# Child Care for Refugee Families:
# Effects on Employment, Well-Being and Integration

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## Abstract

This study examines the impact of child care services on the employment, well-being and integration progress of Ukrainian refugee families in Germany. The analysis uses a new, large and representative panel data set (IAB-BiB/FReDA-BAMF-SOEP Survey) of refugees arriving in Germany after the Russian invasion in Ukraine. Our empirical approach exploits regional differences in child care availability and the age of the youngest child that generate exogenous variation in children's access to child care. Our results reveal very strong effects of child care for refugee families on their participation in language classes, employment and work intentions, as well as their time with Germans. Placebo checks using mothers with older children support a causal interpretation of our findings. Our study highlights the importance of investing in child care services to facilitate the integration of refugee mothers into the labor market and society.

*Keywords:* Child Care, Refugees, Forced Migration, Integration
*JEL:* I26, J13, J15

# 1. Introduction

The Russian invasion of Ukraine has triggered a major migration flow to other countries, with more than one million refugees arriving in Germany. This refugee population disproportionately includes women and children, raising the pressing policy question of how their integration in the host country can best be supported. The provision of child care services to refugee family with young children is regularly brought forward as an important precondition for their integration. Yet, we almost completely lack empirical evidence on refugees willingness to take up child care in the host country, and on the effects it has on integration processes of refugee families, their employment and well-being.

Our paper studies the causal effects of child care services to the integration of Ukrainian refugee families during their first year in Germany. Our analysis is based on a unique, representative panel data set of Ukrainian refugees arriving in Germany following the Russian invasion (IAB-BiB/FReDA-BAMF-SOEP Survey of Ukrainian refugees, see Brücker et al., 2023). The empirical approach builds on the observation that the geographic location exposes refugee families to very different environments providing child care services. Depending on their location and the age of the youngest child, the availability of child care varies substantially. As most refugees moved to relatives and friends and to existing social networks, we can provide evidence that the initial location choice of refugees is unrelated to the availability of child care services in their county. We exploit this variation in child care availability across regions and age of children with IV strategies to study effects of facilitated access to child care services on attending child care, and mothers' integration in labour markets and social environments.

*A priori*, it is not clear whether a higher provision of child care is beneficial for refugee families. Any effects to unfold require refugee families to take up external child care, and once their children attend child care, it is not clear whether the time is invested in activities that enhance their potential employability in the host labour market and their social integration. In theory, mothers could use the time on education and skills acquisition (Becker, 1993). Mothers also gain time to search for jobs that better match their skills, thereby increasing their productivity (Diamond, 2011). They can also dedicate more time to working and generating an income, thereby alleviating economic hardship that refugee families often face. Furthermore, child care can provide a platform for mothers to interact with other parents. This social networking can foster a sense of community and

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help mothers assimilate into the local culture more quickly (Borjas, 1995). Finally, the provision of reliable child care can reduce the stress and anxiety often associated with balancing work and family responsibilities. Better mental health is a critical component of individual well-being (Stiglitz et al., 2009).

Our results reveal a strong, significant effect of regional child care availability on children's child care attendance. A higher availability increases the take-up with an elasticity of about 0.4 percentage points higher attendance for each percentage point more availability. In a second step, we find that child care attendance of children, triggered through a higher regional availability, effectively increases refugee mothers' participation in language classes, their activities in the labour market or in education, as well as their endeavour to search for a job. We also find positive effects on the time refugees spend with Germans. However, we cannot find effects on refugees perception of feeling very welcome, nor in their intention to stay forever or on their life satisfaction. About one year after arrival, it might still be to early for effects to unfold on these long-term oriented outcomes. Overall, our findings carry important policy implications, as they suggest that the publicly funded provision of child care services effectively promotes the take-up of child care and the integration of refugee mothers into the host labor market and society.

In our analyses, we can rule out that other regional factors that are correlated with child care availability are spuriously driving the effects. We show that the regional availability of child care only related to outcomes of mothers with children of the relevant age. However, we cannot find a link to outcomes of mothers with older children or of women without children in the household.

Our paper contributes to at least three different strands of the literature. First, we add to the small literature on the consequences of forced migration following wars, civil conflicts and other conflicts (Becker and Ferrara, 2019). It is now widely recognized that refugees due to war and persecution have poorer integration and participation opportunities than other immigrants. They often have limited time to prepare for migration, they are more likely to be mentally or physically impaired due to traumatic experiences; and they typically face limited access to social networks and other resources in the destination countries (e.g. Brell et al., 2020, Dustmann et al., 2017, Kosyakova and Kogan, 2022). Moreover, it is important to note that the demographic composition of the refugee population varies depending on the reasons behind their migration. The influx of Ukrainian

refugees is characterised by a high share of women, children and elderly due to the general mobilization in Ukraine and the travel ban for men of military age. Moreover, the uncertainty regarding the further course of the war in Ukraine contributes to particularly high levels of uncertainty among refugees regarding their stay in Germany and their intentions of return (Brücker et al., 2022). For this group, access to child care and educational services might be particularly relevant (OECD, 2023). Our paper provides new empirical evidence supporting this hypothesis.

Second, we add novel evidence on the role of child care for the integration of migrant families. We speak to the literature on conditions in the host country that can favor successful integration of migrants. While a substantial body of the literature studied the effects of child care on migrant children, very little attention has been dedicated to the specific benefits of child care for migrant *parents*. Exceptions are two studies, one for migrant families in Norway (Drange and Telle, 2015) and one on refugees in Germany (Gambaro et al., 2021). Drange and Telle (2015) find no effects of immigrant children's child care attendance on their parents' integration, measured by employment and education. Gambaro et al. (2021) find an effect on an index of integration to the host country. Overall, the evidence based on causal identification strategies is still very scarce. Collecting more evidence is important, because the motives and the demographic composition of arriving populations vary substantially.

Thirdly, our study contributes novel empirical evidence on the societal returns from public investments in child care services. Research has firmly established that early educational investments have a significant impact on various dimensions, including the labor market participation of mothers (e.g. Baker et al., 2008, Bauernschuster and Schlotter, 2015, Müller and Wrohlich, 2020), and children's developmental outcomes (e.g. van Huizen and Plantenga, 2018, Cornelissen et al., 2018, Felfe and Lalive, 2018, Gupta et al., 2023). Yet, the specific role and implications of child care services for refugee families remain under-researched. The potential benefits pertaining to the social integration and labor market participation of refugees add an unexplored facet to the cost-effectiveness analyses of public investments in child care. Our findings underscore that the provision of child care services is instrumental for refugee mothers with young children. It enables them to acquire necessary skills for workforce participation in the host country and facilitates their labor market engagement. The uptake of child care services among this

group is considerably high, and the lack of such services emerges as a primary barrier preventing these mothers from attending integration courses and engaging in the labor market.

