Effects of Grandmothers' Proximity on Mothers' Labor Force Participation*

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January 7, 2024

Abstract

This paper investigates the causal effects of grandmothers' geographical proximity on labor supply decisions of married women with young children by leveraging a novel data set from Turkey. We deal with the reverse causality and endogeneity problems arising from mothers' and grandmothers' joint location and labor supply decisions by implementing a two-stage least squares estimation method using the number of alive grandmothers as an instrument. We argue that grandmothers' proximity can increase mothers' labor supply through their free and flexible childcare services. On the other hand, geographically close grandmothers can reduce mothers' labor supply by imposing the traditional gender norms prevalent in Turkey or requiring them to take on elderly caregiving duties. The overall effect depends on the relative size of these opposing factors. Our findings suggest that living in the same neighborhood as grandmothers increases the probability of labor force participation and the employment rates of women with young children by 18.2 ppt and 16.4 ppt, respectively. These results are mostly driven by the non-village sample. The 'traditional gender norm' channel explains the insignificant impact of grandmothers' proximity on the labor market outcomes of mothers who have been raised in villages.

JEL Classification: J13, J20, J21

Keywords: Women's Labor Supply, Childcare, Family Proximity

1 Introduction

Female labor force participation has important implications for women and the economies they live in. It improves women's bargaining and decision-power within the household (Anderson and Eswaran, 2009; Majlesi, 2016). It is also an important driver of growth and development (Verick, 2018; Klasen, 2019). Yet, in many countries, such as India, Turkey, Saudi Arabia, and Mexico, female labor force participation rates stay low.

Several factors, such as education level, gender norms, culture, fertility rates, and childcare facilities, affect female labor force participation decisions (Leibowitz and Klerman, 1995; Vuri, 2016; Akyol and Ökten, 2022). In this paper, we investigate the effect of grandmothers' geographical proximity on the labor supply decisions of married women with young children by using the 2016 Turkish Family Structure Survey.

Grandmothers' proximity may affect female labor market participation through three channels. The first channel is the possible help of grandmothers in childcare activities. The literature shows that increased childcare costs hinder women's active participation in the workforce (Heckman, 1974; Blau and Robins, 1988; Klerman and Leibowitz, 1990; Connelly, 1992; Ribar, 1992; Kimmel, 1998). Essentially, the presence of young children in the household increases the reservation wage of women, thereby decreasing their labor supply (Leibowitz and Klerman, 1995).[1] Therefore, the availability of grandparents in a geographically close distance who can provide free and flexible childcare can be a factor that can increase female labor force participation by reducing women's reservation wages. On the other hand, intergenerational transfers may also operate the other way around. Care duties to grandmothers in need of care may discourage women's labor market participation (Ettner, 1996; Kolodinsky and Shirey, 2000; Pagani and Marenzi, 2008; Maurer-Fazio et al., 2011). The third channel we consider is the traditional gender norm channel. Grandmothers living at a close distance can better monitor women's behavior and impose traditional gender roles on women with children. Several studies document the link between women's labor market outcomes and gender norms (Fernández et al., 2004; the survey by Bertrand, 2011; Olivetti et al., 2020). Given the prevailing gender norms against women's employment in Turkey,[2] grandmothers in close geographical proximity might reduce the labor market participation rates of married women with young children. Therefore, the effects of grandmothers' proximity on female

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[1]In addition, after the birth of a first child, women may experience a large drop in their earnings (Kleven et al., 2019).

[2]According to the 2018 World Value Survey, in Turkey, 50% of women and 53% of men state that they agree or strongly agree with the statement that "When a mother works for pay, the children suffer." In addition, according to a survey conducted in a representative sample of adults by the Konda, Research and Consulting company in 2015, 63% of women and 71% of men state that they agree or strongly agree with the statement that "The main responsibility of the woman is to raise children and run a household."

labor market participation depend on the size of these opposing factors.[3]

In Turkey, as of 2019, women's labor force participation was 38.7%, which is below the OECD average of 65% (see Figure A1).[4] According to the 2016 TFSS, 75% of women state that they are not working because they do household chores, elderly care, or child-rearing (see Table A1). Especially the unskilled group of women that constitutes a large share of women in Turkey opts to leave the labor market due to the combination of low market wages and high reservation wages (Dayıoğlu and Kırdar, 2010). Another important determinant of female labor force participation is the presence of a young child, which discourages women from entering the labor market, in part due to the absence of available and/or affordable formal childcare services. A recent report by the World Bank (2015) presents that there is a lack of affordable and quality childcare service providers to satisfy the needs of full-time working parents in Turkey. The most affordable childcare services, such as publicly provided daycare, offer a half-day service that is incompatible with full-time working mothers' needs. Additionally, the lack of childcare centers nearby can lead to exhausting drop-off and pick-up routines, or it may hinder working mothers' ability to respond promptly to unexpected childcare needs. As a result, many women are left with the choice of either caring for their children themselves or relying on free childcare offered by relatives. Therefore, understanding the causal relationship between women's decision to work and grandmothers' proximity, along with the potential mechanisms through which grandmothers' proximity may affect mothers' labor market outcomes, has important policy implications.

Examining the causal relationship between grandmothers' geographical proximity and mothers' labor force participation decisions is empirically challenging, as mothers' labor supply decisions and grandmothers' or mothers' residential choices might be made simultaneously. Besides, unobserved factors can affect both work decisions and residential preferences. In particular, those who have grown up in more traditional families are more likely to stay closer to their mothers or mothers-in-law (Aytaç, 1998; Aykan and Wolf, 2000), and they are less likely to work (Göksel, 2013; Dildar, 2015; Atasoy, 2017). In this paper, we employ the instrumental variable estimation method, utilizing the number of alive grandmothers as an instrument for the grandmothers' geographical proximity, to address the issues of endogeneity and reverse causality associated with the grandmothers' geographical proximity.

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[3]In a similar setting in India, Khanna and Pandey (2021) investigate the role of the co-residing mother-in-law on the daughter-in-law's labor market participation.

[4]There is a vast amount of literature that argues that one of the most important determinants of low female labor force participation in Turkey is education (Tansel, 2002; Başlevent and Onaran, 2003; Dayıoğlu and Kırdar, 2010). In addition, social norms and cultural factors play an important role in the formation of female labor force participation (Uraz et al., 2010; Akyol and Ökten, 2022). Some attempt to identify this by focusing on religiosity/conservatism (Göksel, 2013; Guner and Uysal, 2014; Atasoy, 2017), while others attribute the observed low participation rates in Turkey to the prevailing societal view that predominantly associates women with caregiving and housework. (İlkkaracan, 2012; O'Neil and Bilgin, 2013; Gedikli, 2014; Dildar, 2015).

We first show that the number of alive grandmothers is a strong predictor of having at least one grandmother residing at a close distance.[5] Our results show that living in the same neighborhood or closer to a mother or mother-in-law leads to an 18.2 and 16.4 percentage points (ppt) increase in labor force participation and employment probabilities of married women with young children, respectively. When we define proximity as living in the same town with at least one grandmother, we find a 13.6 ppt and 12.3 ppt increase in the mothers' labor force participation and employment probabilities. Our estimates have slightly decreased, as expected, to 13.2 ppt and 11.9 ppt when we define close geographical proximity as living in the same city. Next, we investigate the causal channels through which proximity affects the labor market outcomes of married women with young children. To check whether grandmothers' childcare provision drives our results, we extend our analysis to include women without young children and men with young children whose decisions of work do not depend on any childcare transfer (İlkkaracan, 2010). We show that for these groups, the estimates are insignificant and relatively small in terms of size. We further show that the proximity of grandfathers, who typically bear less responsibility in childcare activities, is not a determinant of mothers' labor force participation or employment.

Our data allows us to investigate the two other channels that can link grandmothers' proximity and mothers' labor market outcomes, namely the traditional gender norm and the elderly care channels. We investigate the effects of grandmothers' proximity on four traditionality and religiosity variables.[6] Our results suggest that grandmothers' proximity does not have a significant effect on traditionality variables for the total sample.[7] However, the results differ substantially for the sample of women who have grown up in village vs. those in non-village areas. Grandmothers' proximity significantly increases mothers' traditionality and religiosity in the village sample, while the results are small and statistically insignificant for the non-village sample. We also do not find any differential effects of the mother's or mother-in-law's proximity on traditionality and religiosity variables.

We finally investigate whether grandmothers' proximity has any effects on mothers' labor market outcomes through the elderly care channel. Our results do not provide any evidence that the elderly care channel has the potential to affect our main results. These findings suggest that the results for labor market outcomes for the village sample reflect the net effect of childcare and tra-

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[5]'Close distance' refers to a relatively small distance between the location of the mother and the location of at least one grandmother. The term 'Close proximity' has three distinct definitions, each of which implies having a grandmother living within certain distance thresholds: (i) in the same neighborhood/district/village or closer; (ii) in the same town or closer; and (iii) in the same city or closer. If no grandmothers residing nearby or within these defined proximity thresholds, the proximity variable is set to zero.

[6]These variables are 'Having Son Preference,' 'Finding Women's Working Inappropriate,' 'Not Approving Interdenominational Marriage,' and 'Traditionality Index,' which is the first principal component of all the variables used to construct the three traditionality and religiosity variables.

[7]The only exception is the significant positive effect observed for 'Not Approving Interdenominational Marriage.'

ditionality. In our heterogeneity analysis, consistent with this finding, we observe a significant and positive impact of grandmothers' proximity on labor market outcomes for mothers who have grown up in city or town centers (non-village). Conversely, the effects for mothers who have grown up in villages are small and statistically insignificant. In a separate heterogeneity analysis, we divide our sample into conservative and non-conservative groups according to our constructed traditionality index.[8] Our results show that grandmothers' proximity affects labor market outcomes positively and significantly only in the non-conservative group. Further heterogeneity analysis reveals that the results are driven by less educated women whose reservation wage would be more sensitive to the cost of formal childcare. Similarly, the results are much stronger for women who do not own a house, which can indicate low income levels. We also show that the main results are driven by the effect of the mother rather than the mother-in-law. Finally, we check our results' robustness and show that they are not sensitive to different sample specifications.

Our paper, firstly, contributes to the broad literature that investigates the factors affecting female labor force participation, such as social norms, religiosity, culture (Akerlof and Kranton, 2000; Fernandez, 2007; Fernández and Fogli, 2009; Dildar, 2015; Akyol and Ökten, 2022), fertility and motherhood (Angrist and Evans, 1998; Aguero and Marks, 2008; Cristia, 2008; Lundborg et al., 2017 and Kleven et al., 2019), and availability and cost of childcare (Baum, 2002; Berlinski and Galiani, 2007; Tekin, 2007; Fitzpatrick, 2010; Berlinski et al., 2011; Brilli et al., 2016; Morrissey, 2017; Müller and Wrohlich, 2020). We complement this literature by providing evidence that the proximity of the grandmothers can increase women's labor force participation through their childcare provision or impede their labor force participation by imposing prevalent unequal gender norms on women.

This paper also contributes to the literature that investigates the effect of grandparental childcare on maternal labor force participation. The evidence in the literature shows that having grandparents help with childcare encourages mothers to join the labor market (see Posadas and Vidal-Fernández, 2013; Arpino et al., 2014; Bratti et al., 2018; Aparicio-Fenoll and Vidal-Fernandez, 2015; and Zamarro, 2020).[9,10] Dimova and Wolff (2011) show that frequent childcare provided by maternal grandmothers is positively associated with young mothers' employment probability in ten European countries.[11] Aassve et al. (2012) point out that these results may differ according to the intra-household dynamics in the corresponding country. They find that receiving childcare

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[8]Those with a traditionality index above the median are defined as conservative, and the rest are considered as non-conservative.

[9]For a recent review of the literature on the effect of grandparental childcare on labor supply of women, see Zanella (2017).

[10]Battistin et al. (2014) show that delayed retirement induced by pension reforms decreases the number of hours devoted to childcare by grandparents and has a strong negative effect on their offspring's fertility.

[11]These countries are Austria, Germany, the Netherlands, Sweden, Spain, Italy, Denmark, France, Greece, and Switzerland.

help from grandparents has a positive and significant impact on mothers' labor supply decisions in France, Germany, Bulgaria, and Hungary. However, in Georgia, Russia, and the Netherlands, no significant effect of informal childcare on mothers' work decisions is observed.

Our paper is also related to the literature that investigates the effects of family structure on women's labor market outcomes. The literature shows that co-residence with elderly parents has a significant positive effect on married women's labor market outcomes in Japan (Ogawa and Ermisch, 1996; and Sasaki, 2002) and in China (Maurer-Fazio et al., 2011; and Shen et al., 2016). Shen et al. (2016) also show that the positive impacts of this living arrangement are more prominent in urban areas than in rural areas, which is also consistent with our results. Two recent papers examine effects of co-residing grandmothers' deaths on mothers' employment and labor force participation. Khanna and Pandey (2021) find that a mother-in-law's death reduces her daughter-in-law's labor force participation in the Indian context, and Marcos (2023) finds that the deaths of co-residing grandmothers reduce mothers' employment rate in the Mexican context.[12] Conversely, Dhanaraj and Mahambare (2019) examine co-residing family members in rural India and report decreased non-farm employment, attributed mainly to reduced autonomy for women. Our paper emphasizes the importance of considering the relationship between family dynamics, cultural factors, and women's employment choices. It underlines the need to recognize and address the intergenerational relationships that can be impediments or facilitators of women's labor force participation and employment.

Our findings contribute to a better understanding of gender roles, labor market outcomes, and intergenerational family transfers, extending beyond Turkey. They provide insights into challenges and opportunities for women in different cultural contexts where extended family networks play an important caregiving role.

Our paper is most closely related to Compton and Pollak (2014). Compton and Pollak (2014) show that close geographical distance to mothers or mothers-in-law has a positive impact on the labor supply of married women with young children, and the proximity works through the mechanism of childcare in the U.S. To deal with the endogeneity of grandparents' geographical proximity, they consider a sample of military wives, as their husbands' locations are largely determined by the military. Due to data limitations, they do not observe the geographical distance between the respondent and her mother. Instead, they use the information based on whether the mother lives in her birth state as a proxy for distance to the grandmother in their analysis, accounting for endogeneity.

Different from Compton and Pollak (2014), we observe the information on geographical prox-

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[12]Our reduced form results presented in Table A2, where we investigate the effect of the number of alive grandmothers on mothers' labor force participation rate, are consistent with the findings of Khanna and Pandey (2021) and Marcos (2023).

imity more precisely and solve the endogeneity problem for the whole sample, not just a subsample. We also provide further insight into the subject using alternative measures of proximity. As clearly explained by Compton and Pollak (2014), different from regular grandparental childcare, focusing on the effect of proximity will include the insurance aspect of childcare to meet irregular or unanticipated needs. The studies listed above do not consider the insurance aspect of grandparents' availability for childcare. This aspect of proximity can be very important in the Turkish setting, as there is a lack of childcare services to satisfy working mothers' needs. On the other hand, having a grandmother (in-law) within a geographically close distance may negatively affect mothers' labor supply decisions, as prevalent gender norms in Turkey are hostile to women's labor market participation. The existing literature failed to consider the effect of proximity through the traditional gender norm channel, which we carefully examine and show that it is especially relevant for women raised in villages. These findings are informative from a policy perspective, as increasing public-provided childcare in rural settings may not improve female labor market outcomes. Therefore, more carefully designed policies that interact with traditional gender norms are needed.

The organization of the paper is as follows: In the next section, we propose a simple conceptual framework that explains how grandmothers' proximity can affect mothers' labor market outcomes. Section 3 describes the data. We explain the methodology in Section 4 and report the main results in Section 5. Section 6 investigates the mechanisms through which the proximity of grandmothers affects mothers' labor market outcomes. In Section 7, we investigate the heterogeneity of our results, and in Section 8, we implement several robustness checks to verify the validity of our findings. Section 9 concludes the paper.

2   Conceptual Framework

In this section, we consider the relevant conceptual perspectives that depict possible channels through which grandmothers' proximity can affect labor supply decisions of married women with children and review the related empirical literature. Grandmothers' proximity can affect mothers' labor supply decisions through childcare transfers. As Heckman (1974) and Blau and Robins (1988) mention, childcare services can be provided informally, most often by a relative, either unpaid or low-cost in monetary terms. Considering a neoclassical labor supply model, the availability of free/reduced-cost caregiving services would decrease mothers' reservation wages, thereby increasing their labor force participation and employment rates (Cardia and Ng, 2003; Belan et al., 2010; Dimova and Wolff, 2011). Besides, it is plausible that the probability of receiving help with childcare from grandmothers increases as proximity gets closer. Therefore, we expect that the impact of grandmothers' proximity on mothers' labor supply increases as the geographical

distance between mothers and grandmothers gets closer (Garcia-Moran and Kuehn, 2017). In addition, the impact of grandparental proximity on mothers' labor supply is expected to vary across women of different earnings capacities. The free childcare transfer by grandmothers would result in a relatively greater reduction in the reservation wage for mothers with lower earnings capacities. Therefore, if we only consider the childcare transfer channel, we expect to observe a larger effect of grandmothers' proximity on the labor force participation rate of women with lower earning capacities. In our empirical specification, we proxy earning capacity with education level and house ownership and investigate the heterogeneity of our results.

Contrary to the childcare transfer mechanism, which contributes to the increased labor supply of women with children, intergenerational transfers may also operate the other way around. Care duties to older relatives in need may hinder women's labor market participation (Ettner, 1996; Kolodinsky and Shirey, 2000; Pagani and Marenzi, 2008; Maurer-Fazio et al., 2011). Especially in traditional families with strong family ties and gender norms, home production in the form of elderly care or childcare is mainly performed by women (Alesina and Giuliano, 2010).[13] Therefore, we expect upward time transfers to be a constraint for women who have grown up in more traditional family environments. As the proximity between grandmothers and mothers gets closer, this channel is more likely to work in the opposite direction to decrease mothers' labor supply. Therefore, we will also investigate our results for women who have grown up in more traditional areas, which we proxy by whether they were raised in a village or not.[14] We investigate the effects of the elderly care channel on our results by excluding individuals in co-residency from our analysis since, in the literature, informal caregiving to an older person is typically proxied by co-residency (see Pezzin and Schone, 1999).[15]

Apart from intergenerational transfers of time in the form of grandparenting or elder care, geographically close grandmothers can also impose traditional gender norms and reduce women's employment by restricting women's decision-making authority or access to resources, such as education and information (Debnath, 2015; Dhanaraj and Mahambare, 2019; Khanna and Pandey, 2021). We expect this reduction to be more pronounced among women raised in villages, who have a comparative advantage in household production and are exposed to more traditional gender norms. Similarly, as grandmothers' proximity gets closer, it is easier for them to monitor mothers' behaviors. Therefore, the probability of imposing restrictive gender norms may increase as grandmothers' geographical distance gets closer.

Considering these channels, predicting the overall impact of grandmothers' proximity on moth-

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[13]Similar patterns are observed in Turkey. According to the 2016 Research on Family Structure Survey data set, the Ministry of Family, Labor and Social Services (Turkey) reports that daughters-in-law and daughters are the main providers of care to the elderly (27.8% and 23.1%, respectively).

[14]Table A3 shows that among the women raised in villages, traditionality or religiosity is more prevalent.

[15]We cannot analyze the sample of women co-residing with elderly parents as we only have 388 observations.

ers' labor force participation is challenging. Subsidizing a grandparent's time may raise labor supply (Cardia and Ng, 2003). However, if there are strong gender norms against women's employment or an increase in daughters' provision of caregiving to their elderly parents, such a policy may backfire. Therefore, it requires an empirical investigation to understand the direction of the effect.

