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"GIVING AND RECEIVING CARE: THE DOUBLE ROLE OF GRANDMOTHERS IN MEXICAN FAMILIES"

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Abstract

This research investigates the impact of informal caregiving for the elderly on caregivers, primarily adults, focusing on their health, time use, and labor outcomes. Using data from the Encuesta Nacional sobre Niveles de Vida de los Hogares (ENNViH) from 2002 to 2009 and an event study methodology, it analyzes the effects of the end of caregiving following the death of the only elderly family member on the caregivers, separating the analysis by the sex of the elderly to understand the differentiated role of elderly women. The results vary depending on whether the elderly person was living in the household and whether they were male or female, with the main effects observed in female caregivers, using males as a control group. Three main results emerge from the study: First, there is a reduction in the probability of women working following the death of a female elder relative, highlighting the significant role of elderly women in childcare when they are in the household and younger than the median age. Second, the study observes a possible change —in long term— in household roles correlated with social norms, only when women had a higher likelihood of being involved in the labor market before the caregiving event. Third, while no conclusive results were found for health outcomes, the probable change in reference points for comparison plays an important role in caregivers' self-reported health. The findings emphasize the need for policy reforms to support informal caregivers, primarily with policies that prevent the need for caregiving by improving opportunities for the elderly to be self-sufficient. Furthermore, it is necessary to implement policies that address gender disparities arising from social norms and increase public childcare to prevent women from leaving the labor market.

Contents

Chapter 1

Introduction

The demand for adult caregiving is rising rapidly due to population aging that is an inevitable outcome of the demographic transition —a historic shift from higher to lower levels of fertility and mortality— . This transition leads to a period of rapid population growth following an eventual increase in the proportion of older individuals within the population (United Nations Department of Economic and Social Affairs, Population Division, 2023).

As less developed countries progress through this demographic transition, the increasing proportion of elderly individuals presents unique challenges and opportunities. Understanding the implications of an aging population is worthy of attention for developing effective social, economic, and healthcare policies. This research aims to contribute to this understanding by examining the effects of ending informal caregiving provided by adults, those between 18 and 60 years old, within Mexican households on health, time use and labor outcomes in the context of elderly care.

In the mexican context, the health sector plays a pivotal role in the national economy, as highlighted by the Cuenta Satélite del Sector Salud de México (CSSSM) in 2022. The sector's contribution to the Gross Domestic Product (GDP) has grown from 4.2% in 2003 to 5.1% in 2022. In addition, this report distinguishes between public and private contributions to the health sector, with 4.3% of the GDP attributed to the production of goods and services dedicated to health. Most importantly, it recognizes the economic value of unpaid and informal healthcare provided by households, which accounts for 0.8% of the GDP. This informal care is important, as it includes direct care for household members and indirect care through non-profit institutions (Instituto Nacional de Estadística y Geografía (INEGI), 2023a).

Most of the time, households' members provide care activities without compensation. This includes specialized care for elderly or children household members and support for sick individuals from other households. The dual economic and social roles of the health sector are evident, particularly in the substantial amount of informal care predominantly carried out by women (Sharma et al., 2016). This dynamic reflects and reinforces existing gender disparities.

Additionally, women who bear the heavy caregiving burden face significant impacts on their participation in the labor market. Data from Encuesta Nacional para el Sistema de Cuidados (ENASIC) in 2022 indicates that women caregivers are less likely to be employed full-time and are more likely to occupy lower-paid, part-time, or informal positions (Instituto Nacional de Estadística y Geografía (INEGI), 2023b). This situation is worsened by the lack of adequate policies, such as affordable childcare or eldercare services, which forces many women to choose between caregiving and career advancement. Consequently, the economic gender gap widens, with long-term implications for women's financial independence and security. Societal expectations and cultural norms further entrench caregiving as predominantly female responsibilities, limiting progress toward gender equality.

Moreover, one critical aspect of informal caregiving in Mexico is the role of grandmothers. According to Encuesta Nacional de Empleo y Seguridad Social (ENESS) grandmothers are the primary childcare providers, caring for almost 40 percent of children up to six years old (Instituto Nacional de Estadística y Geografía (INEGI), 2013). The availability of grandmother-provided childcare and mothers' employment are positively correlated. In three-generation households, the grandmother is more likely to provide childcare, causing that mothers have more opportunity to be employed (Talamás Marcos, 2023). Reliance on extended family members is still common (Gong and Van Soest, 2002; Hank and Buber, 2009) and this dynamic reduces the effects of elderly caregiving on labor, highlighting the importance of examining this aspect as part of the broader caregiving landscape.

The evidence emphasize a critical need for policy reforms that integrate healthcare and pension benefits. These reforms are essential to ensure dignified and sustainable care for the elderly while reducing the reliance on informal caregivers. Currently, there is a notable absence of robust causal evidence in the Mexican context regarding the impact of caregiving on employment, time use and health. This gap in knowledge necessitates further study. As Mexico transitions into a society with a rapidly expanding elderly population, it becomes increasingly important to reevaluate and adapt current health and labor policies. Such reevaluation is vital to ensure the sustainability and equity of care and support systems for both the elderly and their caregivers.

This study uses the event study method (Kleven et al., 2019; adapted by Aguilar-Gomez et al., 2019) to show how the death of the only direct elderly family member (i.e., parents or parents in law) affects the outcomes of caregivers focusing on the impact of ending informal caregiving. Additionally, this study analyzes the role of grandmothers as primary childcare providers within Mexican households. This dual-role analysis contributes to the broader discourse on informal caregiving and its multifaceted impacts on adults caregivers' lives.

The results reveal several critical insights. Firstly, the significant role of cohabiting grandmothers in childcare, especially those younger than age of 79, is highlighted. Their assistance in childcare allows mothers to participate more actively in the labor market, but their absence due to death leads to a notable reduction in women's employment and salary. Secondly, the study found no significant changes in caregivers' self-reported health, which can be explained by the reference point theory in behavioral economics. Caregivers adapt their health perceptions by comparing themselves to the elderly they care for, who are generally in worse health. After caregiving ends, their reference point shifts back to healthier individuals, resulting in no significant perceived health changes. Thirdly, a possible change in social norms related to caregiving roles within the household was observed. When women had a higher likelihood of being involved in the labor market before the event, the traditional gender expectations and responsibilities were altered. This shift can lead to a more equitable redistribution of caregiving responsibilities and greater female participation in the labor market.

It is important to note that this study shares similarities with Talamás Marcos, 2023 in analyzing the impact of the absence of grandmothers within Mexican households on caregivers' labor outcomes due to their role as primary childcare providers. Both studies employ similar event study methodologies and utilize comprehensive national survey data to investigate these effects, with the pivotal event being the death of the grandmother. Furthermore, this research supports Tamalás' findings, showing that the absence of grandmothers reduces women's participation in the labor market. This highlights the significant role that grandmothers play in enabling mothers to participate in the labor market by providing informal childcare, thus mitigating some of the caregiving burdens on the parents.

Despite these similarities, there are key differences between the studies. This research goes further than Talamás Marcos, 2023 by utilizing data from the Encuesta Nacional sobre Niveles de Vida de los Hogares (ENNViH), which is a longitudinal panel spanning from 2002 to 2013. This allows for the examination of long-term effects, whereas Talamás Marcos, 2023 relies on the Encuesta Nacional de Ocupación y Empleo (ENOE), which only provides panel data for five quarters, limiting its scope to short-term impacts. Additionally, while Talamás Marcos, 2023 concentrates exclusively on labor outcomes, this study expands the scope to include labor, health, and time-use outcomes. Another important distinction is that this research divides the effect of the presence of grandmothers according to their age, offering a more detailed analysis. Finally, this study differentiates between internal and external elderly (cohabiting and non-cohabiting), providing a more nuanced understanding of the impacts of grandmothers' caregiving roles.

By exploring these relationships, this research seeks to provide insights that could guide policy reforms aimed at alleviating the burdens on caregivers and enhancing their quality of life. Recognizing the economic significance and its effects on health, time use, and labor decisions of the substantial value of informal caregiving is significant. This study aims to delve into the complex interactions between caregiving responsibilities and labor market decisions, considering the direct and indirect impacts on caregivers' health, taking into account the role of grandmothers in the Mexican context. By doing so, it aims to illuminate the multifaceted challenges faced by informal caregivers and inform the development of more supportive and equitable policies. The research is organized as follows: Section II provides the background, and Section III reviews the related literature. Section IV details the data, while Section V outlines the event study methodology. Section VI presents the results and robustness checks, and finally, Section VII concludes the research.

Chapter 2

Background

The background surrounding informal care and demographic shifts in Mexico is complex and multifaceted. This section provides an overview of these key elements, highlighting how they collectively influence the lives of caregivers, particularly those involved in informal caregiving for the elderly.

2.1 Prevalence of Informal Care

Mexico has traditionally been a tight and fatalistic society, where people tend to accept external circumstances as they are, without attempting to change their conditions (de Weiss and Sirkin, 2010). This cultural mindset contributes to the prevalence of informal care in Mexican households, despite social programs and efforts to increase personal savings. The persistent reliance on family members, particularly women, to provide care within households, as a non-profit job, underscores the deeply rooted cultural and social norms that place a significant caregiving burden on women.

According to the ENASIC (2022), the prevalence of informal care in Mexico is significant. Out of the total elderly population of approximately 20 million, it is estimated that 2.9 million individuals have disabilities or dependencies. Of these, nearly two-thirds (65.2%) received care at home. Among the 17.1 million elderly individuals without disabilities or dependencies, 22.4% received care at home, while 77.6% did not receive any care. Only 0.2% attended day care centers, care centers, or other care services, while 3.6% indicated a need for additional care, with nursing care, caregivers, or companions being the most needed services (65.1%). This data reflects the high prevalence of informal care and the minimal impact of formal care options.

Moreover, differences in the prevalence of informal care across genre are large. Among those providing care within the household, 79.3% are the primary caregivers (22.5 million people). Of this primary caregivers, 86.9% are women and 13.1% are men. Women are predominantly the primary caregivers for children and adolescents, with 96.0% and 90.3%, respectively. In contrast, the presence of men as primary caregivers is higher for the elderly and individuals with disabilities or dependencies, with 32.7% and 19.7%, respectively (Instituto Nacional de Estadística y Geografía (INEGI), 2023b). Comparatively, women who are caregivers tend to work fewer hours for pay than those who are not caregivers, with around half of the caregivers working less than 35 hours per week. The unequal distribution of caregiving responsibilities is probably fixed in social norms (Duflo, 2012; Kleven et al., 2019) which have real-life impacts, disproportionately disadvantaging women.

Additionally, this preference for informal care may persist owing to two main factors: the lack of social policy support and the entrenched social norm favoring family-based care over formal care services. This assumption is supported by data showing that 42.7% of individuals aged 15 to 60 disagreed with sending children to early education, daycare, or nursery centers, with 53.5% citing the belief that caregiving is the responsibility of the mother, father, or family. Similarly, for elderly care, slightly more than half (50.6%) expressed disagreement with sending the elderly to care institutions for a few hours a day, all day, or full-time (Instituto Nacional de Estadística y Geografía (INEGI), 2023b).