The remainder of the paper is organized as follows. Section 2 describes the political and institutional background for the set-up of our study. In Section 3, we describe the novel Survey of Ukrainian refugees and our main analysis sample. Section 4 outlines the empirical approach. We summarize the main results in Section 5 and conclude in Section 6.

## 2. Background

### 2.1. General information

The Russian aggression against Ukraine has caused the largest displacement of people in Europe since the end of World War II. As of December 2022, 7.9 million sought refuge abroad (UNHCR, 2023). Among the countries of the European Union, Germany emerged as the second most important destination country for Ukrainian refugees, with approximately one million individuals settling there, after Poland with about 1.6 million (UNHCR, 2023). The population of Ukrainian citizens residing in Germany increased sevenfold since the onset of the conflict. It made up to 9.0 percent of the foreign population by the end of 2022 and 1.4 percent of the total resident population in the country.

The institutional framework for the reception of Ukrainian refugees in Germany differs fundamentally from that of previous refugees. Firstly, Ukrainians have had the possibility of visa-free entry to Germany and all other Schengen countries since 2017. Secondly, the activation of the "Temporary Protection Directive" (2001/55/EC) by the European Union (EU) has provided immediate legal and planning security by waiving the asylum procedure and issuing a temporary residence permit initially until 5 March 2024. This allows for faster employment and integration opportunities. Thirdly, unlike other refugees, Ukrainians in Germany were not required to initially stay in reception facilities designated for refugees and were not generally subject to residence allocation policies. Later on, these policies were implemented and limited to Ukrainian refugees who relied on social benefits and public housing.

Fourthly, beginning in June 2022, Ukrainian refugees were integrated into the basic security system under the Code of Social Law II instead of the Asylum Seekers Benefits

Act, resulting in higher benefit rates and immediate integration into the support structure of the job centers as well as access to language classes. These factors in the Ukraine and Germany factors have triggered not only demographic differences between Ukrainian and other refugees but also have an impact on their prospects for integration, highlighting the need for a more nuanced understanding of the experiences of Ukrainian refugees.

Also before the Russian invasion, Ukrainian citizens migrated to Germany during different periods in history. During the wartime periods of World War I and World War II, many Ukrainians came to Germany as forced laborers or prisoners of war. Some remained in the country after the war ended. Also during the late Soviet period (1980s) and independence (1991), many Ukrainians left the country due to political and economic problems. In the late 1990s to mid-2000s, Germany experienced a wave of immigration of Ukrainian women in Germany as caregivers and household help. Russia's annexation of Crimea and the conflict in eastern Ukraine has led to another wave of immigration since 2014. Many Ukrainians have moved to the EU and Germany for political reasons or because of the unstable economic and security situation.

*2.2. Child care in Ukraine*

To understand the effects of child care in the host country, it is also important to develop an understanding of child care usage in Ukraine.

According to Zharova (2023), Ukraine provides a wide range of preschool educational institutions, ranging from nursery for children aged 2 months to 3 years, to Kindergarten for children aged 3 to 6 years, nursery schools for children aged 2 months to 6 years, as well as different compensatory institutions for children with special needs to support development.

According to the Ministry of Education and Science of Ukraine, about 1.3 million children attended some form of child care. The coverage is about 65% of all children of the corresponding age. In recent years, Ukraine experiences a trend toward overcrowding in preschool educational institutions: on average, 112 people apply for 100 places in preschools. The economic growth and rising birth rates that marked the 2000s were not accompanied by infrastructure development.

The Ministry of Education and Science of Ukraine is responsible for 98% of preschools. The legislation provides for nursery groups or kindergartens for children from 2 months to 3 years of age, but there are few such institutions. Children under the age of 3 account

for only 14% of the total number of children in preschools. Instead, parents often resort to nannies for children below the age of 3.[1]

Recently, the government launched the "municipal nanny" initiative. The program can be used to care for children under the age of 6, regardless of whether the parents have started working or not.

## 2.3. Child care in Germany

Child care services in Germany are accessible through a universally available and highly subsidized system (e.g. Spiess, 2008). These services are commonly provided in centres, which are run by either the local government or non-profit organizations, and serve children across different age groups, from infants to pre-schoolers. Since 1996, children from the age of three until their enrolment in primary school, typically the summer after they turn six, have had a legal right to a place in a child care centre. This legal provision was expanded in 2013 to include children aged one and two. As a result, in 2022, 35.5% of children under three and 91.7% of children aged three and above were attending child care services (Bundesamt, 2022).

There are significant regional differences in attendance rates, most prominently between Eastern and Western states, and even among lower administrative jurisdictions – "counties" – within the same federal state. While the federal government maintains legislative authority, the actual responsibility for financing, regulating, and organizing child care provision is managed by states and counties. This leads to substantial geographical variations in the availability of places, admission criteria, fees charged, and quality regulation measures such as child-to-caregiver ratios (Stahl et al., 2018).

Fees are generally low and typically determined by family income and the number of children in care (Schmitz et al., 2023). However, the precise fee scales and waivers for specific groups vary locally. Provision itself is guided by the subsidiarity principle, whereby the local administration provides direct service only where no other non-governmental organization is available. The enrolment process also varies locally, with individual centres managing their admissions without local administrative oversight.

Within this highly decentralized framework of child care governance, it is unsurprising

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[1]The prices for nanny services vary depending on the locality and city district, the length of the working day, responsibilities (whether you need to cook, take care of the child, spend the night, work on weekends and holidays, etc.), the number of children, and many other factors.

that different federal states have adopted varying strategies in relation to the inclusion of refugee children in child care services. Some states have allowed refugee children to enrol in child care as soon as they leave the initial reception centre, while others have only granted access after they have moved into private accommodation, or once their asylum application is approved, or after a "tolerated stay permit" is issued.

## 3. Data

The basis of our study is the IAB-BiB/FReDA-BAMF-SOEP Survey on Ukrainian Refugees in Germany, a representative panel survey conducted by the Institute for Employment Research (IAB), the Federal Institute for Population Research (BiB), the Research Centre of the Federal Office for Migration and Refugees (BAMF-FZ), and the Socio-Economic Panel (SOEP) at the German Institute for Economic Research (DIW Berlin) (for more information, see Brücker et al., 2023). The aim of the survey is to investigate the institutional and legal frameworks of refugee resettlement in Germany, and their integration in society. It is worth noting that data sources on Ukrainian refugees are largely limited, often not representative, and typically comprise small sample sizes.[2]

The IAB-BiB/FReDA-BAMF-SOEP Survey on Ukrainian Refugees in Germany has been conducted using a random selection of Ukrainian nationals who arrived in Germany between the commencement of the Russian aggression on February 24, 2022, and the early days of June 2022.[3] As the initial step, a total of 100 cities and counties spread across the 16 German federal states were randomly selected (see Appendix Figure A.3). In a second step, a gross sample comprising of 48,000 Ukrainian nationals aged between 18 and 70 years who registered in Germany for the first time post-February 24, 2022 was drawn.[4] The first wave of the panel survey was completed by a total of 11,763 individuals and was conducted between August 25 and October 4, 2022. The data also comprises a

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[2]Previous research has largely depended on convenience samples collected at registration or support centers in the host countries (European Union Agency for Fundamental Rights, 2023, Kohlenberger et al., 2022, Pedziwiatr et al., 2022), surveys conducted online through social media or other mediums (e.g. Panchenko, 2022, Pötzschke et al., 2022), or qualitative interviews (Kjeøy and Tyldum, 2022).