3   Data

In this paper, we use the 2016 Turkish Family Structure Survey (TFSS), which was conducted by the Turkish Statistical Institute and the Ministry of Family and Social Policies. The TFSS is collected to understand the changes in family structures and lifestyles in Turkey. The survey was conducted between June 1 to September 26, 2016 among 35,475 individuals in 17,239 households. It is representative at the NUTS-1 level and in three major provinces (İstanbul, İzmir, Ankara). The survey consists of Individual and Household questionnaires. The Individual questionnaires cover all individuals over 15 years old who live in a household and contain information on demographics, family structure, labor market outcomes, and a unique identifier that helps us match with their partners, if available. It also consists of questions about the proximity of residence of the mother and the mother-in-law. More specifically, it includes the questions: "What is the proximity of residence of your mother?" and "What is the proximity of residence of your mother-in-law?" The possible answers are: non-existent, dead, same house, same building, same neighborhood/district/village, same city and same town, same city but a different town, different city, abroad. We use these variables to determine whether grandmothers are alive and whether they live close by. Household questionnaires collect data on all the individuals in a household, including children under 15 years old, and contain information about household resources.

In this paper, we investigate the role of grandmothers' geographical distance on mothers' labor market outcomes. Therefore, we restrict our sample to married mothers aged 18–50 who live in a co-habiting union with *at least one child ten years old or younger*.[16,17,18] We exclude single mothers, as our data do not include information on husbands unless they live in the same household. After dropping observations with missing values, the sample consists of 3,542 observations of a relatively homogenous group of women.[19]

We define two labor market outcomes: (1) labor force participation (LFP), a variable taking the value of one if the mother is employed or looking for a job and zero otherwise; and (2) employment,

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[16]In Turkey, primary education includes two four-year levels. Children aged 6 to 9 attend the first level of primary education and attend the second level when they turn 10.

[17]Our results are robust to using 40 or 45 as an age cut-off for mothers.

[18]We show that our results are robust to using different age thresholds for children in Section 8.

[19]The proportion of single mothers is only 6% in the nationally representative sample survey (TFSS, 2016).

which is equal to one if she worked at least an hour during the reference period and zero otherwise. To focus on paid and formal employment in the form of a regular employee, casual employee, employer, or self-employed worker, LFP and employment measures are set to zero if the mother works as an unpaid worker.[20,21,22]

We construct three different variables for the geographical proximity of grandmothers. Each variable is equal to one if at *least one* of the grandmothers lives (i) *in the same neighborhood/village/ district or closer*, (ii) *in the same town or closer*, or (iii) *in the same city or closer, and zero otherwise*.[23] We label the first proximity measure as 'District,' the second one as 'Town,' and the last one as 'City.' Note that the proximity variable 'District' denotes the shortest distance, 'Town' denotes the medium distance, and 'City' denotes the longest distance.

After establishing the effect of proximity on mothers' labor market outcomes, we investigate the three possible channels through which grandmothers' proximity can affect mothers' labor market outcomes that we explained in the previous section. To examine the childcare provision channel, we construct labor force participation and employment variables for fathers with young children (children 10 years old or younger) in the same way we define them for mothers. We also construct grandfathers' proximity in the same way we construct the grandmothers' proximity.

We also construct four different outcome variables to measure levels of traditionality and religiosity: i) Son Preference, ii) Finding Women's Working Inappropriate, iii) Not Approving of Interdenominational Marriages, and iv) Traditionality Index. We use two survey questions to construct the 'Son Preference' variable. The survey respondents are asked whether they totally disagree, disagree, partially agree, agree, or strongly agree with the following statements: "A son makes a mother more respectable." and "Only a son can ensure the continuation of the family bloodline." If the respondent agrees or strongly agrees with any of these statements, the 'Son Pref-

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[20]The effects of grandmothers' proximity on mothers' LFP and employment are not expected to be the same ex-ante for at least two reasons. There might be discrimination against women with children in the labor market and/or having children might have changed mothers' preferences about job characteristics, such as flexibility or close location. Assuming that grandmothers' proximity does not affect the degree of discrimination against women with children and mothers' preferences about job characteristics, grandmothers' proximity is expected to have a smaller impact on mothers' employment rates. Therefore, to get a better sense of the impact of grandmothers' proximity, we consider both supply and demand-side factors by focusing on both labor force participation and the employment status of women as outcome variables.

[21]The results of the analysis are unchanged if unpaid family workers are included in the paid labor force and employment. These results are presented in Table A4.

[22]We also exclude individuals continuing their education or those who are retired or disabled from our analysis.

[23]In the survey we use in the paper, proximity measures are ordered in the following way: i) Same house, ii) Same building, iii) Same neighborhood/district/village, iv) Same city, same town, v) Same city, different town, vi) Different city, and vii) Abroad. The smallest administrative units are neighborhoods, followed by districts and villages. A 'district' refers to a smaller urban administrative unit, similar to neighborhoods within a city. 'Villages' are grouped together within a town, and several villages may be part of the same town. A 'town' refers to a larger administrative unit that encompasses both urban and rural areas. It is generally larger in scale compared to 'district' and may have more developed infrastructure and services. The term 'city' refers to large urban areas or metropolitan centers in Turkey. Cities are higher-level administrative units encompassing multiple neighborhoods, districts, and towns.

erence' variable is coded as one, and zero otherwise.

Our second key variable, 'Finding Women's Working Inappropriate,' is constructed by using the survey question "Do you find women's working appropriate?" If the answer to this question is "No," we code it as one, and zero otherwise.

We also construct a 'Not Approving Interdenominational Marriages' variable by using the survey question that asks respondents whether they totally disagree, disagree, partially agree, agree, or strongly agree with the statement, "People from different religious sects can marry each other." We define it as one if the respondent disagrees or totally disagrees with the statement, and zero otherwise. Finally, we construct an index for conservatism, which is the first principal component of the four variables used for constructing the three traditionality and religiosity variables.

Table 1 reports the summary statistics by the proximity of the grandmothers' residence for each proximity definition. According to Table 1, mothers who live at a geographically close distance to their mothers or mothers-in-law are more likely to have a primary education but less likely to complete tertiary education. We observe a similar pattern in their partners' education. Women who live close to either their mother or mother-in-law have a weaker labor force attachment, tend to have younger children, are less likely to have older children, and have more traditional gender views. These statistics highlight the fact that there is selection in these groups (i.e., residential location choice depends on the observed and unobserved characteristics of mothers). Therefore, we address the endogeneity problem in our empirical strategy using the IV strategy, employing IV estimation method by using the number of alive grandmothers as an instrument for proximity.

In Table A5, we present descriptive statistics by the number of available grandmothers, our instrument. In addition to differences in educational outcomes and the number of children, there is a substantial difference in mothers' average age across the groups. In our estimation, we address this problem by controlling for age fixed effects.

4   The Empirical Methodology

We estimate the impact of grandmothers' proximity on mothers' labor force participation and employment decisions using an instrumental variable approach as the residential choice is endogenous. Grandmothers' choice of residence and mothers' labor supply decisions might affect each other. A woman who is already working may have her mother or mother-in-law relocate nearby to help with childcare and housework, which would lead to a positive bias in a basic linear probability model. On the other hand, family structure and labor force participation are related. In more traditional families, there is a lower probability that women will participate in the labor market and a higher likelihood that they will prefer to stay close to their mothers or mothers-in-law, which will generate a negative bias. Therefore, the overall direction of the bias is ambiguous.

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We examine the impact of grandmothers' proximity using the following model:

$$L_{igr} = \psi + \alpha P_i + \gamma_g + \phi_r + X_{igr}{}'\beta + \varepsilon_{igr}, \tag{1}$$

where L_{igr} is the labor market outcome of the individual i at age g and raised in childhood region r. P_i is a binary variable that takes a value of one if individual i's mother and/or in-law lives close, as defined in the previous section. γ_g is age fixed effects and ϕ_r stands for childhood region (region in which the individual lived longest until the age of 15) fixed effects. X_{igr} is a vector of all other control variables in the model, including education category fixed effects for both spouses, whether the spouse works, the current region fixed effects, type of the childhood settlement fixed effects, whether the self or the spouse has a chronic illness, presence of preschoolers in the household, presence of an older child, and the number of children aged 10 years or younger.[24] The coefficient α captures the effect of the grandmother's proximity on the mother's labor market outcome, and ε_{igr} represents the error term.

In our analysis, we use the number of grandmothers alive as an instrument for grandparents' proximity. To account for any dependence at the regional level, we cluster standard errors at the region of childhood residence (NUTS-2, 26 Regions) by age level.[25]

Education is defined as four dummy variables representing primary education, secondary education, tertiary education, and a baseline category that corresponds to primary school or less.[26] The husband's income and employment status tend to be correlated with labor supply decisions of married women through assortative mating or the income effect. The rising income of the spouse might generate an income effect and motivate household members to withdraw from the labor market; therefore, we include the husband's educational attainment level as a proxy for his income (Maurer-Fazio et al., 2011).

Older women tend to have deceased parents and a weak labor force attachment because of severe health diseases. If the woman's age is not controlled properly, our instrument may not satisfy the exclusion restriction assumption. Therefore, we include women's age fixed effects as controls in our estimation. Similarly, by using a set of dummy variables for women's childhood region

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[24]Our main results are robust to controlling for age at first marriage, age of the youngest child in the family, or close proximity to a sister or a sister-in-law.

[25]Furthermore, we cluster standard errors at the current region (NUTS-1 level) by age level as an alternative specification of the model and present results in Table A6, which are very similar to our baseline results. As an additional robustness exercise, we cluster standard errors at both the regional level (26 clusters) and age level (33 clusters) and present wild bootstrap cluster p-values in Table A7.

[26]Primary education refers to the completion of junior high school, vocational junior high school, or primary education. The secondary education dummy indicates whether the individual completed high school, vocational or technical high school. Tertiary education is a dummy variable capturing whether the individual completed at least two years of higher education.

(NUTS-2 level) and type of childhood settlement (province center, town center, or village), we aim to capture differences in family structure and attitudes towards women's employment across regions. In order to control for the differences in labor market opportunities and availability of childcare providers, dummy variables for the region of residence (NUTS-1 level) are included in the analysis.[27]

There is also a possibility that grandmothers may live close to offer care to their daughters or sons experiencing health issues. To take this channel into account, we use a dummy variable indicating whether the woman or her spouse has a chronic illness. Finally, we include an indicator variable for the presence of a child aged 15 and above in the household who might share the burden of childcare duties and two additional variables measuring childcare cost (e.g., the number of children ten years old or below, and whether the youngest one is under 6). We further discuss the validity of our instrument and the robustness of our results when there is a relaxation of the exclusion restriction in Section 8.

In our analysis, IV estimates capture the local average treatment effect (LATE) for women whose proximity to grandparents depends on the existence of grandmothers (compliers), while the OLS estimates capture the association between short-distance grandparents and the labor market outcomes of mothers. Living close to the mother or mother-in-law is a joint decision of the mothers and grandmothers. Therefore, it is hard to expect that the proximity to the grandmothers, the treatment variable, is randomly assigned. First, mothers with higher socioeconomic status might have preferences that lead them to prefer living further away from their mothers or in-laws, and they may never use grandparental childcare (never takers). Second, compliers are mothers who live close to a grandmother when the grandmother is alive and do not live close to her if the grandparent is not alive. Always takers and defiers do not exist in our setting. Therefore, LATE equals the average treatment effect on the treated (ATT). Another important comparison we have to make is between the LATE and the average treatment effect (ATE) for the population. However, this requires us to understand how compliers' characteristics differ from the characteristics of the overall population. In the next subsection, we first present the characteristics of compliers and the overall population. Then, we discuss the relationship between LATE and ATE.

4.1 Characteristics of Compliers

In this subsection, we examine whether the instrumental variable results can be generalized to the population by comparing the observable characteristics of compliers to the overall sample. Table A8 presents the mean and variance of the covariates for the compliers, never-takers, and whole

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[27]The information on the current region of residence is only available at the NUTS-1 level.

sample for each specification of the proximity variable.[28,29] Table A8 shows that the estimated share of compliers is about 37%, whereas never-takers account for 63% of the sample if the proximity variable is defined as living in the same district or closer. Compared to the overall sample, the compliers are less likely to have a college education and more likely to have no schooling. Similarly, their partners are less educated. The complier group of women is more likely to have been raised in a village and adhere to traditional gender roles compared to the overall sample.

We also aim to examine whether the complier group mainly consists of women who have decided to live where they were born or where their partners were born. Table A8 presents the descriptive statistics of two variables, 'woman/husband lives in the childhood region,' where the variables take the value of one if the woman/husband lives in the same childhood region, and zero otherwise. However, we have to note that although we have the information on the current name of the province where the woman/husband lived longest until the age of 15, we observe their current region of residence at the NUTS-1 level unless they live in three major provinces, İstanbul, Ankara, and İzmir.[30] The table shows that among compliers, almost 81.3% of women currently live in the NUTS-1 region where they lived longest until age 15. The average values presented here are interpreted as upper bound values since the respondent is considered not to have moved even if she switched to another city located within the same NUTS-1 region. Regarding their husbands' hometown, the sample mean is highest for women in the complier group.

Overall, mothers in the complier group are less educated, have less educated husbands, are more likely to have traditional gender views, and are more likely to live either in their home region or their husbands' home region. In addition, the share of women who moved to different regions from their parents or parents-in-law is higher in never-takers than in the complier group, implying that demand for grandparental support is lower among household movers.[31] These patterns, considering the channels through which proximity can affect mothers' labor supply, make it hard to compare the LATE and the average treatment effect (ATE). As the compliers group consists of

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[28]We use the ivdesc package in STATA by Marbach and Hangartner (2020) to estimate the statistics.

[29]The method assumes that both the treatment variable and the instrument are binary. Therefore, we split the instrument indicator into two groups: women whose mother or mother-in-law is alive and those with neither of them available.

[30]Turkey has 12 NUTS-1 regions, 24 NUTS-2 subregions, and 81 NUTS-3 provinces. The NUTS-1 regions are İstanbul Region (TR1), West Marmara Region (TR2), Aegean Region (TR3), East Marmara Region (TR4), West Anatolia Region (TR5), Mediterranean Region (TR6), Central Anatolia Region (TR7), West Black Sea Region (TR8), East Black Sea Region (TR9), Northeast Anatolia Region (TRA), Central East Anatolia Region (TRB), and Southeast Anatolia Region (TRC).

[31]As an additional analysis to characterize the compliers, we divide the sample into different groups with respect to the basic characteristics and estimate our first-stage regression specification. Table A9 presents these results. Each panel of Table A9 presents the coefficients of the instrument in each subgroup for each proximity measure, a binary indicator taking a value of one for mothers and grandmothers living in the same district, town, or city, respectively. These patterns show that the LATE is based on less educated women with less educated husbands who hold traditional gender views and reside in their or their husband's home region.

women of low socioeconomic status, their reservation wage would be more sensitive to the cost of formal childcare, making them benefit more from free childcare. On the other hand, women in the compliers group are more likely to grow up in villages and be exposed to traditional gender attitudes, which may reduce their labor supply. Similarly, they are more likely to live in home regions, which may increase demand for their elderly care services, which is anticipated to decrease their labor supply further. Therefore, only if the childcare channel dominates traditional gender norms and elderly care channels, LATE would be larger than ATE.

In the next section, we present our main results.

5 Results

5.1 Main Results

We estimate equation (1) separately for each definition of proximity variable, 'District,' 'Town,' and 'City,' and present the results in Table 2. In columns (1) and (3), we present ordinary least squares estimation results where the outcome variables are labor force participation and employment, respectively. These results show that when proximity is defined as 'City,' the longest distance definition, there is a positive and marginally significant association between proximity and the labor force participation rate and employment of married women with young children, and the size is around 2–3 ppt. However, the size of the association gets smaller and insignificant as the proximity variable indicates a shorter distance.

As we mentioned earlier, OLS results may be biased due to endogeneity and reverse causality problems; therefore, these estimates may not provide any causal relationship. In order to get the causal effect of grandmothers' geographical proximity on the mother's labor market outcome, we use the number of alive grandmothers, 0, 1, or 2, as an instrument for their geographical proximity. In Table 3, we present the first-stage results. As Table 3 shows, the number of alive grandmothers is a strong predictor of grandparents' proximity for each of its definitions. F-statistics are far larger than the acceptable threshold of ten (Staiger and Stock, 1997), which assures us that our instrument is strongly correlated with the endogenous variable, grandmothers' geographical proximity. While our first-stage F-statistic exceeds the threshold recommended by Staiger and Stock (1997), recent work by Lee et al. (2022) and Keane and Neal (2023) suggests that caution should be exercised when interpreting the significance and inference of the endogenous variable. Specifically, Lee et al. (2022) recommend a first-stage F-statistic threshold of 104.7. To address this concern, we conduct additional checks on the sensitivity of the second-stage results using the Anderson-Rubin (AR) test (Keane and Neal, 2023) and the tF-procedure described in Lee et al. (2022). These tests are conducted in a just-identified setting with one endogenous regressor.

We present the IV results in the second and fourth columns of Table 2.[32] These results suggest that grandmothers' proximity has a positive and significant causal impact on mothers' labor market outcomes. It increases the labor force participation and employment rates of mothers with young children by 18.2 ppt and 16.4 ppt, respectively, if the mother or in-law resides in the same neighborhood/district/village or closer. The effect diminishes as the distance from grandmothers increases. Our estimates are statistically significant even in the presence of weak instruments.[33]

According to these results, OLS estimates seem to underestimate the impact of grandmothers' geographical proximity on women's labor force participation and employment. As presented in Table A8, compliers are more likely to have grown up in a village and adhere to more traditional gender roles than women in the whole sample. Table 1 reports that, for all proximity measures, women living close to grandmothers are less likely to be in the labor force or employed. This is consistent with the fact that the most dominant family type in Turkey is the traditional family structure, where women are less likely to work but prefer staying close to their mothers or in-laws. Therefore, the direction of the bias in the OLS estimates is as expected.

We also present the reduced-form effect of the number of alive grandmothers on the labor force participation and employment probabilities of women with young children in Table A2. These estimates imply that women whose mother or in-law is alive are around 3 ppt more likely to participate in the labor market and be employed. The estimate increases to 6 ppt if both of the grandmothers are alive. These results are slightly lower than the findings of Khanna and Pandey (2021) and Marcos (2023) who focus on co-residing mothers and grandmothers. Here, as our focus is on all mothers and grandmothers, a smaller effect is expected.[34]

We also investigate whether proximity to own mother or mother-in-law have similar effects on mothers' labor market outcomes. Table A12 presents these results. In the first two columns, we present the results regarding the effects of own mothers' proximity, and in the third and fourth columns, we present the results regarding the effects of mothers-in-law's proximity on labor market outcomes of women with young children. We find a relatively strong effect for the group of mothers living close to their own mothers. This might be because mothers are more likely to receive childcare transfers from their mothers than from mothers-in-law, or their own mothers might be less likely to impose restrictive norms.

We primarily focus on maternal labor market outcomes; grandparents also play varied roles in

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[32]In Tables A10 and A11, we present the coefficients of other control variables for labor force participation and employment, respectively.

[33]For all the single-instrument IV models estimated in the paper with significant coefficients, we present the 95% and 90% tF confidence intervals unless the first-stage F-statistic reaches around 104.7. We also report AR confidence intervals, independent of the size of the first-stage F-statistic. The same is true of the other IV results presented in the paper.

[34]We cannot analyze the sample of co-residing mothers or mothers-in-law as they constitute only 10% of our sample.

their grandchildren's lives. When children are raised by their grandmothers, it exerts discernible influences on children's psychological and physical well-being. They might shape children's dietary health and eating behaviors or promote a safe environment. Besides, children raised by grandmothers might exhibit a specific pattern of behavioral challenges, including anxiety, depression, and social challenges.[35] Before proceeding to the heterogeneity of our results, we investigate the effect of grandmothers' proximity on the general health status of children. The data set we use in this paper (TFSS) includes a question that extracts information about the general health status of all children in the household. The possible answers include very good, good, neither good nor bad, bad, and very bad. We define the dependent variable as the general health status of the youngest child in the household that is equal to one if his/her health status is, in general, very good.[36] We use our main regression specification to examine the effects of grandmothers' proximity on the general health of the youngest and oldest child in the household. Table A13 shows that the impact of grandparents' proximity on the general health status of either the youngest or oldest children is insignificant and very close to zero. Therefore, grandmothers' proximity does not seem to have any effect on the health of children.

