Control)	26203	26203	26040	35.66	35.66	35.72	57.20	57.20	57.39
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Balanced Sample	No	No	Yes	No	No	Yes	No	No	Yes

Notes: This table shows robustness checks for the ACS labor market estimates. For each outcome, three specifications are presented: (1) baseline with country-of-origin and state-by-year fixed effects; (2) adding individual-level covariates (years since immigration, gender, citizenship, and college education); (3) additionally restricting to a balanced sample of origin countries present in all survey years with at least 500 observations per year. Columns 1–3: monthly earnings in 2024 PPP SEK (100 SEK ≈ $10). Columns 4–6: weeks worked per year. Columns 7–9: probability of usually working 40 or more hours per week (range: 0–100%). Mean values are measured during the pre-invasion period. Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*

B.2 Evidence from the European Social Survey

While the ACS provides evidence on labor market outcomes, it does not contain information on mental health or subjective well-being. To assess whether the mental health effects documented in Sweden are also present in other countries, we use data from the European Social Survey (ESS), a cross-national survey conducted biennially across European countries since 2002. The ESS contains self-reported measures of happiness, life satisfaction, satisfaction with health, and self-rated health, which allow us to examine subjective well-being among Ukrainian expatriates across Europe.

We pool ESS rounds into five periods: 2015–16, 2017–18, 2019–21, 2022–23, and 2024. The sample consists of foreign-born migrants who arrived in their host country before 2022, so that the post-invasion rounds do not include Ukrainians who arrived after the invasion, excluding origin-countries sharing a border with Ukraine or Russia. We restrict to host countries where Ukrainian migrants are observed in both the pre- and post-invasion periods, and require a minimum of three observations per group (Ukrainian versus other migrant) in each country-period cell. These restrictions yield a sample of approximately 830 migrants, of whom 186 are Ukrainian.

We construct an Anderson-style composite index of well-being from four measures: happiness (0–10), life satisfaction (0–10), satisfaction with health (0–10), and self-rated health (1–5) (Anderson, 2008). Each component is standardized using the control-group pre-invasion mean and standard deviation, weighted by the inverse of the covariance matrix of standardized components (estimated in the control-pre sample), and the resulting index is re-standardized to mean zero and unit standard deviation in the control-pre sample.[1]

We estimate event-study specifications regressing each outcome on interactions between a Ukrainian-origin indicator and period dummies, with the 2019–21 period as the base. All specifications control for age, gender, college education, years since immigration, citizenship in the host country, and host-country fixed effects. We include host-country and period fixed effects rather than origin-country fixed effects, since the ESS contains few respondents from any given origin country within each host country. The estimates therefore compare Ukrainian and other migrants living in the same host country. Standard errors are clustered at the country-of-origin level.

Figure B.1 displays raw means of each well-being measure by group and period. For happiness, life satisfaction, and the well-being index, Ukrainian migrants track closely with other migrants prior to the invasion, then diverge sharply downward in 2022–23 and especially

[1]This follows the approach in Anderson (2008), which optimally combines multiple outcomes while accounting for their correlation structure.

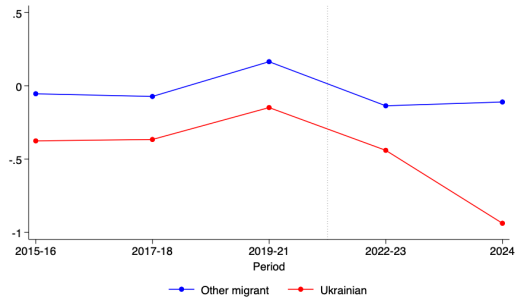
in 2024. The pattern for satisfaction with health is similar but noisier. Self-rated health shows a less clear pattern.

Figure B.2 displays the event-study estimates. Panel A shows that the composite well-being index declines by 0.29 standard deviations in 2022–23 and 0.56 standard deviations by 2024, with flat pre-trends. The individual components reveal that the effects are strongest for happiness (Panel B) and life satisfaction (Panel C), which decline by approximately 0.5 and 0.7 points in 2022–23, deepening to over 1 point by 2024. Satisfaction with health (Panel D) shows a significant decline in 2024, while self-rated health (Panel E) shows small and imprecise effects.

