I Z A Institute
of Labor Economics
Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 17984

Immigration and Adult Children's Care for Elderly Parents: Evidence from Western Europe

Andrea Berlanda
Elisabetta Lodigiani
Lorenzo Rocco

JULY 2025

I Z A Institute
of Labor Economics

Initiated by Deutsche Post Foundation

DISCUSSION PAPER SERIES

IZA DP No. 17984

Immigration and Adult Children's Care for Elderly Parents: Evidence from Western Europe

Andrea Berlanda
University of Padua

Elisabetta Lodigiani
University of Padua and University of Milan

Lorenzo Rocco
University of Padua and IZA

JULY 2025

ISSN: 2365-9793

IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Immigration and Adult Children's Care for Elderly Parents: Evidence from Western Europe*

In this paper, we use the Survey of Health, Ageing, and Retirement in Europe (SHARE), complemented with register data on the share of the foreign population in the European regions, to examine the effects of migration on the level of informal care provided by children to their senior parents. Our main results show that migration decreases informal care among daughters with a university degree, while it increases the provision of informal care among daughters with low-to-medium levels of education. Viceversa, migration has practically no effect on sons' care provision who remain little involved in care activities. These results depend on the combination of two supply effects. First, migration increases the supply of domestic and personal services, making formal care more affordable and available. Second, as immigrants compete with low-to-medium-educated native workers, while improve the labor market opportunities of the better educated, the supply of informal care can increase among the less educated daughters and decrease among the more educated.

JEL Classification: F22, J14, J22

Keywords: caregiving, home production, immigration, Europe

Corresponding author:
Lorenzo Rocco
University of Padova
Department of Economics and Management
via del Santo 33
35123 Padova
Italy

E-mail: lorenzo.rocco@unipd.it

* We thank José J. Escarce for his insightful comments and the many discussions we had with him. We also thank Marcello Morciano and participants of the BOMOPAV workshop 2025 and the workshop on Migration and Family Economics (Paris, 2025) for their comments and advices. We are grateful to Elie Murard for sharing regional-level data on immigrant populations in Europe, originally developed with Hillel Rapoport and Alberto Alesina and described in their joint paper "Immigration and Preferences for Redistribution in Europe". The contribution of Andrea Berlanda and Elisabetta Lodigiani was supported by the PRIN project n.2022CZKPMY entitled "Health and Wellbeing of the Elderly," funded by the MUR. We also acknowledge the contribution of the Department of Economics and Management of the University of Padova through the SID 2022 project. As usual, the views and opinions expressed are solely those of the authors.

1 Introduction

Population aging represents a significant demographic shift across all European countries, driving a surge in the demand for long-term care (LTC). Consequently, LTC expenditure has increased in nearly all OECD member countries, placing a substantial burden on both government budgets and private households. Adult children, particularly daughters, often provide most informal care to their parents, an activity that has significant impacts on their lives. Often, the balance of caregiving and work responsibilities results in a reduction of daughters' labor supply. Crespo and Mira (2014) investigate the participation of daughters in informal care in Europe and find that the loss of employment attributed to informal care is substantial, particularly in Mediterranean countries. In addition, individuals who provide continuous care to the elderly, can be subject to mental health problems and depression generated by stress (e.g., Ervin et al., 2022). Costa-Font and Vilaplana-Prieto (2025) estimate an average 7 percentage point reduction in caregiver life satisfaction, corresponding to a net disutility of caregiving expressed in monetary terms of about 13,000 euro, or 9.55 euro per hour of informal care.

Investigating the levers that may lessen the burden of informal care on adult children, and especially daughters, is becoming pressing. In this paper we focus on international migration, that surged in Europe since the early 2000, and changed the market of formal care because immigrants expanded the supply of domestic and personal services and made them more available and affordable (Cortés, 2008), thus offering a convenient alternative to informal care. To ensure clarity and consistency within the paper, we will use the terms informal care and formal care. Informal care refers to unpaid, non-professional assistance provided by family members, relatives, and friends in the care recipient's home. Formal care, in this context, specifically denotes care purchased on the market and delivered in the care recipient's home by non-family members, whether professional or non-professional.

Building on the Survey of Health, Aging, and Retirement in Europe (SHARE), linked to register data on the share of immigrant population in each European region, we examine the effects of migration on the likelihood that children provide informal care to

their elderly parents and the intensity of informal care.

The existing literature mainly analyses the effects of immigration on female labor supply during child-bearing years, fertility and mother's time use, as immigrants increase the availability of baby-sitters and domestic workers (e.g., Cortes and Tessada, 2011; Farré et al., 2011; Barone and Mocetti, 2011; Forlani et al., 2015; Furtado, 2016; Romiti, 2018; Forlani et al., 2021). Only few papers focus on the role of immigrants in caring for older relatives. In Austria, Paetzold et al. (2023) find that immigrant care workers help mitigating the effects of a parent's health shock on children's labor supply, particularly on daughters who live closer to their parents. In Italy, Peri et al. (2015) find that an increase of the share of immigrants is associated with an increase in the planned retirement age gap between women and men with a living parent aged 80 or more.

Other papers focus on the impact of immigrants on the elderly population. Escarce and Rocco (2021) find that immigration reduce depression symptoms among older natives. The increased affordability of personal and home services helped the seniors by reducing loneliness, remaining socially active and reducing institutionalization (Butcher et al., 2022) and the frequency of hospital admissions and their duration (Capretti et al., 2024). Additionally, immigration helps mitigate the shortage of nursing home staffing, and improve care quality (Grabowski et al., 2023). Furtado and Ortega (2023) find that a larger share of immigrants is associated with fewer falls among the elderly in institutions, particularly in competitive markets.

The contribution of this paper is twofold. First, we combine individual survey data from the Survey of Health, Ageing, and Retirement in Europe (SHARE) with a newly collected dataset on the foreign population, primarily based on register data, at the regional level. These data are highly reliable and do not suffer of sampling error, a crucial advantage when studying the effects of a variable that changes relatively slowly overtime, as migration does. Our dataset covers 107 regions across ten Western European countries—Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, Sweden, and Switzerland—for the years 2013, 2015, and 2019. Second, we capitalize on a distinctive feature of SHARE data: interviewed seniors provide detailed information

about their adult children, including the intensity of the informal care they offer. Utilizing this information, we compile a dataset of children care provision and examine the effects of migration on the support they provide to their aging parents. To our knowledge, no other study has addressed the impact of migration on children's informal care so far.

Since migrants sort across regions, the share of migrants is correlated with observable and unobservable regional characteristics and shocks. We address such endogeneity by using the standard shift-share instrument proposed by Card (2001) which exploits the tendency of immigrants to locate in areas where previous immigrants from the same country of origin settled. A possible threat to the validity of our instrumental variable approach is that long-lasting local labor market shocks might lead to a violation of the exclusion restriction, despite the baseline regional variation exploited in the instrument is established decades ago. In support of our identification strategy, we perform a battery of tests and robustness. First we run the test designed by Conley et al. (2012). Next, we modify the reference year for our instrument, using the share of migrants in each region in 1991 instead of 2001. Finally, to address the concern that the baseline distributions of immigrants depend on particular source countries, we exclude one country of origin at a time from the definition of the instrument, as in Brunello et al. (2020).

Our primary findings reveal contrasting effects of migration on informal care provision by daughters with different education levels. Highly educated daughters (university degree) decrease their support to parents, whereas less educated daughters (high school or less) increase theirs. Consistent with the established pattern of women predominantly undertaking household work and eldercare in many European countries (e.g., Peri et al., 2015), we observe that migration has a negligible impact on the care provided by sons to their parents. We also analyze the effect of migration on the distribution of informal care across children. Results indicate that inequalities in caregiving responsibilities among children increase in families with only daughters, and in those where children are less educated.

We interpret the contrasting effects of immigration between more and less educated

daughters as the result of two supply effects. On the one hand immigrants increase the supply of personal and home services. Using the European Labour Force data, we find evidence of a significant increase on the share of workers employed as cleaners and personal care workers. This result supports the idea that immigration has increased the supply of *formal* care (intended as market-based care) and made it more affordable.

On the other hand, immigrants affect natives' labor market outcomes through substitution or complementarity effects, by reducing (short-run) employment and wages of the less educated natives (Edo and Özgüzel, 2023) and increasing the outcomes of the more educated. As a consequence, the time available for informal care and thus the supply of *informal* care may increase among the less educated and decrease among the better educated. Using SHARE information reported by parents we obtain suggestive evidence of a strong positive effect of immigration on the labor supply of better educated daughters and a negative effect, although small and not statistically significant, on that of the less educated.

In conclusion, our findings indicate that for the less educated daughters the potential negative labor market effects of immigration outweighed any increased convenience offered by formal care options and they increased their supply of informal care. Conversely, for more educated daughters, immigration's positive influence on their labor market opportunities, coupled with an increased and potentially more affordable supply of formal care services, has likely driven a substitution away from informal care towards formal alternatives. This divergence highlights how immigration can reshape the landscape of elderly care provision within families, with less educated daughters potentially stepping into more significant informal care roles while more educated daughters increasingly leverage formal care options.

The paper is organized as follows. Section 2 describes the data. Section 3 presents both the empirical model and the identification strategy. Section 4 shows our results and robustness checks. Finally, conclusions follow.

2 Data

In this section, we provide a detailed description of the data used in the analysis.