5.2 Is it the Grandmothers' Proximity or Availability?

In the previous section, we show that grandmothers' proximity improves labor market outcomes of women with young children. However, one may argue that our results capture the grandmothers' availability rather than proximity. We check this hypothesis by computing sample-split estimates.[37] We construct three different samples. In the first sample, we only keep individuals whose mothers and/or mothers-in-law are living in the same district or a different city. In the second sample, we keep individuals whose mothers and/or mothers-in-law are living in the same town or different city (i.e., we dropped individuals living in the same district and same city with their mother or mothers-in-law). Finally, in the third sample, we keep individuals whose mothers and/or mothers-in-law are living in the same city or a different city. We illustrate which groups are included in each sample in the following table.

Our proximity variable equals one if the mother or mother-in-law live in the same district (town, city), and zero otherwise. In each case, our control group is the same, those living in different cities than their mother and/or mother-in-law. The results for these samples are presented in different panels of Table A14. The first panel shows that those women who live in the same district as their mothers and/or mothers-in-law, compared to those living in a different city, are significantly more

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[35]See Pulgaron et al. (2016) and Sadruddin et al. (2019) for a discussion of grandparents' health effects on their grandchildren.

[36]As 96% of children are reported to have good or very good health, we chose to define the dependent variable as having very good health.

[37]We would like to thank an anonymous referee for suggesting this analysis.

	Treatment Group			Control Group
	Same District	Same Town	Same City	Another City
Sample 1	X			X
Sample 2		X		X
Sample 3			X	X

likely to be in the labor force or employed. On the other hand, for the women whose mothers or mothers-in-law live in the same town but in a different district (same city but different town), the coefficients are insignificant and relatively small. If grandmothers being available (i.e., alive) or not available (i.e., not alive) drive our results, rather than their proximity, we would observe coefficients in the same magnitude across different samples. Therefore, we argue that proximity to grandmothers drives our results.

6 Mechanisms

We show that the proximity of grandmothers has a positive causal effect on mothers' labor market outcomes. In this section, we investigate how three different mechanisms –childcare provision, traditional gender norms, and elderly care channels– which we discuss in the Conceptual Framework section, contribute to these results.

6.1 Childcare Provision Channel

We argue that the most important channel that links proximity and mothers' labor market outcomes is the grandmothers' free and flexible childcare provision. First, we examine whether the childcare provision channel drives our results by restricting our sample to married mothers with children older than ten and married women without any children. If grandmothers' proximity affects mothers' labor market outcomes through their childcare provision, the effect in this sample should be small or non-existent as the women's labor market participation decision in this sample does not depend on the availability of childcare. In the first two columns of Table 4 and Table 5, we present OLS and IV results where we use the number of grandmothers alive as an instrument for the grandmothers' proximity. Although the coefficients are positive when the proximity of grandmothers is instrumented, they are insignificant and much smaller relative to our main results in Table 2.

We then investigate if our findings are driven by the childcare channel by repeating the same analysis with the sample of fathers with children ten years old or younger. Men are less likely to be involved in household or childcare activities in societies where the patriarchal structure dom-

inates (as in Turkey). Thus, we expect that grandmothers' proximity would have either no effect or a smaller effect on fathers' labor force participation and employment probabilities. The OLS and IV results are presented in the third and fourth columns of Table 4 and Table 5 for labor force participation and employment, respectively. Our IV results confirm that grandmothers' geographical proximity does not affect either fathers' labor supply or employment probabilities. We also perform a reduced-form estimation for each of these samples (i.e., we estimate the direct effect of the number of grandmothers alive on the labor market outcomes of women without young children and fathers with young children). We present the results in Table A15. These results show that the impact of the number of alive grandmothers on labor market outcomes is negligible and statistically insignificant for these samples.

Grandfathers are less engaged in childcare activities than grandmothers (Hank and Buber, 2009); therefore, we expect very little or no impact of grandfathers' proximity on the labor market outcomes of mothers with young children. In the fifth and sixth columns of Tables 4 and 5, we focus on our main sample, mothers with young children, but use grandfathers' proximity as an endogenous variable and the number of alive grandfathers as an instrument. Our IV results indicate that grandfathers' childcare transfers do not significantly affect daughters' labor market outcomes.[38] For this sample, we also perform a reduced-form estimation to examine the direct impact of the number of alive grandfathers on the labor market outcomes of mothers with young children. The last two columns of Table A15 present these results, showing that the number of alive grandfathers has literally no effect (the coefficients are around 0.009) on the labor market outcomes in this sample.

Finally, we define an additional outcome variable that is equal to one if a woman reports housework and childcare as the primary reason for not working, and zero for those in the labor force, seasonal workers, or those reporting that their reason for not working is something other than childcare and household chores. Almost 85% of married women with young children in the TFSS data set state that they are out of the labor market because they engage in housework activities. Therefore, we conduct the same analysis using this new variable to see if the reasons for not working change with the proximity of grandmothers for each group of women *with* and *without* young children in Table A16. The IV results presented in Table A16 show that for the sample of women with young children, the proximity of grandmothers decreases their probability of stating childcare as a reason for not working. The coefficients are negative for women without young children but are much smaller and insignificant. These falsification checks support our hypothesis that childcare availability links grandmothers' geographical proximity and mothers' labor market outcomes.

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[38]In our sample, 29% of grandfathers live in the same district, 56% live in the same town, and 69% live in the same city as their daughters (in-law). The correlation between the grandmothers' and grandfathers' proximity is 75% *(p<.001)* for the shortest proximity definition, and 71% *(p<.001)* and 68% *(p<.001)* for the medium and longest proximity definitions.

6.2 Traditional Gender Norms Channel

In this section, we examine the effects of grandmothers' proximity on mothers' traditionality and religiosity to understand whether it has any effects on our main results. We use four variables defined in the Data section. Namely, we use 'Having Son Preference,' 'Finding Women's Working Inappropriate,' 'Not Approving Interdenominational Marriage,' and 'Traditionality Index.' The 'Traditionality Index' is constructed using all the variables employed in the creation of the traditionality and religiosity measures.[39]

In Table 6, we present the effects of grandmothers' proximity on these four variables for the total sample as well as for the sample of women who have grown up in villages and non-villages (city or town centers). We also report the p-values adjusted for multiple hypothesis testing using Simes (1986). The results for the total sample show that grandmothers' proximity does have a significant effect on traditionality variables except 'Not Approving Interdenominational Marriage.'

Table A3 shows that women in our sample who grew up in village areas are more likely to hold traditional gender views compared to women raised in non-village areas. Therefore, we divide our sample according to the type of childhood region settlement to investigate heterogeneity in different samples. The results presented in columns (2) and (3) of Table 6 show that grandmothers' proximity increases the probability of having son preference, finding women's working inappropriate,[40] not approving interdenominational marriages, and the traditionality index for the sample of women who have grown up in villages. However, for the women who have been raised in city or town centers, the estimated coefficients are small and insignificant. Overall, the results presented in Table 6 show evidence that 'the traditional gender view channel' is an important factor for the women raised in villages. Therefore, we expect that the results for the labor outcomes of women who have grown up in a city or district would reflect grandmothers' childcare provision, while the results for the village subsample will be the net effect of the childcare provision and traditional gender norms channel that are going in the opposite directions.

We also investigate the differential effects of grandmothers' proximity on traditionality variables in the subsample of mothers with a child aged 0 to 5 (i.e., a preschool-age child) and those with a school-age child aged 6 to 10. The gender norm cost associated with working mothers of children aged 0 to 5 might be higher, as prevalent gender norms support the view that women's primary responsibility is childcare and household chores. In other words, working while having a child who needs extensive childcare might be less accepted culturally. We present these results in Table 7. The evidence shows that grandmothers' proximity significantly affects mothers' tradi-

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[39]The minimum value of the traditionality index is 0, and the maximum value is 1.92.
[40]The p-value of the test for significance of each proximity variable is 0.13.

tional gender views for mothers with children 5 years old or younger.[41] However, for the mothers with children aged 6 to 10, the coefficients are on the opposite sign. Therefore, for mothers with a child aged 0 to 5, we expect the traditional gender view channel to work in the opposite direction to reduce the effects of grandmothers' childcare provision. In Table 7, we also repeat the same exercise according to mothers' education level and house ownership status.[42] The results for different education levels do not provide any significant and consistent pattern.[43] Similarly, the estimates according to house ownership do not provide any significant results.

Finally, we investigate whether the proximity to mothers and mothers-in-law differentially affects women's own perceptions of traditionality and religiosity. We present the results in Table A18. In the first two panels, we observe that the proximity of mothers and mothers-in-law exhibits opposite signs, but no consistent pattern emerges for either group.[44] Therefore, we shift our focus to the overall traditionality index, which represents the first principal component of the following variables: 'Having Son Preference,' 'Finding Women's Working Inappropriate,' and 'Not Approving Interdenominational Marriage.' Based on estimates for the traditionality index, we find that coefficients for both mothers and mothers-in-law are statistically insignificant and exhibit similarity. Therefore, we conclude that the differential effects we observe concerning the proximity of mothers and mothers-in-law on labor market outcomes of mothers are not driven by their differential impacts on perceptions of traditionality.

6.3   Elderly Care Channel

In this section, we investigate whether the proximity of grandmothers affects mothers' labor market outcomes through the elderly care channel. To examine this channel, we focus on the subsample of mothers who do not co-reside with an elderly individual. We make this choice as intergenerational co-residence is an important determinant of elderly caregiving (Pezzin and Schone, 1999), and co-residence with an elder care recipient reflects increasing care demands (Heitmueller, 2007). Aytaç (1998) and Aykan and Wolf (2000) show that in Turkey, co-residence primarily reflects the traditional caregiving pattern for elderly parents. Consequently, we exclude individuals in co-residency from our analysis to understand its effects on our results. The results

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[41]As an additional check, we also run our analysis in a pooled sample, incorporating an interaction term between the availability of children aged 0–5 and the proximity variable, along with baseline control variables. Our results show that the coefficient of the interaction term is statistically significant (see Table A17).

[42]Estimates of the proximity variable, when defined as living in the same district or closer, are not reported for the group of mothers who have at least college degrees, as F-statistics are small.

[43]Although, the estimated coefficients are positive for the traditionality index for at least college-educated women, the estimates on 'Finding Women's Working Inappropriate' are negative. Therefore, these results do not provide any consistent evidence.

[44]The only exception is the significant positive effect we observe for 'Not Approving Interdenominational Marriage.'

in Table A19 show that the coefficients increased slightly for the shortest proximity definition, and the results for other proximity definitions are consistent with baseline estimates, which shows that the possible effects of elderly care on our estimates are negligible.

In Online Appendix B, we also investigate the differential effect of proximity by the availability of a sister or sister-in-law. Our motivation stems from the observation that daughters-in-law and daughters are the main providers of care to older people. Therefore, we argue that if the elderly care channel is an important factor that can decrease women's labor market participation, the availability of a sister or sister-in-law might decrease the burden of elderly care so that it may augment the effects of the proximity of grandmothers. On the other hand, if the childcare channel is important, grandmothers may prioritize their daughters, which may decrease the effects of the proximity of grandmothers. We find that women with at least one sister-in-law are less likely to experience labor market advantages stemming from the mother-in-law's proximity. If the mother-in-law's proximity affects mothers' labor supply through the elderly care channel, women with at least one sister-in-law would share the burden of elderly care and provide fewer hours of care, which would increase the labor supply of women. Therefore, these results do not provide evidence that the proximity of grandmothers' affects daughters' LFP through the elderly care channel.

Overall, our results on mechanisms show that the elderly care channel does not have the potential to have a significant impact on our results. However, the traditional gender norm channel might be important, especially for women who have been raised in village areas. In the next section, we investigate the heterogeneity of the main results by considering our results in this section.

7 Heterogeneity of Results

Having established the causal relationship between grandmothers' geographical proximity and mothers' labor market outcomes, we would like to investigate the heterogeneity of our results. We first divide our sample according to the type of childhood region, village or non-village. We expect to find that women who grew up in village areas differ from those who grew up in city or town centers in terms of background characteristics, such as their mother's working status or the culture they were exposed to during their childhood. Table 8 shows that proximity to mothers or mothers-in-law has a positive impact on the labor force participation and employment of married women with young children who have grown up in a city or town center.[45] However, the effect is considerably smaller and insignificant for those who have grown up in a village. We attribute this difference to the variation in traditional gender norms mothers have been exposed to if their mothers or mothers-in-law live in close proximity (see Table 6).

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[45]The p-value of the test for significance of the proximity variable 'District' is 0.11 for the outcome variable 'Employment.' The p-values are 0.12 for other definitions of the proximity variable.

Second, we divide our sample into two categories by the presence and age of the youngest child in the household: mothers with a child aged 0 to 5 (i.e., a preschool-aged child) and those with a school-age child, aged 6 to 10. One may expect to find that the childcare impact declines as the child ages; on the other hand, the gender norm cost associated with working for mothers of children aged 0 to 5 might be higher.[46] The results presented in Table 8 show that the effect of grandmothers' availability on the labor supply and employment of mothers with children aged 0 to 5 is smaller in size relative to mothers with older children. This might be because school-age children need less intensive childcare, which increases the likelihood of getting grandmothers' help. In addition, as our evidence shows in the previous section (see Table 7), for the mothers of children aged 6 to 10, it might be more acceptable to work.[47]

Third, we investigate the impact of grandmothers' proximity according to the educational attainment of mothers. We divide our sample into two groups: mothers who have (at most) secondary education degrees and those who have at least a college degree. In the previous section, we could not find differential effects of grandmothers' proximity on mothers' traditionality measures by education levels. However, as discussed in Section 2, if grandmothers' proximity only affects mothers' labor market outcomes through the childcare transfer, we expect the childcare channel to be stronger for women with lower education levels as free childcare would result in a greater percentage increase in the reservation wage.[48] Therefore, considering these two channels, we expect to find a larger effect for women with lower education. As we expected, Table 8 shows that the effect of grandmothers' proximity on labor force participation is pronounced only for women with, at most, secondary education degrees.

We also report the estimated effects of grandmothers' geographical proximity for two different groups, categorized based on the ownership status of the residences where families reside. The first category pertains to individuals who are the 'owner' of the residence, and the second group consists of tenants, lodgers, or those living in lodging, or those who are not the owner of the house but also not paying rent. We see that the effect of proximity is smaller in magnitude and not significant for mothers residing in their own homes, unlike the second category of women who are probably in a lower income group or feel less constrained about switching their residences and prefer to stay close to their mothers or in-laws.

Finally, we check the heterogeneity of the results according to women's traditionality index. We define women with a traditionality index above the median as 'conservative,' and women with

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[46]Reflecting these views, in 2015, the Minister of Health at the time was quoted saying that "Mothers should not put any career other than motherhood at the center of their career." (Akyol and Ökten, 2022).

[47]In the sample of mothers with children aged 0–5, the p-value of the test for significance of the proximity variable is 0.10 in the fourth column. In the sample of mothers with children aged 6 to 10, it is 0.11 when proximity is defined as the same city or closer, and p-values are 0.12 for other proximity measures in the second column.

[48]In Turkey, less educated women work under unfavorable conditions (Uraz et al., 2010).

a traditionality index equal to or below the median as 'non-conservative.' The results presented in Table 8 show that the estimates are larger and significant for the sample of non-conservative women. These results highlight the importance of traditional gender norms.

We also repeat our heterogeneity analysis using the total sample instead of focusing on different samples by running a regression on the interaction of the group dummy and proximity variable. We present these results in Table A20. Although the estimates of the interaction terms are less precisely estimated, they are large and in line with the results, as we presented in this section.

8   Robustness Checks

In this section, we present several analyses to test the robustness of our results.

8.1   Violation of the Exclusion Restriction

As our paper's main results hinge on the instrument's validity, we test the robustness of our results to violations of the exclusion restriction assumption by using the imperfect instrumental variable (IIV) method proposed by Nevo and Rosen (2012) and the plausible exogeneity test by Conley et al. (2012). We present the details of the implementation of these methods in Online Appendix B. By using the IIV method by Nevo and Rosen (2012), we show that, for all proximity definitions, the IV estimates are located in the confidence intervals generated under the assumption that the instrument is less correlated with the error term than the original endogenous variable. Therefore, our results are robust to violations of the exclusion restriction.

We also apply the plausibly exogenous technique by Conley et al. (2012) to show how large a potential direct effect of the instrument can be to turn the 2SLS estimate of labor force participation and employment outcomes insignificant. We find that our results on labor market outcomes are significant as long as some omitted variable, which is also captured by the number of alive grandmothers, explains less than a quarter of the overall reduced form effect, which we argue is a large enough direct effect to ensure the robustness of our main results.

8.2   Violation of the Exogeneity Assumption

In our main analysis, we use the number of alive grandmothers as an instrument for the proximity of grandmothers while examining the labor market outcomes of mothers. However, if the labor market outcomes of mothers have any effect on the later deaths of grandmothers, our instrument would violate the exogeneity assumption. In this subsection, we utilize an alternative dataset, specifically the Turkish Income and Living Conditions Survey Micro data set (SILC), spanning the

years 2012–2015, 2013–2016, 2014–2017, and 2015–2018, to investigate whether female labor force participation (FLFP) relates to the subsequent deaths of grandmothers.

The SILC dataset comprises four separate sets of data, including observations spanning two, three, and four years to assess individuals' living standards. This dataset includes information from various sources: i) Household register form, ii) Personal register form, iii) Household and personal follow-up form, iv) Household questionnaire, and v) Personal questionnaire.

Specifically, we construct a dataset within SILC, focusing on married women aged 18–50 who reside with either their mothers or mothers-in-law and have at least one child aged 0–10, as we only observe information about the respondent's mother or mother-in-law if they share the same household. After excluding observations with missing values for the variables used in our analysis, the sample size is reduced to 3,558 respondents.

To assess the relationship between FLFP and the subsequent deaths of grandmothers, we create two indicator variables: i) whether the respondent is currently active in the labor market, and ii) whether her co-residing mother or mother-in-law passes away in the following year.

We then employ a simple Ordinary Least Squares (OLS) regression, controlling for various factors, including age fixed effects, education categories for both spouses (primary education, secondary education, tertiary education, and less than primary education as the baseline category), the employment status of the spouse, and the presence of a chronic illness in either the respondent or her spouse.[49] We also cluster the standard errors at age level to account for potential correlations within age groups.

The results of our analysis are presented in Table A21, and they indicate no observed relationship between current labor force participation and the subsequent death of grandmothers. It is also important to note that the coefficient presented in Table A21 should be interpreted as an upper bound. This is because our analysis focuses on instances where the mother or mother-in-law passed away in the year following the observation, rather than considering the previous years when they were still alive.

8.3 Placebo Exercise

In this subsection, we conduct a placebo exercise, following Alsan (2015), to explore the differential effect of grandmothers' availability on subgroups of women with at least a college degree. This choice is motivated by the anticipation that better-educated couples tend to live farther from their parents due to greater variability in earning opportunities and the ability to be selective in job choices, leading to exploration across broader geographical regions (Chan and Ermisch, 2015; and Amior, 2019). Additionally, if adult children with a college education achieve greater success

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[49]The information on the region of residence, type of childhood settlement, or childhood region (NUTS-2 level) is not available.

in terms of employment and earnings, time transfers from mothers may be less crucial to them (Compton and Pollak, 2015). Therefore, we argue that the availability of grandmothers is less likely to affect the labor market outcomes of mothers with at least a college education through geographical proximity. As a result, the differential effects of the instrument on the labor market outcomes of women with at least a college education capture other potential channels that the instrument may affect, if they exist. We use our original sample and regress labor market outcomes on our instrument –the number of grandmothers alive– and its interaction with a dummy variable indicating less than college-educated mothers. We also include the interaction of this dummy with the covariates in our baseline model. Results are presented in Table A22. The first column shows the effect of the instrument on labor market outcomes for at least college-educated mothers. The estimate is both insignificant and has a negative sign. The second column of Table A22 represents the differential effect of the instrument on mothers with less than a college education. Finally, the third column presents the overall effect of the instrument on less-than-college-educated mothers, revealing a significant and positive effect. Overall, these results provide evidence that our instrument does not affect mothers' labor market outcomes through a channel other than proximity.