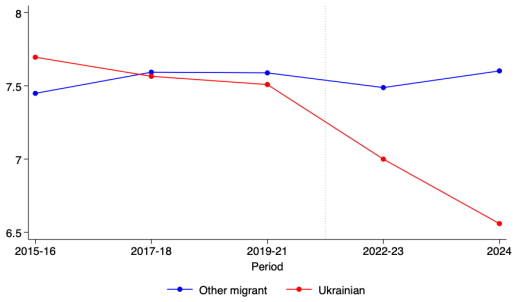
Table B.4 reports the corresponding pooled estimates. The well-being index, happiness, life satisfaction, and satisfaction with health all show significant declines in 2022–23 that deepen in 2024. The persistence and deepening of effects mirror the pattern observed for mental health prescriptions in Sweden, where anti-depressant use continues to rise through 2024.

These results complement our Swedish findings by showing that the deterioration in well-being among Ukrainian expatriates is not specific to one country or one measurement approach. While the ESS measures capture subjective well-being rather than clinical mental health, the consistency of results across self-reports and administrative prescription data strengthens the conclusion that the invasion caused meaningful and persistent harm to the well-being of Ukrainian expatriates.

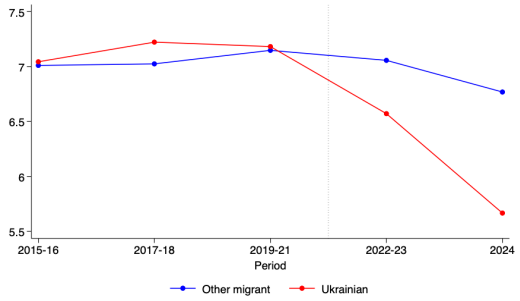
FIGURE B.1: RAW MEANS BY GROUP AND PERIOD (ESS)



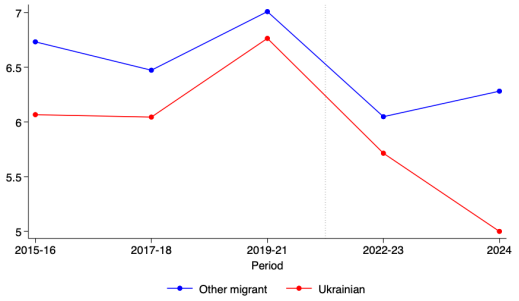
(A) ANDERSON WELL-BEING INDEX



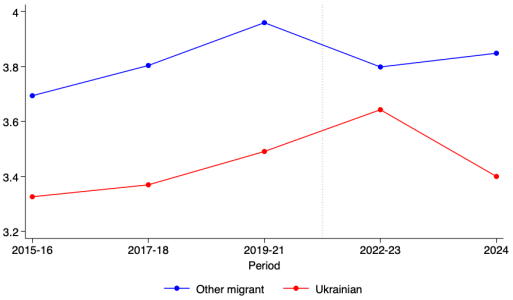
(B) HAPPINESS (0–10)



(C) LIFE SATISFACTION (0–10)



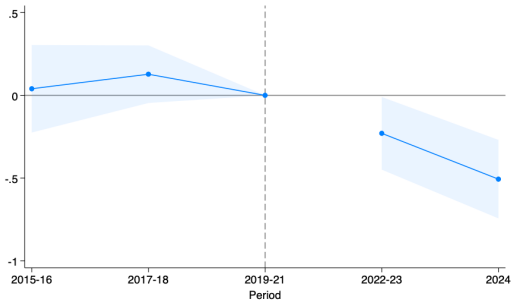
(D) SATISFACTION WITH HEALTH (0–10)



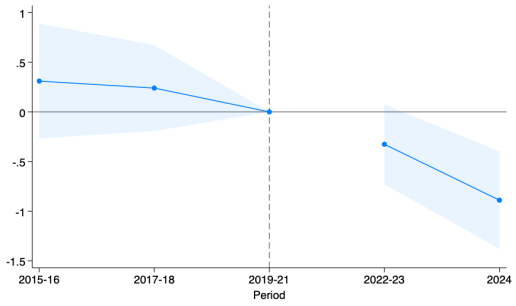
(E) SELF-RATED HEALTH (1–5)

Notes: This figure shows raw means of well-being measures for Ukrainian migrants (red) and other migrants (blue) across pooled ESS periods. Panel A shows the composite well-being index, constructed as an inverse-covariance-weighted average of standardized components (Anderson, 2008) (Panels B–E), with mean zero and unit standard deviation in the control-pre sample. Panels B–E show the individual components: happiness (0–10), life satisfaction (0–10), satisfaction with health (0–10), and self-rated health (1–5). The dotted vertical line indicates the boundary between the pre-invasion (2015–21) and post-invasion (2022–24) periods. The sample includes foreign-born migrants who arrived before 2022, in ESS countries where Ukrainian migrants are observed in both pre- and post-invasion periods.