2.1 Survey data

The main source is the Survey of Health, Aging and Retirement in Europe (SHARE). SHARE is a multi-disciplinary and cross-national panel which collects several information on demographics, socio-economic status, physical and mental health, social support and networks of individuals aged 50 or older in Europe. In all waves current partners living in the same household are interviewed regardless of their age. Data collection began in 2004-2005 with wave 1 and subsequent waves have been conducted approximately every two years. The sample is systematically refreshed to address attrition. In particular, SHARE respondents provide information on whether and how much care they received over the past twelve months both within and outside the household, including help from their children.

We use data collected in 2013 (wave 5), 2015 (wave 6) and 2019-20 (wave 8).[1] Starting from wave 5, more specific information on which child has provided help is available. This information is used to reconstruct a panel of parental caregiving activities, with elderly parents providing details about each of their living children.[2] More specifically, respondents are first asked whether in the last twelve months they have received help from outside the households with respect to personal care, practical household help, and help with paperwork. Individuals who report receiving such help from someone outside their household are then asked to identify up to three primary caregivers. If a child is identified,

[1] Note that wave 7 and wave 3, SHARELIFE, are different from other waves and focus on subjects' life histories.

[2] We have excluded waves 1 and 2 as they provide less accurate information on children help and other children characteristics Wave 4 has been excluded because we cannot track which child has provided help.

the respondent is asked to specify which child provided the assistance.[3] Respondents who reported care from individuals outside their household also provide information about the frequency of this care (i.e., about daily, about every week, about every month, less often). With respect to help received inside the household, the respondent reports if he/she has received personal care from a child on a daily basis in the last 12 months.[4] We construct a variable of parental care-giving, combining information on help both inside and outside the household. With respect to the frequency of this care, we consider help inside the household as about daily care.

Then, we collect information on children (e.g., age, marital status, occupational status, educational level) which are provided by the family respondent on behalf of

[3]With respect to help received from outside the households, respondent are asked the following question (SP002): "Thinking about the last twelve months, has any family member from outside the household, any friend or neighbor given you any kind of help listed on this card?" Where the card displays the following: 1. personal care, e.g. dressing, bathing or showering, eating, getting in or out of bed, using the toilet; 2. practical household help, e.g. with home repairs, gardening, transportation, shopping, household chores; 3. help with paperwork, such as filling out forms, settling financial or legal matters. If the answer is yes, the respondent could indicate a maximum of 3 people who has helped (SP003) "Which family member from outside the household, friend or neighbour has helped you in the last twelve months?". In wave 5, the respondent has to directly indicate in question SP003, which child provided help (out of a maximum of 9 children), among three possible helpers. In waves 6 and 8, if a child is indicated in question SP003, the follow-up question SP027 specifies which child provides help (again, for a maximum of 3 children out of a possible number of 20 children).

[4]We consider the question SP020 which reads as follows: "And is there someone living in this household who has helped you regularly during the last twelve months with personal care, such as washing, getting out of bed, or dressing? INSTRUCTION: By regularly we mean daily or almost daily during at least three months. We do not want to capture help during short-term sickness". Question SP021 indicates which person gives help. In wave 6 an 8, if a child is indicated in question SP021, the respondent is asked which child in a following question (SP033). In wave 5, instead, the respondent has to directly indicate in question SP021, which child provided help (out of maximum of 9 children)

the family.[5] Using the information given by the respondents (the parents), we construct longitudinal data of children. Note that children do not have to be reported in the same order in each wave and do not have identification numbers to be uniquely identified across waves. As recommended in the SHARE Release Guide 8.0.0, we use the children's gender and year of birth to identify children across waves (along with the *merge_id* which is consistent across waves). Therefore we cannot identify twins of the same gender, and children for which the gender and/or year of birth is missing. We restrict the sample to families in which all children can be individually identified. Finally, we collected several parent characteristics, including age, gender, living with a partner, and two indicators capturing whether the respondent and his/her partner have any difficulties in doing everyday activities or difficulties in instrumental activities of daily living (IADL) due to physical, mental, emotional, or memory problems as well as his/her partner.[6] Finally we retain only parents (and therefore children of parents) who are not in nursing homes, who declare to be citizens and are born in the country. We further restrict the sample to parents older than 75, as they are more likely to be in need of help, and adult children under 72 years of age, as they are less likely to be in need of help.

[5]We collect this information from the module *gv_children* which is available starting from waves 6, combined with the module CH, when needed to recover time-invariant information from previous waves (see the SHARE Release Guide 8.0.0 for the module CH and *gv_children*). Following the same methodology explained in the SHARE Release Guide 8.0.0 for the module *gv_children*, we constructed the same information for wave 5 from the module CH. In all the waves, from the module *gv_isced*, which contains the 1997 International Standard Classification of Education (ISCED-97), we recover the educational level for respondents' children. Further, we keep individuals interviewed from wave 4 onwards, as it was not possible to recover all the relevant information for individuals that entered the sample before wave 4, due to differences in coding. For example, in wave 1 and 2, the education of only up to four selected children was asked.

[6]We consider question $PH048\_HeADLa$ for everyday activities and $PH049\_HeADLb$ for Instrumental Activities of Daily Living.

2.2 Regional data

Our main analyses focus on native-born citizens residing in ten Western European countries, namely Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Spain, Sweden and Switzerland, that meet following two criteria.[7] First, the country participated in at least two waves of SHARE in our period of analysis.[8] Second, it is possible to collect regional migration data either using register data or the European Union Labor Force Survey (EU LFS) data, that provides harmonized labor force survey data conducted by the national statistical institutes of each EU member country. Eventually, we draw on population register data for all countries but France, for which we rely on the European Labor Force Survey, due to the lack of regional-level population register data. We link regional migration data to individual data using the respondent's region of residence. The standard SHARE module reports the region of the country where each subject resided when he/she first entered in the study. Additionally, the SHARELIFE module (wave 7, 2016) reconstructs respondents' retrospective life histories. The retrospective accommodation data provides information on all the regions where individuals have lived throughout their lives. We use these two sources of information to determine the respondent's region of residence in a given year.[9] Region is reported at the NUTS1 level for Belgium, Germany, and the Netherlands, and at the NUTS2 level for the other countries.

Official registers typically use two different criteria to define a migrant: being born in a foreign country or holding foreign citizenship/nationality. Whenever possible, we use data based on citizenship. Table A1 in the Appendix provides detailed information

[7] See `https://worldpopulationreview.com/country-rankings/western-countries` for a classification for Western Europe.

[8] All the countries in our sample participated in all three waves, except for the Netherlands, which is included only in waves 5 and 8. In wave 6, the Netherlands did not take part in the regular SHARE wave but instead conducted a mixed-mode experiment.

[9] In this regard, we follow Midões et al. (2024) and Bertoni et al. (2025) and use SHARE Release 7.1.0.

on these sources.[10] In the main analysis, we rely on the 2001 population census to determine, for each destination country and region, the "baseline" share of immigrants - by nationality/citizenship or country of birth- which our shift-share instrument grounds on.[11] For the shift component of the instrument, we supplement register data with OECD data when the register data lacks detailed information on the country of birth or nationality of foreigners.[12] Finally, we use harmonized data from Eurostat[13] on the unemployment rate, gross domestic product (GDP), and the share of the population aged 25–64 who have successfully completed tertiary studies in each study country and region.

2.3 The sample

Table A2 in the Appendix presents summary statistics for the variables used in our analysis. Our sample includes 6463 daughters and 6407 sons of 4517 parents. Adult children age is about 52 while parents' age is about 82. Most parents (60 percent) live with a partner. Fourteen percent of daughters are indicated by their parents as care providers compared to 11 percent of sons. However, daughters provide care more frequently than sons. About two thirds of all adult children have high school education or less, and the remaining third have a college degree; 85 percent of daughters are employed compared to 95 percent of sons. The sample of parents covers 98 European regions in 10 countries, with a share of immigrants ranging from 1.8 percent to 34.9 percent.[14]

[10] Data are collected at the first of January of each year, so we consider it as $t-1$ in our empirical analysis.

[11] We used the data provided by Alesina et al. (2021).

[12] The OECD International Migration Database has been used for Belgium, France, the Netherlands, and Spain. For Belgium, the Netherlands, and Spain we use information on the stock of migrants by nationality, while for France we use information on the stock of migrants by country of birth.

[13] `https://ec.europa.eu/eurostat/databrowser/`

[14] The corresponding region-by-wave data points are 288.

3 Empirical Approach

We examine the impact of migration on the informal care that children provide to their senior parents, using three waves of SHARE data from 2013 to 2019/2020. Our identification strategy exploits variations in the regional share of migrants over time.

The baseline specification is as follows:

$$IC_{i,p,r,t} = \alpha + \beta S_{r,t-1} + X'_{i,t}\zeta + Z'_{p,t}\theta + W'_{r,t-1}\lambda + \delta_i + \gamma_t + \eta_r + \epsilon_{i,p,r,t} \quad (1)$$

where $IC_{i,p,r,t}$ denotes the informal care provided by child i to parent p, who resides in region r at time t. The variable $S_{r,t-1}$ represents the share of migrants (over total population) in region r, i.e. parent's region of residence.[15] $X_{i,t}$ includes individual-level controls for child i at time t (i.e., marital status and number of children). $Z_{p,t}$ captures parent-level controls, including health status, the presence of a partner in the household, and the partner's health condition (if applicable). $W_{r,t-1}$ is a vector of regional characteristics from the prior year, such as GDP growth, unemployment rates, and the share of the population aged 25–64 with tertiary education. We incorporate an extensive set of fixed effects to account for unobserved heterogeneity: δ_i are child fixed effects and capture time-invariant individual characteristics, η_r represents time-invariant regional factors that may influence both migration patterns and informal care provision (e.g., cultural norms shaping migration and children's willingness to care for parents), referred to parents' region of residence, and γ_t accounts for time shocks. Finally, $\epsilon_{i,p,r,t}$ represents an error term which is allowed to be clustered at the regional level.