2.2 Demographic and epidemiological transit

As Mexico undergoes profound demographic shifts, the implications for labor and social policies become increasingly critical. According to projections by the Consejo Nacional de Población (CONAPO), life expectancy at birth is expected to rise from 68.91 years in 2020 to 83.02 years by 2070. This increase in life expectancy is accompanied by a significant rise in the aging index and median age, from 29.81 and 28 years, respectively in 2020, to 206.72 and 47 years by 2070 (Consejo Nacional de Población, 2020).

These statistics highlight a dramatic aging of the Mexican population, with the aging index —a ratio of the population aged 60 years or older to those under 15 years— more than sextupling over fifty years. Such changes emphasize the growing need for elderly care solutions that are sustainable and effective. As the median age increases, the portion of the population that traditionally provides informal caregiving, predominantly women in their working years, will face increased pressures, both as potential caregivers and active economic participants.

The epidemiological transition in Mexico involves a shift from a population health profile characterized by high mortality and infectious diseases to one where mortality rates are low and non-communicable diseases (NCDs) cause the majority of deaths. This transition reflects significant reductions in both, mortality and fertility rates. Importantly, older populations today have survived childhood diseases that were fatal to earlier generations, leading to a shift in major causes of death from communicable diseases to NCDs like cancers and heart attacks. Further, urban living increases the risk of obesity, diabetes, poor diet, and the overuse of tobacco and alcohol. Particularly, in economically and socially deprived areas, there has been a re-emergence of diseases like tuberculosis, dengue, malaria, and cholera.

The increasing prevalence of elderly care requirements presents both a societal challenge and an economic burden, significantly impacting the workforce, especially among informal caregivers. This demographic shift is not unique to Mexico but is part of a global trend towards aging populations, which has profound implications for labor markets, social insurance systems, and healthcare services. As Mexico continues to experience these transitions, the need for comprehensive policies that address both demographic and epidemiological changes becomes ever more critical.

Chapter 3

Related literature

3.1 Labor Effects of Informal Caregiving

Studies showed that informal caregiving can significantly impact employment status, with caregivers often facing the necessity to leave the workforce, reduce their working hours, or switch to less demanding and lower-paying jobs (Brito and Contreras, 2023; Van Houtven et al., 2013; Smith et al., 2020). The causal perspective on the labor effects of caregiving can be explained by two main factors: caregivers must reduce work hours or even quit their jobs to provide sufficient care, and unemployed or part-time workers, having more available time, are more likely to become caregivers (Michaud et al., 2010). However, some studies found little evidence for an endogenous caregiving decision and thus treat caregiving as exogenous (Bauer and Sousa-Poza, 2015).

One of the most consistent findings across the literature, as highlighted by Bauer and Sousa-Poza, 2015, is that informal caregiving negatively impacts labor force participation. They emphasized that informal caregivers, particularly those providing intense care or co-residing with care recipients, are significantly less likely to be employed, with the probability of employment being particularly reduced for primary caregivers. Similarly, Brito and Contreras, 2023 revealed that in Chile, after a parental health shock, daughters but not sons experience significant reductions in employment and earnings emphasize that caregiving responsibilities disproportionately affect women, leading to reduced employment and earnings of 11%.

In Japan, Sugawara and Nakamura, 2014 investigated the impact of the Japanese Long-Term Care Insurance (LTCI) program on female labor supply. They found that the availability of formal care services under the LTCI affects positively female labor participation, although care requirements still reduce the probability of women being regular workers. Regular workers are more likely to utilize formal care, while non-regular workers often provide informal care themselves.

Similarly, caregiving responsibilities also affect wages and career progression. For example, Van Houtven et al., 2013 found that male caregivers providing personal care are 2.4 percentage points less likely to be employed, while female chore caregivers are more likely to retire. For female caregivers who continue to work, there is a decrease in work hours by 3–10 hours per week and a 3% wage penalty compared to non-caregivers.

As it can be deduce above, the gendered nature of caregiving is a recurring theme in the literature. Bauer and Sousa-Poza, 2015 and Brito and Contreras, 2023 discuss the adverse effects of caregiving on labor market attachment, particularly highlighting the gender disparities that exacerbate economic inequalities. Smith et al., 2020 examined male and female differences in the impact of informal caregiving on labor market attachment and hours of work in Canada from 1997 to 2015. They found that women were 73% more likely to leave the labor market, more than five times more likely to work part-time, and twice as likely to take time off work due to informal care compared to men. Additionally, women took an average of 160 minutes more per week off from work than men.

3.2 Health Effects of Informal Caregiving

Health consequences of caregiving can be influenced by many factors such as age, duration of caregiving, and gender (Kaschowitz and Brandt, 2017). This section reviews the literature on the health impacts of caregiving and aims to provide a comprehensive overview of this critical issue. Bom et al., 2019 conducted a systematic literature review and meta-analysis, highlighting that causal evidence regarding the health effects of being a caregiver is relatively recent. Being the first one, Coe and Van Houtven, 2009 reported an increase in depressive symptoms among continuous caregivers, particularly married women.

Most studies within this meta-analysis found a negative impact on the mental health of informal caregivers (Brenna and Di Novi, 2016; Coe and Van Houtven, 2009; Trivedi et al., 2014). Additionally, studies indicated negative effects on physical health, with caregivers often ignoring healthy lifestyles, increasing stress, and leading to adverse outcomes such as hypertension and cardiovascular disease (De Zwart et al., 2017; Goren et al., 2016; Bauer and Sousa-Poza, 2015). However, these findings are less consistent than the effects on mental health. Some studies, such as those made by Di Novi et al., 2015 and Coe and Van Houtven, 2009, even found positive effects of informal caregiving on physical health for specific subgroups, attributing the positive impact on self-assessed health to a bias related to reference points.

Kaschowitz and Brandt, 2017 explored the health effects of informal caregiving across Europe using longitudinal data from the Survey of Health, Ageing and Retirement (SHARE) and the English Longitudinal Study of Ageing (ELSA). Their findings showed distinct differences in health outcomes depending on whether care was provided inside or outside the household. Caregivers inside the household reported worse health, while those outside reported better health both compared to non-caregivers. This was largely attributed to selection effects, with healthier individuals more likely to take up caregiving roles outside the household. However, caregiving inside the household generally led to a decline in mental health, highlighting the psychological stress associated with this role.

The effects of informal caregiving also vary according to caregiver subgroups increasing gender disparities. Studies that separately estimated health effects for males and females often found larger or solely present effects for females (De Zwart et al., 2017; Heger, 2017). The intensity of care provided is another significant factor as Brenna and Di Novi, 2016 found a greater impact on depression among women providing intensive care in Southern Europe. Also, Schulz and Sherwood, 2008 showed that caregiving, typically performed by family members or friends, often leads to significant physical and psychological strain, akin to a chronic stress experience. This stress can result in adverse health effects, including psychological distress, impaired health behaviors, and increased morbidity and mortality.

Long-term effects of informal caregiving remain less clear due to the scarcity of literature reviewing this aspect in a causal manner. Bom et al., 2019 noted that many studies were unable to estimate longer-term effects due to reliance on survey data. In the same direction, Schmitz and Westphal, 2015 concluded that there might not be large scarring effects of care provision, although further research is needed to confirm this.

3.3 Gender Gap, Child Penalty, and the Role of Grandmothers

This research is intricately related to the literature on gender gaps, the child penalty, and the role of grandmothers in providing childcare. The "child penalty" refers to the negative impact of childbirth on women's labor market outcomes relative to men (Kleven et al., 2019). Combining these topics is essential to understand the interconnected nature of these issues.

While early literature on gender inequality in the labor market focused on the role of human capital and discrimination, the disappearance of gender differences in education and the implementation of anti-discrimination policies suggest that the explanation for the remaining gender gap lies elsewhere (Aguilar-Gomez et al., 2019; Kleven et al., 2019).

In developed countries, the arrival of a child creates a long-run gender gap in earnings of around 20 percent, driven by hours worked, participation, and wage rates, and also reduces the probability for women to work full-time jobs (Kleven et al., 2019; Laun and Wallenius, 2021). Similarly, in developing countries such as Mexico, women experience significant reductions in labor force participation, wages, and working hours following childbirth. Aguilar-Gomez et al., 2019 provided robust causal evidence of the child penalty, showing that women begin to drop out of the labor force even before childbirth and continue to do so afterward, with long-term economic effects. Additionally, the gender gap in unpaid work widens by over 15 hours per week after childbirth. These penalties are more pronounced for low-income women, exacerbating existing inequalities. In Chile, this caregiving penalty increases the overall gender pay gap by 9%, with the penalties being most pronounced among mothers (Brito and Contreras, 2023).

The gender wage gap in Mexico has decreased from 1990 to 2010 but remains at 6% in 2010 (Arceo-Gómez and Campos-Vázquez, 2014). The gender gap forms between the ages of twenty and thirty and remains thereafter, similar to the motherhood penalty (Talamás Marcos, 2023). Literature on gender wage gaps establishes that caregiving roles are one of the main drivers of gender differences and that the provision of public services that substitute for the mother's care increases female labor force participation (Aguilar-Gomez et al., 2019; Calderón, 2014; Padilla-Romo and Cabrera-Hernández, 2019).

Moreover, substitutes for a mother's care can often be elderly family members, such as grandmothers. Healthy and long-lived older people can offer a free, reliable, and flexible source of childcare to parents (Zanella, 2017). Across Europe, grandmothers play a major role in providing both intensive and occasional care for their grandchildren with over 40% providing grandchild care without the child's parents present (Glaser et al., 2013). In the United States, around 24% of children are cared for by grandparents (Bureau, 2013).

In Mexico, grandmothers play a crucial role in providing childcare (Instituto Nacional de Estadística y Geografía (INEGI), 2013), significantly influencing mothers' ability to participate in the labor market. This research is related to Talamás Marcos, 2023, the first study to explore this topic in Mexico, which highlighted that the death of a cohabiting grandmother leads to a 12 percentage point reduction in the mother's employment rate. This finding underscores the critical role grandmothers play in childcare provision. Inspired by these findings, this research further explores the grandmothers' role by examining their impact on labor, health, and time-use outcomes. The availability of grandmothers as caregivers helps mitigate some of the child penalties and, therefore, reduces the gender gap by allowing mothers to remain in or re-enter the workforce more easily

Chapter 4

Data

This analysis is based on Panel observations from ENNViH with threw interview waves in 2002, 2005 and 2009. The data maintained 85% (30,244) of the original sample (35,677) and over 8,100 households over the course of 3 waves. The ENNViH is a collaborative effort among researchers from various universities and institutions. Its primary objective is to create a comprehensive longitudinal database covering at least 10 years. This database provides valuable insights into the economic, demographic, and social transitions experienced by the Mexican population during the first decade of the 21st century (Rubalcava Peñafiel, Teruel Belismelis et al., 2007).