[3]The procedure for sampling was grounded in two German administrative registers in Germany, namely, the population register (*Einwohnermelderegister*) and the Central Register of Foreigners (*Ausländerzentralregister*). The use of both registers enabled the generation of a high-quality sampling base.

[4]The survey's methodology combined a push-to-web mixed-mode design that capitalized on the merits of postal recruitment and online surveys.

second wave with interviews being conducted between January 16 and March 6, 2023.

The questionnaires covered a variety of topics, which included questions on the educational background, employment status, individual financial condition both in Ukraine and Germany, engagement in integration activities, family circumstances and social interactions, housing arrangements, needs, and the intention to stay in Germany. Our main outcome variables are whether mothers attend language classes, are working or in education, whether they are actively looking for job, intend to work, intend to stay in Germany, how much time they spend with Germans, whether they feel welcome and their life satisfaction.

We focus on mothers with at least one child up the age of 6 in the household. Table 1 presents descriptive statistics of our main sample, consisting of 2300 observations of refugee mothers from two waves. We distinguish between families with a child in child care (955 families) and those without (1345 families).

On average, mothers are around 34.6 years old and 78% have tertiary education. From geographical perspectives, 8% are from West Ukraine, 37% from Central Ukraine, 15.4% from South Ukraine, and 39% from East Ukraine. Prior to coming to Germany, 82% were employed. Roughly a third of the sample (31%) entered Germany with their parents (grandparents to the children).

Regarding our outcome variables, 39% of families attended language classes, with a significantly higher percentage among those with a child in child care (52% vs. 31%). The trend is similar for other employment and integration related measures, such as working or being in education, actively looking for a job, and planning to work as soon as possible. Interestingly, a child in child care also correlates positively with the time spent with Germans (average score of 3.8 vs. 3.5 on a scale from 1 to 6).

In terms of county-level characteristics, the average population density is 0.19 thousand inhabitants per square kilometer, and the average GDP per capita is 56.56 thousand euros. Counties have an average unemployment rate of 7.4%, with a female employment rate of 56.6%. Education levels vary, with 12% having a lower secondary school degree, 40% a middle secondary school degree, and 43% an upper secondary school degree. The average child care ratio at the county level is 66%, which is significantly higher among families with a child in child care (77.4% vs. 59.7%).

The last column reports statistical differences between families with and without

children in daycare. What stands out is that mothers with children in child care are very similar to mothers with children not attending daycare. There are no differences by their region of origin, the partner's status or their employment before coming to Germany, nor by the number of children in the household. Yet, mothers with children in child care entered the country less frequently with grandparents, spent 3.8 more days in Germany, are 0.4 years older and 8.2 percentage points more likely to hold a tertiary education degree. Despite these rather small differences in pre-determined characteristics, outcomes differ substantially between the groups. This points towards the potential role of child care in refugee families' integration into their host society.

## 4. Empirical Approach

Our empirical analysis starts with the following ordinary least squares (OLS) regression:

$$y_{itc} = \beta_0 + \beta_1 Childcare_{itc} + X_i'\beta_2 + Z_c'\beta_3 + \rho_i + \lambda_t + \epsilon_{itc} \tag{1}$$

where $y_{itc}$ is the outcome of interest for refugee $i$ at time $t$ in county $c$. $Childcare_{it}$ denotes the child care attendance of the youngest child in family $i$ at time $t$. $X_i$ represents a set of pre-determined individual control variables, including age and age squared, education, Ukraine region of origin, employment before coming to Germany, boarder entry with grandparents, time since arrival, location of the partner and number of children in Germany. To account for regional differences in labour market conditions and the social and economic environment, we include federal state fixed effects, $\rho_i$, as well as a set of county-level control variables, $Z_c$, which include population density, GDP per capita, the total fertility rate in 2020, population share with migration background, the unemployment rate, female employment rate, education of the population, share of the population below age 3 and age 6 and the log number of Ukrainians in 2021. $\lambda_t$ are survey wave fixed effects. The error term, $\epsilon_{itc}$, captures all other unexplained variation of the outcome variable.

However, child care attendance ($childcare_{it}$) may be endogenous due to omitted variables, selection bias, or simultaneity. For instance, families with higher motivation or socioeconomic status might be more likely to enrol their children to child care, and these same unobserved factors might also influence their social and labour market integration.

To address these concerns, we use an instrumental variable (IV) approach in a two-stage least squares (2SLS) framework. We instrument child care attendance with the availability of child care services at the county level. The IV approach attempts to remove the endogeneity concerns by isolating the variation in $childcare_{it}$ that is purely due to the counties' child care availability for children of the specific ages.

Our first-stage regression is:

$$Childcare_{itc} = \gamma_0 + \gamma_1 CareShare_c + X_i'\gamma_2 + Z_c'\gamma_3 + \phi_i + \kappa_t + u_{itc} \tag{2}$$

Here, $CareShare_c$ denotes the child care availability in county $c$ in 2021 before the influx of Ukrainian refugees for children of the specific age. $X_i$ and $Z_c$ refer to the individual and county level control variables, $\phi_i$ to federal state fixed effects, $\kappa_t$ to survey wave fixed effects. The error term $u_{it}$ captures idiosyncratic variation in the outcomes.

We then substitute the predicted values of $Childcare_{it}$ from eq. 2 into eq. 1 for the second-stage regression:

$$y_{itc} = \delta_0 + \delta_1 \widehat{Childcare}_{it} + X_i'\delta_2 + Z_c'\delta_3 + \theta_i + \mu_t \varepsilon_{itc} \tag{3}$$

The coefficient $\delta_1$ is of main interest. To interpret the coefficient as the causal effect of child care on refugee mothers' outcomes, several assumptions have to be made. First, we need to assume that the availability of child care services at the county level for children of the given age ($CareShare_c$), is as good as random conditional on the set of control variables. This assumption could be violated if Ukrainian refugees with strong preferences for labour market integration choose to live in counties with more child care availability. The same characteristics determining care needs and location choice affect refugees' outcomes.