All models are estimated using linear regressions. The primary challenge to identification is the potential endogeneity of the migrant share, as the location choices of immigrants is likely driven by observable and unobservable regional shocks which affect both immigration and informal care provided by children to parents. For example, immigrants may choose to settle in areas with higher demand for care services due to an aging population and increased need for parental care. Alternatively, immigrants might

[15] Data are collected on the first of January of year t and can be considered as representing the end of the year preceding the survey.

choose to settle in regions with stronger labor demand, where the prevailing economic conditions also affect children's labor market decisions and in turn their willingness to support their parents.

To mitigate these concerns, first, we include a comprehensive set of control variables, such as time-varying regional controls to directly account for economic shocks that might simultaneously affect migration and informal care provision; second, we lag the share of migrants by one year; third, and most important, we adopt an instrumental variable (IV) approach. Following Card (2001), Giuntella and Mazzonna (2015), among many others in the related literature, we built a shift-share instrument for the share of immigrants. The instrument uses data on pre-existing immigrant location in a baseline year, set to 2001 (more than 10 years before our study period), to predict the geographical distribution of migrants across regions in subsequent years. The underlying idea is that migrants tend to settle in areas with a high concentration of individuals from the same country of origin, as network effects influence their location choices, lowering the costs faced by newcomers.

More specifically, we build a country-based instrument, and we estimate the predicted number of migrants from a given country of origin o in region r of country c at time t as follows:

$$\hat{M}_{o,r,t} = M_{o,c,t} \cdot f_{o,r,2001} \tag{2}$$

where $M_{o,c,t}$ represents the total number of migrants from origin country o living in host country c at time t, and $f_{o,r,2001}$ is the fraction of that population residing in region r (of country c) in the baseline year.

The predicted migrant share, $\hat{S}_{r,t}$, is then computed as:

$$\hat{S}_{r,t} = \frac{\sum_o \hat{M}_{o,r,t}}{N_{r,2001}} \tag{3}$$

where $N_{r,2001}$ denotes the total native population of region r in the baseline year. By keeping the denominator fixed, we ensure that the variation in the instrument is driven only by changes in the predicted immigrant population.

Since our IV relies primarily on administrative data, discrepancies in the classification of origin countries across statistical offices could affect our results. To address this, we harmonize country-of-origin classifications to match those used in Germany, which distinguishes 118 origin countries.

The main identification assumption of the shift-share instrument is that, conditional on the explanatory variables and fixed effects in the model, unobserved local economic shocks during the sample period that could affect our dependent variable are uncorrelated with past economic shocks that influenced the allocation of immigrants in 2001, the baseline year. In Section 4, we present a series of tests to probe this assumption.

The first stage F-statistic is always above 20 (in many cases much above) across all specifications, dispelling concerns regarding the instrument's strength.

4 Results

4.1 Baseline Analysis: Children's Help

Table 1 details the findings from the estimation of our baseline equation (1), with results presented separately for men and women across different education levels, high school or less (low-to-medium levels of education - LM) versus college (high education - H). Adult children education is a pre-determined characteristic acquired well before current parental health conditions and care needs, and also preceding the more recent scale of immigration observed in many countries. Educational attainment strongly correlates with individual labor market opportunities, shapes fertility decisions, and ultimately dictates the opportunity cost associated with providing informal care to parents in need. This exogeneity ensures that our analysis can more confidently disentangle the effects of immigration on caregiving decisions, without the confounding influence of reverse causality from parental needs, or the problem of endogenous selection when the sample is split according to a variable that depends on the influx of migrants, such as children employment status, marital status, or the presence of grandchildren.

The outcome variable examined in these regressions is a binary indicator signifying

the provision of informal care (extensive margin). Our analysis reveals that a higher proportion of migrants in the parents' region of residence has no significant impact on the likelihood of sons providing informal care. Estimates are rather small. A 1 percentage point (p.p.) increase in the share of immigrants - a substantial variation relative to the mean share of immigrants in our sample of European Regions at 8.8 percent - would increase the probability that sons provide informal care by 0.97 p.p., with minor differences between sons with college education and sons with at most high school. The large standard errors indicate that these estimates are all statistically insignificant. This finding is consistent with the notion that sons' engagement in caregiving is weak, due to prevailing societal expectations and cultural models that traditionally assign a lesser role to men in direct caring responsibilities (Grigoryeva, 2017; Yee and Schulz, 2000). As a result, the presence of migrants is less likely to alter men decisions of caregiving.

We observe a much more complex picture among daughters. Women with less than high school (LM) are more likely to provide care to their parents, whereas highly educated women (H) are less likely to do so. A 1 p.p. increase in the share of migrants in the region is associated with a 2.8 p.p. increase in the probability that daughters with LM education provide help to their parents, and a 2.6 p.p. decrease among daughters with H education. These effects are sizable with respect to the sample mean of the outcome variables: they correspond to a 17.5% increase in the provision of help by low-to-medium educated daughters and a 21% decrease in help provided by highly educated daughters, and they are both statistically significant at the conventional level.

Turning to the intensity of informal care (intensive margin), we define three nested binary variables indicating the frequency a child provides informal care: daily, at least weekly, or at least monthly. These indicators are hierarchical; for instance, an increase in the likelihood of daily care necessarily increases the likelihood of weekly and monthly care. Conversely, an increase only in weekly and monthly care, without a corresponding rise in daily care, reflects a change beginning from a weekly frequency.

Table 2 reports the results of this analysis. Once again, we do not detect major effects

among sons, excepting for a moderate increase in weekly or monthly care provision among those with LM education. Once again, daughters display a divergent pattern consistent with our findings on the extensive margin: women with LM education increase the frequency of care, while H women decrease it. Specifically, LM women increase care provided on a weekly basis or less frequently, whereas H women reduce weekly or monthly caregiving. The former, react to a 1 p.p. increase in the share of migrants with a 4.3 p.p. increase in the probability of providing weekly help to their parents, equivalent to 39% of the unconditional mean. The latter react with 1.98 p.p. decrease in the likelihood that they provide weekly help to their parents, which corresponds to 33% of the unconditional mean. Notably, we find no significant effects on daily care provision for either either type of daughter, although in these case signs are coherent with the pattern described above.

To further investigate the intensive margin we construct a continuous indicator of the number of days per year of informal care[16]. Table A3 presents the results of this analysis. Following a 1 p.p increase in the share of immigrants, LM daughters increase the care the provide by 13.9% (equivalent to 3 days of extra help) while H daughters reduce days of caregiving by 9.3% (equivalent to an extra day of help).

4.2 Instrument Validity and robustness

In this section we investigate whether the adopted IV procedure is reliable. Following Conley et al. (2012), we test the "plausible exogeneity" of our instrument. Focusing on the probability of giving help to parents on a weakly basis, we estimate what is the correct IV estimate for any given and known deviation from the exclusion restriction. We express such deviation as a percentage of the reduced form effect of the instrument on the outcome. Figure A1 shows that the effect of immigration preserve its sign and statistical significance for the sample of all daughters, and both subsamples of LM and H daughters for sizable deviations from the exclusion restriction (40 percent of the reduced

[16]We impute the total number of help days provided by each child per year as follows: for daily help, we assign 360 days per year; for weekly help, 52 days; for monthly help, 12 days; and for occasional help, 1 day.

form effect in the full sample, over 50 percent in the subsample of LM daughters and 25 percent in the subsample of H daughters). These results suggest that our findings are robust even if the instrument suffered of some residual correlation with the error term.

Next, we modify the reference year for our instrument, using the share of migrants in each NUTS region in 1991 instead of 2001. Table A5 collects the results. While this change does not affect the magnitude of our findings, the precision of the estimates slightly decreases due to the instrument's reduced strength.

Finally, we examine whether our results depend on specific origin countries, NUTS regions of residence, or national contexts. We focus on the effects of migration on daughters probability of providing weekly care (reported in columns (4)–(6) of Table 2). Figure A2 reports regression point estimates when we sequentially exclude each migrant origin country. We observe that no single country of origin drives our findings.

Similarly, we drop in turn each region from the sample. Figure A3 shows that no individual region drives the results. We also exclude one country at a time and confirm that no single country is responsible for the observed effects (Figure A4).

Lastly, we investigate whether cultural factors influence our results. Specifically, we assess potential differences between Catholic and Protestant countries by splitting the sample according to the World Religion Database classification.[17] Although the instrument is notably weaker in the Protestant subsample, our estimates indicate a large positive effect of migration on LM daughters in both groups, even if not significant in the Protestant subsample. Instead, the reduction in informal care provided by H daughters appears to be primarily driven by Catholic countries (Table A6).

4.3 Help Distribution

In this subsection we take parents' viewpoint. We aggregate the children help at the parent level and examine the impact of immigration on a binary variable indicating whether a parent receives weekly or monthly help from at least one of his/her children.

[17] We classify the following countries as Catholic: Austria, Belgium, Switzerland, Spain, France and Italy. The Protestant countries are: Netherlands, Germany, Denmark, Sweden.

To measure help inequality distribution, we focus our analysis on families with at least two children. We use a specification akin to Equation 1, replacing child fixed effects with parent fixed effects. The results of this analysis are collected in Table A4.

We consider three samples of parents. In columns (1) and (4) we look at the sample of all parents with at least one daughter (or son) regardless of their children education. The probability that a parent receives at least weekly help from his/her daughters increases by 1.97 p.p. when the share of immigrants increases by 1 p.p. The effect is more than three times as large in the subsample of parent who have only LM daughters. Viceversa, parents who have only H daughters observe a decrease in the probability of receiving help by 3.3 p.p. for the same change in immigration. No significant effect emerges among parents who have only sons, regardless of their education.