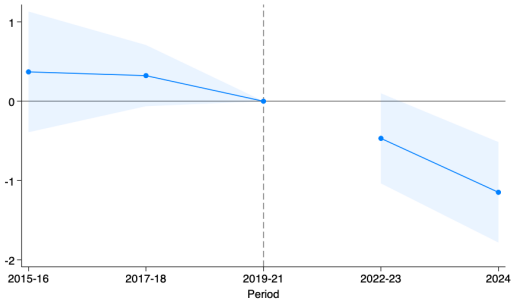
FIGURE B.2: EVENT-STUDY ESTIMATES: EUROPEAN SOCIAL SURVEY



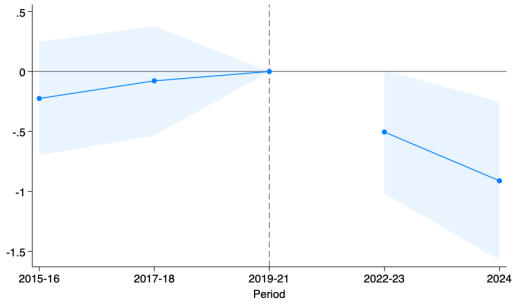
(A) WELL-BEING INDEX



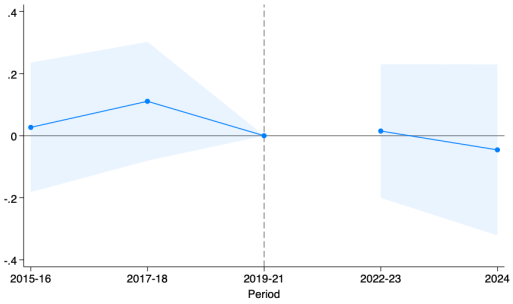
(B) HAPPINESS (0–10)



(C) LIFE SATISFACTION (0–10)



(D) SATISFACTION WITH HEALTH (0–10)



(E) SELF-RATED HEALTH (1–5)

Notes: This figure shows event-study estimates of the effect of the 2022 Russian invasion of Ukraine on self-reported well-being among Ukrainian migrants in Europe, using pooled data from the European Social Survey (ESS) rounds 8–11 (2015–2024). The base period is 2019–21. Panel A shows the composite well-being index (standardized to mean 0 and standard deviation 1 in the control-pre sample; following Anderson (2008)). Panels B–E show the individual components: happiness (0–10), life satisfaction (0–10), satisfaction with health (0–10), and self-rated health (1–5). All specifications control for age, gender, college education, years since immigration, host-country citizenship, and host-country fixed effects. The dotted vertical line indicates the boundary between the pre-invasion (2015–21) and post-invasion (2022–24) periods. Standard errors clustered by country of origin. The shaded area shows the confidence intervals at the 95 % level.

Table B.4: Well-being outcomes: ESS

	Well-being index (1)	Happiness (2)	Life satisfaction (3)	Satisfaction with health (4)	Self-rated health (5)
Ukraine × 2022-23	-0.285***	-0.506***	-0.695***	-0.409*	-0.032
	(0.079)	(0.152)	(0.198)	(0.234)	(0.087)
Ukraine × 2024	-0.564***	-1.058***	-1.363***	-0.826***	-0.094
	(0.100)	(0.164)	(0.279)	(0.280)	(0.110)
Observations	801	834	818	814	835
Observations (Ukraine)	182	186	184	184	186
Observations (Control)	619	648	634	630	649
Mean pre (Ukraine)	-0.286	7.585	7.151	6.324	3.401
Mean pre (Control)	-0.000	7.559	7.056	6.687	3.824

Notes: This table shows difference-in-differences estimates of the effect of the 2022 Russian invasion of Ukraine on self-reported well-being among Ukrainian migrants in Europe, using pooled data from the European Social Survey (ESS) rounds 8–11 (2015–2024). Column 1 shows the composite well-being index, constructed as an inverse-covariance-weighted average of the four standardized components (mean 0, standard deviation 1 in the control-pre sample; following Anderson (2008)). Columns 2–5 show the individual components: happiness (0–10), life satisfaction (0–10), satisfaction with health (0–10), and self-rated health (1–5). The sample includes foreign-born migrants who arrived before 2022, in ESS countries where Ukrainian migrants are observed in both pre- and post-invasion periods, with a minimum of three observations per group in each country-period cell. All specifications control for age, gender, college education, years since immigration, host-country citizenship, period, and host-country fixed effects. Mean values are measured during the pre-invasion period (2015–2021). Standard errors clustered by country of origin. ** p<0.1, ** p<0.05, *** p<0.01.*