Despite most studies analyzing child or elderly penalties use administrative data, in Mexico, the ENNViH is one of the best resources for addressing the research questions. It provides comprehensive representation of the Mexican population at national, urban, rural, and regional levels. The database contains detailed information on sex, parental status of the head of household, children, earnings, labor supply, and self-reported health. Essentially, it includes precise information about the exact year of death between interviews of family members and the death of the head of household or spouse's parents outside the household, allowing us to time the event with accuracy.

The main event study analysis focuses on the death of an elderly individual inside the household or a parent outside the household, observing adults annually from six years before the event to five years after. It is specifically examine deaths occurring between 2002 and 2013, where the elderly person is the only one in the household or the last surviving parent outside the household. The adults must be alive and residing in Mexico throughout the 11-year window surrounding the death.

No restrictions are imposed on the relationship status of the adults or the number of children inside the household. All adults who experience the death of an elderly household member or adult - head of household and spouse- who experience the death of a parent outside the household within the given year are included. These individuals are tracked through the 11-year window, regardless of whether they are married, separated, divorced, or single. This approach results in a core estimation sample of 2,168 adult children experiencing the death of a parent outside the household, 2,629 adult children whose parents could be either household members or not, and 1,597 adults who experience the death of an elderly household member.

The effects of the end of caregiving are estimated for both cohabiting elderly, meaning those living in the household, and non-cohabiting parents elders, meaning those living outside the household. The estimations include various probabilities: providing care or spending time on children, the sick, or the elderly; assisting with studying as a proxy for childcare time; working or participating in the labor force; improvement in self-reported health; and reporting salary and income. All these estimations control for year-fixed effects and age.

Compared to Talamás Marcos, 2023, which utilizes data from the ENOE providing panel data for five quarters, this research benefits from the longer timeframe and broader scope of the ENNViH dataset. This allows for the examination of long-term effects and provides a more detailed analysis of the impacts of caregiving responsibilities. Additionally, even though Talamás's dataset is superior to administrative data in this context because it includes both the formal and informal sectors of the economy, it focuses solely on labor outcomes. In contrast, the ENNViH dataset used in this research allows for the analysis of labor, health, and time-use outcomes. Furthermore, while Talamás Marcos, 2023 does not differentiate between internal and external elderly (cohabiting and non-cohabiting), this research makes this distinction, offering a nuanced understanding of how the caregiving role of grandmothers affects labor, health, and time-use outcomes differently based on their living arrangements.

The next table displays the descriptive characteristics of adults who provide care during the week. It indicates that 77.5% of those identifying as caregivers are women, while in the non-caregiver group, the proportions are more balanced, with 52.36% being men and 47.64% being women.It also demonstrates a similar pattern of being recognized as an academic aid.

Table 4.1: Distribution by Gender of Caregivers and Non-Caregivers

	Gender		**Total**
	Men	**Women**	
Non-caregiver	47,418	43,134	90,552
	(52.36%)	(47.64%)	(100.00%)
Caregiver	3,152	10,862	14,014
	(22.49%)	(77.51%)	(100.00%)
Non-Academic Helper	47,568	47,587	95,155
	(49.99%)	(50.01%)	(100.00%)
Academic Helper	3,002	6,409	9,411
	(31.80%)	(68.20%)	(100.00%)
Total	50,570	53,996	104,566
	(48.36%)	(51.64%)	(100.00%)

Source: ENNViH 2002,2005 and 2009.It displays responses to the question "During the past week, did you care for elderly, sick, and/or children?" and "During the past week, did you help with studying or homework?" and highlights gender inequality among caregivers.

Table 2 presents the descriptive characteristics of women and men aged 18-60, highlighting differences in age, caregiving time, academic aid time, salary, and self-reported health. Notably, women who cohabitate with an elder are slightly older (37.38 years) compared to non-cohabiting women (37.55 years) and men in both categories. They spend more time on caregiving (8.93 hours per week) compared to non-cohabiting women (8.80 hours) and significantly more than men (1.53 and 0.98 hours). Before the event, cohabiting women spent 11.16 hours per week on caregiving, which decreases to 7.16 hours after the event. Non-cohabiting women also show a decrease from 9.76 to 7.91 hours. Men show a smaller increase in caregiving time after the event.

In the case of academic aid, Cohabiting women spend more time on academic aid (7.41 hours per week) compared to non-cohabiting women (5.33 hours). Men spend less time on academic aid in both categories. Academic aid time for cohabiting women decreases from 8.54 hours before to 6.27 hours after the event. Non-cohabiting women follow a similar pattern, decreasing from 5.39 to 5.16 hours. In addition to the data previously mentioned, the gender gap is evident, with cohabiting women having a lower average salary (7.49 in natural logarithms) compared to non-cohabiting women (7.86), and men having higher salaries in both categories.Regarding health, self-reported health scores are slightly worse for cohabiting women (2.76) compared to non-cohabiting women (2.68), with men showing similar scores across categories.

Overall, the data highlights significant gender disparities in caregiving and academic aid responsibilities with women bearing a larger burden in line with the previously literature present. Economic and health impacts also differ, with women experiencing fluctuations in salary and self-reported health before and after significant events. These statistics do not control for factors such as age, economic shocks, or the increasing age of children being cared for, which could influence the observed outcomes.

Table 4.2: Characteristics for Adults by sex and treatment status (2005-2019)

	All Women	All Men	Treatment Cohabiting		Treatment Non-Cohabiting	
			(Women)	(Men)	(Women)	(Men)
Age	35.38	35.20	37.38	36.43	37.55	37.33
Caring time	11.14	1.49	8.93	1.53	8.80	0.98
	(21.08)	(6.32)	(18.11)	(6.96)	(18.50)	(4.76)
Caring time before event	-	-	11.16	1.29	9.76	0.84
			(19.16)	(6.11)	(19.16)	(4.42)
Caring time after event	-	-	7.16	1.73	7.91	1.12
			(17.05)	(7.04)	(17.57)	(5.19)
Academic aid time	6.49	4.58	7.41	4.51	5.33	4.58
	(6.89)	(4.55)	(13.19)	(6.02)	(4.10)	(4.97)
Academic aid time before event	-	-	8.54	4.54	5.39	4.57
			(17.56)	(7.87)	(4.01)	(5.42)
Academic aid time after event	-	-	6.27	4.39	5.16	4.33
			(4.98)	(3.22)	(4.18)	(4.38)
Salary	7.93	8.18	7.49	7.69	7.86	7.93
	(4.16)	(4.26)	(4.21)	(4.41)	(4.28)	(4.37)
Salary before event	-	-	6.73	6.76	6.23	7.10
			(4.48)	(4.76)	(4.77)	(4.66)
Salary after event	-	-	8.41	8.59	9.13	8.88
			(3.72)	(3.84)	(3.37)	(3.77)
Self-reported health	2.70	2.64	2.76	2.64	2.68	2.65
	(0.67)	(0.65)	(0.67)	(0.65)	(0.66)	(0.66)
Self-reported health before event	-	-	2.80	2.67	2.66	2.67
			(0.65)	(0.60)	(0.65)	(0.62)
Self-reported health after event	-	-	2.71	2.59	2.67	2.61
			(0.68)	(0.69)	(0.69)	(0.69)

Source: ENNViH 2002,2005 and 2009.The analysis consists of individuals aged 18 to 60. Standard errors are shown in parentheses. Salary is expressed in natural logarithms, while caring time and academic aid time are in hours per week. Self-reported health is based on the question "Comparing your health to others, it is " , with responses ranging from 1, meaning "Better than others", to 5, meaning "A lot worse than others".

Chapter 5

Empirical strategy

This research aims to contribute to the existing literature by providing causal evidence on the effects of informal caregiving on labor and health outcomes within Mexican households. It will explore the impacts of caregiving for elderly individuals both inside and outside the household, with a particular focus on the role of grandmothers in childcare. By examining these dynamics, this study seeks to offer a comprehensive understanding of how informal caregiving shapes economic and health outcomes, thereby addressing the gender disparities and caregiving penalties observed in Mexico.

The core of the analysis relies on the event study methodology, a quasi-experimental approach that examines labor market and health outcomes related to a pivotal event. This method is particularly robust for identifying temporal dynamics and causal relationships in the context of informal caregiving within Mexican households (Kleven et al., 2019; Aguilar-Gomez et al., 2019). In this study, the event is defined as the death of the only elderly family member who cohabitates with the household during the interview waves. For cohabitating elderly, the end of caregiving is certain, while for non-cohabitating elderly, the analysis is limited to cases where the deceased was the only surviving parent. By tracking individuals over time, changes in health and labor market outcomes attributable to the end of caregiving responsibilities can be observed.

Two underlying identifying assumptions support this framework. First, the exact timing of the death, which is the same pivotal event used in Talamás Marcos, 2023, is assumed to be exogenous. Second, it is assumed that no other determinants of labor market outcomes or health experience a sharp discontinuity after the event. Under these assumptions, the corresponding discontinuity in labor and health outcomes can be interpreted as the causal effect of ending caregiving responsibilities.

For each adult in the data, it is denote the year of the elderly's decease by t = 0 , and index all years relative to that year. The study examines the evolution of various labor and health outcomes as a function of event time, allowing the observation of trajectories for both women and men and the identification of divergences attributable to this event.

The key equation, run separately for men and women, is specified as follows:

$$Y_{ist}^{g} = \sum_{j \neq -1} \alpha_j^g \cdot 1\{j = t\} + \sum_k \beta_k^g \cdot 1\{k = age_{is}\} + \sum_y \gamma_y^g \cdot 1\{y = s\} + \nu_{ist}^g \tag{5.1}$$

Where:

- Y_{ist}^{g}: Labor market or Health outcome for individual i, of gender g, in year s, at event time t.
- α_j^g: Impact of the end of caregiving responsibilities at different times j, relative to one year before.
- β_k^g: Coefficients for capturing life-cycle effects based on the age of the individual.
- γ_y^g: Year fixed effects to control for overall time-varying factors.

By including a full set of age and year dummies, the analysis non-parametrically controls for underlying life-cycle trends and time trends such as wage inflation and business cycles, as recommended by Kleven et al., 2019 and Aguilar-Gomez et al., 2019. This is essential since individuals tend to be older at the end of caregiving responsibilities, and these controls help isolate the causal impact of the event from other confounding factors.

First, the panel structure of the database is exploited to estimate the effects of ending caregiving responsibilities, using the death of the only elderly household member or the last surviving non-cohabitating parent as the event to be evaluated. This approach allows for examining how changes in time devoted to care impact the size of the elderly penalty, which is expected to decrease. Additionally, the effects based on the sex and/or age at death of the elderly and presence of children under 12 years old are investigated. The same equation (1) is used, but the sample is selected. This helps determine if grandmothers provide significant caregiving support, as suggested by Talamás Marcos, 2023, and whether the age of the elderly affects the elderly penalty. Understanding the role of grandmothers in offering flexible, informal childcare and whether this potential help is influenced by the age of the elderly is pivotal. This analysis sheds light on the dynamics of caregiving responsibilities and their implications for household labor and health outcomes.