Next we investigate whether migration influences the intensity of aggregated informal care received by parents from their children, using the logarithm of the imputed number of help days as the dependent variable. Table 3 presents the results of this analysis.

The sample is split as follows: all families (Column (1)), families with only daughters (Column (2)), families with only sons (Column (3)), families with mixed-gender children (Column (4)), mixed-gender families with only LM educated children (Column (5)), and mixed-gender families with only H educated children (Column (6)). The results suggest a positive effect of migration on the total help received by parents, primarily driven by families with only daughters and mixed-gender families where all children have LM education levels.

Finally, we investigate how immigration influences the distribution of the help burden among children. Using the number of help days at the individual level, we construct a Theil Index to quantify the concentration of help within families.[18] Table 4 displays the results. These observed patterns corroborate the findings in Table 3, revealing that migration leads to a concentration of informal caregiving responsibilities on a subset of children. This concentration effect is especially strong within families comprising only

[18]The Theil L index for each family i is calculated as follows: $T_L = \frac{1}{N}\sum_{i=1}^{N}\log(\frac{\mu}{x_i})$, where $\mu = \frac{1}{N}\sum_{i=1}^{N} x_i$.

daughters and in mixed-gender families where the offspring possess low to medium levels of education. According to our prior results, this suggests a shift in the caregiving burden towards women with low to medium education, and a greater overall burden on women compared to men.

5 Interpretation

We attribute the findings of our analysis to two primary consequences of immigration, both affecting caregiving dynamics.

First, immigration expands the supply of formal care services. This makes care more abundant and potentially more affordable, largely because immigrant labor often concentrates in labor-intensive, relatively low-skilled sectors like personal and home care. For example, research by Cortés (2008) shows that the significant immigration wave in the United States between 1980 and 2000 led to lower prices for services such as babysitting, childcare, housekeeping, gardening, laundry, and shoe repair. Similarly, European studies confirm that immigrants have increased the supply of workers in these sectors and reduced wages, which serves as a good proxy for prices (e.g., Forlani et al., 2021).

Second, immigration can reshape the broader labor market, potentially worsening employment prospects for low-skilled natives while enhancing opportunities for the high-skilled. This outcome isn't universally guaranteed, as shown by Foged and Peri (2016), and typically holds true when the substitutability between immigrants and natives of similar education and experience is sufficiently high (Ottaviano and Peri, 2012). If not, low-skilled natives would be shielded from competition, and immigration could even positively impact wages and employment for both skilled and unskilled native workers. The academic literature on this point is still debating, with empirical results varying significantly based on context, time period, and prevailing labor market institutions.[19] However, a recent paper by Edo and Özgüzel (2023) specifically finds that in Europe,

[19] See Dustmann et al. (2016) for a detailed discussion.

during the years relevant to our analysis, low-educated native workers experienced employment losses due to immigration, while highly-educated ones were more likely to gain employment.

Unfortunately, Edo and Özgüzel (2023) does not disaggregate by gender. However, US-based research by Llull (2021) estimates that the competitive effect of immigration on labor supply is stronger for women than for men. Similarly, Sakamoto and Sugiyama (2025) found that the Mariel Boatlift immigration shock in Miami caused a larger decline in working hours among low-skilled native women compared to men, thereby widening the gender gap in labor supply.

The combination of these mechanisms suggests that high-skilled women increased their labor supply and substituted informal care with formal care, as it became more convenient.

For low-skilled daughters, the effect is theoretically ambiguous. Immigration simultaneously reduces the opportunity cost of providing informal care (due to potentially poorer job prospects) and the price of purchasing formal care. While individual preferences are always a factor, it's plausible that in many cases, low-skilled daughters, facing lower incomes and potentially having more time, will favor providing informal care over purchasing formal care.[20]

Finally, if immigration's labor market effects are indeed stronger for women than for men, as observed in the US, this could partly explain why we do not find similar effects of immigration on the intensity of informal care provided by sons. The smaller role of the labor market channel for men, combined with a traditional cultural weaker engagement in caregiving, would mean less pressure to alter their caregiving behaviors.

In this section we provide some support for this interpretation.[21]

[20] This might not hold if the marginal disutility of informal care is relatively high and the marginal utility of income is relatively low.

[21] See also Cortés (2023) for a similar discussion.

5.1 The impact of migration on the services sector

First, we verify whether the increase in the share of immigrants leads to greater availability of home and personal services for the study period and sample. We take data from the European Labour Force Survey[22] and study the impact of migration on the home and personal service sector by estimating the following equation:

$$Y_{r,t} = \alpha + \beta S_{r,t-1} + X'_{r,t-1}\zeta + \gamma_t + \eta_r + \epsilon_{r,t} \tag{4}$$

Where $Y_{r,t}$ is the share of individuals employed in the home and personal services in region r at time t.[23] $S_{r,t-1}$ denotes the share of migrants in region r at the end of year prior to the surveys. $X'_{r,t}$ is a set of regional controls at the time $t-1$, including the logarithm of the unemployment rate, and of the share of the population with tertiary education. Finally, η_r accounts for time-invariant characteristics of regions, and γ_t absorbs time-specific shocks common to all observations. As in the main analysis, $S_{r,t-1}$ is instrumented by the shift-share instrument described above.

Table 5 reports the results of our analysis. We find that a 1 p.p. increase in the share of migrants increases by 0.10 p.p. the share of workers employed in the home and personal services sector (the average share of workers in this sector being 7 percent). This result confirms that immigrants tend to concentrate in home and personal services expanding its supply and plausibly decreasing its price.[24]

5.2 Labor Market Outcomes of Children

Next, we examine the effect of immigration on the labor supply of adult children in our sample. Our approach draws on the findings of Edo and Özgüzel (2023), who, using data from the European Labour Force Surveys over a comparable period (2010–2019) across

[22] In our sample the following countries are included: Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, and Sweden.

[23] We identify the workers in this sector using the ISCO codes 911 (*Domestic, Hotel and Office Cleaners and Helpers*) and 532 (*Personal Care Workers in Health Services*)

[24] Unfortunately, data from the European Labor force survey lack information on wages and we cannot test the effects of migration on wages in the home and personal services.

13 Western European countries, identified a short-run negative impact of immigration on the employment rate of natives with less than tertiary education, and a small positive effect on college graduates that tended to reinforce in the longer run. We extend their analysis (for the short-run) stratifying by gender and using our dataset of daughters and sons.[25]

Our analysis suffers from two important limitations. First, it is constrained by the fact that we only possess information on the parents' region of residence, lacking precise data on the geographical location of their adult children. However, as parents do report the distance to their children's residence, it turns out that approximately 85 percent of children in our sample reside within a 100-kilometer radius of their parents. The reliance on parents' region as a proxy for children's labor market exposure introduces potential measurement error, although hopefully rather small.

Second and more importantly, the employment status of adult children is reported by their senior parents, which may be subject to inaccuracies or recall bias. Parents might not possess perfectly up-to-date information or their adult children may selectively disclose employment shocks to avoid causing parental worry or distress. This reliance on proxy reporting constitutes a further limitation in our ability to precisely capture the labor market experiences of the children in our sample.

With the aforementioned limitations in mind, the results of our analysis on children's labor market outcomes are presented in Table 6.

Panel A examines the effect of an increased share of migrants on the probability of children's employment, disaggregated by gender and educational attainment. We observe a significant and positive impact of immigration on the likelihood of employment for high-skilled daughters, while the effect on high-skilled sons is practically negligible. For individuals with low-to-medium education, we detect a small and statistically insignificant decline in the employment probability of women, and a more substantial

[25] By stratifying by gender, we aim to capture both the competition effect, as in Edo and Özgüzel (2023), and the migration-induced effect on the price of formal care, which is expected to be particularly relevant for females.

negative effect on similarly educated men.

Panel B delves into the intensive margin of employment by analyzing the impact of migration on the probability of working full-time versus part-time, conditional on being employed. The results, again presented by education and gender, reveal a positive and statistically significant effect of migration on the probability of full-time employment among highly educated women, with no discernible effect on men in this education group.

The combined findings from Panels A and B suggest that immigration enhances the employment opportunities for the most educated daughters, increasing both their likelihood of being employed and their probability of working full-time. Consequently, the opportunity cost of providing informal care likely rises for this group of women.

Turning to low- and medium-educated children, Panel A indicates a negative, though statistically insignificant, effect of immigration on daughters' employment. Panel B further shows no statistically significant effects of migration on the likelihood of full-time versus part-time employment for either low- to medium-educated daughters or sons. While the direction of these estimates aligns with our hypothesized substitution effect in the lower-skilled labor market, the evidence in our data does not reach conventional levels of statistical significance for daughters.

6 Conclusions

We investigate the effect of immigration on the informal care children provide to their parents. Our key results highlight a heterogeneous impact on daughters: migration leads to a decrease in both the probability and frequency of care from tertiary-educated daughters, but an increase for those with low to medium education. Confirming the well-documented pattern of women being the primary providers of household work and eldercare in many European countries, we observe little to no impact of migration on the informal care sons provide to their parents.

SHARE data enable us to examine the impact of migration on the distribution of informal care among siblings. Our analysis reveals a widening of caregiving inequalities

in families composed solely of daughters and in those where all children possess low to medium levels of education. Consequently, migration contributes to a more unequal sharing of the responsibilities associated with informal care within these family types, to the detriment especially of less educated daughters.