8.4 Alternative Specifications and Samples

In this section, we present additional analysis to check the robustness of our results to alternative specifications and samples. First, we check the robustness of our results by dropping the potentially endogenous variables from our analysis. Particularly, we drop the following variables: i) whether there is at least one child aged 0 to 5, ii) whether there is an older sibling, and iii) the number of young children in the household. We present the results in Table A23. While the coefficients are slightly smaller in magnitude, our results are robust to the exclusion of the potentially endogenous variables listed above.

Second, we changed our estimation sample by focusing on mothers with children aged 0 to 9 and 0 to 11 to show that our results are robust to the age cutoff. As Table A24 shows, the effect of proximity is positive and significant across different cut-off age levels.[50],[51]

One may argue that the reason why mothers are staying out of the labor market might be their poor health conditions. In that case, they may prefer to stay close to their grandmothers to share the burden of housework or childcare activities, leading to a downward bias in our IV estimates. Therefore, we restrict our sample to mothers without chronic illnesses. Table A24 shows that, as expected, the coefficients increase slightly relative to the baseline results, and they

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[50]For the subsample of mothers with children aged 0 to 9, for the outcome variable of employment, the p-value of the test for significance of each proximity variable is 0.11.

[51]The estimates for the key variable of interest in the main sample and the subsample of mothers with children aged 0 to 9 are not statistically different.

are all significant.

We further check the robustness of our results by changing the definition of the instrumented and instrumental variables. In the first analysis, we change the proximity variable definition to the number of grandmothers within a close distance, while keeping the instrumental variable the same as in the baseline regression (i.e., the number of grandmothers alive). The estimated coefficient and Wald F-statistics are reported in Table A25. The results show that having either grandmother a short distance away increases the mother's labor force participation and employment probability by 4–12 ppt, almost half of our baseline estimates. In the second analysis, we keep the proximity variable as in the baseline model (i.e., equal to one if at least one grandmother lives close), but we use two different instruments for the proximity variable. We define two different instruments by using the information on whether maternal and paternal grandmothers are alive. The results of this specification are also consistent with our main findings. Having multiple instruments for a single endogenous variable allows one to perform an over-identification test. The joint null hypothesis that the instruments are valid and that the excluded instruments are correctly excluded from the estimated equation is not rejected by Hansen J statistics. In the final analysis, we define proximity as the number of grandmothers in close distance and specify two instruments indicating whether maternal and paternal grandmothers are alive. That is, proximity is defined as in Analysis 1, and the instruments are defined as in Analysis 2. The estimated effects from this specification remain similar to those obtained in the previous analysis, showing that our results are robust to different specifications.

8.5   Sample Selection

Another important concern is that women living close to grandmothers might affect women's fertility behavior, resulting in selection into our main analysis sample, which would bias our results. To see if our findings are influenced by sample selection bias, we focus on the sample of all married women and estimate the effects of proximity on having at least one young child (aged 0 to 10). The results presented in the first column of Table A26 show that the grandmothers' proximity does not significantly affect having at least one young child. We also investigate the effects of grandmothers' proximity on the number of young children in our main estimation sample, married women aged 18 to 50 with at least one young child. The results presented in the second column of Table A26 show that grandmothers' proximity has no significant effect on the number of young children. Therefore, we can conclude that our results are less likely to suffer from sample selection bias.

9 Conclusion

Female labor force participation is an essential driver of women's well-being and the well-being of the economy they live in, yet, in many countries, it remains at low levels. There are several factors, such as access to childcare, education level, and cultural and gender norms, that can affect women's labor supply decisions. In this paper, we investigate how geographical proximity to grandmothers affects labor supply decisions of women with young children using the Turkish Family Structure Survey data set. Unlike regular childcare, being close to grandmothers can increase women's labor market participation through free and flexible childcare, which can also be considered an insurance mechanism. However, at the same time, grandmothers living at a close distance can impose the traditional gender norms that are prevalent in the population, or grandmothers living in close proximity may require elderly care, which would decrease women's labor market participation. Therefore, the direction of the effect is ambiguous.

We use an instrumental variable approach to address the potential endogeneity that arises if the labor force participation decision of women determines grandmothers' choice of residence or vice versa, and if unobserved family characteristics affect women's decision to work.

We find that living in the same neighborhood or closer to a mother or mother-in-law increases women's labor force participation and employment rate by 18.2 ppt and 16.4 ppt, respectively. We also show that when we extend proximity measures to the same town or closer, and the same city or closer, the effects are reduced to 13.6 ppt and 12.3 ppt for labor force participation, respectively, and reduced to 13.2 ppt and 11.9 ppt for employment outcomes, respectively. We investigate three potential channels –childcare, elderly care, and traditional gender norms channels– that can link grandmothers' proximity to mothers' labor market outcomes.

We show that for women with no children or those with older children and for fathers with young children whose primary responsibility does not include childcare activities, the proximity of grandmothers has no significant impact on their labor market outcomes. We also find that grandfathers' proximity does not affect the labor market outcomes of women with young children. These results show that grandmothers' proximity affects the labor market outcomes of mothers with children primarily through their childcare provision. We also examine the effects of grandmothers' proximity on traditionality and find that grandmothers' proximity has a significant and positive impact on the traditionality of women raised in villages. Finally, we show that the elderly care channel does not affect our main results. Therefore, we argue that grandmothers' proximity affects mothers' labor market outcomes through childcare and traditional gender norm channels.

Our heterogeneity results reveal that our main results are driven by women with, at most, secondary education, and the results are stronger for women who have been raised in non-village areas. Highlighting the impact of the traditional gender norms channel, we find no significant

results for women raised in villages and for women who have conservative gender norms.

Our results suggest that government policies that promote affordable, quality, and accessible childcare services, provided either by formal or informal institutions, have the potential to increase the labor force participation of women who are at risk of withdrawing from the labor market. However, these policies are less likely to work in rural settings; therefore, policies should be designed considering their interaction with prevailing gender norms.

Table 1: Descriptive statistics by grandmothers' geographical proximity

	District		Town		City	
	Distant	Close	Distant	Close	Distant	Close
Labor force participation	0.273	0.209	0.265	0.242	0.269	0.245
	(0.446)	(0.407)	(0.441)	(0.428)	(0.444)	(0.430)
Employment	0.259	0.199	0.255	0.228	0.256	0.232
	(0.438)	(0.399)	(0.436)	(0.420)	(0.437)	(0.422)
Age	34.090	32.792	34.658	33.072	34.782	33.296
	(6.303)	(6.194)	(6.489)	(6.119)	(6.637)	(6.157)
Primary school or less	0.430	0.544	0.435	0.490	0.431	0.482
	(0.495)	(0.498)	(0.496)	(0.500)	(0.496)	(0.500)
Primary education	0.169	0.198	0.164	0.187	0.160	0.185
	(0.375)	(0.398)	(0.370)	(0.390)	(0.367)	(0.388)
Secondary education	0.190	0.159	0.180	0.178	0.165	0.183
	(0.392)	(0.366)	(0.384)	(0.383)	(0.371)	(0.386)
Tertiary education	0.212	0.100	0.221	0.145	0.244	0.151
	(0.409)	(0.299)	(0.415)	(0.352)	(0.430)	(0.358)
Primary school or less (husband)	0.309	0.426	0.312	0.372	0.314	0.362
	(0.462)	(0.495)	(0.464)	(0.484)	(0.465)	(0.481)
Primary education (husband)	0.140	0.203	0.124	0.183	0.116	0.176
	(0.347)	(0.402)	(0.329)	(0.387)	(0.32)	(0.381)
Secondary education (husband)	0.241	0.239	0.209	0.257	0.183	0.256
	(0.428)	(0.426)	(0.407)	(0.437)	(0.387)	(0.437)
Tertiary education (husband)	0.310	0.132	0.355	0.188	0.387	0.206
	(0.463)	(0.339)	(0.479)	(0.391)	(0.487)	(0.405)
Employed (husband)	0.932	0.886	0.927	0.909	0.932	0.910
	(0.252)	(0.318)	(0.260)	(0.288)	(0.251)	(0.286)
Childhood region: City center	0.398	0.318	0.348	0.380	0.355	0.373
	(0.490)	(0.466)	(0.477)	(0.486)	(0.479)	(0.484)
Childhood region: Town center	0.322	0.269	0.324	0.291	0.321	0.298
	(0.467)	(0.444)	(0.468)	(0.454)	(0.467)	(0.457)
Childhood region: Village	0.280	0.413	0.328	0.328	0.325	0.329
	(0.449)	(0.493)	(0.470)	(0.470)	(0.469)	(0.470)
Child aged 0–5 in the household	0.653	0.678	0.626	0.681	0.606	0.677
	(0.476)	(0.467)	(0.484)	(0.466)	(0.489)	(0.468)
Child aged 15 and above	0.216	0.210	0.244	0.198	0.257	0.202
	(0.412)	(0.407)	(0.430)	(0.399)	(0.437)	(0.402)
Number of young children	1.523	1.657	1.510	1.604	1.481	1.597
	(0.692)	(0.796)	(0.687)	(0.756)	(0.677)	(0.748)
Son preference	0.296	0.410	0.314	0.349	0.332	0.338
	(0.456)	(0.492)	(0.465)	(0.477)	(0.471)	(0.473)
Finding women's working inappropriate	0.082	0.088	0.081	0.086	0.083	0.084
	(0.274)	(0.283)	(0.273)	(0.280)	(0.276)	(0.278)

Interdenominational marriage is not allowed	0.490	0.554	0.502	0.520	0.506	0.516
	(0.500)	(0.497)	(0.500)	(0.500)	(0.500)	(0.500)
Traditionality index	0.420	0.541	0.434	0.480	0.456	0.466
	(0.453)	(0.501)	(0.452)	(0.485)	(0.476)	(0.474)
Lives in childhood region	0.628	0.814	0.474	0.812	0.308	0.803
	(0.484)	(0.389)	(0.500)	(0.391)	(0.462)	(0.398)
Husband childhood region	0.656	0.847	0.512	0.838	0.357	0.828
	(0.475)	(0.36)	(0.500)	(0.369)	(0.479)	(0.378)
Only one grandmother alive	0.221	0.152	0.247	0.169	0.248	0.181
	(0.415)	(0.359)	(0.432)	(0.375)	(0.432)	(0.385)
Both grandmothers alive	0.738	0.848	0.677	0.831	0.632	0.819
	(0.440)	(0.359)	(0.468)	(0.375)	(0.482)	(0.385)
Only one grandfather alive	0.324	0.341	0.337	0.327	0.345	0.326
	(0.468)	(0.474)	(0.473)	(0.469)	(0.476)	(0.469)
Both grandfathers alive	0.576	0.559	0.543	0.584	0.522	0.583
	(0.494)	(0.497)	(0.498)	(0.493)	(0.500)	(0.493)
Observations	2,256	1,286	1,221	2,321	770	2,772

Source: Family Structure Survey Micro Data Set 2016. The standard deviations are presented in parentheses.

Table 2: Effects of grandmothers' proximity on mothers' labor market outcomes

	Dependent Variables			
	LFP		Employment	
	(OLS)	(IV)	(OLS)	(IV)
Same neighborhood/district/village or closer				
Proximity	0.001	0.182**	0.004	0.164**
	(0.013)	(0.080)	(0.013)	(0.079)
AR confidence set (95%)		*[0.032, 0.343]*		*[0.016, 0.324]*
tF confidence interval		*[0.024, 0.339]*		*[0.008, 0.320]*
F statistic:		121.126		121.126
Same town or closer				
Proximity	0.026**	0.136**	0.020	0.123**
	(0.013)	(0.060)	(0.013)	(0.060)
AR confidence set (95%)		*[0.024, 0.257]*		*[0.012, 0.243]*
tF confidence interval		*[0.018, 0.254]*		*[0.006, 0.239]*
F statistic:		186.531		186.531
Same city or closer				
Proximity	0.030*	0.132**	0.030*	0.119**
	(0.015)	(0.059)	(0.016)	(0.058)
AR confidence set (95%)		*[0.023, 0.251]*		*[0.011, 0.236]*
tF confidence interval		*[0.017, 0.247]*		*[0.005, 0.233]*
F statistic:		213.617		213.617
Observations		3,542		

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The mean LFP and Employment is 0.250 (0.433) and 0.237 (0.426). Regressions include age fixed effects, education categories for both spouses (less than primary education (omitted), primary, secondary, and tertiary education), whether her spouse works, the current region of residence (NUTS-1 level), type of childhood settlement (city center (omitted), town center, or village), the childhood region (NUTS-2 level), whether self or spouse has a chronic illness, whether there is at least one child aged 0–5, whether there is an older sibling, and the number of young children in the household. The proximity variable is a dummy variable equal to one if the mother or in-law lives close; otherwise, it is zero. In columns 2, 4, and 6, the number of alive grandmothers used as an instrument. The sample includes all married mothers, aged 18–50 inclusive, with at least one child aged 0–10.

Table 3: First-stage estimation results

	Dependent variable: Grandparent's proximity		
	District	Town	City
Number of grandmothers alive	0.168***	0.225***	0.232***
	(0.015)	(0.016)	(0.016)
Primary education	-0.018	-0.024	-0.014
	(0.026)	(0.025)	(0.021)
Secondary education	-0.015	-0.020	-0.006
	(0.026)	(0.024)	(0.020)
Tertiary education	-0.033	-0.006	-0.037
	(0.029)	(0.030)	(0.028)
Primary education (husband)	-0.002	0.012	0.016
	(0.025)	(0.021)	(0.018)
Secondary education (husband)	-0.078***	-0.047**	-0.012
	(0.023)	(0.021)	(0.016)
Tertiary education (husband)	-0.223***	-0.264***	-0.198***
	(0.028)	(0.026)	(0.025)
Employment (husband)	-0.104***	-0.033	-0.035*
	(0.028)	(0.025)	(0.021)
Town center	-0.007	-0.042**	-0.014
	(0.020)	(0.019)	(0.016)
Village	0.095***	-0.042**	-0.003
	(0.021)	(0.020)	(0.017)
Chronic illness	-0.001	0.012	0.015
	(0.020)	(0.020)	(0.016)
At least one child aged 0–5	-0.018	0.012	0.025
	(0.020)	(0.019)	(0.016)
At least one child aged 15 and above	0.039	-0.002	-0.013
	(0.024)	(0.023)	(0.020)
Number of young children	0.028**	0.003	0.005
	(0.013)	(0.011)	(0.010)
Observations	3,542	3,542	3,542

Notes: *$p<0.1$ **$p<0.05$ ***$p<0.01$. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. Regressions include age fixed effects, education categories for both spouses (less than primary education (omitted), primary, secondary, and tertiary education), whether her spouse works, the current region of residence (NUTS-1 level), type of childhood settlement (city center (omitted), town center, or village), the childhood region (NUTS-2 level), whether self or spouse has a chronic illness, whether there is at least one child aged 0–5, whether there is an older sibling, and the number of young children in the household. The proximity variable is a dummy variable equal to one if the mother or in-law lives close; otherwise, it is zero. The independent variable is the number of alive grandmothers. The sample includes all married mothers, aged 18–50 inclusive, with at least one child aged 0–10. Age fixed effects, the current region of residence (NUTS-1 level) and the childhood region (NUTS-2 level) fixed effects are not presented for space considerations.

Table 4: Effects of grandparents' proximity on labor force participation of women without young children, fathers, and mothers with young children

| | Dependent Variable: Labor Force Participation | | | | | |
| | Women without young children | | Fathers with young children | | Mothers with young children | |
	OLS	IV	OLS	IV	OLS	IV
Same neighborhood/district/village or closer						
Grandmother lives close	-0.010	0.075	-0.014***	-0.001		
	(0.019)	(0.059)	(0.005)	(0.029)		
F statistic:		321.186		137.925		
Same town or closer						
Grandmother lives close	-0.000	0.054	-0.012***	-0.001		
	(0.017)	(0.042)	(0.004)	(0.024)		
F statistic:		620.949		176.879		
Same city or closer						
Grandmother lives close	0.042**	0.050	-0.010***	-0.001		
	(0.019)	(0.039)	(0.004)	(0.024)		
F statistic:		812.586		182.870		
Same neighborhood/district/village or closer						
Grandfather lives close					-0.014	0.047
					(0.015)	(0.054)
F statistic:						333.590
Same town or closer						
Grandfather lives close					0.005	0.030
					(0.013)	(0.034)
F statistic:						764.301
Same city or closer						
Grandfather lives close					0.004	0.028
					(0.014)	(0.032)
F statistic:						942.015
Observations	2,509	2,509	3,408	3,408	3,542	3,542

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The dependent variables are women's labor force participation, fathers' labor force participation, and mothers' labor force participation, respectively. The mean value of the dependent variable is 0.322 (0.467), 0.984 (0.124), and 0.250 (0.433) for the group of married women without young children, fathers with young children, and mothers with young children, respectively. Control variables are the same as the baseline estimation. For the first four columns, the instrumented variable: Mother or in-law lives close; the instrumental variable: Number of grandmothers alive. For the fifth and sixth columns, the instrumented variable: Father or in-law lives close; the instrumental variable: Number of grandfathers alive. The results of the sample of married women with children aged 11 and older or no children are presented in columns one and two. The results of the sample of fathers with children aged 10 and younger are presented in the third and fourth columns. The last two columns consider married women with young children.

Table 5: Effects of grandmothers' proximity on the employment status of women without young children, fathers, and mothers with young children

| | Dependent Variable: Employment | | | | | |
| | Women without young children | | Fathers with young children | | Mothers with young children | |
	OLS	IV	OLS	IV	OLS	IV
Same neighborhood/district/village or closer						
Grandmother lives close	-0.009	0.065	-0.022***	0.025		
	(0.019)	(0.058)	(0.009)	(0.053)		
F statistic:		321.186		137.925		
Same town or closer						
Grandmother lives close	0.000	0.046	-0.025***	0.021		
	(0.017)	(0.041)	(0.008)	(0.044)		
F statistic:		620.949		176.879		
Same city or closer						
Grandmother lives close	0.038**	0.043	-0.019**	0.021		
	(0.019)	(0.038)	(0.009)	(0.045)		
F statistic:		812.586		182.870		
Same neighborhood/district/village or closer						
Grandfather lives close					-0.012	0.048
					(0.014)	(0.054)
F statistic:						333.590
Same town or closer						
Grandfather lives close					-0.000	0.030
					(0.013)	(0.034)
F statistic:						764.301
Same city or closer						
Grandfather lives close					0.002	0.029
					(0.014)	(0.032)
F statistic:						942.015
Observations	2,509	2,509	3,408	3,408	3,542	3,542

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The dependent variables are women's employment, fathers' employment, and mothers' employment, respectively. The mean value of the dependent variable is 0.297 (0.457), 0.937 (0.243), and 0.237 (0.426) for the group of women without young children, fathers with young children, and mothers with young children, respectively. Control variables are the same as the baseline estimation. For the first four columns, the instrumented variable: Mother or in-law lives close; the instrumental variable: Number of grandmothers alive. For the fifth and sixth columns, the instrumented variable: Father or in-law lives close; the instrumental variable: Number of grandfathers alive. The results of the sample of married women with children aged 11 and older or no children are presented in columns one and two. The results of the sample of fathers with children aged 10 and younger are presented in the third and fourth columns. The last two columns consider married women with young children.