Chapter 6

Results and Robustness

In this section, the estimates of the impacts of informal caregiving on a wide range of time use, labor, and health outcomes for both men and women are presented. The analysis begins with the impacts on the probability of providing care and academic aid. It then examines self-reported health and emotional well-being to understand the impact of the end of informal caregiving. The section concludes by evaluating the labor supply and salaries.

In each section it is first analyzed the impact of the death of an external grandmother, highlighting how this event influences caregiving responsibilities and outcomes. It then shifts focus to the internal grandmother, detailing the effects within the household. This subsection further controls for households with and without children under 12 years old to provide a more nuanced understanding of caregiving dynamics.

For robustness checks, the analysis considers the impact of the death of grandparents, both external and internal. These robustness checks are similar to those employed in Talamás Marcos, 2023. Furthermore, this study differentiates the effects based on the age at death for internal elderly women, providing a comprehensive view of how these factors influence the outcomes of informal caregiving. The overall impacts, which do not distinguish between cohabiting and non-cohabiting caregivers, are presented in the appendix. Here, the primary focus is on adults who are heads of households or spouses, and the impact of the end of caregiving responsibilities for the sole surviving elderly parent.

It is important to note that the analysis has low statistical power due to a small sample size. For non-cohabiting cases, there are 1,130 households, and for cohabiting cases, there are 441 households. This small sample size results in large confidence intervals, affecting the precision of the estimates. In contrast, Talamas' study benefits from a larger database, which permits a higher level of statistical power, providing more precise estimates.

Results

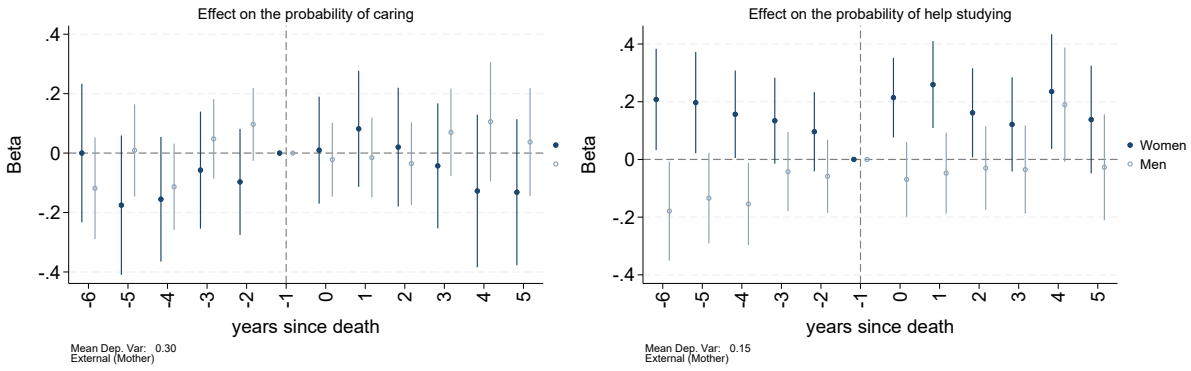
6.1 Use of time/caregiving

This section has the objective to understand the impacts of the end of informal care on the use of time/caregiving. This is examined through the probability of caregiving and the probability of helping with studying, used as a proxy for childcare.

6.1.1 External grandmothers

In the case of external female elderly care recipients, there is evidence of a substitution effect (Figure 6.1 [a] and [b]). Before the event, caregivers appear to shift their focus from caring for children to caring for elderly women outside the household, likely due to increased care needs. After the event, caregiving provided to children responsibilities increase, as seen in Figure 6.1(b). This indicates that the role of grandmothers in providing childcare outside the household is important but might be combine with receiving care.

Figure 6.1: Effects of the End of Caregiving by Female Elderly (Non-Cohabitating)



(a) Probability of Caring

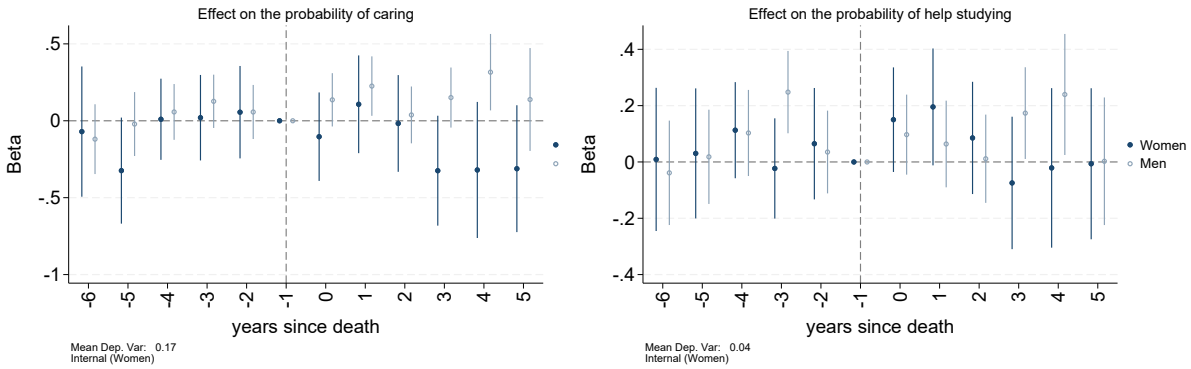
(b) Prob. of Helping Studying

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person, only parent alive, on the probability of providing care (a) and helping with studying (b) over time for non-cohabitating caregivers, separated by the sex of the caregiver.

6.1.2 Internal Elderly female

For cohabitating caregivers, Figure 6.2 shows there is an increase in childcare responsibilities after the event (Figure 6.2(b)). This highlights the ongoing childcare support after the primary caregiving duties for elderly women have concluded, as shown by Talamás Marcos, 2023.

Figure 6.2: Effects of the End of Caregiving by Female Elderly (Cohabitating)



(a) Probability of Caring

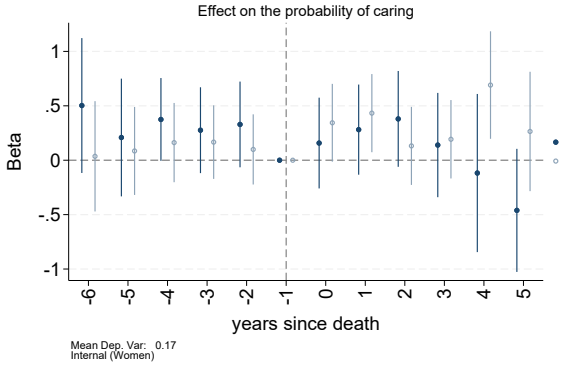
(b) Prob. of Helping Studying

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person, cohabitating during the analyzed period, on the probability of providing care (a) and helping with studying (b) over time for caregivers, separated by the sex of the caregiver.The results show a similar impact and direction even when excluding cases where only elderly mothers in the household are considered.

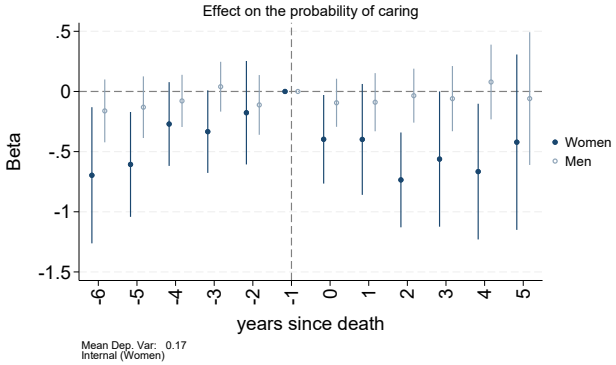
Controlling for Children Under and Over 12 Years Old

Additionally, Figure 6.3 demonstrates an increase in the substitution effect after controlling for households with children under 12 years old, as shown in Figures 6.3(a) and 6.3(c). In contrast, when controlling for households without children under 12 years old, thereby isolating the informal care provided by adult women to elderly females, there is no change in the probability of helping with studying and an immediate reduction in the probability of caregiving after the event, as depicted in Figures 6.3(b) and 6.3(d). This reinforces the critical role grandmothers play in providing childcare within the household, particularly when there are young children present as Talamás Marcos, 2023 finds for the mexican economy.

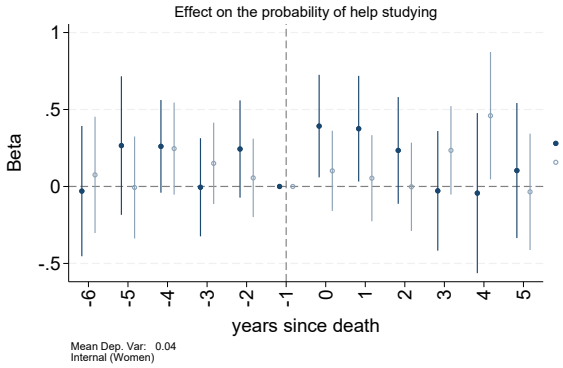
Figure 6.3: Effects of the End of Caregiving controlling for children (Cohabitating)



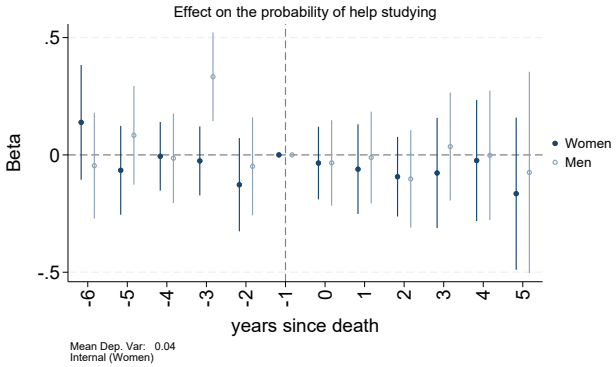
(a) Probability of Caring (Children under 12)



(b) Probability of Caring(No Children under 12)



(c) Prob. of Helping Studying(Children under 12)



(d) Prob. of Helping Studying(No Children under 12)

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person, cohabitating during the analyzed period, on the probability of providing care (top) and helping with studying (bottom) over time, for men and women. Graphs (a) and (c) illustrate the impact when there are children under 12 years old, while graphs (b) and (d) show the impact when there are no children under 12 years old. The results indicate a similar impact and direction even when excluding cases where only elderly mothers in the household are considered.

Further, a noticeable change in tendency in men's roles is observed —in long-term— only in the case of cohabitating elderly women. After the caregiving period ends, men show an increased probability of caring and helping with studying, as illustrated in Figures 6.2 (a) and (b) and confirmed in Figures 6.3 (a) and (c).

One possible explanation for this shift can be correlated to a change in social norms, where the grandmother's assistance in childcare previously enabled women to work. The end of caregiving responsibilities prompts a reevaluation of household roles, leading to a more equitable, albeit still insufficient, distribution of responsibilities between men and women. This phenomenon can be explained by the theory of social norms in behavioral economics, which suggests that individuals' expectations and behaviors are strongly influenced by prevailing norms in their social environment. The unequal distribution of caregiving responsibilities is likely rooted in social norms (Duflo, 2012; Kleven et al., 2019), and these norms are influenced by the environment (Bettinger and Long, 2005; Carrell et al., 2010; Gneezy et al., 2009). Therefore, women's participation in the labor market can challenge and modify traditional norms, creating an environment where caregiving responsibilities do not fall exclusively on them. This change in norms can lead to a more equitable redistribution of caregiving responsibilities and greater female participation in the labor market. Further research needs to be done to confirm this effect.