To complete our analysis, we test two hypotheses: that migration increases the supply of home and personal services, and that it has asymmetric labor market effects differentially altering the opportunity costs of informal care. Specifically, using European Labour Force data, we analyze the impact of migration on the share of workers employed as cleaners and personal care workers, finding suggestive evidence of a significant increase. Next, by using SHARE information on children employment reported by their parents, we find suggestive evidence that immigration has opposite effects on high educated and less educated daughters. Immigration rises the prospects of the former on the labor market and possibly weakens those of the latter.

The interplay of these effects makes formal care more appealing for highly educated daughters, who face a higher opportunity cost of providing informal care alongside an increased availability of personal and home services. For them, substituting informal care with formal care becomes a rational choice. Conversely, the combination of more affordable formal care but potentially worsened labor market opportunities for less educated daughters creates an ambiguous theoretical prediction regarding their informal care provision. The actual outcome, as our findings suggest, is an increase in their informal caregiving.

Our findings suggest that immigration, while potentially addressing labor shortages in the care sector, can inadvertently exacerbate the existing disparity in informal caregiving responsibilities between skilled and unskilled daughters, and does not necessarily alleviate the overall burden of long-term care in an aging society.

To address the widening disparity in unpaid caregiving among daughters, extending existing cash transfers for carers could prove beneficial. Many OECD countries, notably the Nordic nations, England, and Spain, already implement such schemes where benefits are paid directly to carers. In contrast, major European countries like Germany, France,

and Italy typically channel these transfers to care recipients, who may or may not then pass the funds to the caregiver (Rocard and Llena-Nozal, 2022). While these cash benefits are usually means-tested and contingent on the carer's income (or a combination of carer and caree income), their relatively small amounts often fail to compensate for the opportunity and utility costs of informal care (Zigante et al., 2018). To effectively reduce disparities among daughters, all countries should implement direct, means-tested transfers to carers, with amounts substantial enough to genuinely offset caregiving costs.

Such a cash transfer, funded through general taxation, could be designed to redistribute some of the economic benefits of immigration. This could involve drawing a larger share of funding from those who gain in the labor market, thereby supporting individuals such as low-educated daughters who often bear a disproportionate caregiving burden. Careful consideration of eligibility criteria, payment levels, and integration with existing welfare systems would be crucial to ensure the policy's effectiveness and sustainability, while also mitigating potential disincentives to formal labor market participation.

Our study is subject to two primary limitations. First, the reliance on parental reports for information on their adult children introduces potential measurement error, particularly in assessing the children's labor market outcomes. Second, our analysis does not examine the welfare implications of migration-induced changes in parental informal care for either parents or children. A comprehensive evaluation of welfare changes would necessitate observing the quality of care received by parents, their welfare, the psychological and emotional burden experienced by caregivers, and how daughters reallocate their time across various activities beyond paid work and parental care - data which are not available in our study and represent avenues for future research.

References

Alesina, Alberto, Elie Murard, and Hillel Rapoport, "Immigration and preferences for redistribution in Europe1," *Journal of Economic Geography*, 03 2021, *21* (6), 925–954.

Barone, Guglielmo and Sauro Mocetti, "With a little help from abroad: the effect of low-skilled immigration on the female labour supply," *Labour Economics*, 2011, *18* (5), 664–675.

Bertoni, Marco, Danilo Cavapozzi, Giacomo Pasini, and Caterina Pavese, "The causal effect of working from home on mental health of 50+ Europeans," *The Journal of the Economics of Ageing*, 2025, *31* (100560).

Brunello, Giorgio, Elisabetta Lodigiani, and Lorenzo Rocco, "Does low-skilled immigration increase profits? Evidence from Italian local labour markets," *Regional Science and Urban Economics*, 2020, *85*, 103582.

Butcher, Kristin F, Kelsey Moran, and Tara Watson, "Immigrant labor and the institutionalization of the US-born elderly," *Review of International Economics*, 2022, *30* (5), 1375–1413.

Capretti, Lisa, Joanna Kopinska, Rama Dasi Mariani, and Furio C. Rosati, "Caring Connections: Immigrant Caregivers and Long-Term Elderly Care in Italy," Working Paper 573, CEIS April 2024. Available at SSRN: https://ssrn.com/abstract=4790268.

Card, David, "Immigrant inflows, native outflows, and the local labor market impacts of higher immigration," *Journal of Labor Economics*, 2001, *19* (1), 22–64.

Conley, Timothy G, Christian B Hansen, and Peter E Rossi, "Plausibly exogenous," *Review of Economics and Statistics*, 2012, *94* (1), 260–272.

Cortes, Patricia and José Tessada, "Low-skilled immigration and the labor supply of highly skilled women," *American Economic Journal: Applied Economics*, 2011, *3* (3), 88–123.

Cortés, Patricia, "The effect of low-skilled immigration on US prices: Evidence from CPI data," *Journal of Political Economy*, 2008, *116* (3), 381–422.

_ , "Immigration, household production, and native women's labor market outcomes: A survey of a global phenomenon," *European Economic Review*, 2023, *158*, 104545.

Costa-Font, Joan and Cristina Vilaplana-Prieto, "The hidden value of adult informal care in Europe," *Health Economics*, 2025, *34* (4), 791–812.

Crespo, Laura and Pedro Mira, "Caregiving to elderly parents and employment status of European mature women," *Review of Economics and Statistics*, 2014, *96* (4), 693–709.

Dustmann, Christian, Uta Schönberg, and Jan Stuhler, "The Impact of Immigration: Why Do Studies Reach Such Different Results?," *Journal of Economic Perspectives*, November 2016, *30* (4), 31–56.

Edo, Anthony and Cem Özgüzel, "The impact of immigration on the employment dynamics of European regions," *Labour Economics*, 2023, *85*, 102433.

Ervin, Jennifer, Yamna Taouk, Ludmila Fleitas Alfonzo, Tessa Peasgood, and Tania King, "Longitudinal association between informal unpaid caregiving and mental health amongst working age adults in high-income OECD countries: A systematic review," *EClinicalMedicine*, 2022, *53.*

Escarce, José J and Lorenzo Rocco, "Effect of immigration on depression among older natives in Western Europe," *The Journal of the Economics of Ageing*, 2021, *20*, 100341.

Farré, Lídia, Libertad González, and Francesc Ortega, "Immigration, family responsibilities and the labor supply of skilled native women," *The BE Journal of Economic Analysis & Policy*, 2011, *11* (1).

Foged, Mette and Giovanni Peri, "Immigrants' effect on native workers: New analysis on longitudinal data," *American Economic Journal: Applied Economics*, 2016, *8* (2), 1–34.

Forlani, Emanuele, Elisabetta Lodigiani, and Concetta Mendolicchio, "Impact of low-skilled immigration on female labour supply," *The Scandinavian Journal of Economics*, 2015, *117* (2), 452–492.

_ , _ , and _ , "Natives and migrants in home production: the case of Germany," *Review of Economics of the Household*, 2021, *19* (4), 1275–1307.

Furtado, Delia, "Fertility responses of high-skilled native women to immigrant inflows," *Demography*, 2016, *53* (1), 27–53.

_ and Francesc Ortega, "Does immigration improve quality of care in nursing homes?," *Journal of Human Resources*, 2023.

Giuntella, Osea and Fabrizio Mazzonna, "Do immigrants improve the health of natives?," *Journal of health economics*, 2015, *43*, 140–153.

Grabowski, David C, Jonathan Gruber, and Brian McGarry, "Immigration, the long-term care workforce, and elder outcomes in the US," Technical Report, National Bureau of Economic Research 2023.

Grigoryeva, Angelina, "Own gender, sibling's gender, parent's gender: The division of elderly parent care among adult children," *American Sociological Review*, 2017, *82* (1), 116–146.

Llull, Joan, "Immigration and Gender Differences in the Labor Market," *Journal of Human Capital*, 2021, *15* (1), 174–203.

Midões, Catarina, Enrica De Cian, Giacomo Pasini, Sara Pesenti, and Malcolm N. Mistry, "SHARE-ENV: A Data Set to Advance Our Knowledge of the Environment–Wellbeing Relationship," *Environment & Health*, 2024, *2* (2), 95–104.

Ottaviano, Gianmarco I. P. and Giovanni Peri, "Rethinking the Effect of Immigration on Wages," *Journal of the European Economic Association*, 2012, *10* (1), 152–197.

Paetzold, Jörg Manfred, Halla Martin, Wolfgang Frimmel, and Julia Schmieder, "Health of Parents, their Children's Labor Supply, and the Role of Migrant Care Workers," *Journal of Labor Economics*, 2023.

Peri, Giovanni, Agnese Romiti, and Mariacristina Rossi, "Immigrants, domestic labor and women's retirement decisions," *Labour Economics*, 2015, *36*, 18–34.

Rocard, Eileen and Ana Llena-Nozal, "Supporting informal carers of older people: Policies to leave no carer behind," *OECD Health Working Papers*, 2022, (140), 0_1–72.

Romiti, Agnese, "The effects of immigration on household services, labour supply and fertility," *Oxford Bulletin of Economics and Statistics*, 2018, *80* (4), 843–869.

Sakamoto, Ryo and Takuma Sugiyama, "The effect of low-skilled immigration on women's labor supply: Theory and evidence from the United States," https://doi.org/10.21203/rs.3.rs-6257195/v1 2025. Preprint (Version 1), available at Research Square.

Yee, Jennifer L and Richard Schulz, "Gender differences in psychiatric morbidity among family caregivers: A review and analysis," *The Gerontologist*, 2000, *40* (2), 147–164.