To assess this concern, it is important to understand the location choice of Ukrainian refugees. We collected register data on the number of Ukrainian refugees in each county in April 2023, more than one year after the Russian invasion. Their location choice within Germany is illustrated in Appendix Figure A.2, Panel A. When we compare the distribution to the presence of Ukrainians in Germany before the Russian invasion (Panel B), we already note a strong link. For a systematic analysis, we regress the number of refugees in a county on different county characteristics. Results are reported in Appendix

Table A.1. Ukrainian refugees were more likely to settle in denser populated areas with a lower unemployment rate (column 1). When we include the number of Ukrainians in the county in 2021 before the invasion (column 2), we can explain an additional 30% of the location of refugees. A one percent higher number of Ukrainians increases the number of refugees in the county by 0.6 percent (column 2). Most importantly, the location choice is not related to the availability of child care in the county. When we focus on the location of female refugees (column 3), or of refugee children below the age of 6 (column 4), the same patterns emerge: The county child care rate is unrelated to the location choice, but existing social networks and the presence of other Ukrainians are one of the most important factors to explain the location choice. We illustrate the strong link to the presence of similar foreigners in Appendix Figure A.1, Panel A. On the other side, there is no link in the number of refugees and the availability of child care in the county (Panels B and C).

Although the location choice is not related to the counties' availability of child care at the aggregate level, Ukrainians' individual characteristics could be related to the availability of child care. Those with a strong preference for child care might select into counties with a higher availability. Based on our main analysis sample, we take the county's child care ratio as the dependent variable and regress it on individual characteristics (Appendix Table A.2. We cannot find a link to individuals' age, marrital status, education or time in Germany, nor with the number of children in the household (tested jointly). Only women arriving with the grandparents in Germany live in counties with marginally less child care. What determines a higher availability of child care in the county is the population density, a higher GDP per capita, a lower migration background and a lower unemployment rate, but not the presence of Ukrainians in 2021 or refugees from Ukraine arriving after February 2022 (see Appendix Table A.3).

The second main assumption for a causal interpretation of the IV results is that the county child care availability is predictive for refugee children's child care attendance. Figure 1 shows that child care attendance of refugee children is higher in counties with a higher child care availability. We demonstrate a strong first stage with an F-statistic $> 81$ for our main estimates of eq. 2. Our results are robust to different sets of control variables, including models with individual and county controls, as well as a county fixed-effects model.

Finally, we need to assume that the availability of child care affects outcomes only through child care attendance. Yet, counties with a higher availability of child care might also provide better community services or stronger regional labor market conditions that might facilitate the integration of refugees. To address this concern, we conduct a falsification test by showing that child care availability does not affect outcomes for families with older children or refugees without children in the household.

Throughout the analysis, we cluster standard errors at the countie level (96 clusters).

## 5. Results

### 5.1. Main Results

We first present OLS results on the correlation between child care attendance and mothers' outcomes in Table 2. Results for each outcome are presented in a separate row.

Column 1 presents the coefficient on child care from regressions federal state fixed effects and wave fixed effects, without further control variables. We find a significant positive correlation between child care attendance and language class attendance. When children attend child care, refugee mothers are also more likely to being employed or in education, actively looking for a job, planning to work as soon as possible, spending time with Germans, and feeling very welcome. However, mothers with children attending child care report similar levels of life satisfaction compared to mothers whose children do not attend child care.

The relationships mainly remain significant and of similar magnitude when individual and county controls are added to the OLS model (column 2). Only the link between child care attendance on mothers' work intentions turns insignificant. As other regional characteristics could be related to child care attendance and mothers' outcomes, we include county-fixed effects in column 3 to flexibly account for regional characteristics. Reassuringly, the results are very similar to the previous models, suggesting that regional sorting of refugees based on their child care preferences and outcomes is not biasing OLS results.

Yet, there might be other factors beyond the regional context that are related to child care and mothers' labour market and social integration. For example, women with a strong preference for labour market participation might be more willing to enrol the child in child care. To overcome concerns of endogeneity in the attendance of child care and concerns related to reversed causality, we use the availability of child care in the

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county as an instrumental variable for child care attendance. Figure 1 demonstrates the strong link between individuals' child care attendance and the availability of child care in the county. Based on model 2, we use the county and age-specific availability of daycare to predict refugee children's attendance of daycare. Panel A of Table 3 shows that a one percentage points higher availability of child care in the county increases refugee's child care attendance by 0.4 percentage points. The F-statistic of the first stage is 81 and well above the critical value of 10 to circumvent problems related to weak instruments.

Panel B of Table 3 reports the second stage IV results. Attending day care has a significant and positive effect on participating in language classes, on working and being in education, on mothers' endeveaur to look for a job and on their plan to start working soon and on the time they spend with Germans. Yet, child care has no impact on the general intention to work, probably because these intentions are already very high in the population. We also cannot find an effect on refugees intentions to stay in Germany forever, nor on feeling welcome or on their life satisfaction.

The IV-results are much larger than the OLS results. We attribute this finding to the very high intentions of mothers to participate in the labour market. About 75% of mothers express their intention to work definitely. This number is higher than the number of children in care, pointing to severe excess demand for child care. Moreover, without other modes of external care, mothers depend on formal child care to participate in the labour market. The IV estimates identify a local average treatment effect (LATE) of compliers, i.e. of mothers that just receive access to childcare due to a higher regional availability. It suggest that effects on refugee mothers are particularly strong if they are admitted access to child care.

In summary, our results suggest that child care attendance has a positive impact on important measures of labour market and social integration, yet no effects on their well-being and intentions to stay forever.

## 5.2. Robustness Checks

In Table 4, we show results to several robustness checks. One concern is that other regional characteristics but the child care availability might drive the effects on refugees. To address this concern, we include county fixed effects in our main model which for all general county characteristics. We draw identification from variation in the age of the child in the household and the variation in counties child care availability by child age.

We reach the same conclusions.

As another robustness check, we remove individuals from the sample located in Berlin and Hanover. These cities served as registration hubs and are prone to a misassignment of refugees place of residence if they haven't re-registered after relocation. While we drop about 10% of the sample, the results are almost identical.

In our main specification, we use the age-specific child care rate at the county as an instrument for child care attendance. However, it is possible that the availability of child care slots for older children might spill-over to the availability of slots for younger refugee children, or vice versa. In column (3), we use the age-specific child care rates at the county level, interacted with children's age, as multiple instruments, and draw the same conclusions.