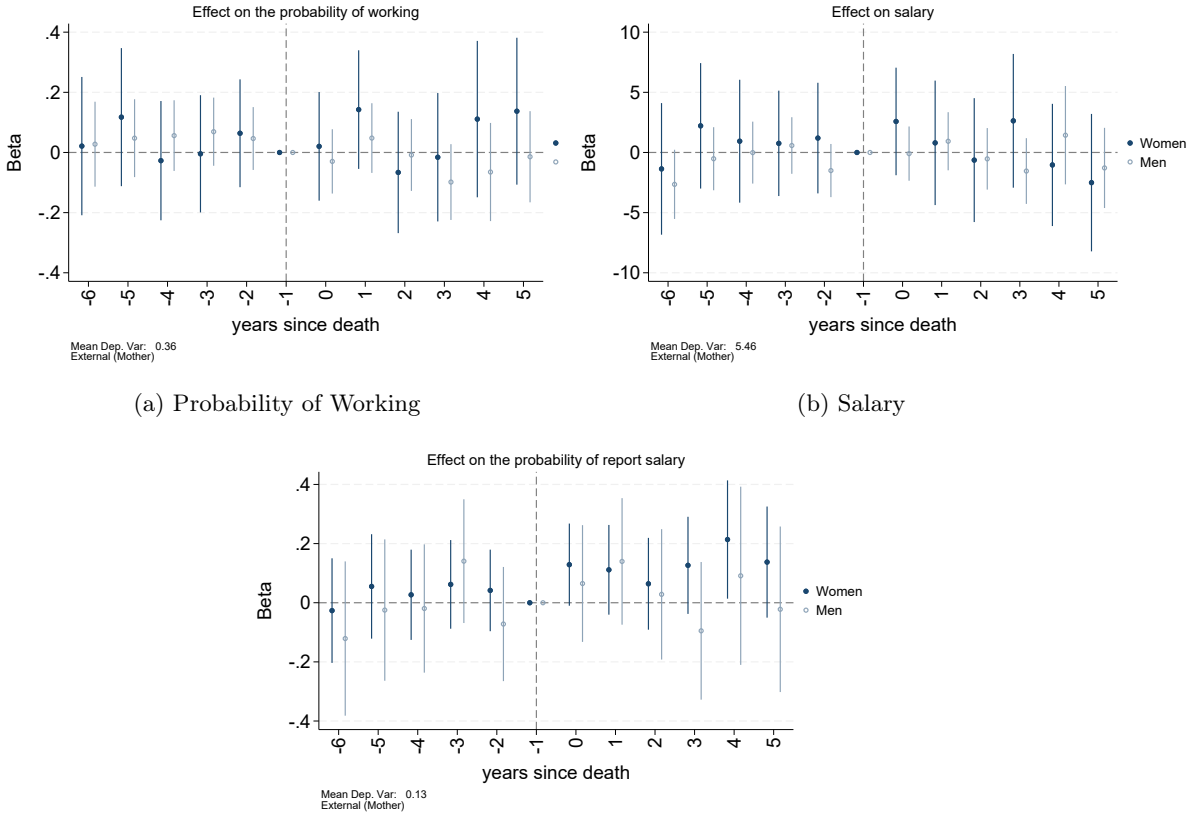
6.2 Labor outcomes

The analysis of labor outcomes focuses on the effects of the end of informal caregiving on the probability of working, salary, and the probability of reporting a salary. The analysis is structured as previous section focusing on the death of an elderly female external and internal.

6.2.1 External grandmothers

To understand the impact of informal caregiving by external grandmothers, this section examines the effects on labor outcomes, focusing on non-cohabitating caregivers. Figures 6.4 presents the effects for non-cohabiting. However, the results are not conclusive. The probability of working (a), salary (b), and the probability of reporting a salary (c) exhibit no significant variations over time. This suggests that while caregiving duties shift between caring for children and elderly women, these shifts do not substantially affect labor market participation or earnings for non-cohabitating caregivers.

Figure 6.4: Effects of the End of Caregiving by Female Elderly (Non-Cohabitating)



(a) Probability of Working

(b) Salary

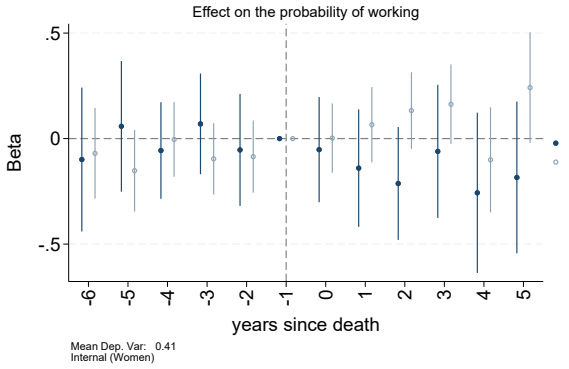
(c) Prob. of Reporting Salary

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person, only parent alive non-cohabitating, on labor markets outcomes separated by the sex of the caregiver. The graphs illustrate the effect on the probability of working (a), salary (b), and the probability of reporting a salary (c) over time for men and women.

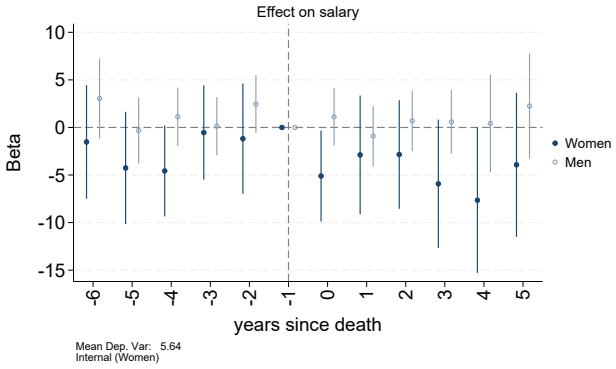
6.2.2 Internal Elderly female

In the case of cohabiting female elderly care recipients, Figure 6.5 (a) illustrates the results highlighted by Talamás Marcos, 2023, showing that the death of a cohabiting grandmother leads to a reduction in women's probability of working. This emphasize the critical role grandmothers play in childcare provision, as their absence significantly impacts the labor participation of women. Additionally, there is a noticeable reduction in salary for women, aligning with the decreased probability of working, and a downward trend in the probability of reporting a salary. These findings highlight the compounded economic challenges faced by women following the death of a female elderly care recipient.

Figure 6.5: Effects of the End of Caregiving by Female Elderly (Cohabitating)



(a) Probability of Working



(b) Salary

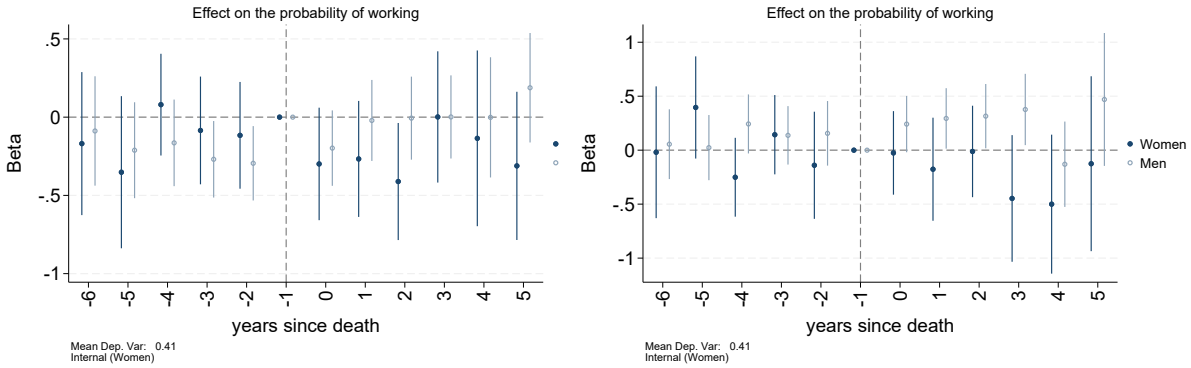
(c) Prob. of Reporting Salary

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person, cohabitating, on labor markets outcomes separated by the sex of the caregiver. The graphs illustrate the effect on the probability of working (a), salary (b), and the probability of reporting a salary (c) over time for men and women. The results show a similar impact and direction even when excluding cases where only elderly mothers in the household are considered.

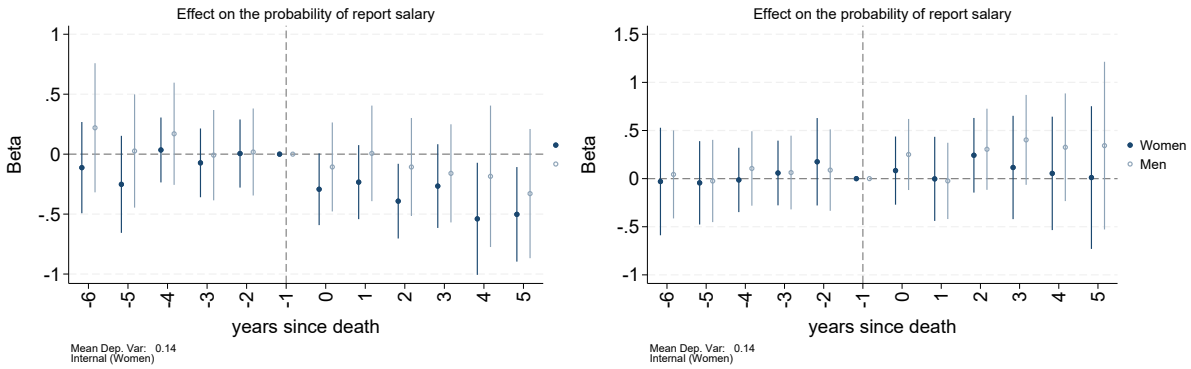
Controlling for Children Under and Over 12 Years Old

The analysis of labor outcomes for internal female elderly, while controlling for the presence of children, reveals significant insights and strengthens the previously explained mechanism. When there are children under 12 years old in the household, the effects of reductions in labor market participation are maintained, indicating that the grandmother previously helped take care of the children, allowing women to participate in the labor market. In contrast, for households without children under 12 years old, there is no significant change in the probability of working, or reporting a salary. This suggests two possible mechanisms: first, the absence of young children reduces the immediate need for women to step in as primary caregivers after the grandmother's death, allowing them to maintain their labor market participation. Alternatively, these results may demonstrate that if women have previously left the workforce due to caregiving responsibilities, it is much harder for them to reenter the labor market once they have exited.