Zigante, Valentina et al., "Informal care in Europe: Exploring formalisation, availability and quality," *European Commission*, 2018, *10*, 78836.

Table 1: The Impact of Immigration on Children's Informal Care: Extensive Margin

Panel A	Help data: Children's Help Extensive					
	Daughters			Sons		
Education	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	0.9191	2.7957***	-2.5766**	0.9708	0.9851	0.8382
	(0.832)	(0.856)	(1.247)	(0.932)	(0.958)	(1.784)
Mean Dep	0.14	0.16	0.12	0.11	0.12	0.10
Observations	6,463	3,943	2,250	6,408	4,018	2,130
Clusters	98	97	87	98	96	89
Kleibergen-Paap	50.99	54.45	61.00	34.06	60.72	39.01
Parent's age	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√
Child f.e.	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√

Notes: This table reports the estimates of the impact of immigration on informal care provided by children following Equation (1). The dependent variable is a binary indicator equal to 1 if a child reports helping their parents. The sample is restricted to individuals with at least one parent aged 75 or older. Columns (1)–(3) show results for daughters, and columns (4)–(6) for sons. In columns (1) and (4), the analysis considers the entire relevant sample of children. Columns (2) and (5) restrict the sample to children with low-to-medium education levels, while columns (3) and (6) restrict it to children with high education levels. All specifications include region, year, and individual fixed effects, as well as region-specific controls. Child-specific controls include the health status of the parent, the presence of a parent's partner in the household, the partner's health status, the child's marital status, and their number of children. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

Table 2: The Impact of Immigration on Children's Informal Care: Intensive Margin

Help data: Children's Help Analysis (Daughters)									
	Daily Help			At least Weekly help			At least Monthly help		
Education	Any	LM	H	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Share Migrants	-0.1722	0.1843	-0.6922	1.7983***	4.2768***	-1.9839**	1.1562*	3.0463***	-2.0697**
	(0.465)	(0.588)	(0.636)	(0.589)	(0.884)	(0.912)	(0.651)	(0.731)	(1.035)
Mean Dep	0.04	0.05	0.02	0.09	0.11	0.06	0.12	0.14	0.09
Observations	6,463	3,943	2,250	6,463	3,943	2,250	6,463	3,943	2,250
Clusters	98	97	87	98	97	87	98	97	87
Kleibergen-Paap	50.99	54.45	61.00	50.99	54.45	61.00	50.99	54.45	61.00
Help data: Children's Help Analysis (Sons)									
	Daily Help			At least Weekly help			At least Monthly help		
Education	Any	LM	H	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Share Migrants	0.7000*	0.7491*	0.4014	1.3524*	1.6747**	1.0180	1.2474*	1.7423*	0.3881
	(0.413)	(0.446)	(0.475)	(0.687)	(0.808)	(0.712)	(0.726)	(0.887)	(1.395)
Mean Dep	0.02	0.02	0.01	0.05	0.06	0.04	0.08	0.09	0.07
Observations	6,407	4,018	2,129	6,407	4,018	2,129	6,407	4,018	2,129
Clusters	98	96	89	98	96	89	98	96	89
Kleibergen-Paap	34.02	60.72	38.89	34.02	60.72	38.89	34.02	60.72	38.89
Parent's age	75+	75+	75+	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√	√	√	√
Child f.e.	√	√	√	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√	√	√	√

Notes: This table reports the estimates of the impact of immigration on informal care provided by children following Equation (1). The dependent variables are binary indicators for whether a child provides informal care: daily (Columns (1)–(3)), at least weekly (Columns (4)–(6)), or at least monthly (Columns (7)–(9)). The sample is restricted to individuals with at least one parent aged 75 or older. Panel A presents results for daughters, and Panel B for sons. Columns (1), (4), and (7) include the entire relevant sample. Columns (2), (5), and (8) restrict the sample to children with low-to-medium education levels, while columns (3), (6), and (9) restrict it to children with high education levels. All specifications include region, year, and individual fixed effects, as well as region-specific controls. Child-specific controls include the health status of the parent, the presence of a parent's partner in the household, the partner's health status, the child's marital status, and their number of children. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

Table 3: The Impact of Immigration on Children's Informal Care: Total Help (Parents' Data)

Panel A	Help data: Parents' Analysis Total Help (log days)					
	Any Family	Daughters Only	Sons Only	Mixed Gender	LM only	H only
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	7.5127*	17.4257*	4.3944	5.4571	18.8878***	-6.8226
	(4.345)	(9.046)	(11.057)	(4.864)	(6.484)	(15.748)
Mean Dep	1.62	1.52	1.33	1.70	1.81	1.30
Observations	4,517	688	670	3,078	1,875	831
Clusters	98	76	73	96	94	74
R2	0.03	0.07	0.05	0.03	0.05	0.02
Kleibergen-Paap	24.53	52.48	40.94	32.15	46.59	23.97
Parent's age	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√

Notes: This table reports estimates of the impact of immigration on informal care provided by children, using data aggregated at the parent's level. The specification resembles Equation (1), but the data are aggregated at the family level. The dependent variable is the logarithm of the total imputed number of days of help received by a parent from their children. The sample is restricted to parents aged 75 or older. The sample splits include all families (Column (1)), families with only daughters (Column (2)), families with only sons (Column (3)), families with mixed-gender children (Column (4)), mixed-gender families with only low-medium educated children (Column (5)), and mixed-gender families with only highly educated children (Column (6)). All specifications include region, year, and parent fixed effects, along with region-specific controls. Parent-specific controls include the parent's health status, the presence of a partner in the household, and the partner's health status. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

Table 4: The Impact of Immigration on Children's Informal Care: Help Distribution (Parents' Data)

Panel A	Help data: Parents' Analysis Inequalities (Theil L)					
	Any Family	Daughters Only	Sons Only	Mixed Gender	LM only	H only
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	2.8676	11.5105***	-0.7102	1.4520	6.5275**	-5.5916
	(1.733)	(3.927)	(3.795)	(1.942)	(2.910)	(6.591)
Mean Dep	0.24	0.22	0.15	0.26	0.32	0.14
Observations	4,517	688	670	3,078	1,875	831
Clusters	98	76	73	96	94	74
R2	0.02	0.07	0.05	0.02	0.03	0.00
Kleibergen-Paap	24.53	52.48	40.94	32.15	46.59	23.97
Parent's age	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√

Notes: This table reports estimates of the impact of immigration on the within-family distribution of informal care provided by children, using data aggregated at the parent's level. The specification resembles Equation (1), but the data are aggregated at the family level. The dependent variable is the Theil L index constructed at the family level using the number of help days provided by each child. The sample is restricted to parents aged 75 or older. The sample splits include all families (Column (1)), families with only daughters (Column (2)), families with only sons (Column (3)), families with mixed-gender children (Column (4)), mixed-gender families with only low-medium educated children (Column (5)), and mixed-gender families with only highly educated children (Column (6)). All specifications include region, year, and parent fixed effects, along with region-specific controls. Parent-specific controls include the parent's health status, the presence of a partner in the household, and the partner's health status. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

Table 5: The impact of immigration on the availability of home and personal services

	LFS data -share of workers in services			
	Share of Migrants		Workers in services	
	(1)	(2)	(3)	(4)
Predicted Migrants	0.5284***	0.5295***		
	(0.058)	(0.059)		
Share Migrants			0.1074*	0.1030*
			(0.063)	(0.061)
Mean Dep			0.07	0.07
Observations	282	282	282	282
Clusters	94	94	94	94
Kleibergen-Paap			81.82	79.93
Nuts f.e.	√	√	√	√
Year f.e.	√	√	√	√
Control Variables	×	√	×	√

Notes: The table reports the estimates of the impact of immigration on services based on Equation (4). The outcome is the share of workers employed in the personal care and cleaning services. All the specifications include region and year fixed- effects, and region specific controls. Region specific controls include the lagged logarithm of the unemployment rate and of the lagged share of the population with tertiary education. */**/*** indicate significance at 10%/5%/1%, respectively; standard errors in parentheses are clustered at the nationality×year level.

Table 6: The Impact of Immigration on Children's Labor Market Outcomes (alternative)

Panel A	Children's Employment, everyone					
	Daughters			Sons		
Education	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	0.9002	-0.3048	3.5634***	-1.3230	-2.2893**	-0.0167
	(0.733)	(1.147)	(0.939)	(0.943)	(0.968)	(0.834)
Mean Dep	0.85	0.81	0.91	0.95	0.94	0.98
Observations	5,942	3,488	2,162	5,786	3,439	2,074
Clusters	97	96	87	96	93	89
Kleibergen-Paap	35.19	42.22	35.60	23.28	46.22	23.15
Panel B	Children's Employment: Full Time vs Part Time					
	Daughters			Sons		
Education	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	1.4281	-0.5669	3.6332**	0.2927	0.4300	0.2582
	(1.121)	(1.097)	(1.750)	(0.508)	(0.463)	(0.535)
Mean Dep	0.77	0.73	0.83	0.98	0.98	0.98
Observations	4,237	2,300	1,710	4,463	2,635	1,605
Clusters	93	90	81	95	92	80
Kleibergen-Paap	39.77	48.89	42.35	28.25	53.91	26.21
Parent's age	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√
Child f.e.	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√

Notes: This table reports the estimates of the impact of immigration on children's labor market outcomes following Equation (1). The dependent variables are a binary indicator equal to 1 if a child is employed (Panel A), and a binary indicator equal to 1 if an employed child is employed full-time (Panel B). The sample is restricted to individuals with at least one parent aged 75 or older. Columns (1)–(3) show results for daughters, and columns (4)–(6) for sons. In columns (1) and (4), the analysis considers the entire relevant sample of children. Columns (2) and (5) restrict the sample to children with low-to-medium education levels, while columns (3) and (6) restrict it to children with high education levels. All specifications include region, year, and individual fixed effects, as well as region-specific controls. Child-specific controls include the health status of the parent, the presence of a parent's partner in the household, the partner's health status, the child's marital status, and their number of children. Region-specific controls include the share of the population with tertiary education and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