Finally, we conduct a falsification test in which we relate outcomes for families with older children or refugees without children to the counties' child care availability (column 4). We cannot find any statistical link for women with older children or refugees without children in the household. Only the coefficient on "planing to work" is significant, but with the opposite sign. Therefore, we render it unlikely that other regional characteristics that are just correlated with child care availability are driving our results. This finding also supports the exclusion restriction, requiring the child care rate to affect outcomes only through its effect on children's child care attendance.

*5.3. Effect Heterogeneity*

To be completed.

# 6. Conclusion

The forced migration of Ukrainians to Germany triggered by the Russian invasion has set in motion a series of changes with lasting impacts. Our study sheds light on the role of child care services in the integration and employment trajectories of refugee mothers in Germany, a population that has been disproportionately represented among Ukrainian refugees. Our analysis builds on a large and representative dataset drawn from the IAB-BiB/FReDA-BAMF-SOEP Survey of Ukrainian refugees.

We highlight that the demographic composition and legal framework of the Ukrainian refugee population in Germany is distinct from previous refugee influxes. This demographic shift coupled with the different legal status and benefits accorded to Ukrainian

refugees creates a nuanced scenario requiring a comprehensive understanding of the experiences of these refugees. Next to the recognition of qualifications, access to child care have emerged as pivotal barriers to labour market integration, stressing the need for policy attention in these areas. Yet, we lack empirical evidence on the causal effects of child care availability on the employment, integration and well-being of refugees.

Based on the regional availability of child care, serving as an instrument for children's actual child care attendance, we find a significant effect of child care on mothers' participation in language classes, their employment and work intentions. We cannot find effects on intentions to stay in Germany or on their well-being which we attribute to the short time frame since arrival. Our findings supports the long-held view in the economic literature about the significant effects of child care services on mothers' labour market trajectories. Our findings suggest that investing in these services can effectively facilitate the integration of refugee mothers into the labour market and society.

Our work contributes to the growing literature on the long-term effects of forced migration due to wars and other crises, highlighting the unique experiences and potential benefits for migrant parents through child care, a subject that has so far received limited attention. Compared to prior research which focused on the counterfactual of not migrating, our study offers new insights by focusing on the environment in the host country that can facilitate the integration of refugees.

In conclusion, our study underscores the transformative potential of child care services in fostering successful integration in the labour market and society. The insights derived from this study inform policy-makers on the crucial role of accessible early education and care services.

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# Figures

Figure 1: Correlation between age-specific child care rates at county level and individual attendance
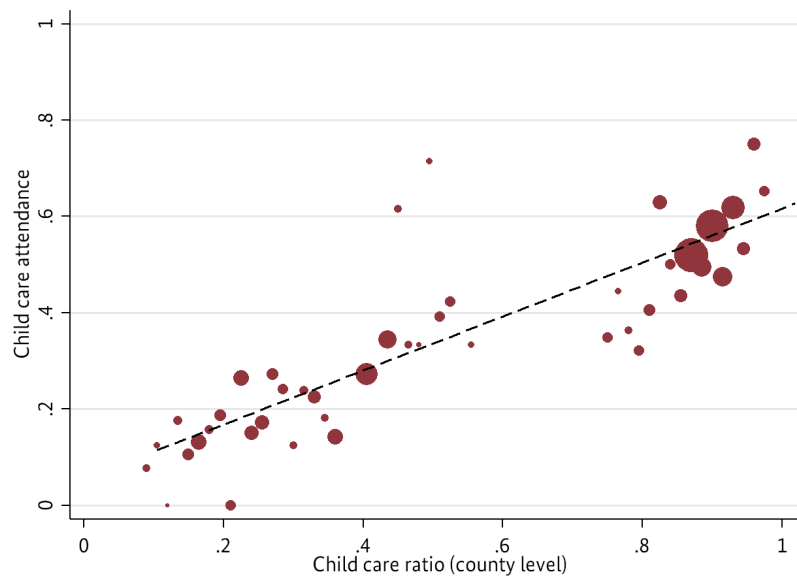


*Note:* binned means (bin width of 0,02) from 96 counties, size of dots corresponds to number of observations within bin, n = 2300
*Source:* IAB-BiB/FReDA-BAMF-SOEP survey, Destatis (2022), own calculation

# Tables

Table 1: Descriptive statistics

| | Overall mean | Child in child care Yes | No | Diff |
|---|---|---|---|---|
| | (1) | (2) | (3) | (2) - (3) |
| **Outcomes** | | | | |
| Language class participation (%) | 38.77 | 51.53 | 31.40 | 20.13*** |
| Working or in education (%) | 9.18 | 13.31 | 6.79 | 6.52*** |
| Actively looking for job (%) | 24.56 | 27.79 | 22.68 | 5.11* |
| Intention to work, definitely (%) | 71.40 | 75.24 | 69.33 | 5.91** |
| Planing to work, as soon as possible (%) | 16.91 | 23.24 | 13.50 | 9.74*** |
| Intention to stay, for ever (%) | 22.57 | 25.06 | 21.14 | 3.92 |
| Time with Germans (never 1 - daily 6) | 3.61 | 3.83 | 3.49 | 0.34*** |
| Feeling very welcome | 33.52 | 36.98 | 31.52 | 5.45* |
| Life satisfaction (0-10) | 6.06 | 6.05 | 6.07 | -0.02 |
| **Individual controls** | | | | |
| Age (years) | 34.64 | 34.92 | 34.48 | 0.44 |
| Tertiary education (%) | 78.27 | 83.47 | 75.26 | 8.21*** |
| From West Ukraine (%) | 7.93 | 9.74 | 6.88 | 2.86 |
| From Central Ukraine (%) | 37.43 | 37.01 | 37.67 | -0.66 |
| From South Ukraine (%) | 15.35 | 14.68 | 15.73 | -1.05 |
| From East Ukraine (%) | 39.29 | 38.57 | 39.71 | -1.14 |
| Ever employed before coming to Germany (%) | 82.18 | 81.94 | 82.31 | -0.37 |
| Boarder entry with grandparents (%) | 31.02 | 27.32 | 33.16 | -5.84** |
| Time since arrival (in days) | 158.97 | 161.37 | 157.58 | 3.79 |
| Partner in Germany (%) | 35.02 | 35.32 | 34.84 | 0.48 |
| Partner abroad (%) | 48.16 | 50.61 | 46.74 | 3.87 |
| No partner (%) | 16.82 | 14.07 | 18.42 | -4.35** |
| Number of children in Germany | 1.73 | 1.72 | 1.73 | -0.01 |
| **County level controls** | | | | |
| Population Density (1,000 inh./km$^2$) | 0.19 | 0.18 | 0.19 | -0.01* |
| GDP per capita (1,000 euro) | 56.56 | 54.60 | 57.70 | -3.1** |
| 2020 fertility | 1.45 | 1.44 | 1.46 | -0.02* |
| Migration Background (%) | 17.46 | 16.12 | 18.23 | -2.11*** |
| Unemployment rate (%) | 7.36 | 7.28 | 7.41 | −0.13 |
| Female employment rate (%) | 56.55 | 57.21 | 56.17 | 1.04*** |
| Lower sec. school degree (%) | 12.14 | 11.63 | 12.44 | -0.81** |
| Middle sec. school degree (%) | 39.87 | 39.30 | 40.19 | -0.89 |
| Upper sec. school degree (%) | 42.65 | 43.83 | 41.96 | 1.87*** |
| Share children below 3 (% of population) | 2.92 | 2.91 | 2.93 | -0.02 |
| Share children3 to 6 (% of population) | 5.80 | 5.79 | 5.80 | -0.01 |
| # Ukrainians in 2021 (log) | 6.84 | 6.90 | 6.81 | -0.09*** |
| **Instrumental variable** | | | | |
| Child care ratio (county level, %) | 66.16 | 77.39 | 59.67 | 17.72*** |
| Observations | 2298 | 955 | 1343 | 2298 |