Table 6: Effects of grandmothers' proximity on measures of traditionality by childhood region type

	Childhood Region Type		
Dependent Variables:	**Total Sample**	**City or Town Center**	**Village**
Having Son Preference:			
District	0.071	-0.043	0.251*
	(0.101)	(0.143)	(0.151)
	{0.616}	{0.999}	{0,128}
F statistic:	121.126	64.947	49.583
AR confidence set (95%)			*[-0.030, 0.580]*
AR confidence set (90%)			*[0.018, 0.520]*
tF confidence interval			*[-0.069, 0.571]*
Town	0.053	-0.030	0.190*
	(0.075)	(0.100)	(0.113)
	{0.615}	{0.999}	{0.125}
F statistic:	186.531	108.175	94.528
AR confidence set (95%)			*[-0.021, 0.427]*
AR confidence set (90%)			*[0.015, 0.383]*
tF confidence interval			*[-0.033, 0.412]*
City	0.052	-0.030	0.189*
	(0.074)	(0.101)	(0.114)
	{0.615}	{0.999}	{0.126}
F statistic:	213.617	107.548	114.823
AR confidence set (95%)			*[-0.023, 0.427]*
AR confidence set (90%)			*[0.013, 0.382]*
Mean dependent variable	0.337	0.300	0.414
	(0.473)	(0.458)	(0.493)
Finding Women's Working Inappropriate:			
District	0.032	-0.000	0.132
	(0.063)	(0.084)	(0.088)
	{0.616}	{0.999}	{0.134}
F statistic:	121.126	64.947	49.583
Town	0.024	-0.000	0.100
	(0.047)	(0.058)	(0.065)
	{0.615}	{0.999}	{0.125}
F statistic:	186.531	108.175	94.528
City	0.023	-0.000	0.099
	(0.046)	(0.059)	(0.065)
	{0.615}	{0.999}	{0.126}
F statistic:	213.617	107.548	114.823
Mean dependent variable	0.084	0.076	0.102
	(0.278)	(0.264)	(0.302)

	Childhood Region Type		
Dependent Variables:	**Total Sample**	**City or Town Center**	**Village**
Not Approving Interdenominational Marriage:			
District	0.194*	0.100	0.336**
	(0.111)	(0.150)	(0.151)
	{0.321}	{0.999}	{0.105}
F statistic:	121.126	64.947	49.583
AR confidence set (95%)	*[-0.012, 0.427]*		*[0.067, 0.677]*
AR confidence set (90%)	*[0.023, 0.383]*		*[0.103, 0.617]*
tF confidence interval			*[0.015, 0.657]*
Town	0.145*	0.070	0.254**
	(0.082)	(0.105)	(0.113)
	{0.315}	{0.999}	{0.097}
F statistic:	186.531	108.175	94.528
AR confidence set (95%)	*[-0.008, 0.311]*		*[0.044, 0.500]*
AR confidence set (90%)	*[0.018, 0.285]*		*[0.080, 0.455]*
tF confidence interval			*[0.034, 0.471]*
City	0.141*	0.071	0.253**
	(0.080)	(0.107)	(0.111)
	{0.312}	{0.999}	{0.094}
F statistic:	213.617	107.548	114.823
AR confidence set (95%)	*[-0.008, 0.302]*		*[0.045, 0.487]*
AR confidence set (90%)	*[0.018, 0.277]*		*[0.081, 0.451]*
Mean dependent variable	0.514	0.469	0.605
	(0.500)	(0.499)	(0.489)
Traditionality Index:			
District	0.055	-0.088	0.302*
	(0.103)	(0.145)	(0.157)
	{0.616}	{0.999}	{0.110}
F statistic:	121.126	64.947	49.583
AR confidence set (95%)			*[0.009, 0.644]*
AR confidence set (90%)			*[0.059, 0.582]*
tF confidence interval			*[-0.032, 0.636]*
Town	0.041	-0.061	0.228*
	(0.077)	(0.101)	(0.118)
	{0.615}	{0.999}	{0.105}
F statistic:	186.531	108.175	94.528
AR confidence set (95%)			*[0.009, 0.475]*
AR confidence set (90%)			*[0.047, 0.429]*
tF confidence interval			*[-0.003, 0.460]*
City	0.040	-0.063	0.227*
	(0.075)	(0.103)	(0.118)
	{0.615}	{0.999}	{0.108}
F statistic:	213.617	107.548	114.823
AR confidence set (95%)			*[0.008, 0.475]*
AR confidence set (90%)			*[0.045, 0.428]*
Mean dependent variable	0.464	0.407	0.581
	(0.475)	(0.438)	(0.523)
Observations	3,542	2,380	1,162

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. P-values, adjusted for multiple hypothesis testing, are displayed in {curly brackets}.

Table 7: Effects of grandmothers' proximity on the indicators of traditionality for different subgroups

Subgroups:	*Dependent Variables*					
Age of the youngest children: 0–5						
	Traditionality Index			**Finding Women's Working Inappropriate**		
	District	Town	City	District	Town	City
	0.232*	0.184*	0.209*	0.076	0.061	0.069
	(0.138)	(0.110)	(0.127)	(0.078)	(0.062)	(0.070)
F statistic:	68.101	97.917	82.679	68.101	97.917	82.679
AR confidence set (95%)	[-0.035, 0.522]	[-0.029, 0.405]	[-0.027, 0.476]			
AR confidence set (90%)	[0.008, 0.466]	[0.006, 0.370]	[0.011, 0.433]			
tf confidence interval	[-0.050, 0.514]	[-0.031, 0.399]	[-0.044, 0.463]			
Mean dependent variable		0.456			0.0836	
		(0.277)			(0.407)	
Observations			2,345			
Age of the youngest children: 6–10						
	District	Town	City	District	Town	City
	-0.224	-0.153	-0.127	-0.002	-0.002	-0.001
	(0.168)	(0.113)	(0.094)	(0.104)	(0.071)	(0.059)
F statistic:	45.169	87.755	145.847	45.169	87.755	145.847
Mean dependent variable		0.479			0.0852	
		(0.485)			(0.279)	
Observations			1,197			
Education: Secondary or less						
	District	Town	City	District	Town	City
	0.026	0.020	0.020	0.032	0.025	0.025
	(0.105)	(0.082)	(0.080)	(0.063)	(0.049)	(0.048)
F statistic:	125.774	188.162	223.951	125.774	188.162	223.951
Mean dependent variable		0.514			0.096	
		(0.489)			(0.295)	
Observations			2,936			
Education: College or above						
	District	Town	City	District	Town	City
	–	0.171	0.154	–	-0.033	-0.030
		(0.154)	(0.137)		(0.093)	(0.084)
F statistic:	2.249	15.538	19.807	2.249	15.538	19.807
Mean dependent variable		0.0.222			0.026	
		(0.298)			(0.160)	
Observations			606			

Subgroups:	*Dependent Variables*					
Home Ownership: Owner						
	Traditionality Index			**Finding Women's Working In-appropriate**		
	District	Town	City	District	Town	City
	0.056	0.040	0.039	-0.030	-0.021	-0.021
	(0.138)	(0.099)	(0.098)	(0.091)	(0.065)	(0.065)
F statistic:	74.456	141.972	144.794	74.456	141.972	144.794
Mean dependent variable		0.481			0.088	
		(0.481)			(0.284)	
Observations			1,725			
Home Ownership: Not owner						
	District	Town	City	District	Town	City
	0.076	0.057	0.052	0.106	0.079	0.073
	(0.172)	(0.128)	(0.119)	(0.100)	(0.074)	(0.068)
F statistic:	41.993	59.308	75.185	41.993	59.308	75.185
Mean dependent variable		0.448			0.080	
		(0.468)			(0.272)	
Observations			1,817			

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. Dependent variables are Traditionality Index and Finding it Inappropriate for Women's Working. Control variables are the same as the baseline estimation.

Table 8: Effects of grandmothers' proximity on mothers' labor force force participation and employment status for different subgroups

Subgroups:	*Dependent Variables*					
Childhood region type: City or town center						
	LFP			**Employment**		
	District	Town	City	District	Town	City
	0.228**	0.159**	0.162**	0.178	0.124	0.127
	(0.112)	(0.078)	(0.081)	(0.113)	(0.079)	(0.081)
F statistic:	64.947	108.175	107.548	64.947	108.175	107.548
AR confidence set (95%)	*[0.020, 0.463]*	*[0.013, 0.323]*	*[0.012, 0.332]*			
tf confidence interval	*[-0.002, 0.459]*					
Mean dependent variable		0.289			0.276	
		(0.453)			(0.447)	
Observations			2,380			
Childhood region type: Village						
	District	Town	City	District	Town	City
	0.110	0.083	0.083	0.134	0.101	0.101
	(0.111)	(0.084)	(0.083)	(0.108)	(0.081)	(0.080)
F statistic:	49.583	94.528	114.823	49.583	94.528	114.823
Mean dependent variable		0.170			0.158	
		(0.375)			(0.365)	
Observations			1,162			
Age of the youngest children: 0–5						
	District	Town	City	District	Town	City
	0.146*	0.116*	0.132*	0.139	0.110	0.125
	(0.087)	(0.068)	(0.079)	(0.086)	(0.068)	(0.078)
F statistic:	68.101	97.917	82.679	68.101	97.917	82.679
AR confidence set (95%)	*[-0.015, 0.328]*	*[-0.017,0.253]*	*[-0.015, 0.297]*			
AR confidence set (90%)	*[0.011, 0.293]*	*[0.005, 0.231]*	*[0.009, 0.270]*			
tf confidence interval	*[-0.031, 0.323]*	*[-0.018, 0.250]*	*[-0.026, 0.289]*			
Mean dependent variable		0.221			0.209	
		(0.415)			(0.407)	
Observations			2,345			
Age of the youngest children: 6–10						
	District	Town	City	District	Town	City
	0.228	0.156	0.129	0.187	0.128	0.106
	(0.147)	(0.099)	(0.082)	(0.143)	(0.096)	(0.079)
F statistic:	45.169	87.755	145.847	45.169	87.755	145.847
Mean dependent variable		0.307			0.292	
		(0.461)			(0.455)	
Observations			1,197			

Subgroups:	Dependent Variables					
Educational Level:	LFP			Employment		
Secondary school or less	District	Town	City	District	Town	City
	0.207***	0.162***	0.158***	0.181**	0.142**	0.138**
	(0.075)	(0.059)	(0.057)	(0.073)	(0.057)	(0.056)
F statistic:	125.774	188.162	223.951	125.774	188.162	223.951
AR confidence set (95%)	[0.066, 0.365]	[0.053, 0.280]	[0.052, 0.273]	[0.044, 0.335]	[0.035, 0.258]	[0.035, 0.251]
Mean dependent variable		0.165			0.154	
		(0.371)			(0.361)	
Observations			2,936			
Educational Level:						
College or above	District	Town	City	District	Town	City
	–	-0.101	-0.091	–	-0.078	-0.070
		(0.216)	(0.193)		(0.228)	(0.204)
F statistic:	2.249	15.538	19.807	2.249	15.538	19.807
Mean dependent variable		0.662			0.642	
		(0.474)			(0.480)	
Observations			606			
Ownership status of the house:						
Owner	District	Town	City	District	Town	City
	0.099	0.071	0.070	0.065	0.047	0.046
	(0.108)	(0.077)	(0.077)	(0.107)	(0.077)	(0.076)
F statistic:	41.993	59.308	75.185	41.993	59.308	75.185
Mean dependent variable		0.257			0.246	
		(0.437)			(0.431)	
Observations			1,725			
Ownership status of the house:						
Not owner	District	Town	City	District	Town	City
	0.326**	0.244**	0.225**	0.315**	0.235**	0.217**
	(0.139)	(0.104)	(0.097)	(0.136)	(0.102)	(0.094)
F statistic:	41.993	59.308	75.185	41.993	59.308	75.185
AR confidence set (95%)	[0.068, 0.628]	[0.050, 0.470]	[0.045, 0.428]	[0.062, 0.610]	[0.046, 0.456]	[0.042, 0.415]
tf confidence interval	[0.023, 0.630]	[0.028, 0.459]	[0.030, 0.420]	[0.018, 0.611]	[0.024, 0.446]	[0.027, 0.407]
Mean dependent variable		0.243			0.229	
		(0.429)			(0.421)	
Observations			1,817			
Traditionality index:						
Non-conservative	District	Town	City	District	Town	City
	0.229*	0.158*	0.156*	0.197	0.136	0.134
	(0.132)	(0.092)	(0.091)	(0.131)	(0.091)	(0.090)
F statistic :	54.564	88.708	94.026	54.564	88.708	94.026
AR confidence set (95%)	[-0.018, 0.517]	[-0.013, 0.352]	[-0.013, 0.347]			
AR confidence set (90%)	[0.022, 0.462]	[0.014, 0.321]	[0.014, 0.316]			
tf confidence interval	[-0.050, 0,507]	[-0.025, 0.341]	[-0.024, 0.335]			
Mean dependent variable		0.295			0.282	
		(0.456)			(0.450)	
Observations			2,187			
Traditionality Index:						
Conservative	District	Town	City	District	Town	City
	0.129	0.102	0.099	0.123	0.097	0.094
	(0.096)	(0.076)	(0.073)	(0.094)	(0.075)	(0.072)
F statistic:	72.384	110.916	145.524	72.384	110.916	145.524
Mean dependent variable		0.177			0.166	
		(0.382)			(0.372)	
Observations			1,355			

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10 Online Appendix A

Figure A1: Female labor force participation in OECD countries by years
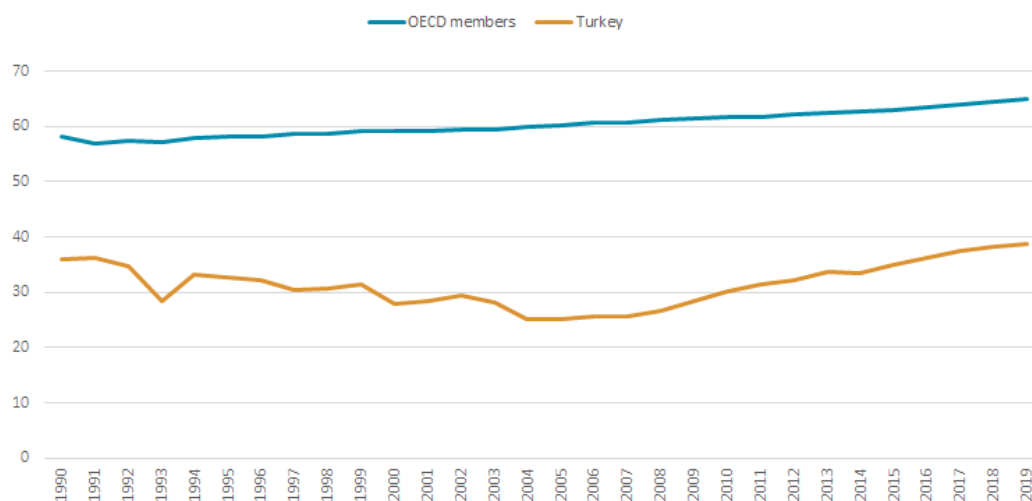
Source:OECD

Table A1: Family Structure Survey Micro Data Set 2016

The reason of not working	*Observations*
Couldn't find job / unemployed and looking for job	579
Seasonal working	40
Continuing to education / training	1,484
Busy with housework (including care of children, elderly, ill etc. individuals)	9,246
Retired or left the job	607
Disabled or ill (unable to work)	202
Elderly (not retired, but thinking that he/she is too old to work, 60+)	126
Income owner	2
Family and personal reasons	203
Other	35
Total	12,524

Table A2: Effects of the number of alive grandmothers on mothers' labor market outcomes

	Dependent Variables	
	LFP	Employment
Number of grandmothers alive	0.031**	0.028**
	(0.013)	(0.013)
Primary education	0.036*	0.036*
	(0.019)	(0.019)
Secondary education	0.112***	0.108***
	(0.022)	(0.022)
Tertiary education	0.521***	0.514***
	(0.028)	(0.027)
Primary education (husband)	0.015	0.008
	(0.020)	(0.019)
Secondary education (husband)	-0.004	-0.003
	(0.018)	(0.018)
Tertiary education (husband)	-0.019	-0.024
	(0.022)	(0.021)
Employment (husband)	-0.062**	-0.022
	(0.025)	(0.024)
Town center	-0.004	-0.008
	(0.016)	(0.015)
Village	-0.007	-0.011
	(0.016)	(0.015)
Chronic illness	0.014	0.010
	(0.017)	(0.017)
At least one child aged 0–5	-0.083***	-0.081***
	(0.017)	(0.017)
At least one child aged 15 and above	-0.039*	-0.035*
	(0.020)	(0.020)
Number of young children	-0.024**	-0.021**
	(0.010)	(0.010)
Observations	3,542	3,542

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 child-hood region-age level are given in the parentheses.

Table A3: Traditionality index by childhood region type

Variables	Village Born	Nonvillage Born	Difference	Whole Sample
Son preference	0.414	0.300	-0.114***	0.337
Finding women's working inappropriate	0.102	0.076	-0.026*	0.084
Interdenominational marriage is not allowed	0.605	0.469	-0.136***	0.514
Traditionality index	0.581	0.407	-0.173***	0.464
Observations	1355	2187		3542

Table A4: Effects of grandmothers' proximity on mothers' labor force participation and employment status if unpaid family workers are included in the paid labor force and employment

	Dependent Variables			
	LFP		**Employment**	
	(OLS)	(IV)	(OLS)	(IV)
Same neighborhood/district/village or closer				
Proximity	0.047***	0.171**	0.050***	0.154*
	(0.015)	(0.086)	(0.015)	(0.085)
F statistic:		121.126		121.126
AR confidence set (95%)		*[0.005, 0.344]*		*[-0.012, 0.326]*
AR confidence set (90%)		*[0.032, 0.316]*		*[0.015, 0.298]*
Same town or closer				
Proximity	0.065***	0.128**	0.060***	0.115*
	(0.015)	(0.064)	(0.015)	(0.064)
F statistic:		186.531		186.531
AR confidence set (95%)		*[0.004,0.257]*		*[-0.009, 0.243]*
AR confidence set (90%)		*[0.024, 0.232]*		*[0.011, 0.218]*
Same city or closer				
Proximity	0.061***	0.124**	0.062***	0.112*
	(0.017)	(0.062)	(0.017)	(0.062)
F statistic:		213.617		213.617
AR confidence set (95%)		*[0.003,0.250]*		*[-0.009, 0.237]*
AR confidence set (90%)		*[0.023, 0.226]*		*[0.011, 0.213]*
Observations			3,542	

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The mean LFP and Employment is 0.304 (0.460) and 0.291 (0.454). Regressions include age fixed effects, education categories for both spouses (less than primary education (omitted), primary, secondary, and tertiary education), whether spouse works, the current region of residence (NUTS-1 level), type of childhood settlement (city center (omitted), town center, or village), the childhood region (NUTS-2 level), whether self or spouse has a chronic illness, whether there is at least one child aged 0–5, whether there is an older sibling, and the number of young children in the household. The proximity variable is a dummy variable equal to one if the mother or in-law lives close; otherwise, it is zero. In columns 2 and 4, the number of alive grandmothers used as an instrument. The sample includes all married mothers aged 18–50 inclusive, with at least one child aged 0–10.