Figure 6.6: Effects of the End of Caregiving controlling for children (Cohabitating)



(a) Probability of Working (Children under 12) (b) Probability of Working (No Children under 12)



(c) Prob. of Reporting Salary (Children under 12) (d) Prob. of Reporting Salary (No Children under 12)

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person, cohabitating during the analyzed period, on the probability of working (top) and reporting salary (bottom) over time, for men and women. Graphs (a) and (c) illustrate the impact when there are children under 12 years old, while graphs (b) and (d) show the impact when there are no children under 12 years old. The results indicate a similar impact and direction even when excluding cases where only elderly mothers in the household are considered.

6.3 Health outcomes

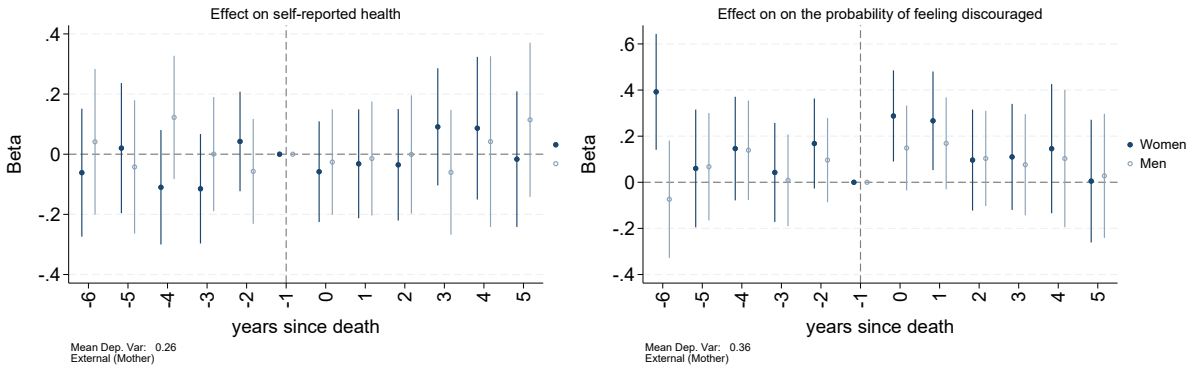
The analysis of health outcomes focuses on the effects of the end of informal caregiving on self-reported health and the probability of feeling discouraged. The analysis is structured beginning with self-reported health, followed by the probability of feeling discouraged.

6.3.1 External grandmothers

Figure 6.7 presents the effects of the end of informal caregiving by female elderly (non-cohabitating) on health outcomes. The first graph (a) illustrates the effect on self-reported health. There is a noticeable trend indicating that self-reported health does not significantly improve after the cessation of caregiving duties. This result can be interpreted through the reference point theory in behavioral economics. Caring for an elderly person can change the caregiver's reference point. Instead of comparing their health to that of healthy individuals, caregivers tend to compare it to that of the elderly person they are caring for, who is generally in worse health. This implies that the caregiver perceive their own health as better in the short term despite deterioration due to caregiving (Di Novi et al., 2015). Upon the end of caregiving, the caregiver's reference point may shift back to healthy individuals, and having adapted their perception, it is possible that no significant change in self-reported health is observed.

The second graph (b) highlights an increase in the probability of feeling discouraged for women after the end of caregiving responsibilities. This suggests that the emotional toll of caregiving, combined with the loss of the elderly family member, can lead to feelings of discouragement and emotional distress in the short-term.

Figure 6.7: Effects of the End of Caregiving by Female Elderly (non-cohabitating)



(a) Self-reported health

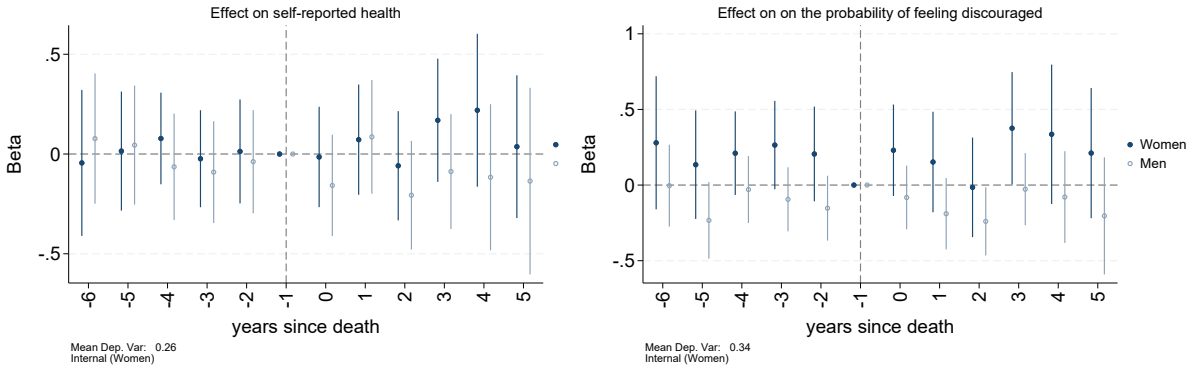
(b) Probability of feeling discouraged

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person,only parent alive non-cohabitating, on health outcomes separated by the sex of the caregiver. The graphs illustrate the effect on self-reported health (a), and the probability of feeling discouraged (b) over time for men and women.

6.3.2 Internal Elderly female

Figure 6.8 presents the effects of the end of informal caregiving by a cohabitating female elderly on health outcomes. The first graph (a) shows that changes in self-reported health are not statistically significant, suggesting that the cessation of caregiving duties may not lead to immediate health benefits, which aligns with the previous explanation of reference points. The second graph (b) indicate no change in the probability of feeling discouraged for female caregivers after the end of caregiving responsibilities.

Figure 6.8: Effects of the End of Caregiving by Female Elderly (Cohabitating)



(a) Self-reported health

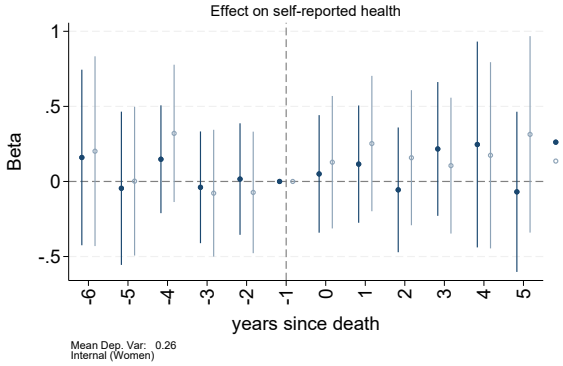
(b) Probability of feeling discouraged

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person, cohabitating, on health outcomes separated by the sex of the caregiver. The graphs illustrate the effect on self-reported health (a), and the probability of feeling discouraged (b) over time for men and women. The results show a similar impact and direction even when excluding cases where only elderly mother in the household are considered.

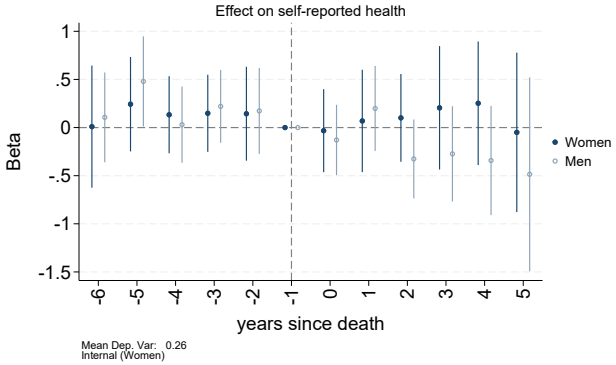
Controlling for Children Under and Over 12 Years Old

Figure 6.9 presents the effects of the end of informal caregiving, controlling for the presence of children (cohabitating) on health outcomes. In all cases presented, no significant changes are observed in self-reported health before and after the end of caregiving. Graphs (a) and (b) show the effects on self-reported health for households with and without children under 12 years old, respectively, both indicating a lack of significant change. The second set of graphs, (c) and (d), illustrate the probability of feeling discouraged. The results show that feelings of discouragement are more pronounced when there are no children under 12 years old, as seen in graph (d). The mechanism behind this observation remains unclear, suggesting the need for further research to understand the factors contributing to these emotional outcomes.

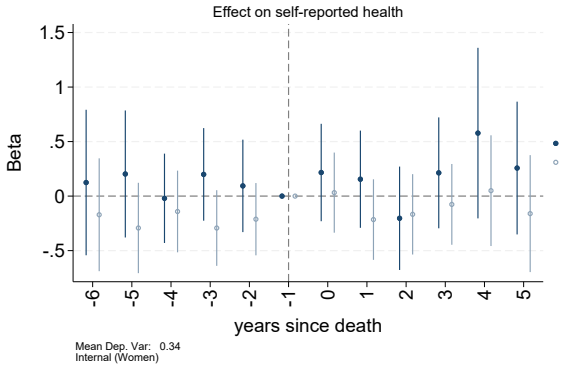
Figure 6.9: Effects of the End of Caregiving controlling for children (Cohabitating)



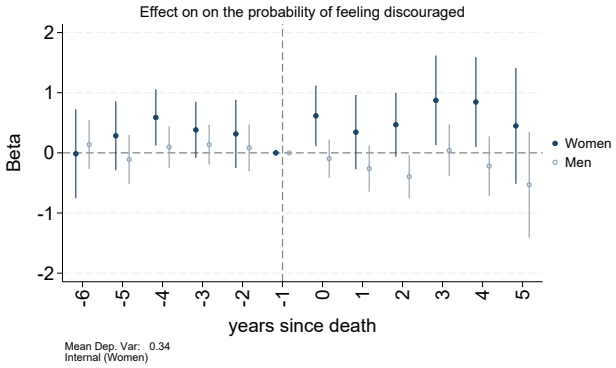
(a) Self-reported health (Children under 12)



(b) Self-reported health (No Children under 12)



(c) Prob. of feeling discouraged (Children under 12)



(d) Prob. of feeling discouraged (No Children under 12)

Source: ENNViH 2002-2009. The graphs show the effect of the death of a female elderly person, cohabitating during the analyzed period, on the self-reported health (top) and probability of feeling discouraged (bottom) over time, for men and women. Graphs (a) and (c) illustrate the impact when there are children under 12 years old, while graphs (b) and (d) show the impact when there are no children under 12 years old. The results indicate a similar impact and direction even when excluding cases where only elderly mothers in the household are considered.

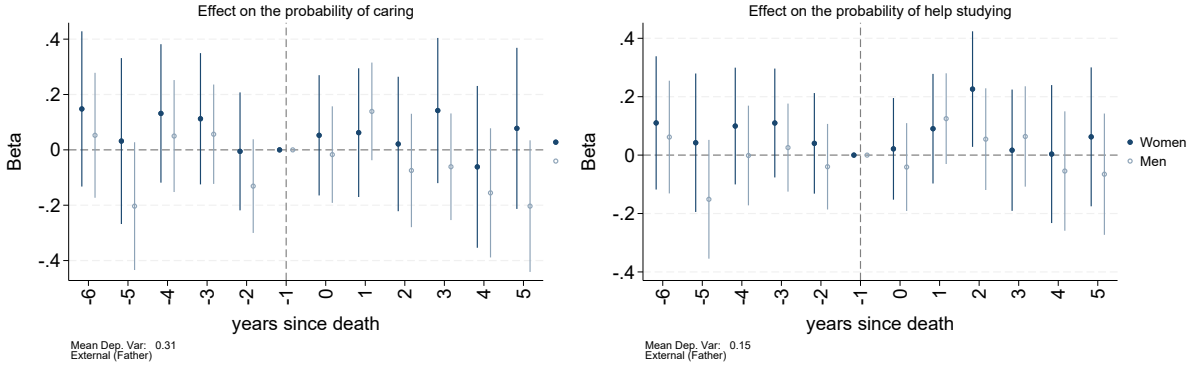
Robustness

6.4 Use of time/caregiving

6.4.1 External and Internal Elderly Male

In the case of male elderly care recipients outside the household, no significant effects are observed (Figure 6.10 [a] and [b]). For cohabitating caregivers, Figure 6.11 shows more intense caregiving for male elderly recipients before the event, with no significant substitution effect observed post-event.