*Notes:* The sample includes all women with at least one child up to age 6. *Source:* IAB-BiB/FReDA-BAMF-SOEP; Federal Statistical Office and Central Register for Foreigners, own calculations.

Table 2: OLS results: correlation between child care attendance and outcomes

| Dep. var. | (1) | (2) | (3) |
|---|---|---|---|
| Language class participation | 0.200*** | 0.211*** | 0.201*** |
| | (0.027) | (0.028) | (0.029) |
| Working or in education | 0.065*** | 0.049** | 0.054** |
| | (0.018) | (0.020) | (0.021) |
| Actively looking for job | 0.052* | 0.056** | 0.053* |
| | (0.026) | (0.027) | (0.029) |
| Intention to work, definitely | 0.059** | 0.045 | 0.041 |
| | (0.029) | (0.031) | (0.033) |
| Planing to work, as soon as possible | 0.098*** | 0.109*** | 0.115*** |
| | (0.020) | (0.020) | (0.020) |
| Intention to stay, for ever | 0.040 | 0.063** | 0.071** |
| | (0.025) | (0.026) | (0.029) |
| Time with Germans | 0.339*** | 0.355*** | 0.350*** |
| | (0.111) | (0.117) | (0.117) |
| Feeling very welcome | 0.056** | 0.072** | 0.090*** |
| | (0.026) | (0.028) | (0.030) |
| Life satisfaction | -0.020 | 0.020 | 0.083 |
| | (0.103) | (0.104) | (0.113) |
| ind. controls | | ✓ | ✓ |
| county controls | | ✓ | - |
| state FE | | ✓ | - |
| county FE | | | ✓ |
| Nbr. observations | 2300 | 2298 | 2298 |

*Notes:* The sample includes all women with a youngest child up to age 6. All regression control for wave fixed effects. For set of individual and regional controls see Table 1. Robust standard errors clustered at the county level in parathesis. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
*Source:* IAB-BiB/FReDA-BAMF-SOEP; Federal Statistical Office and Central Register for Foreigners, own calculations.

Table 3: IV results on the effect of child care on mothers' outcomes

| Dep. var. | (1) b | (2) se | (3) N |
|---|---|---|---|
| **Panel A: First-stage** | | | |
| Child Care Attendance | 0.407*** | (0.045) | 2298 |
| F-stat first stage | | 81.01 | |
| **Panel B: Second-stage** | | | |
| Language class participation | 0.697*** | (5.88) | 2297 |
| Working or in education | 0.152** | (2.15) | 2298 |
| Actively looking for job | 0.313*** | (3.42) | 2298 |
| Intention to work, definitely | 0.009 | (0.08) | 2089 |
| Planing to work, as soon as possible | 0.426*** | (3.85) | 2089 |
| Intention to stay, for ever | -0.017 | (-0.15) | 2297 |
| Time with Germans | 1.143*** | (3.03) | 2298 |
| Feeling very welcome | -0.042 | (-0.33) | 2298 |
| Life satisfaction | 0.239 | (0.61) | 2298 |

*Notes:* The sample includes all women with a youngest child up to age 6. All regression control for a rich set of individual and regional controls as well as wave and state fixed effects. For set of individual and regional controls see Table 1. Robust standard errors clustered at the county level in Column (2). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
*Source:* IAB-BiB/FReDA-BAMF-SOEP; Federal Statistical Office and Central Register for Foreigners, own calculations.

Table 4: Robustness checks of IV results

| Dep. var. | (1) county FE | (2) w/o Berlin & Hanover | (3) child-care ratio both age groups | (4) Placebo with older/no children |
|---|---|---|---|---|
| Language class participation | 0.739*** | 0.671*** | 0.619*** | -0.025 |
| | (5.61) | (5.63) | (5.40) | (-0.71) |
| Working or in education | 0.185** | 0.174** | 0.139** | -0.002 |
| | (2.44) | (2.42) | (2.00) | (-0.10) |
| Actively looking for job | 0.319*** | 0.297*** | 0.284*** | 0.003 |
| | (3.20) | (3.21) | (3.02) | (0.13) |
| Intention to work, definitely | -0.0147 | 0.005 | 0.00500 | 0.00345 |
| | (-0.12) | (0.04) | (0.04) | (0.12) |
| Planing to work, as soon as possible | 0.404*** | 0.429*** | 0.418*** | -0.070*** |
| | (3.57) | (3.66) | (4.03) | (-2.86) |
| Intention to stay, for ever | 0.012 | 0.019 | 0.006 | -0.033 |
| | (0.10) | (0.18) | (0.06) | (-1.35) |
| Time with Germans | 1.261*** | 1.051*** | 1.080*** | -0.095 |
| | (3.07) | (2.79) | (2.98) | (-1.04) |
| Feeling very welcome | 0.005 | 0.007 | -0.060 | -0.021 |
| | (0.04) | (0.06) | (-0.49) | (-0.83) |
| Life satisfaction | 0.382 | 0.238 | 0.242 | 0.017 |
| | (0.93) | (0.59) | (0.63) | (0.13) |
| ind. controls | ✓ | ✓ | ✓ | ✓ |
| county controls | | ✓ | ✓ | ✓ |
| state FE | | ✓ | ✓ | ✓ |
| county FE | ✓ | | | |
| Nbr. observations | 2298 | 1994 | 2298 | 6973 |

*Notes:* Column (2) runs specification 3 excluding observations in Berlin and Hanover. These cities served as the main reception hubs at first arrival. Column (3) uses child care rates at the county level of both age groups interacted with child' age. Column (4) shows reduced form coefficients based on a sample that includes all women without a child up to age 6. Age-group specific child care rates at county level are assigned randomly.
*Source:* IAB-BiB/FReDA-BAMF-SOEP; Federal Statistical Office and Central Register for Foreigners, own calculations.