Table A5: Descriptive statistics by the number of alive grandmothers

	Number of Alive Grandmothers		
	0	**1**	**2**
Labor force participation	0.141	0.206	0.265
	(0.350)	(0.405)	(0.441)
Employment	0.141	0.195	0.251
	(0.350)	(0.396)	(0.434)
Age	40.576	36.692	32.613
	(6.156)	(6.328)	(5.880)
Primary school or less	0.804	0.622	0.422
	(0.399)	(0.485)	(0.494)
Primary education	0.098	0.130	0.194
	(0.299)	(0.336)	(0.396)
Secondary education	0.065	0.135	0.193
	(0.248)	(0.342)	(0.395)
Tertiary education	0.033	0.112	0.190
	(0.179)	(0.316)	(0.393)
Primary school or less (husband)	0.587	0.470	0.314
	(0.495)	(0.499)	(0.464)
Primary education (husband)	0.174	0.160	0.163
	(0.381)	(0.367)	(0.369)
Secondary education (husband)	0.174	0.200	0.253
	(0.381)	(0.401)	(0.435)
Tertiary education (husband)	0.065	0.170	0.271
	(0.248)	(0.376)	(0.444)
Employed (husband)	0.804	0.882	0.927
	(0.399)	(0.323)	(0.260)
Childhood region: City center	0.261	0.331	0.382
	(0.442)	(0.471)	(0.486)
Childhood region: Town center	0.228	0.272	0.313
	(0.422)	(0.445)	(0.464)
Childhood region: Village	0.511	0.396	0.305
	(0.503)	(0.489)	(0.460)
Child aged 0–5 in the household	0.380	0.529	0.705
	(0.488)	(0.500)	(0.456)
Child aged 15 and above	0.587	0.367	0.163
	(0.495)	(0.482)	(0.369)
Number of young children	1.293	1.513	1.596
	(0.584)	(0.742)	(0.734)
Son preference	0.413	0.356	0.330
	(0.495)	(0.479)	(0.470)
Finding women's working inappropriate	0.130	0.088	0.082
	(0.339)	(0.283)	(0.274)
Interdenominational marriage is not allowed	0.620	0.507	0.512
	(0.488)	(0.500)	(0.500)
Traditionality index	0.639	0.491	0.451
	(0.563)	(0.494)	(0.465)
Lives in childhood region	0.685	0.732	0.687
	(0.467)	(0.443)	(0.464)
Lives in childhood region (husband)	0.717	0.731	0.724
	(0.453)	(0.444)	(0.447)
Only one grandfather alive	0.391	0.464	0.295
	(0.491)	(0.499)	(0.456)
Both grandfathers alive	0.120	0.331	0.645
	(0.326)	(0.471)	(0.479)
Observations	92	694	2,756

Source: Family Structure Survey Micro Data Set 2016. The standard deviations are presented in parentheses.

Table A6: Effects of grandmothers' proximity on mothers' labor force participation and employment status

	LFP		Employment	
	(OLS)	(IV)	(OLS)	(IV)
Same neighborhood/district/village or closer				
Proximity	0.001	0.182**	0.004	0.164**
	(0.016)	(0.081)	(0.015)	(0.079)
F statistic:		131.100		131.100
AR confidence set (95%)		*[0.007, 0.336]*		*[-0.007, 0.314]*
AR confidence set (90%)		*[0.033, 0.309]*		*[0.019, 0.289]*
Same Town or closer				
Proximity	0.026*	0.136**	0.020	0.123**
	(0.013)	(0.061)	(0.013)	(0.059)
F statistic:		196.895		196.895
AR confidence set (95%)		*[0.001, 0.250]*		*[-0.010, 0.234]*
AR confidence set (90%)		*[0.025, 0.230]*		*[0.014, 0.215]*
Same city or closer				
Proximity	0.030*	0.132**	0.030**	0.119**
	(0.016)	(0.059)	(0.015)	(0.058)
F statistic:		216.153		216.153
AR confidence set (95%)		*[0.001, 0.243]*		*[-0.005, 0.229]*
AR confidence set (90%)		*[0.025, 0.224]*		*[0.014, 0.210]*
Observations		3,542		

Dependent Variables spans the LFP and Employment columns.

Notes: *$p<0.1$ **$p<0.05$ ***$p<0.01$. Standard errors clustered by the NUTS-1 current region-age level are given in the parentheses. Control variables are the same as the baseline.

Table A7: Effects of grandmothers' proximity on mothers' labor market outcomes

	Dependent Variables			
	LFP		Employment	
	(OLS)	(IV)	(OLS)	(IV)
Same neighborhood/district/village or closer				
Proximity	0.001	0.182	0.004	0.164
	[0.952]	[0.053]	[0.732]	[0.078]
	{0.957}	{0.043}	{0.808}	{0.078}
Same town or closer				
Proximity	0.026	0.136	0.020	0.123
	[0.027]	[0.056]	[0.109]	[0.094]
	{0.102}	{0.051}	{0.153}	{0.089}
Same city or closer				
Proximity	0.030	0.132	0.030	0.119
	[0.093]	[0.058]	[0.094]	[0.084]
	{0.086}	{0.068}	{0.074}	{0.096}
Observations	3,542			

Notes: Standard errors are clustered by the NUTS-2 childhood region or age level. The wild bootstrap cluster p-values are presented in square brackets for the NUTS-2 childhood region and in curly brackets for age level. Control variables are the same as the baseline.

Table A8: Descriptive statistics for the complier and non-complier subpopulations

	District			Town			City		
	Whole	Compliers	Never Takers	Whole	Compliers	Never Takers	Whole	Compliers	Never Takers
Age	33.619	33.290	33.814	33.619	33.348	34.175	33.619	33.527	33.996
	(0.105)	(0.181)	(0.131)	(0.105)	(0.125)	(0.188)	(0.108)	(0.120)	(0.243)
Primary school or less	0.471	0.567	0.414	0.471	0.503	0.405	0.471	0.493	0.381
	(0.008)	(0.014)	(0.010)	(0.008)	(0.010)	(0.014)	(0.008)	(0.009)	(0.018)
Primary education	0.179	0.192	0.172	0.179	0.184	0.169	0.179	0.182	0.168
	(0.006)	(0.011)	(0.008)	(0.006)	(0.008)	(0.011)	(0.006)	(0.007)	(0.014)
Secondary education	0.179	0.151	0.195	0.179	0.173	0.190	0.179	0.179	0.178
	(0.006)	(0.010)	(0.009)	(0.006)	(0.008)	(0.011)	(0.006)	(0.007)	(0.015)
Tertiary education	0.171	0.090	0.220	0.171	0.139	0.236	0.171	0.146	0.273
	(0.006)	(0.008)	(0.009)	(0.006)	(0.007)	(0.013)	(0.006)	(0.007)	(0.017)
Primary school or less(husb.)	0.351	0.443	0.297	0.351	0.382	0.290	0.351	0.370	0.277
	(0.008)	(0.014)	(0.010)	(0.008)	(0.010)	(0.014)	(0.008)	(0.009)	(0.017)
Primary edu.(husb.)	0.163	0.204	0.138	0.163	0.184	0.120	0.163	0.176	0.108
	(0.006)	(0.011)	(0.008)	(0.006)	(0.008)	(0.009)	(0.006)	(0.007)	(0.012)
Secondary edu.(husb.)	0.240	0.234	0.244	0.240	0.254	0.212	0.240	0.254	0.184
	(0.007)	(0.012)	(0.009)	(0.007)	(0.009)	(0.012)	(0.007)	(0.008)	(0.015)
Tertiary edu.(husb.)	0.246	0.119	0.321	0.246	0.181	0.379	0.246	0.200	0.431
	(0.007)	(0.010)	(0.010)	(0.007)	(0.008)	(0.015)	(0.007)	(0.008)	(0.018)
Employment(husb.)	0.915	0.878	0.937	0.915	0.904	0.937	0.915	0.907	0.950
	(0.005)	(0.009)	(0.005)	(0.005)	(0.006)	(0.007)	(0.005)	(0.006)	(0.008)
Village	0.328	0.426	0.270	0.328	0.336	0.313	0.328	0.335	0.299
	(0.008)	(0.014)	(0.010)	(0.008)	(0.010)	(0.013)	(0.008)	(0.009)	(0.017)
Chronic illness	0.185	0.199	0.177	0.185	0.191	0.174	0.185	0.191	0.164
	(0.006)	(0.011)	(0.008)	(0.007)	0.008)	(0.011)	(0.007)	(0.007)	(0.014)
At least one child aged 0–5	0.662	0.658	0.665	0.662	0.670	0.646	0.662	0.668	0.637
	(0.008)	(0.013)	(0.010)	(0.008)	(0.009)	(0.014)	(0.008)	(0.009)	(0.019)
At least one child aged 15 and above	0.214	0.237	0.201	0.214	0.213	0.216	0.214	0.214	0.212
	(0.007)	(0.012)	(0.009)	(0.007)	(0.009)	(0.012)	(0.007)	(0.008)	(0.016)
Number of young children	1.572	1.637	1.533	1.572	1.593	1.528	1.572	1.588	1.506
	(0.012)	(0.022)	(0.015)	(0.013)	(0.016)	(0.020)	(0.013)	(0.014)	(0.026)
Having son preference	0.337	0.415	0.291	0.337	0.352	0.306	0.337	0.341	0.322
	(0.008)	(0.015)	(0.009)	(0.008)	(0.010)	(0.014)	(0.008)	(0.009)	(0.018)
Finding women's working inappropriate	0.084	0.091	0.080	0.084	0.088	0.077	0.084	0.086	0.077
	(0.005)	(0.008)	(0.006)	(0.004)	(0.005)	(0.008)	(0.005)	(0.005)	(0.010)
Interdenominational marriage is not allowed	0.514	0.562	0.485	0.514	0.524	0.492	0.514	0.519	0.491
	(0.008)	(0.014)	(0.011)	(0.008)	(0.010)	(0.014)	(0.009)	(0.010)	(0.019)
Traditionality index	0.464	0.554	0.411	0.464	0.487	0.417	0.464	0.472	0,432
	(0.008)	(0.014)	(0.009)	(0.008)	(0.010)	(0.013)	(0.008)	(0.008)	(0.018)
Lives in hometown	0.695	0.813	0.625	0.695	0.811	0.457	0.695	0.803	0.257
	(0.008)	(0.011)	(0.011)	(0.008)	(0.008)	(0.015)	(0.008)	(0.008)	(0.017)
Live in husband's hometown	0.725	0.846	0.653	0.725	0.837	0.495	0.725	0.827	0.308
	(0.008)	(0.011)	(0.011)	(0.008)	(0.008)	(0.015)	(0.008)	(0.007)	(0.017)
Only one grandfather is alive	0.330	0.345	0.322	0.330	0.329	0.332	0.330	0.328	0.339
	(0.008)	(0.013)	(0.010)	(0.008)	(0.010)	(0.014)	(0.008)	(0.009)	(0,019)
Both grandfathers are alive	0.570	0.527	0.595	0.570	0.566	0.578	0.570	0.568	0.577
	(0.008)	(0.014)	(0.011)	(0.008)	(0.010)	(0.015)	(0.009)	(0.009)	(0.019)
Proportions	1	0.373	0.627	1	0.673	0.327	1	0.803	0.197

Notes:Bootstrapped standard errors are given in the parentheses.

Table A9: First-stage regression for various subgroups

	Districst		Town		City	
	Age≤35	Age>35	Age≤35	Age>35	Age≤35	Age>35
Instrument	0.184***	0.170***	0.214***	0.249***	0.176***	0.277***
	(0.024)	(0.020)	(0.026)	(0.020)	(0.025)	(0.019)
Observation	2187	1355	2187	1355	2187	1355
	Primary educ. or less	Secondary educ. or above	Primary educ. or less	Secondary educ. or above	Primary educ. or less	Secondary educ. or above
Instrument	0.199***	0.078***	0.250***	0.159***	0.253***	0.170***
	(0.018)	(0.028)	(0.018)	(0.036)	(0.016)	(0.035)
Observation	2303	1239	2303	1239	2303	1239
	Primary educ. or less(husb)	Secondary educ. or above(husb)	Primary educ. or less(husb)	Secondary educ. or above(husb)	Primary educ. or less(husb)	Secondary educ or above(husb)
Instrument	0.193***	0.133***	0.243***	0.197***	0.255***	0.192***
	(0.020)	(0.024)	(0.020)	(0.029)	(0.018)	(0.027)
Observation	1821	1721	1821	1721	1821	1721
	Born in village	Born in center	Born in village	Born in center	Born in village	Born in center
Instrument	0.192***	0.150***	0.254***	0.216***	0.256***	0.211***
	(0.027)	(0.019)	(0.026)	(0.021)	(0.024)	(0.020)
Observation	1162	2380	1162	2380	1162	2380
	Child aged below 6	No child aged below 6	Child aged below 6	No child aged below 6	Child aged below 6	No child aged below 6
Instrument	0.179***	0.152***	0.228***	0.223***	0.200***	0.268***
	(0.022)	(0.023)	(0.023)	(0.024)	(0.022)	(0.022)
Observation	2345	1197	2345	1197	2345	1197
	Older Sibling	No older sibling	Older sibling	No older sibling	Older sibling	No older sibling
Instrument	0.171***	0.164***	0.246***	0.207***	0.286***	0.201***
	(0.026)	(0.019)	(0.025)	(0.022)	(0.024)	(0.021)
Observation	758	2784	758	2784	758	2784
	Few child.	Many child.	Few child.	Many child.	Few child.	Many child.
Instrument	0.168***	0.188***	0.232***	0.169***	0.238***	0.164***
	(0.016)	(0.070)	(0.017)	(0.057)	(0.016)	(0.052)
Observation	3165	377	3165	377	3165	377
	Son pref.	No son pref.	Son pref.	No son pref.	Son pref.	No son pref.
Instrument	0.221***	0.142***	0.269***	0.206***	0.275***	0.209***
	(0.027)	(0.018)	(0.027)	(0.020)	(0.025)	(0.020)
Observation	1194	2348	1194	2348	1194	2348
	Women can work	Women can not work	Women can work	Women can not work	Women can work	Women can not work
Instrument	0.206***	0.163***	0.295***	0.218***	0.272***	0.226***
	(0.057)	(0.016)	(0.054)	(0.017)	(0.052)	(0.017)
Observation	298	3244	298	3244	298	3244
	Interdenominational marriage not allowed	Interdenominational marriage allowed	Interdenominational marriage not allowed	Interdenominational marriage allowed	Interdenominational marriage not allowed	Interdenominational marriage allowed
Instrument	0.177***	0.156***	0.254***	0.194***	0.250***	0.215***
	(0.021)	(0.022)	(0.023)	(0.024)	(0.022)	(0.024)
Observation	1819	1723	1819	1723	1819	1723

	Conservative	Nonconservative	Conservative	Nonconservative	Conservative	Nonconservative
Instrument	0.211***	0.137***	0.266***	0.198***	0.275***	0.201***
	(0.025)	(0.019)	(0.025)	(0.021)	(0.023)	(0.021)
Observation	1355	2187	1355	2187	1355	2187
	Live in home town	Do not live in home town	Live in home town	Do not live in home town	Live in home town	Do not live in home town
Instrument	0.184***	0.130***	0.231***	0.211***	0.214***	0.273***
	(0.019)	(0.023)	(0.019)	(0.028)	(0.018)	(0.028)
Observation	2463	1079	2463	1079	2463	1079
	Live in husb. home town	Do not live in husb. home town	Live in husb. home town	Do not live in husb. home town	Live in husb. home town	Do not live in husb. home town
Instrument	0.192***	0.093***	0.243***	0.167***	0.227***	0.230***
	(0.019)	(0.024)	(0.019)	(0.032)	(0.017)	(0.031)
Observation	2569	973	2569	973	2569	973

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. Control variables are the same as the baseline estimation. The sample includes all married mothers, aged 18–50 inclusive, with at least one child aged 0–10. Few children corresponds to 2 children or less.

Table A10: Effects of grandmothers' proximity on mothers' labor force participation

| | Dependent Variable:LFP | | | | | |
| | District | | Town | | City | |
	OLS	IV	OLS	IV	OLS	IV
Proximity	0.001	0.182**	0.026**	0.136**	0.030*	0.132**
	(0.013)	(0.080)	(0.013)	(0.060)	(0.015)	(0.059)
Primary education	0.037*	0.040**	0.038*	0.040**	0.037*	0.038**
	(0.019)	(0.020)	(0.019)	(0.019)	(0.019)	(0.019)
Secondary education	0.114***	0.115***	0.114***	0.115***	0.114***	0.113***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)
Tertiary education	0.523***	0.527***	0.523***	0.522***	0.524***	0.526***
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.027)
Primary education (husband)	0.015	0.015	0.015	0.013	0.014	0.013
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Secondary education (husband)	-0.003	0.010	-0.002	0.003	-0.003	-0.002
	(0.018)	(0.019)	(0.018)	(0.018)	(0.018)	(0.018)
Tertiary education (husband)	-0.016	0.022	-0.010	0.017	-0.011	0.007
	(0.022)	(0.028)	(0.022)	(0.026)	(0.022)	(0.024)
Employment (husband)	-0.060**	-0.043	-0.060**	-0.057**	-0.060**	-0.057**
	(0.025)	(0.027)	(0.025)	(0.025)	(0.025)	(0.025)
Town center	-0.004	-0.002	-0.003	0.002	-0.003	-0.002
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Village	-0.008	-0.024	-0.006	-0.001	-0.007	-0.006
	(0.016)	(0.017)	(0.016)	(0.016)	(0.016)	(0.015)
Chronic illness	0.012	0.014	0.012	0.012	0.012	0.012
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
At least one child aged 0–5	-0.083***	-0.080***	-0.083***	-0.085***	-0.084***	-0.086***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
At least one child aged 15 and above	-0.040**	-0.046**	-0.040**	-0.039**	-0.040*	-0.037*
	(0.020)	(0.021)	(0.020)	(0.020)	(0.020)	(0.020)
Number of young children	-0.023**	-0.029***	-0.023**	-0.024**	-0.023**	-0.024**
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)
Observations	3,542					

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. Control variables are the same as the baseline estimation. Age fixed effects, dummy variables for the current region of residence and the childhood region are included, but coefficients are not reported.

Table A11: Effects of grandmothers' proximity on mothers' employment status

	District		Town		City	
	District		**Town**		**City**	
	OLS	IV	OLS	IV	OLS	IV
Proximity	0.004	0.164**	0.020	0.123**	0.030*	0.119**
	(0.013)	(0.079)	(0.013)	(0.060)	(0.016)	(0.058)
Primary education	0.037*	0.039**	0.037*	0.039**	0.037*	0.038**
	(0.019)	(0.020)	(0.019)	(0.019)	(0.019)	(0.019)
Secondary education	0.110***	0.111***	0.110***	0.111***	0.110***	0.109***
	(0.022)	(0.023)	(0.022)	(0.022)	(0.022)	(0.022)
Tertiary education	0.516***	0.519***	0.515***	0.514***	0.516***	0.518***
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
Primary education (husband)	0.008	0.008	0.008	0.006	0.008	0.006
	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
Secondary education (husband)	-0.002	0.009	-0.002	0.002	-0.002	-0.002
	(0.018)	(0.019)	(0.018)	(0.018)	(0.018)	(0.018)
Tertiary education (husband)	-0.021	0.013	-0.017	0.009	-0.016	0.000
	(0.021)	(0.027)	(0.022)	(0.026)	(0.021)	(0.023)
Employment (husband)	-0.021	-0.005	-0.021	-0.018	-0.020	-0.018
	(0.024)	(0.026)	(0.024)	(0.024)	(0.024)	(0.024)
Town center	-0.008	-0.007	-0.007	-0.003	-0.007	-0.006
	(0.015)	(0.016)	(0.015)	(0.016)	(0.015)	(0.015)
Village	-0.012	-0.026	-0.011	-0.006	-0.011	-0.010
	(0.015)	(0.017)	(0.015)	(0.015)	(0.015)	(0.015)
Chronic illness	0.009	0.010	0.009	0.009	0.009	0.008
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
At least1 child aged 0–5	-0.081***	-0.078***	-0.081***	-0.082***	-0.081***	-0.084***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
At least one child aged 15 and above	-0.036*	-0.042**	-0.036*	-0.035*	-0.036*	-0.034*
	(0.020)	(0.021)	(0.020)	(0.020)	(0.020)	(0.020)
Number of young children	-0.020**	-0.025**	-0.020**	-0.021**	-0.020**	-0.021**
	(0.010)	(0.010)	(0.010)	(0.009)	(0.010)	(0.009)
Observations			3,542			

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. Control variables are the same as the baseline estimation. Age fixed effects, dummy variables for the current region of residence and the childhood region are included, but coefficients are not reported.