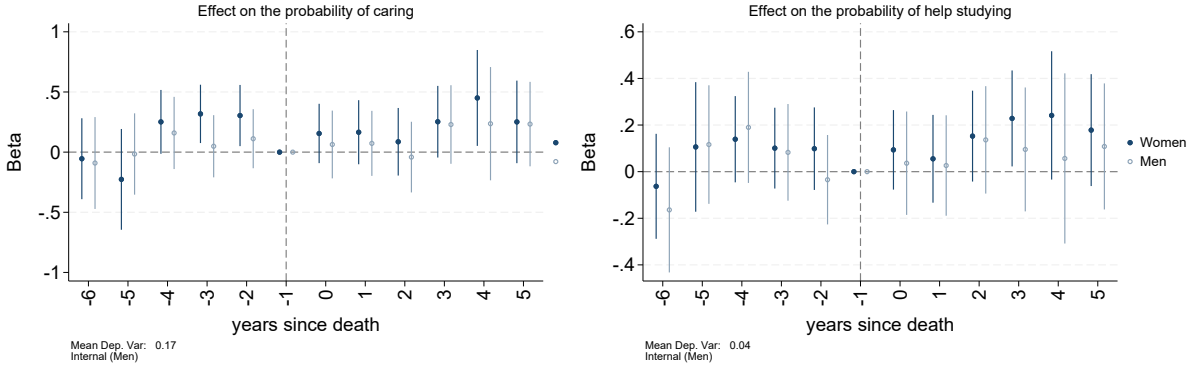
Figure 6.10: Effects of the End of Caregiving by Male Elderly (non-cohabitating)



(a) Probability of Caring (b) Prob. of Helping Studying

Source: ENNViH 2002-2009. The graphs show the effect of the death of a male elderly person,only parent alive, on the probability of providing care (a) and helping with studying (b) over time, for men and women.

Figure 6.11: Effects of the End of Caregiving by Male Elderly (Cohabitating)



(a) Probability of Caring(Elderly Death: Men) (b) Prob. of Helping Studying(Elderly Death: Men)

Source: ENNViH 2002-2009. The graphs show the effect of the death of a male elderly person, cohabitating during the analyzed period, on the probability of providing care (a) and helping with studying (b) over time, for men and women. The results show a similar impact and direction even when excluding cases where only elderly fathers in the household are considered.

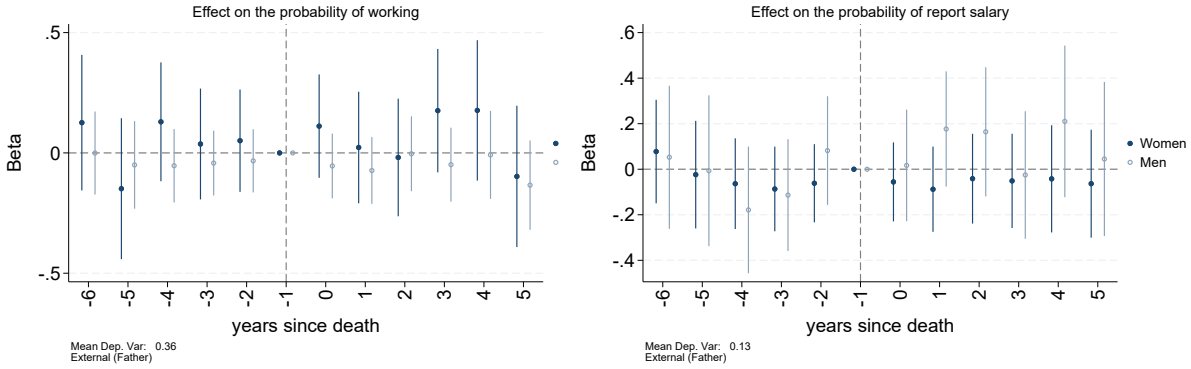
6.5 Labor outcomes

6.5.1 External and Internal Elderly Male

Figures 6.12 and 6.13 present the effects for male elderly non-cohabiting and cohabiting caregivers, respectively. However, there are no significant changes in trends in most cases. The only notable change is observed in Figure 6.13 (a). In this graph, the findings of Bauer et al. (2015) are evident, highlighting that informal caregivers, particularly those who provide intense care or co-reside with care recipients, are significantly less likely to participate in the labor force. This is reflected in the increased probability of working for women, who are the main caregivers, after the end of caregiving duties. Despite this, no significant changes are observed in other variables, indicating that even if

women return to work after caregiving, minimal impacts on their labor outcomes are perceived.

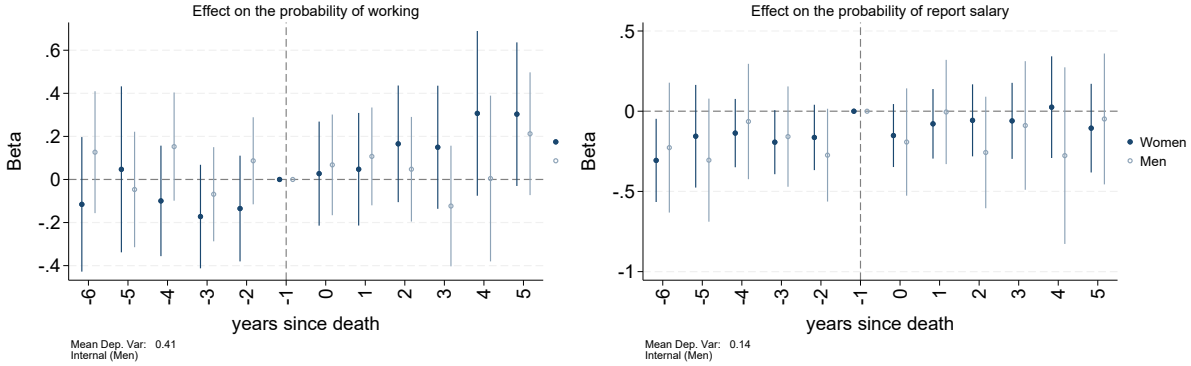
Figure 6.12: Effects of the End of Caregiving by Male Elderly (non-cohabitating)



(a) Probability of Working (b) Prob. of Reporting Salary

Source: ENNViH 2002-2009. The graphs show the effect of the death of a male elderly person,only parent alive non-cohabitating, labor outcomes separated by sex of the caregiver. The graphs illustrate the effect on the probability of working (a), and reporting salary (b) over time, for men and women.

Figure 6.13: Effects of the End of Caregiving by Male Elderly (Cohabitating)



(a) Probability of Working (b) Prob. of Reporting Salary

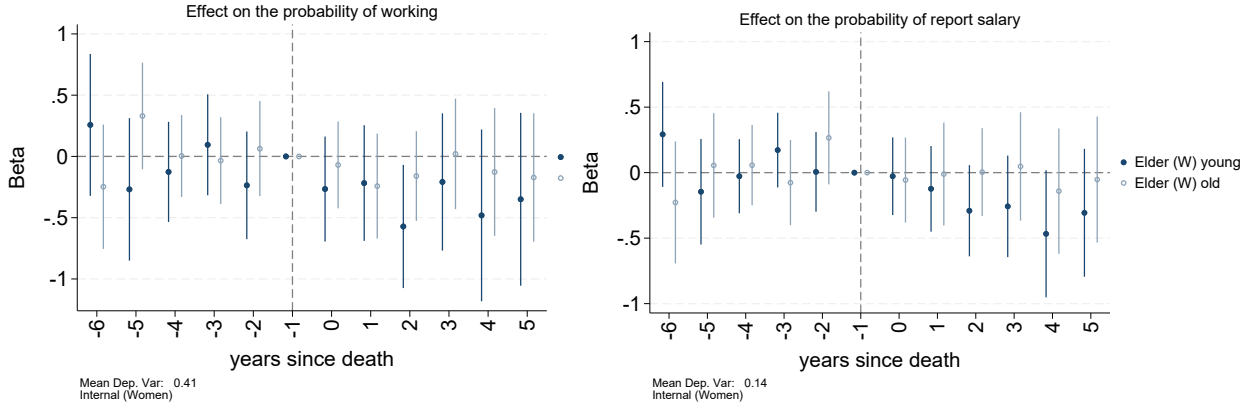
Source: ENNViH 2002-2009. The graphs show the effect of the death of a male elderly person, cohabitating, on labor outcomes separated by the sex of the caregiver. The graphs illustrate the effect on the probability of working (a), and reporting salary (b) over time, for men and women. The results show a similar impact and direction even when excluding cases where only elderly father in the household are considered.

6.5.2 Age at death

In order to understand the role of grandmothers more deeply, the analysis is disaggregated by the age at death of the elderly women, with a division at the median age of 79 years. The impacts on labor outcomes, specifically the probability of working and reporting salary, are only significant following the death of younger elderly women (under 79 years old). This robustness strengthens more our proposed mechanism and added to the findings from Talamás Marcos, 2023: younger elderly women are more likely to assist with childcare within the household, thereby alleviating caregiving responsibilities for other family members. Conversely, as elderly women age beyond 79,

their likelihood of participating in childcare diminishes, resulting in less pronounced impacts on labor outcomes when they pass away, as illustrated in the figure 6.14. This adds depth to Talamás Marcos, 2023's findings by considering the age of the elderly women.

Figure 6.14: Effects of the End of Caregiving by Women Elderly's age at death (Cohabitating)



(a) Probability of Working

(b) Probability of report a salary

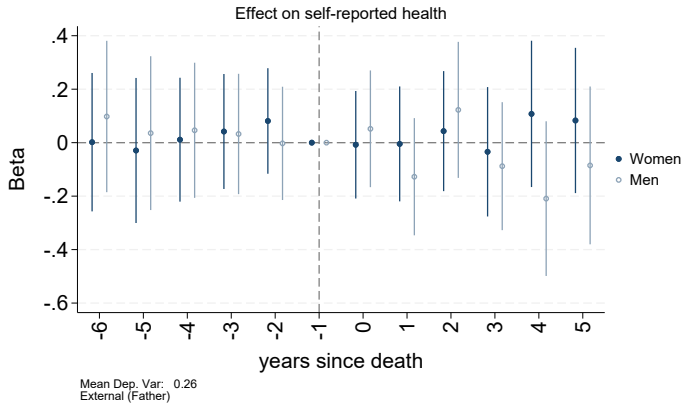
Source: ENNViH 2002-2009. The graphs illustrate the effect of the death of a cohabitating female elderly person, separated by age at death, on the probability of working (left) and reporting salary (right) over time, focusing exclusively on women. The graphs compare the impact when the deceased elderly woman is under 79 years old and over 79 years old. The results show a consistent impact and direction, even when excluding cases where only elderly mothers in the household are considered.