# Appendix

Table A.1: Where did Ukrainian refugees settle?

| | Dep. Variable: log # UKR refugees (April 2023) ... | | | |
| | All | | Females | Children below 6 |
| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Day Care Attendance < age 3 | -0.002 | -0.004 | -0.004 | -0.004 |
| | (0.005) | (0.004) | (0.004) | (0.004) |
| Day Care Attendance $\geq$ age 3 | 0.001 | -0.005 | -0.005 | -0.012 |
| | (0.009) | (0.006) | (0.006) | (0.007) |
| Population Density (1,000 inh./km$^2$) | 3.552*** | 0.305 | 0.336 | 0.087 |
| | (0.944) | (0.595) | (0.591) | (0.696) |
| GDP per capita (1,000 euro) | 0.000 | -0.001 | -0.001 | 0.000 |
| | (0.002) | (0.001) | (0.001) | (0.001) |
| Migration Background (%) | 0.008 | -0.022*** | -0.021*** | -0.031*** |
| | (0.013) | (0.007) | (0.007) | (0.008) |
| Unemployment rate (%) | -0.125*** | -0.068*** | -0.068*** | -0.071*** |
| | (0.023) | (0.018) | (0.018) | (0.020) |
| Female employment rate (%) | 0.003 | 0.002 | 0.003 | 0.001 |
| | (0.011) | (0.007) | (0.007) | (0.007) |
| Lower sec. school degree (%) | -0.027 | -0.005 | -0.004 | -0.004 |
| | (0.017) | (0.012) | (0.012) | (0.014) |
| Middle sec. school degree (%) | -0.024 | -0.007 | -0.008 | -0.006 |
| | (0.015) | (0.011) | (0.010) | (0.012) |
| Upper sec. school degree (%) | -0.021 | -0.012 | -0.011 | -0.013 |
| | (0.014) | (0.010) | (0.010) | (0.012) |
| # Ukrainians in 2021 (log) | | 0.599*** | 0.607*** | 0.554*** |
| | | (0.030) | (0.029) | (0.031) |
| Adjusted R$^2$ | 0.51 | 0.81 | 0.82 | 0.75 |
| N | 388 | 388 | 388 | 388 |

*Notes*: OLS regressions based on county level. All models include federal state fixed effects.
Standard errors clustered at county level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
*Source: Federal Statistical Office and Central Register for Foreigners, own calculations.*

Table A.2: How does county child care availability relate to individual characteristics?

| | Dep. var.: Share in Child Care ... | |
| --- | --- | --- |
| | Below Age 3<br>(1) | Age 3-6<br>(2) |
| Age | 0.000 | -0.000 |
| | (0.000) | (0.000) |
| Married (baseline single) | 0.001 | 0.003 |
| | (0.003) | (0.003) |
| Divorced | -0.003 | 0.003 |
| | (0.005) | (0.005) |
| Widowed | 0.001 | 0.009 |
| | (0.015) | (0.013) |
| Tertiary education (baseline sec. educ or less) | 0.004 | 0.003 |
| | (0.004) | (0.003) |
| Time in Germany | -0.000 | -0.000 |
| | (0.000) | (0.000) |
| Arrived with grandparents | -0.008*** | -0.008*** |
| | (0.003) | (0.002) |
| Two children (baseline one child) | -0.002 | -0.005** |
| | (0.003) | (0.002) |
| Three children | 0.001 | -0.004 |
| | (0.005) | (0.004) |
| More than three children | 0.001 | -0.004 |
| | (0.008) | (0.008) |
| N | 2299 | 2299 |

*Notes*: OLS regressions include federal state fixed effects. Standard errors clustered at county level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
*Source: IAB-BiB/FReDA-BAMF-SOEP Survey, own calculations.*

Table A.3: How does county child care availability depend on other county characteristics?

| | Dep. var.: Share in Child Care ... | |
|---|---|---|
| | Below Age 3 (1) | Age 3-6 (2) |
| # UKR refugee children 0-5 (Apr 2023, log) | 1.001 | -0.932 |
| | (1.612) | (1.357) |
| # Ukrainians in 2021 (log) | 0.010 | 1.066 |
| | (1.085) | (0.918) |
| Population Density (1,000 inh./km$^2$) | 20.175* | -0.230 |
| | (11.012) | (9.330) |
| GDP per capita (1,000 euro) | 0.113*** | 0.063** |
| | (0.030) | (0.031) |
| Migration Background (%) | -0.796*** | -0.498*** |
| | (0.193) | (0.150) |
| Unemployment rate (%) | -0.327 | -0.923*** |
| | (0.424) | (0.305) |
| Female employment rate (%) | -0.033 | 0.037 |
| | (0.170) | (0.160) |
| Lower sec. school degree (%) | 0.367 | 0.005 |
| | (0.517) | (0.400) |
| Middle sec. school degree (%) | 0.347 | 0.133 |
| | (0.441) | (0.321) |
| Upper sec. school degree (%) | 0.347 | 0.128 |
| | (0.415) | (0.302) |
| Adjusted R$^2$ | 0.85 | 0.56 |
| N | 97 | 97 |
| Federal State FE (#16) | ✓ | ✓ |

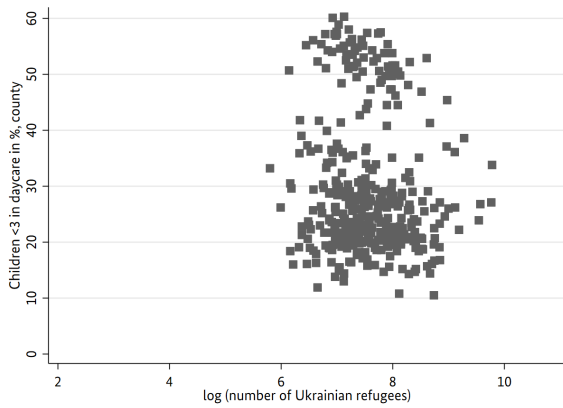*Notes*: OLS regressions using counties in the Ukraine survey.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.
*Source: Federal Statistical Office and Central Register for Foreigners, own calculations.*
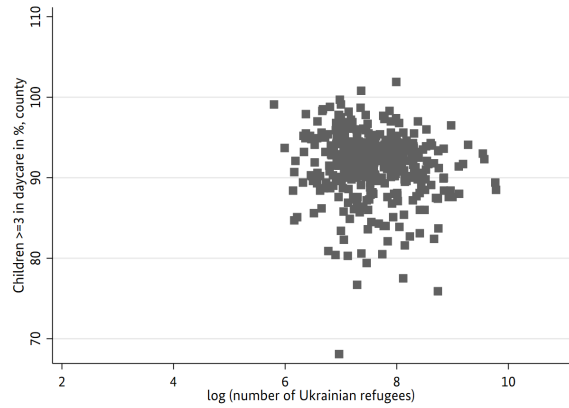
Figure A.1: Location choice of Ukrainian refugees
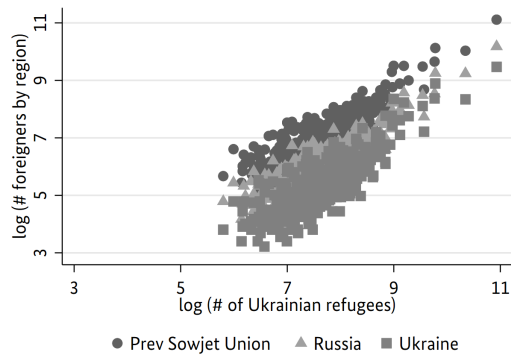