Table A12: Effect of mothers' and mothers-in-law's proximity on their daughters' labor market outcomes

	Dependent Variables			
	Mother's Proximity		Mother-in-law's Proximity	
	LFP	Employment	LFP	Employment
Same neighborhood/district/village or closer				
Proximity	0.188*	0.173	0.083*	0.074
	(0.113)	(0.112)	(0.049)	(0.048)
F statistic:	304.828	304.828	834.768	834.768
AR confidence set(95%	*[-0.031, 0.417]*		*[-0.013, 0.179]*	
AR confidence set(90%)	*[0.004, 0.372]*		*[0.002, 0.163]*	
Same town or closer				
Proximity	0.070*	0.064	0.048*	0.043
	(0.041)	(0.041)	(0.028)	(0.028)
F statistic:	1012.518	1012.518	2467.799	2467.799
AR confidence set(95%)	*[-0.011, 0.150]*		*[-0.007, 0.103]*	
AR confidence set(90%)	*[0.002, 0.137]*		*[0.002, 0.094]*	
Same city or closer				
Proximity	0.050*	0.046	0.039*	0.034
	(0.030)	(0.029)	(0.023)	(0.023)
F statistic:	2003.992	2003.992	4857.792	4857.792
AR confidence set(95%)	*[-0.007, 0.107]*		*[-0.006, 0.084]*	
AR confidence set(90%)	*[0.002, 0.098]*		*[0.001 , 0.076]*	
Observations		3,542		

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The mean LFP and Employment is 0.25 (0.433) and 0.237 (0.426), respectively. Regressions include age fixed effects, education categories for both spouses (less than primary education (omitted), primary, secondary, and tertiary education), whether her spouse works, the current region of residence (NUTS-1 level), type of childhood settlement (city center (omitted), town center, or village), the childhood region (NUTS-2 level), whether self or spouse has a chronic illness, whether there is at least one child aged 0–5, whether there is an older sibling, and the number of young children in the household. In columns one and two the proximity variable is equal to one if the mother lives close and it is equal to one if the mother-in-law lives close in the third and fourth columns; otherwise, it is zero. We define two different instruments by using the information on whether maternal and paternal grandmothers are alive. The sample includes all married mothers, aged 18–50 inclusive, with at least one child aged 0–10.

Table A13: Effects of grandmothers' proximity on the health status of the youngest or oldest child in the household

	Dependent Variable: Health Status of the Child	
	Youngest Child	Oldest Child
Same neighborhood/district/village or closer	0.008	0.009
	(0.102)	(0.102)
F statistics:	121.126	121.126
Same town or closer	0.006	0.007
	(0.076)	(0.076)
F statistics:	186.531	186.531
Same city or closer	0.006	0.007
	(0.074)	(0.074)
F statistics:	213.617	213.617
Observations	3,542	3,542

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The dependent variable is defined as the very good health status of the youngest or oldest child in the household. The mean health status of the youngest child and oldest child is 0.300 (0.458) and 0.299 (0.458), respectively. Control variables are the same as the baseline estimation. The endogenous variable is whether mother or in-law lives close. The instrumental variable is the number of grandmothers alive. The sample includes all married mothers, aged 18–50 inclusive, with at least one child aged 0–10.

Table A14: Effects of grandmothers' proximity on labor market outcomes for different samples

	Dependent Variables	
	LFP	**Employment**
Sample 1: Same District & Another City	0.156*	0.165**
	(0.081)	(0.081)
F statistic:	97.75	
AR confidence set (95%)	*[0.005, 0.325]*	*[0.015, 0.334]*
tF confidence interval	*[-0.003, 0.314]*	*[0.007, 0.323]*
Mean dependent variable	0.235	0.223
	(0.424)	(0.417)
Observations	1,514	
Sample 2: Same Town & Another City	0.071	0.046
	(0.079)	(0.078)
F statistic:	102.5	
Mean dependent variable	0.273	0.258
	(0.446)	(0.438)
Observations	1,609	
Sample 3: Same City & Another City	0.073	0.056
	(0.102)	(0.099)
F statistic:	72.20	
Mean dependent variable	0.265	0.255
	(0.441)	(0.436)
Observations	1,221	

Notes: *$p<0.1$ **$p<0.05$ ***$p<0.01$. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses.

Table A15: Effects of the number of alive grandparents on mothers' and fathers' labor market outcomes

| | | | *Dependent Variables* | | | |
	LFP	Employment	LFP	Employment	LFP	Employment
Groups:						
Women without young children:						
Number of grandmothers alive	0.016	0.014				
	(0.013)	(0.013)				
Fathers with young children:						
Number of grandmothers alive			-0.000	0.005		
			(0.005)	(0.010)		
Mothers with young children:						
Number of grandfathers alive					0.009	0.009
					(0.010)	(0.010)
Observations		2,509		3,408		3,542

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors are clustered by the NUTS-2 childhood region-age level. Control variables are the same as the baseline estimation. For the first four columns, the independent variable is the number of grandmothers alive. For the fifth and sixth columns, the independent variable is the number of grandfathers alive. The results of the sample of married women with children aged 11 and older or no children are presented in columns one and two. The results of the sample of fathers with children aged 10 and younger are presented in the third and fourth columns. The last two columns consider married women with young children.

Table A16: Effects of grandmothers' proximity on stating childcare and household chores as a reason for not working

| | Dependent Variable: Not Working as she is busy with childcare and household chores | | | |
| | Mothers with young children | | Women without young children | |
	(OLS)	(IV)	(OLS)	(IV)
Same neighborhood/district/village or closer				
Proximity	-0.045***	-0.204**	-0.089***	-0.071
	(0.015)	(0.086)	(0.021)	(0.069)
F statistic:		121.126		321.186
AR confidence set(95%)		*[-0.378, -0.037]*		
Same town or closer				
Proximity	-0.072***	-0.153**	-0.051***	-0.050
	(0.014)	(0.064)	(0.019)	(0.049)
F statistic:		186.531		620.949
AR confidence set(95%)		*[-0.282, -0.028]*		
Same city or closer				
Proximity	-0.068***	-0.148**	-0.071***	-0.047
	(0.017)	(0.063)	(0.022)	(0.046)
F statistic:		213.617		812.586
AR confidence set(95%)		*[-0.275, -0.027]*		
Observations		3,542		2,509

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The mean 'Not Working' is 0.684 (0.465) and 0.564 (0.496) for the group of mothers with young children and women without young children, respectively. Regressions include age fixed effects, education categories for both spouses (less than primary education (omitted), primary, secondary, and tertiary education), whether spouse works, the current region of residence (NUTS-1 level), type of childhood settlement (city center (omitted), town center, or village), whether self or spouse has a chronic illness. The proximity variable is a dummy variable equal to one if the mother or in-law lives close; otherwise, it is zero. In columns 2 and 4, the number of alive grandmothers is used as an instrument. The sample includes all married mothers aged 18–50 inclusive, with at least one child aged 0–10.

Table A17: Effects of grandmothers' proximity on the indicators of traditionality for different sample specifications in terms of the age of the youngest child in the household

	Dependent Variables	
	Traditionality Index	**Finding Women's Working Inappropriate**
Same neighborhood/district/village or closer		
Mothers' proximity × child aged 0–5 years	0.456**	0.079
	(0.219)	(0.132)
Mothers' proximity	-0.224	-0.002
	(0.168)	(0.104)
First-stage F-statistics:		
Mothers' proximity × child aged 0–5 years	111.31	
Mothers' proximity	46.11	
Same town or closer		
Mothers' proximity × child aged 0–5 years	0.337**	0.062
	(0.159)	(0.096)
Mothers' proximity	-0.153	-0.002
	(0.113)	(0.071)
First-stage F-statistics:		
Mothers' proximity × child aged 0–5 years	181.44	
Mothers' proximity	89.59	
Same city or closer		
Mothers' proximity × child aged 0–5 years	0.337**	0.070
	(0.160)	(0.094)
Mothers' proximity	-0.127	-0.001
	(0.094)	(0.059)
First-stage F-statistics:		
Mothers' proximity × child aged 0–5 years	222.72	
Mothers' proximity	148.90	
Observations	3,542	

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The mean Traditionality Index and Finding Women's Working Inappropriate is 0.456 (0.469) and 0.084 (0.277) for the group of women with very young children and 0.479 (0.485) and 0.085 (0.279) for the counter group. First-stage F-statistics are Sanderson-Windmeijer (2016) F-statistics for multiple endogenous regressors. The corresponding Stock and Yogo (2005) critical value for 10% maximal IV size is 7.03.

Table A18: Differential effects of mothers and mothers in law's proximity on measures of traditionality

	District	Town	City
Dependent Variables:			
Having son preference			
Mother	-0.007	-0.003	-0.002
	(0.151)	(0.056)	(0.040)
Mother-in-law	0.062	0.036	0.029
	(0.064)	(0.037)	(0.030)
Finding women's working inappropriate			
Mother	0.096	0.035	0.025
	(0.084)	(0.031)	(0.022)
Mother-in-law	-0.009	-0.005	-0.004
	(0.040)	(0.023)	(0.019)
Interdenominational marriage is not allowed			
Mother	0.354**	0.131**	0.094**
	(0.163)	(0.061)	(0.044)
AR confidence set (95%)	*[0.038, 0.670]*	*[0.013, 0.249]*	*[0.009, 0.179]*
Mother-in-law	0.032	0.018	0.015
	(0.069)	(0.040)	(0.032)
Traditionality index			
Mother	0.033	0.012	0.009
	(0.157)	(0.058)	(0.042)
Mother-in-law	0.034	0.019	0.016
	(0.064)	(0.037)	(0.030)
Observations		3,542	

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. Control variables are the same as the baseline estimation. Endogenous variables are mothers' proximity or mother-in-law's proximity. Instruments are the presence of mother or mother-in-law. The first-stage F-statistics are above 104.7.

Table A19: Effects of grandmothers' proximity on labor market status for the subgroup of women who do not reside with their parents

| | Dependent Variables | |
	LFP	Employment
Analysis 1: Same District	0.220**	0.182*
	(0.103)	(0.103)
F statistic:	81.651	
AR confidence set (95%)	*[0.029, 0.436]*	*[-0.009, 0.398]*
AR confidence set (90%)	*[0.060, 0.395]*	*[0.022, 0.356]*
tF confidence interval	*[0.014, 0.427]*	*[-0.024, 0.388]*
Analysis 2: Same Town	0.141**	0.117*
	(0.066)	(0.066)
F statistic:	152.508	
AR confidence set (95%)	*[0.019, 0.274]*	*[-0.006, 0.250]*
AR confidence set (90%)	*[0.039, 0.253]*	*[0.014, 0.228]*
Analysis 3: Same City	0.129**	0.107*
	(0.060)	(0.060)
F statistic:	196.077	
AR confidence set (95%)	*[0.017, 0.251]*	*[-0.005, 0.228]*
AR confidence set (90%)	*[0.035, 0.231]*	*[0.013, 0.209]*
Observations	3,154	

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The mean LFP and Employment is 0.263 (0.440) and 0.250 (0.433).

Table A20: Differential effects of grandmothers' proximity on mothers' labor force participation and employment status

| | Dependent Variables | | | | | |
| | LFP | | | Employment | | |
	District	Town	City	District	Town	City
Analysis 1: Education level: Less than secondary						
Mother's proximity × Less than secondary	–	0.301	0.298	–	0.275	0.273
		(0.256)	(0.241)		(0.262)	(0.248)
Mother's proximity		-0.130	-0.131		-0.120	-0.120
		(0.260)	(0.243)		(0.267)	(0.250)
First-stage F-statistics:						
Mother's proximity × Less than secondary	3.50	30.97	41.96	3.50	30.97	41.96
Mother's proximity	4.12	17.97	19.44	4.12	17.97	19.44
Analysis 2: Childhood region type: Village						
Mother's proximity × Village	-0.116	-0.076	-0.093	-0.048	-0.026	-0.041
	(0.144)	(0.104)	(0.107)	(0.143)	(0.103)	(0.105)
Mother's proximity	0.236**	0.170* *	0.175**	0.187*	0.134*	0.138*
	(0.108)	(0.078)	(0.081)	(0.109)	(0.078)	(0.081)
First-stage F-statistics:						
Mother's proximity × Village	136.35	220.47	225.44	136.35	220.47	225.44
Mother's proximity	78.04	117.81	111.55	78.04	117.81	111.55
Analysis 3: Ownership status of the house: Owner						
Mother's proximity × Owner	-0.122	-0.079	-0.072	-0.136	-0.088	-0.082
	(0.187)	(0.124)	(0.122)	(0.182)	(0.121)	(0.118)
Mother's proximity	0.253*	0.182*	0.173*	0.243*	0.175*	0.166*
	(0.139)	(0.096)	(0.093)	(0.135)	(0.094)	(0.090)
First-stage F-statistics:						
Mother's proximity × Owner	102.90	181.96	190.02	102.90	181.96	190.02
Mother's proximity	47.78	72.70	87.01	47.78	72.70	87.01
Analysis 4: Age of children: Child aged 0–5						
Mother in law's proximity × Child aged 0–5	-0.128	-0.076	-0.036	-0.066	-0.036	-0.001
	(0.187)	(0.121)	(0.112)	(0.183)	(0.119)	(0.110)
Mother in law's proximity	0.259*	0.179*	0.150*	0.204	0.143	0.120
	(0.157)	(0.103)	(0.085)	(0.153)	(0.101)	(0.083)
First-stage F-statistics:						
Mother in law's proximity × Child aged 0–5	93.91	175.09	189.33	93.91	175.09	189.33
Mother in law's proximity	56.87	97.70	151.26	56.87	97.70	151.26
Analysis 5: Degree of traditionality: Traditional						
Mother in law's proximity × Traditional	-0.142	-0.082	-0.095	-0.085	-0.044	-0.055
	(0.160)	(0.110)	(0.112)	(0.156)	(0.107)	(0.109)
Mother in law's proximity	0.261*	0.177**	0.180**	0.212	0.145	0.148
	(0.135)	(0.090)	(0.092)	(0.133)	(0.088)	(0.090)
First-stage F-stat:						
Mother in law's proximity × Traditional	119.92	207.49	215.44	119.92	207.49	215.44
Mother in law's proximity	57.24	100.07	97.36	57.24	100.07	97.36
Observations			3,542			

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors are clustered by the NUTS-2 childhood region-age level. Dependent variables are LFP and employment status. In the first analysis, endogenous variables are the mothers' proximity and its interaction with the presence of at least one sister. Control variables are the same as the baseline estimation, except that for this analysis we include the presence of the sister as an additional control variable. In the second analysis, endogenous variables are the mothers-in-law's proximity and its interaction with the presence of at least one sister-in-law. First-stage F-statistics are Sanderson-Windmeijer (2016) F-statistics for multiple endogenous regressors. The corresponding Stock and Yogo (2005) critical value for 10% maximal IV size is 7.03.

Table A21: Effects of mother's labor force participation on the later death of the grandmother

	Dependent Variable: Later Death of the Grandmother
LFP	0.005
	(0.008)
Observations	3,558

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the age level are given in the parentheses. The mean of the death of grandmother is 0.039 (0.192). The regression includes age fixed effects, education categories for both spouses (less than primary education (omitted), primary, secondary, and tertiary education), whether her spouse works, whether self or spouse has a chronic illness, and survey year fixed effects. The future death of the grandmother is a dummy variable equal to one if the mother or in-law died in the following years; otherwise, it is zero. The sample includes all married mothers co-residing with mother or in-law, aged 18–50 inclusive, with at least one child aged 0–10.

Table A22: Differential effect of the number of grandmothers alive on non-college-educated daughters

	Main Effect of the Instrument	No College Degree Interaction with the Instrument	No College Degree Total Effect of the Instrument
Dependent Variables:			
LFP	-0.023	0.060	0.038***
	(0.050)	(0.051)	(0.014)
Employment	-0.017	0.050	0.033**
	(0.053)	(0.054)	(0.013)
Observations		3,542	

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors are clustered by the NUTS-2 childhood region-age level. Dependent variables are LFP and employment status. The instrument denotes the number of grandmothers alive.

Table A23: Effects of grandmothers' proximity on mother's labor market outcomes after dropping potentially endogenous variables

	Dependent Variables			
	LFP		Employment	
	(OLS)	(IV)	(OLS)	(IV)
Same neighborhood/district/village or closer				
Proximity	-0.001	0.168**	0.003	0.151*
	(0.013)	(0.080)	(0.013)	(0.080)
F statistic:		122.205		122.205
AR confidence set (95%)		*[0.018, 0.331]*		*[0.003, 0.312]*
Same town or closer				
Proximity	0.024*	0.125**	0.019	0.113*
	(0.013)	(0.060)	(0.013)	(0.060)
F statistic:		189.158		189.158
AR confidence set (95%)		*[0.013, 0.247]*		*[0.002, 0.234]*
Same city or closer				
Proximity	0.026*	0.122**	0.027*	0.110*
	(0.015)	(0.059)	(0.016)	(0.058)
F statistic:		216.981		216.981
AR confidence set (95%)		*[0.013, 0.240]*		*[0.001, 0.227]*
Observations		3,542		

Notes: *$p<0.1$ **$p<0.05$ ***$p<0.01$. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The mean LFP and Employment is 0.25 (0.433) and 0.237 (0.426). Regressions include age fixed effects, education categories for both spouses (less than primary education (omitted), primary, secondary, and tertiary education), whether her spouse works, the current region of residence (NUTS-1 level), type of childhood settlement (city center (omitted), town center, or village), whether self or spouse has a chronic illness. The proximity variable is a dummy variable equal to one if the mother or in-law lives close; otherwise, it is zero. In columns 2, 4, and 6, the number of alive grandmothers used as an instrument. The sample includes all married mothers, aged 18–50 inclusive, with at least one child aged 0–10.

Table A24: Effects of grandmothers' proximity on mothers' labor force participation and employment status for different sample specifications

	Dependent Variables					
	LFP			Employment		
	District	Town	City	District	Town	City
Cut-off age level:9	0.137*	0.102*	0.103*	0.124	0.093	0.094
	(0.078)	(0.058)	(0.059)	(0.077)	(0.058)	(0.058)
F statistic:	108.364	170.457	181.884	108.364	170.457	181.884
AR confidence set (95%)	*[-0.008, 0.295]*	*[-0.006, 0.220]*	*[-0.007, 0.223]*	*[-0.020, 0.286]*	*[-0.015, 0.209]*	*[-0.015, 0.212]*
AR confidence set (90%)	*[0.015, 0.270]*	*[0.011, 0.201]*	*[0.011, 0.204]*	*[0.004, 0.255]*	*[0.003, 0.190]*	*[0.002, 0.193]*
Mean dependent variable		0.246			0.233	
		(0.431)			(0.423)	
Observations			3,351			
Cut-off age level:11	0.219***	0.165***	0.161***	0.199***	0.150***	0.146***
	(0.076)	(0.057)	(0.056)	(0.075)	(0.057)	(0.056)
F statistic:	140.099	219.483	247.083	140.099	219.483	247.083
AR confidence set (95%)	*[0.078, 0.372]*	*[0.058, 0.281]*	*[0.056, 0.274]*	*[0.059, 0.351]*	*[0.044, 0.265]*	*[0.042, 0.259]*
Mean dependent variable		0.253			0.240	
		(0.435)			(0.427)	
Observations			3,713			
Mothers without chronic illnesses	0.185**	0.143**	0.142**	0.181**	0.141**	0.139**
	(0.084)	(0.066)	(0.066)	(0.084)	(0.066)	(0.065)
F statistic:	111.732	160.872	176.641	111.732	160.872	176.641
AR confidence set (95%)	*[0.021, 0.355]*	*[0.020, 0.277]*	*[0.019, 0.275]*	*[0.025, 0.351]*	*[0.018, 0.279]*	*[0.018, 0.271]*
Mean dependent variable		0.255			0.243	
		(0.436)			(0.429)	
Observations			3,175			

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors are clustered by the NUTS-2 childhood region-age level. Dependent variables are LFP and employment status. Control variables are the same as the baseline estimation.