A Appendix

A.1 Tables

Table A1: Data on foreign population: regional data sources by destination country

Data on 1st January, years 2013, 2015, 2019				
Country	**Regional Level**	**Definition**	**Data Provider**	**Weblink**
Austria	NUTS2	Nationality	Statistik Austria (STATcube)	https://www.statistik.at/
Belgium	NUTS1	Nationality	Statistics Belgium (STATBEL)	https://bestat.statbel.fgov.be
Denmark	NUTS2	Citizenship	Statistics Denmark	https://www.statbank.dk
France	NUTS2	Country of Birth	European Labor Force Survey	https://ec.europa.eu/eurostat/
Germany	NUTS1	Citizenship	Statistisches Bundesamt DESTATIS	https://www.destatis.de
Italy	NUTS2	Citizenship	ISTAT	https://demo.istat.it/
Netherlands	NUTS1	Nationality	Centraal Bureau voor de Statistiek CBS	https://www.cbs.nl/
Spain	NUTS2	Nationality	Instituto Nacional de Estadistica INE	http://www.ine.es/
Sweden	NUTS2	Citizenship	Statistics Sweden	https://www.statistikdatabasen.scb.se
Switzerland	NUTS2	Nationality	Federal Statistical Office	https://www.bfs.admin.ch/

Table A2: Summary Statistics

	N	Mean	SD	Min	Max
Regional Data					
Share of migrants (lag)	288	0.097	0.062	0.018	0.349
GDP growth (lag)	288	0.017	0.020	-0.049	0.072
Tertiary education (share, lag)	288	0.300	0.093	0.124	0.540
Employment rate (lag)	288	0.707	0.093	0.424	0.859
Parents' data					
Age	4517	82.050	4.291	76.000	101.000
Partner in HH	4517	0.603	0.489	0.000	1.000
IADL	4517	0.386	0.487	0.000	1.000
Number of Children	4517	2.881	1.131	2.000	10.000
Received Help (Anyone)	4517	0.343	0.475	0.000	1.000
Received Help (Children)	4517	0.218	0.413	0.000	1.000
Total Days of Help	4517	35.081	112.814	2.000	1084.000
Theil Index	4517	0.236	0.624	0.000	3.127
Daughters' data					
Age	6463	52.647	6.772	22.000	72.000
Married	6463	0.724	0.447	0.000	1.000
Number of children	6463	1.795	1.130	0.000	19.000
Low-medium Education	6463	0.631	0.483	0.000	1.000
Help (extensive)	6463	0.138	0.344	0.000	1.000
Daily Help	6463	0.037	0.190	0.000	1.000
At least weekly Help	6463	0.091	0.288	0.000	1.000
At least monthly Help	6463	0.117	0.322	0.000	1.000
Days of Help	6463	17.261	68.441	1.000	360.000
Employed	5740	0.844	0.363	0.000	1.000
Full Time Employment	4440	0.759	0.427	0.000	1.000
Sons' data					
Age	6407	52.642	6.667	22.000	72.000
Married	6407	0.699	0.459	0.000	1.000
Number of children	6407	1.674	1.299	0.000	22.000
Low-medium Education	6407	0.646	0.478	0.000	1.000
Help (extensive)	6407	0.109	0.312	0.000	1.000
Daily Help	6407	0.019	0.138	0.000	1.000
At least weekly Help	6407	0.053	0.224	0.000	1.000
At least monthly Help	6407	0.081	0.273	0.000	1.000
Days of Help	6407	9.744	49.564	1.000	360.000
Employed	5656	0.952	0.215	0.000	1.000
Full Time Employment	4666	0.975	0.155	0.000	1.000

Notes: This table reports the Summary statistics of the main variables used in the analysis.

A.2 Figures

Table A3: The Impact of Immigration on Children's Informal Care: Intensive Margin, days of help

Panel A	Help data: Children's Help Intensive (Log Days)					
	Daughters			Sons		
Education	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	5.0191	13.8699***	-9.2879**	5.8866*	7.3270*	3.1846
	(3.036)	(3.815)	(4.354)	(3.271)	(3.961)	(3.876)
Mean Dep	0.49	0.59	0.36	0.31	0.35	0.26
Observations	6,463	3,943	2,250	6,407	4,018	2,129
Clusters	98	97	87	98	96	89
Kleibergen-Paap	50.99	54.45	61.00	34.02	60.72	38.89
Parent's age	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√
Child f.e.	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√

Notes: This table reports the estimates of the impact of immigration on informal care provided by children following Equation (1). The dependent variable is the log of the imputed number of days of help. The sample is restricted to individuals with at least one parent aged 75 or older. Columns (1)–(3) show results for daughters, and columns (4)–(6) for sons. In columns (1) and (4), the analysis considers the entire relevant sample of children. Columns (2) and (5) restrict the sample to children with low-to-medium education levels, while columns (3) and (6) restrict it to children with high education levels. All specifications include region, year, and individual fixed effects, as well as region-specific controls. Child-specific controls include the health status of the parent, the presence of a parent's partner in the household, the partner's health status, the child's marital status, and their number of children. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

Table A4: The Impact of Immigration on Children's Informal Care: Extensive margin, parents' data

Panel A	Help data: Children's Help Extensive (Weekly or More)					
	Daughters			Sons		
Family	Any	LM Daughters Only	H Daughters Only	Any	LM Sons Only	H Sons Only
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	1.9714**	7.7579**	-3.3497***	1.3824	2.5541	-1.1925
	(0.766)	(3.241)	(1.037)	(0.957)	(1.973)	(2.612)
Mean Dep	0.12	0.22	0.12	0.08	0.13	0.07
Observations	4,373	595	335	4,337	595	350
Clusters	98	74	59	98	73	53
R2	0.02	0.09	0.07	0.01	0.05	0.02
Kleibergen-Paap	52.60	62.48	161.00	26.76	126.20	18.07
Parent's age	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√

Notes: This table reports the estimates of the impact of immigration on informal care provided by children using data aggregated at the parent's level. The specification resembles Equation (1), but now data are aggregated at the family. The dependent variable is a binary outcome taking value 1 if the parent receives help at least once per week by one of the children. The sample is restricted to individuals with at least one parent aged 75 or older. Columns (1)–(3) show results for daughters, and columns (4)–(6) for sons. In columns (1) and (4), the analysis considers the entire relevant sample of parents. Columns (2) and (5) restrict the sample to families where all children have low-to-medium education levels, while columns (3) and (6) restrict it to families with only children with high education levels. All specifications include region, year, and parent fixed effects, as well as region-specific controls. Parent-specific controls include the health status of the parent, the presence of a parent's partner in the household, and the partner's health status. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

Table A5: The Impact of Immigration on Children's Informal Care: Intensive Margin, 1991 reference year

	Help data: Children's Help Analysis (Daughters)								
	Daily Help			At least Weekly help			At least Monthly help		
Education	Any	LM	H	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Share Migrants	-0.1270	0.2172	-0.6753	2.0426***	4.3639***	-1.9678	1.5387**	3.2830***	-1.7296
	(0.502)	(0.574)	(0.823)	(0.672)	(0.852)	(1.189)	(0.746)	(0.800)	(1.326)
Mean Dep	0.04	0.05	0.02	0.09	0.11	0.06	0.12	0.14	0.09
Observations	6,463	3,943	2,250	6,463	3,943	2,250	6,463	3,943	2,250
Clusters	98	97	87	98	97	87	98	97	87
Kleibergen-Paap	24.96	35.97	17.76	24.96	35.97	17.76	24.96	35.97	17.76

	Help data: Children's Help Analysis (Sons)								
	Daily Help			At least Weekly help			At least Monthly help		
Education	Any	LM	H	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Share Migrants	0.6505	0.5603	0.5128	1.3605*	1.6419*	1.2012	1.1467	1.6706	0.1597
	(0.479)	(0.530)	(0.532)	(0.774)	(0.951)	(0.778)	(0.837)	(1.062)	(1.428)
Mean Dep	0.02	0.02	0.01	0.05	0.06	0.04	0.08	0.09	0.07
Observations	6,407	4,018	2,129	6,407	4,018	2,129	6,407	4,018	2,129
Clusters	98	96	89	98	96	89	98	96	89
Kleibergen-Paap	14.87	26.67	15.58	14.87	26.67	15.58	14.87	26.67	15.58
Parent's age	75+	75+	75+	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√	√	√	√
Child f.e.	√	√	√	√	√	√			
Control Variables	√	√	√	√	√	√	√	√	√

Notes: This table reports the estimates of the impact of immigration on informal care provided by children following Equation (1) using 1991 as reference year for our instrument. The dependent variables are binary indicators for whether a child provides informal care: daily (Columns (1)–(3)), at least weekly (Columns (4)–(6)), or at least monthly (Columns (7)–(9)). The sample is restricted to individuals with at least one parent aged 75 or older. Panel A presents results for daughters, and Panel B for sons. Columns (1), (4), and (7) include the entire relevant sample. Columns (2), (5), and (8) restrict the sample to children with low-to-medium education levels, while columns (3), (6), and (9) restrict it to children with high education levels. All specifications include region, year, and individual fixed effects, as well as region-specific controls. Child-specific controls include the health status of the parent, the presence of a parent's partner in the household, the partner's health status, the child's marital status, and their number of children. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