A: Previous foreigners by country of origin



B: Availability of child care below age 3



C: Availability of child care above age 3

*Notes:* The figures show scatter plots of the number of Ukrainian refugees by county and the number of Ukrainians in 2021 (Panel A), and the link between the number of Ukrainian refugees and the availability of child care for children below and above the age of three (Panels B and C).
*Source:* Federal Statistical Office and Central Register for Foreigners, own calculations.

Figure A.2: Location of Ukrainians across German counties
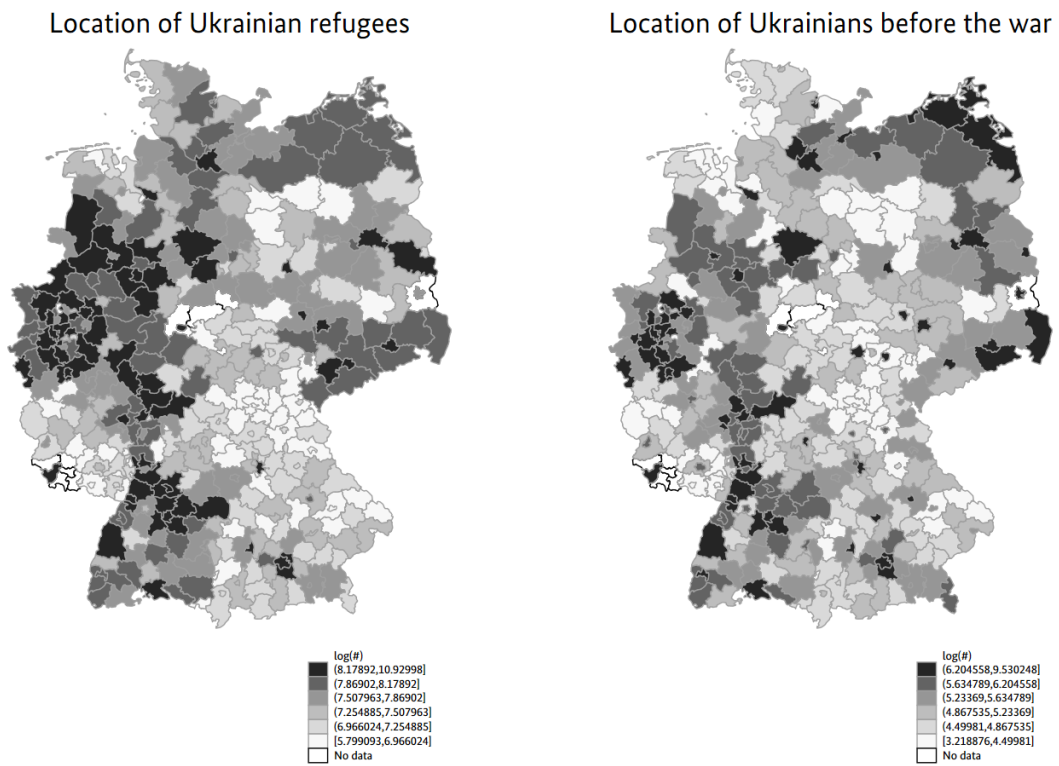


A: Ukrainian refugees in April 2023 (log number)

B: Ukrainians in 2021 (log number)

*Notes:* The maps plot the location of Ukrainians across German counties in April 2023 for refugees arriving after February 2022 (after the invasion, see Panel A) and in 2021 (Ukrainians arriving before the Russian invasian, Panel B).
*Source:* Federal Statistical Office and Central Register for Foreigners, own calculations.

Figure A.3: Counties in IAB-BiB/FReDA-BAMF-SOEP survey



Not in sample
In UKR sample
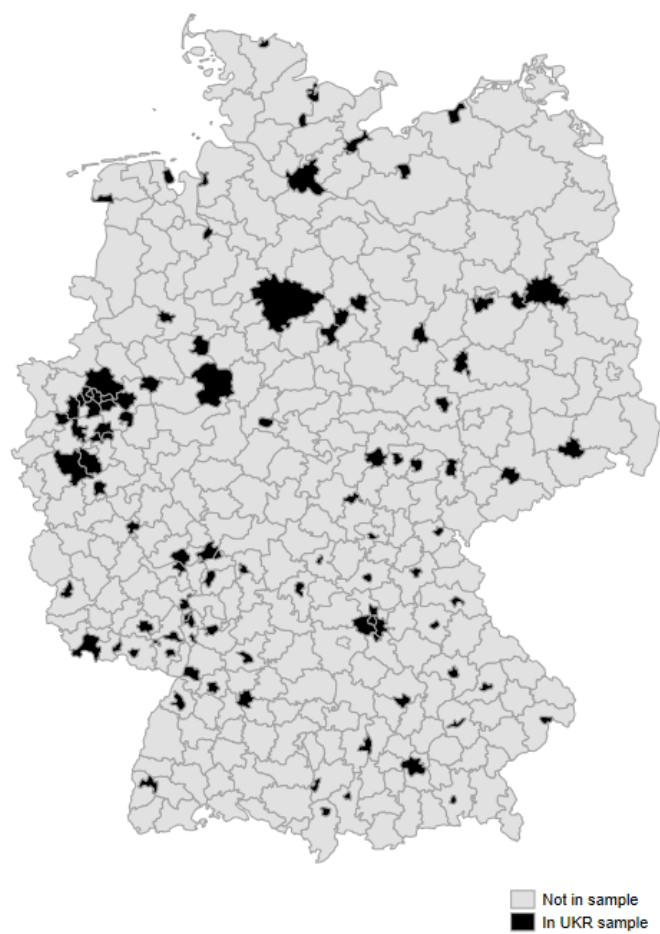
*Notes:* The map plots the counties included in the IAB-BiB/FReDA-BAMF-SOEP survey.
*Source:* IAB-BiB/FReDA-BAMF-SOEP survey, own illustration.