Table A25: Effects of grandmothers' proximity on mothers' labor force participation and employment status using different instrumented and instrumental variables

	Dependent Variables					
	LFP			Employment		
	District	Town	City	District	Town	City
Analysis 1: *Instrumented variable is equal to 1 if mother or in-law is geographically close and 2 if mother and in-law are geographically close.*						
Proximity	0.120**	0.057**	0.043**	0.109**	0.052**	0.039**
	(0.053)	(0.025)	(0.019)	(0.052)	(0.025)	(0.019)
F statistic:	197.048	646.083	1336.543	197.048	646.083	1336.543
AR confidence set (95%)	[0.022, 0.227]	[0.009, 0.106]	[0.007, 0.080]	[0.011, 0.214]	[0.004, 0.100]	[0.003, 0.075]
Chi-sq(1) P-val	–	–	–	–	–	–
Analysis 2: *Two different instruments for the mother and mother-in-law, identical instrumented variable in the baseline analysis.*						
Proximity	0.131*	0.119**	0.126**	0.117*	0.107*	0.114**
	(0.069)	(0.057)	(0.058)	(0.068)	(0.056)	(0.057)
F statistic:	85.231	98.336	104.605	85.231	98.336	104.605
Chi-sq(1) P-val	0.215	0.402	0.608	0.240	0.416	0.605
Analysis 3: *Two different instruments for the mother and mother-in-law, identical instrumented variable in analysis 1.*						
Proximity	0.101**	0.055**	0.042**	0.091*	0.050**	0.038**
	(0.049)	(0.025)	(0.019)	(0.048)	(0.025)	(0.019)
F statistic:	125.314	335.933	676.689	125.314	335.933	676.689
Chi-sq(1) P-val	0.341	0.624	0.751	0.360	0.620	0.736
Observations			3,542			

Notes: *$p<0.1$ **$p<0.05$ ***$p<0.01$. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. Control variables are the same as the baseline estimation.

Table A26: Effects of grandmothers' proximity on having a young child in the household

	Dependent Variables	
	Probability of having a young child	**Number of young children**
Same neighborhood/district/village or closer	0.051	0.226
	(0.048)	(0.143)
F statistics:	448.023	122.847
Same town or closer	0.037	0.170
	(0.035)	(0.108)
F statistics:	741.211	187.426
Same city or closer	0.035	0.166
	(0.033)	(0.105)
F statistics:	844.364	214.642
Observations	6,051	3,542

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors clustered by the NUTS-2 childhood region-age level are given in the parentheses. The mean of having a young child is 0.585 (0.493). The mean number of total children is 1.572 (0.734). In the first column, regressions include age fixed effects, education categories for both spouses (less than primary education (omitted), primary, secondary, and tertiary education), whether spouse works, the current region of residence (NUTS-1 level), type of childhood settlement (city center (omitted), town center, or village), whether self or spouse has a chronic illness. The dependent variable is a dummy variable equal to one if the woman has a young child, and zero otherwise. In the second column, the model includes additional control variables: whether there is at least one child aged 0–5 and whether these is an older sibling. The dependent variable is equal to the total number of young children. The proximity variable is a dummy variable equal to one if the mother or in-law lives close; otherwise, it is zero. The number of alive grandmothers used as an instrument. In the first analysis, the sample includes all married women aged 18–50 inclusive with children or no children. In the second analysis, it includes all married mothers, aged 18–50, with at least one child aged 0–10.

11 Online Appendix B

11.1 Elderly Care Channel

We investigate whether the proximity of grandmothers' proximity affects mothers' labor market outcomes through the elderly care channel by implementing two different analyses. In our first analysis, we focus on the differential effect of grandmothers' proximity on women with at least one surviving sister or sister-in-law.[52] That is, we implement regression analysis in which we include the original proximity variable and its interaction with the presence of a sister (in-law) as endogenous variables. By doing so, we aim to understand if the positive effects of living close to grandmothers differ depending on the availability of a sister or sister-in-law. More specifically, we define a binary variable 'Sister (Sister-in-Law)' that equals one if the individual has at least one surviving sister (sister-in-law). The instrumental variables we use are the dummy variable indicating whether the mother (mother-in-law) is alive and its interaction with the 'Sister (Sister-in-Law)' variable.

In Table B1, we present these results for labor market outcomes in the total, village, and non-village samples. The results in the first three panels, which are for the own mother and sister, show that the coefficients of the interaction term are insignificant but positive for the total, village, and non-village samples. The positive coefficients on the interaction term suggest that the presence of at least one sister amplifies the impact of grandmothers' proximity on mothers' labor force participation and employment rates. This result might be attributed to sisters' help with elderly care or childcare. However, when we examine the effects of the mother-in-law's proximity in the presence of at least one sister-in-law, as presented in the last three panels, the coefficients are negative and significant. This suggests that women with at least one sister-in-law are less likely to benefit from their mother-in-law's proximity to join the labor market. If mother-in-law's proximity affects mothers' labor supply through the elderly care channel, women with at least one sister-in-law would share the burden of elderly care and provide fewer hours of care, leading to fewer caregiving hours and increased labor supply for women. Overall, these results do not provide evidence that the proximity of grandmothers affects daughters' LFP through the elderly care channel.

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[52]In our data, we do not observe information on the number of siblings or whether the sibling is older or younger. We only have the information on whether the woman or her husband has at least one sister or brother and if they live close by. That is, if a woman states that she lives far away from her sister, she might have another sister living nearby who is not mentioned in the questionnaire. Therefore, heterogeneity based on siblings' proximity will be problematic. Additionally, we lack information regarding grandparents' health and whether women provide elder care to them, unless they live in the same household.

Table B1: Differential effects of grandmothers' proximity on mothers' labor force participation and employment status for the group of women with sisters or sisters-in-law

| | Dependent Variables | | | | | |
| | LFP | | | Employment | | |
	District	Town	City	District	Town	City
Total Sample						
Mother's proximity × Sister	0.158	0.055	0.036	-0.024	-0.014	-0.013
	(0.314)	(0.119)	(0.086)	(0.297)	(0.112)	(0.080)
Mothers' proximity	0.060	0.023	0.019	0.193	0.076	0.057
	(0.284)	(0.111)	(0.081)	(0.264)	(0.103)	(0.075)
First-stage F-statistics:						
Proximity	142.98	593.88	1228.47	142.98	593.88	1228.47
Proximity × Sister	254.39	1058.97	2190.39	254.39	1058.97	2190.39
Village Sample						
Mothers' proximity × Sister	0.128	0.060	0.043	-0.203	-0.094	-0.069
	(0.428)	(0.200)	(0.144)	(0.379)	(0.177)	(0.126)
Mothers' proximity	-0.089	-0.043	-0.031	0.203	0.094	0.071
	(0.402)	(0.186)	(0.139)	(0.348)	(0.160)	(0.119)
First-stage F-statistics:						
Proximity	43.91	167.14	359.70	43.91	167.14	359.70
Proximity × Sister	97.82	271.48	559.33	97.82	271.48	559.33
Non-Village Sample						
Mothers' proximity × Sister	0.129	0.015	0.006	0.134	0.020	0.011
	(0.413)	(0.146)	(0.104)	(0.410)	(0.144)	(0.103)
Mothers' proximity	0.350	0.123	0.093	0.289	0.101	0.076
	(0.375)	(0.138)	(0.099)	(0.370)	(0.136)	(0.098)
First-stage F-statistics:						
Proximity	82.17	409.57	843.42	82.17	409.57	843.42
Proximity × Sister	139.67	654.00	1370.25	139.67	654.00	1370.25
Total Sample						
Mother in law's proximity × Sister in law	-0.492**	-0.218**	-0.166**	-0.487**	-0.216**	-0.165**
	(0.200)	(0.090)	(0.068)	(0.197)	(0.088)	(0.067)
Mother in law's proximity	0.525***	0.240***	0.185***	0.511***	0.233***	0.180***
	(0.192)	(0.085)	(0.065)	(0.189)	(0.084)	(0.064)
First-stage F-statistics:						
Proximity	156.96	617.51	1393.84	156.96	617.51	1393.84
Proximity × Sister in law	251.23	1146.37	2680.84	251.23	1146.37	2680.84
Village Sample						
Mother in law's proximity × Sister in law	-0.436**	-0.232**	-0.189**	-0.456**	-0.241**	-0.197**
	(0.217)	(0.117)	(0.094)	(0.228)	(0.122)	(0.099)
Mother in law's proximity	0.470**	0.259**	0.213**	0.497**	0.274**	0.225**
	(0.206)	(0.109)	(0.089)	(0.218)	(0.116)	(0.094)
First-stage F-statistics:						
Proximity	64.06	234.12	468.13	64.06	234.12	468.13
Proximity × Sister in law	96.83	399.02	819.19	96.83	399.02	819.19
Non-Village Sample						
Mother in law's proximity × Sister in law	-0.594**	-0.253**	-0.189**	-0.572**	-0.246**	-0.185**
	(0.278)	(0.116)	(0.087)	(0.272)	(0.114)	(0.085)
Mother in law's proximity	0.572**	0.243**	0.182**	0.527**	0.224**	0.169**
	(0.269)	(0.111)	(0.083)	(0.262)	(0.109)	(0.081)
First-stage F-statistics:						
Proximity	101.10	456.37	960.59	101.10	456.37	960.59
Proximity × Sister in law	177.83	805.69	1862.71	177.83	805.69	1862.71
Observations			3,542			

Notes: *p<0.1 **p<0.05 ***p<0.01. Standard errors are clustered by the NUTS-2 childhood region-age level. Dependent variables are LFP and employment status. In the first analysis, endogenous variables are the mothers' proximity and its interaction with the presence of at least one sister. Control variables are the same as the baseline estimation, except that for this analysis we include the presence of the sister as an additional control variable. In the second analysis, endogenous variables are the mothers-in-law's proximity and its interaction with the presence of at least one sister-in-law. First-stage F-statistics are Sanderson-Windmeijer (2016) F-statistics for multiple endogenous regressors. The corresponding Stock and Yogo (2005) critical value for 10% maximal IV size is 7.03.

11.2 Potential Violation of the Exclusion Restriction

We employ two strategies to assess the sensitivity of the IV estimates to violations of the exclusion restriction: the imperfect instrumental variable (IIV) method proposed by Nevo and Rosen (2012) and the plausible exogeneity test by Conley et al. (2012).

11.2.1 Nevo and Rosen (2012)

The implementation of Nevo and Rosen (2012)'s method requires that the correlation between the instrumental variable and the error term be in the same direction as the correlation between the original endogenous regressor and the error term (Assumption 3 in Nevo and Rosen, 2012). Therefore, we multiply the proximity variable by -1 so that this assumption is satisfied. Traditional women tend to live close but stay out of the labor market; therefore, $\rho_{xu} > 0$. Women whose mothers die earlier might come from poorer socioeconomic backgrounds. Women from lower socioeconomic backgrounds work less if they have fewer skills and education. That is, they are less likely to work and have a mother or in-law who is still alive, so $\rho_{zu} > 0$.

It is implausible to expect that the death of grandmother is even more endogenous than our endogenous variable (proximity). As a result, we expect the instruments to have lower correlation with the error term than the original endogenous variable (Assumption 4 in Nevo and Rosen, 2012). Using the constructed IV by Nevo and Rosen (2012)'s approach for each definition of proximity variable, the estimated effects of proximity on labor force participation are as follows:

- The coefficient of proximity_district is statistically insignificant and between 0.026 and 0.182 (with a confidence interval of -0.007 and 0.339).

- The coefficient of proximity_town is statistically significant and between 0.046 and 0.136 (with a confidence interval of 0.014 and 0.254).

- The coefficient of proximity_city is statistically significant and between 0.051 and 0.132 (with a confidence interval of 0.013 and 0.247).

Using the constructed IV by Nevo and Rosen (2012)'s approach for each definition of proximity variable, the estimates of the effects of proximity on employment are as follows:

- The coefficient of proximity_district is statistically insignificant and between 0.026 and 0.164 (with a confidence interval of -0.006 and 0.320).

- The coefficient of proximity_town is statistically significant and between 0.039 and 0.123 (with a confidence interval of 0.007 and 0.239).

- The coefficient of proximity_city is statistically significant and between 0.049 and 0.119 (with a confidence interval of 0.011 and 0.233).

For each definition of proximity variable, the IV estimates are located in the confidence intervals for labor force participation and employment as outcome variables. Thus, the IIV method confirms the robustness of our IV estimation results.

11.2.2 Conley et al. (2012)

We examine the possibility that the instrument may have a direct effect on the probability of women being in the labor force or being employed. We apply the plausibly exogenous technique by Conley et al. (2012) to show how large a potential direct effect of the instrument can be in order to turn the 2SLS estimate of labor force participation and employment outcomes insignificant. According to Conley et al. (2012)'s approach, in the following regression
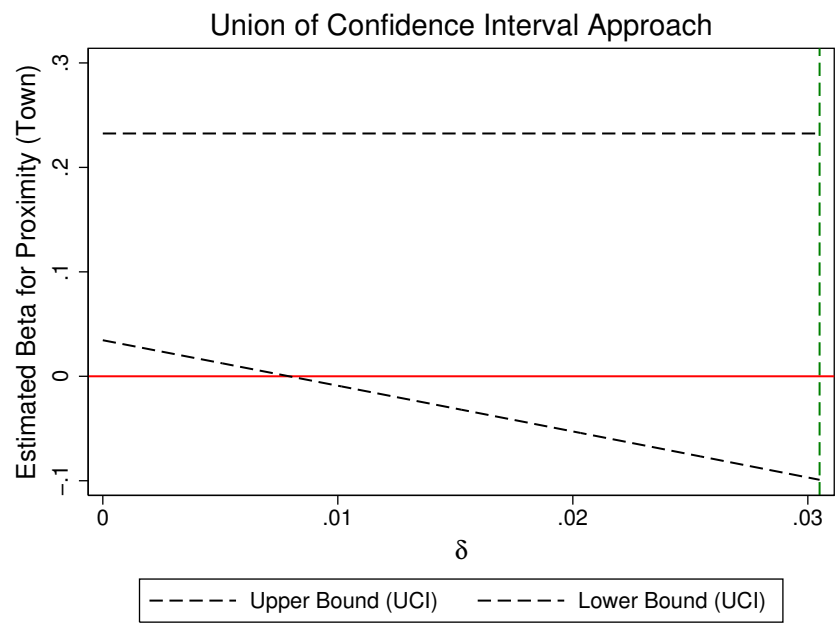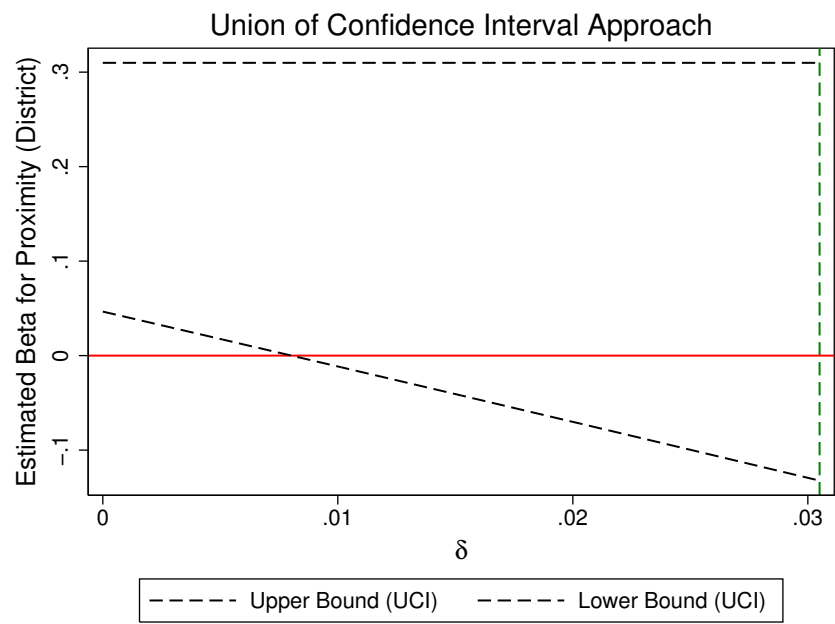
$$Y = X\beta + Z\gamma + \varepsilon,$$

where Y is an outcome vector, X is a matrix of endogenous treatment variables, ε are unobservables, and Z is a matrix of instruments assumed to be uncorrelated with ε, for the exclusion restriction to be satisfied, γ needs to be identically 0.

We estimate the direct effect of the number of grandmothers alive on the labor market status and impose that the support of the direct effect γ is in the interval $[0, \delta]$, with $\delta > 0$. Then, we report the 90% confidence intervals (black dashed lines) for the second-stage estimates of proximity variables for labor market status using the union of confidence intervals (UCI) approach. We present the results in Figures B1 and B2 for labor force participation and employment as outcome variables, respectively, which show the threshold at which the estimated 2SLS coefficient of the endogenous variable becomes statistically insignificant at the 10% level.

For the endogenous variable of living in the same district or closer to grandmothers, the direct effect on labor force participation would turn the second-stage effect insignificant at $\delta \approx 0.08$ (δ corresponding to the intersection of the zero line (red) with the dashed lower-bound of the confidence interval). That is, our 2SLS estimates on labor market outcomes are significant as long as some omitted factors that are also captured by the number of alive grandmothers explain less than a quarter of the overall reduced form effect (25% (0.008/0.031)). In all figures, we show the overall reduced form effects with a vertical green line. For the second and third definitions of proximity variables, the omitted variable that is also captured by the number of grandmothers alive needs to be less than about 23% (0.007/0.031) of the overall reduced form effect and 23% (0.007/0.031) in Figure B1 to depict our 2SLS estimates as significant. Similarly, Figure B2 shows how large the omitted variable should be to render 2SLS estimates insignificant for the employment outcome,

and the results are similar. Therefore, these results show that our main results are robust to the violation of the exclusion restriction to some extent.

Figure B1: Plausibly exogenous technique (LFP)

Union of Confidence Interval Approach

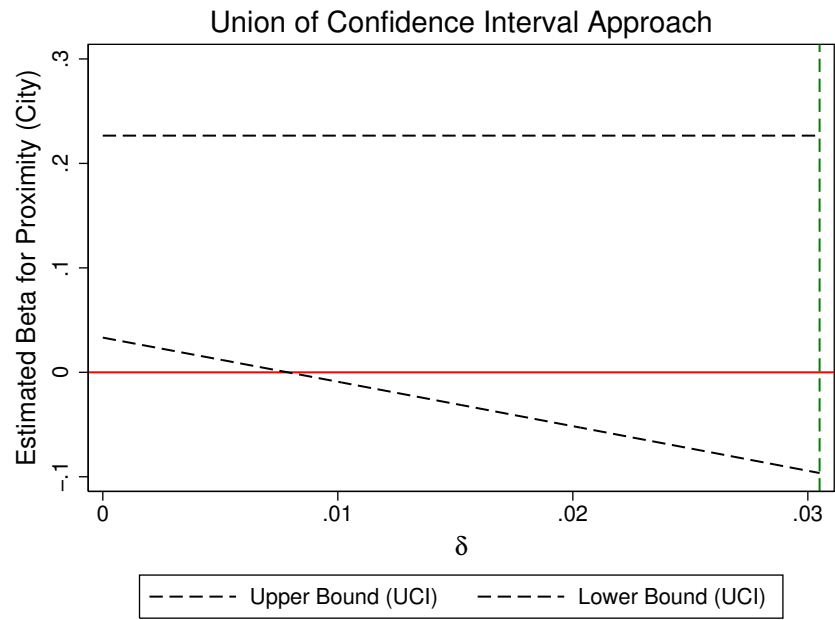## Union of Confidence Interval Approach

Union of Confidence Interval Approach

Figure B2: Plausibly exogenous technique (Employment)

Union of Confidence Interval Approach

Union of Confidence Interval Approach

Union of Confidence Interval Approach