Table A6: The Impact of Immigration on Children's Informal Care: at least weekly help, splitting sample by religion

	Help data: Children's Help Analysis (Daughters): At least Weekly help					
Sample	All		Low-Medium		High	
Sample	Catholic	Protestant	Catholic	Protestant	Catholic	Protestant
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	1.7608**	1.7834	4.9311***	3.7386	-2.1408*	-0.7120
	(0.739)	(2.218)	(1.117)	(2.661)	(1.219)	(3.047)
Mean Dep	0.10	0.07	0.12	0.09	0.08	0.04
Observations	4,265	2,198	2,690	1,253	1,403	847
Clusters	66	32	65	32	56	31
Kleibergen-Paap	38.75	8.73	43.75	10.90	43.38	7.59
Parent's age	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√
Child f.e.	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√

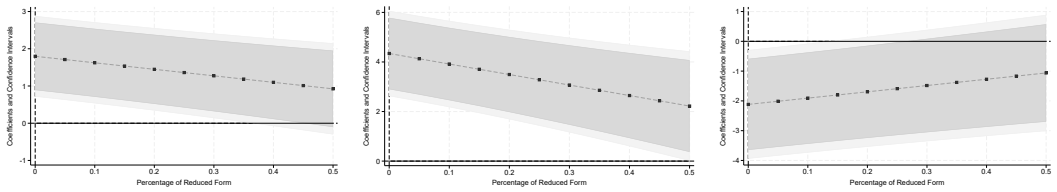
Notes: This table reports the estimates of the impact of immigration on informal care provided by daughters following Equation (1). The dependent variable is a binary variable taking value 1 if the child provides informal care on at least a weekly basis. The sample is restricted to individuals with at least one parent aged 75 or older and split by religion according by the World Religion Database. Odd columns reports the results for the Catholic subsample (AT, BE, CH, ES, FR, IT), while even ones for the Protestant subsample (NL, DE, DK, SE). In columns (1) and (2), the analysis considers the entire relevant sample of daughters. Columns (3) and (4) restrict the sample to daughters with low-to-medium education levels, while columns (5) and (6) restrict it to daughters with high education levels. All specifications include region, year, and individual fixed effects, as well as region-specific controls. Child-specific controls include the health status of the parent, the presence of a parent's partner in the household, the partner's health status, the child's marital status, and their number of children. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

Table A7: The Impact of Immigration on Children's Informal Care: Help Distribution

Panel A	Help data: Children's Help Distribution (Share)					
	Daughters			Sons		
Education	Any	LM	H	Any	LM	H
	(1)	(2)	(3)	(4)	(5)	(6)
Share Migrants	-0.2907	0.3919	-1.5494***	0.4538	0.3601	0.5654
	(0.218)	(0.447)	(0.567)	(0.305)	(0.420)	(0.448)
Mean Dep	0.41	0.40	0.42	0.39	0.37	0.42
Observations	6,463	3,943	2,250	6,407	4,018	2,129
Clusters	98	97	87	98	96	89
Kleibergen-Paap	50.99	54.45	61.00	34.02	60.72	38.89
Parent's age	75+	75+	75+	75+	75+	75+
Nuts f.e.	√	√	√	√	√	√
Year f.e.	√	√	√	√	√	√
Child f.e.	√	√	√	√	√	√
Control Variables	√	√	√	√	√	√

Notes: This table reports the estimates of the impact of immigration on informal care provided by children following Equation (1). The dependent variable is the share of help provided by a child out of the total informal care received by the parent. The sample is restricted to individuals with at least one parent aged 75 or older. Columns (1)–(3) show results for daughters, and columns (4)–(6) for sons. In columns (1) and (4), the analysis considers the entire relevant sample of children. Columns (2) and (5) restrict the sample to children with low-to-medium education levels, while columns (3) and (6) restrict it to children with high education levels. All specifications include region, year, and individual fixed effects, as well as region-specific controls. Child-specific controls include the health status of the parent, the presence of a parent's partner in the household, the partner's health status, the child's marital status, and their number of children. Region-specific controls include the logarithm of the unemployment rate, the share of the population with tertiary education, and GDP growth. */**/*** indicate significance at the 10%, 5%, and 1% levels, respectively. Standard errors (in parentheses) are clustered at the parents' region of residence level (NUTS)

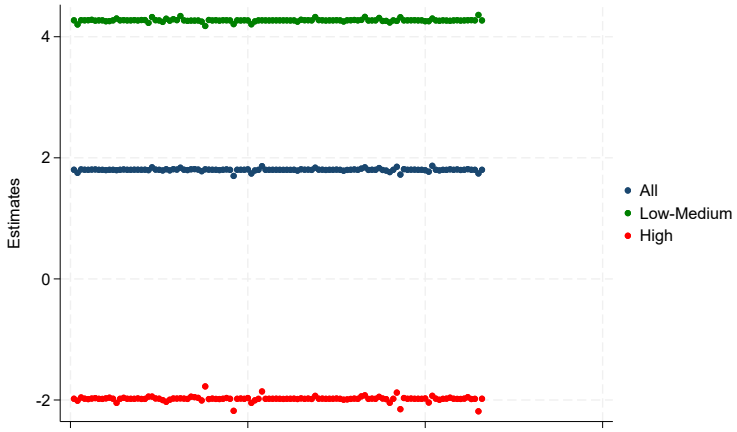
Figure A1: Robustness check: Conley (at least weekly help, daughters) using local to zero for at least weekly help provided by daughters.



(a) All (b) Low-medium (c) High

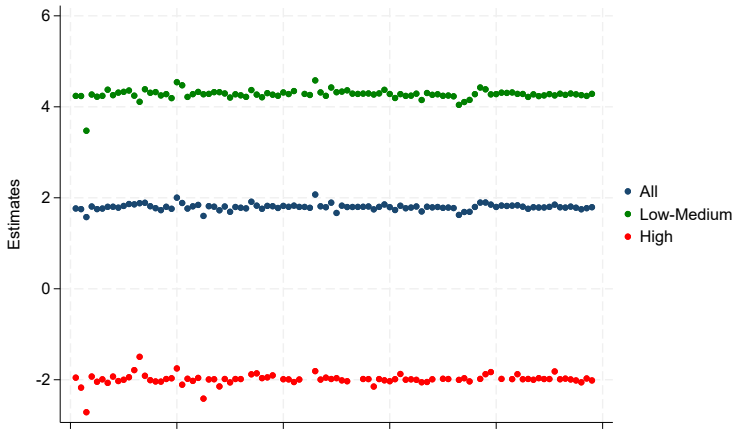
Notes: This figure shows the test for plausible exogeneity of our instrument following Conley et al. (2012) for columns (4) to (6) of Table 2. The parameters are computed using local to zero method. Where $\mu = \alpha\%\beta_{ITT}$ and $\Omega = (\frac{\mu}{3})^2$. One the y axis we plot the coefficients and s.e. while on the x one the corresponding α. The outcome variable is a binary variable taking value 1 if a daughter provides informal care at least once per week. Panel (a) reports results for the whole sample of daughters, Panel (b) for the low-medium educated ones, and Panel (c) for the the high educated ones.

Figure A2: Robustness check: Drop one nationality from instrument (at least weekly help, daughters)



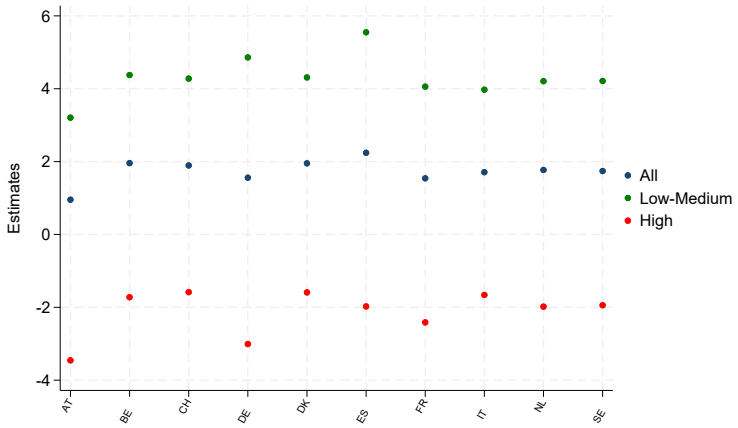
Notes: This Figure reports a robustness test for columns (4) to (6) of Table 2. We test wether any nationality in our instrument is driving the results by dropping one country of origin per time from our instrument. The outcome variable is a binary variable taking value 1 if a daughter provides informal care at least once per week. Blue dots reports results for the whole sample of daughters, green dots for the low-medium educated ones, and red dots for the the high educated ones.

Figure A3: Robustness check: Drop one nuts from analysis (at least weekly help, daughters)



Notes: This Figure reports a robustness test for columns (4) to (6) of Table 2. We test wether any region in our sample is driving the results by dropping one nuts of residence of parents per time from our sample. The outcome variable is a binary variable taking value 1 if a daughter provides informal care at least once per week. Blue dots reports results for the whole sample of daughters, green dots for the low-medium educated ones, and red dots for the the high educated ones.

Figure A4: Robustness check: Drop one country from analysis (at least weekly help, daughters)



Notes: This Figure reports a robustness test for columns (4) to (6) of Table 2. We test wether any country in our sample is driving the results by dropping one country of residence of parents per time from our sample. The outcome variable is a binary variable taking value 1 if a daughter provides informal care at least once per week. Blue dots reports results for the whole sample of daughters, green dots for the low-medium educated ones, and red dots for the the high educated ones.