6.6 Health outcomes

6.6.1 External and Internal Elderly Male

Figures 6.15 and 6.16 present the effects of the end of caregiving for male elderly, both non-cohabitating and cohabitating. However, no significant changes are observed in self-reported health before and after the end of caregiving.

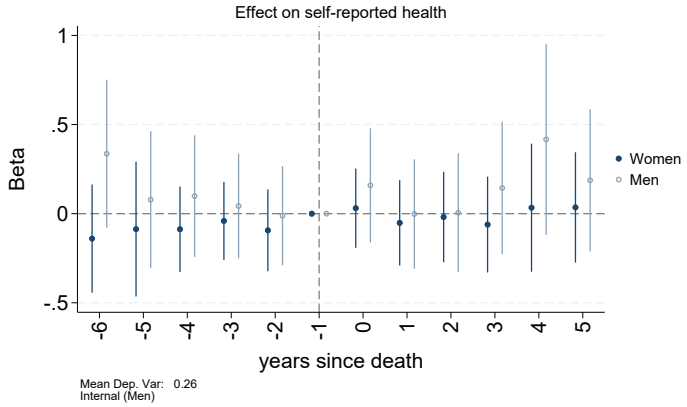
Figure 6.15: Effects of the End of Caregiving by Male Elderly (non-cohabitating)



(a) Self-reported health

Source: ENNViH 2002-2009. The graphs show the effect of the death of a male elderly person, only parent alive non-cohabitating during the analyzed period, on the probability of improve self-reported health over time, for men and women.

Figure 6.16: Effects of the End of Caregiving by Male Elderly (Cohabitating)



(a) Self-reported health

Source: ENNViH 2002-2009. The graphs show the effect of the death of a male elderly person, cohabitating during the analyzed period, on the probability of improve self-reported health over time, for men and women. The result show a similar impact and direction even when excluding cases where only elderly father in the household are considered.

Chapter 7

Conclusion

This research finds significant impacts of informal caregiving on various outcomes, focusing on gender and cohabitation status. The findings underline that informal caregiving primarily affects female caregivers, reflecting broader gender roles based on social norms and responsibilities. Importantly, this study is the first in Mexico to analyze, in a causal manner, the impacts of the end of elderly caregiving responsibilities both inside and outside the household.

There are three main results from this research, first this findings reveal a reduction in the probability of women working after the end of caregiving duties, particularly for cohabiting caregivers. The role of grandmothers in providing childcare within the household is particularly important as showed in Talamas' study, especially when there are young children present. Analysis disaggregated by the age at death of the elderly women shows that younger elderly women are more likely to assist with childcare, thereby alleviating caregiving responsibilities. This finding strengthens our proposed mechanism, adding depth to what Talamás Marcos, 2023 found. Additionally, the study observes a possible shift in social norms, albeit still insufficient, regarding caregiving roles, especially when women had a higher likelihood of being involved in the labor market before the caregiving event. This shift can lead to a more equitable distribution of household responsibilities between men and women. These findings align with previous literature finding that norms are influenced by the environment (Bettinger and Long, 2005; Carrell et al., 2010; Gneezy et al., 2009), nevertheless, further research needs to be done. Thirdly, no significant changes are observed in self-reported health before and after the end of caregiving in none of the cases. This result can be interpreted through the reference point theory in behavioral economics. This implies that upon the end of caregiving, the caregiver's reference point may shift back to healthy individuals, and having adapted their perception, it is possible that no significant change in self-reported health is observed.

The study also has additional findings such as the differences between non-cohabiting and cohabiting caregivers. Furthermore, the impacts of informal caregiving are primarily observed in female caregivers, reflecting broader gender roles based on social norms and responsibilities. This dynamic is evident in both labor market outcomes and time use patterns.

These findings underscore the need for policies that support informal caregivers, particularly women, who bear the majority of caregiving responsibilities. Implementing policies that provide support before caregiving begins can help avoid short-term health declines and short- and long-term negative impacts on labor outcomes. Providing public childcare services would enable women to work without relying on extended family support, thereby reducing the caregiving burden on women. Additionally, addressing gender disparities arising from social norms by promoting equitable caregiving responsibilities and supporting women's participation in the labor market is essential. Implementing gender role models can also help increase women's participation (Cohen and Deterding, 2009; Marx and Roman, 2002).

Further research is needed to explore the long-term health effects of caregiving using causal methods. Examining the specific mechanisms through which social norms affect caregiving responsibilities and, consequently, labor market and health outcomes can provide more targeted policy recommendations. In summary, this study emphasizes the significant effects of informal caregiving on labor, health, and time use, with important implications for policy and further research. Addressing the needs of caregivers, particularly women, is needed for improving their quality of life and ensuring sustainable support systems for the elderly.

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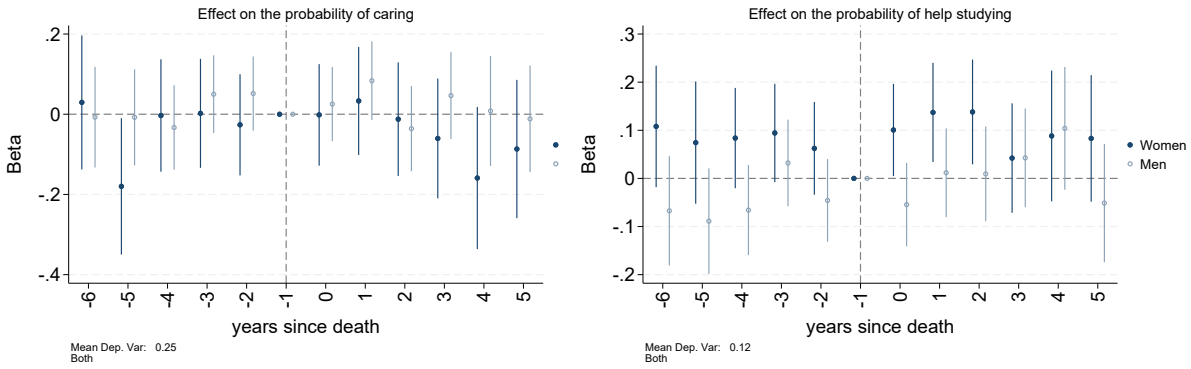
Appendix

Overall Analysis

Use of time/caregiving

At a general level, Figures A1, A2 and A3 illustrate the overall trends. An increase in the probability of helping with studying is observed after the event in all cases. Nevertheless, in the case of cohabitating caregivers, as depicted in Figure A3 (b), the patterns are less clear. In addition, the probability of caregiving for the non-cohabiting case shows an inverted U pattern, while the cohabiting case is different, as Figure A3(a) shows a more intense general caregiving provision before the event. However, there is no significant reduction in caregiving after the event, potentially due to the ongoing need to assist with studying, as indicated by a small, sustained increase in the probability of helping with studying (Figure A3[b]). Further analysis is required to differentiate the effects based on the sex of the elderly.

Figure A1: Effects of the End of Caregiving on Time Use

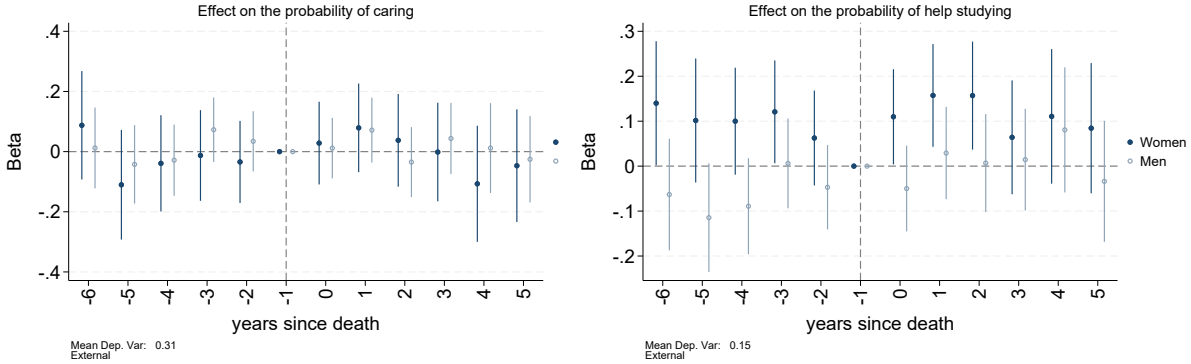


(a) Probability of Caring

(b) Probability of Helping with Studying

Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person, cohabitating and non-cohabitating, on the probability of providing care (left) and helping with studying (right) over time, for men and women.

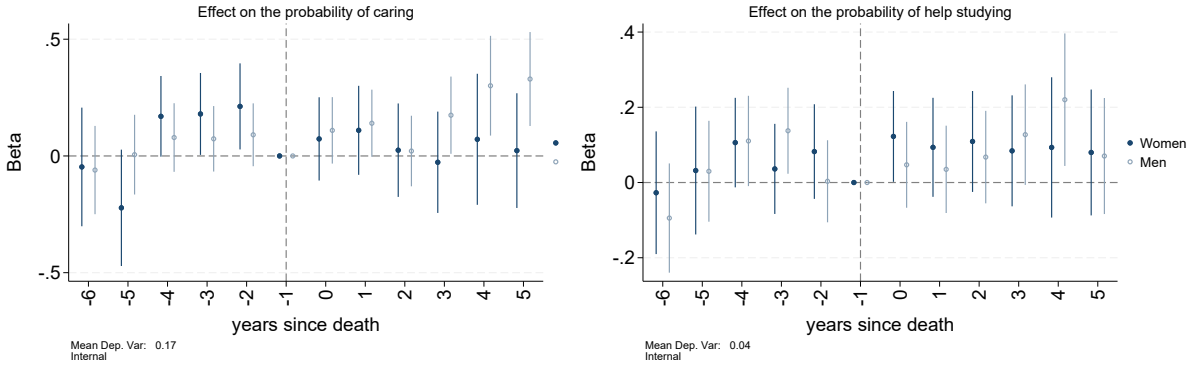
Figure A2: Effects of the End of Caregiving (non-cohabitating)



(a) Probability of Caring (b) Probability of Helping with Studying

Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person,only parent alive non-cohabitating during the analyzed period, on the probability of providing care (left) and helping with studying (right) over time, for men and women.

Figure A3: Effects of the End of Caregiving (Cohabitating)



(a) Probability of Caring (b) Probability of Helping with Studying

Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person, cohabitating during the analyzed period, on the probability of providing care (left) and helping with studying (right) over time, for men and women.The results show a similar impact and direction even when excluding cases where only elderly parents in the household are considered.

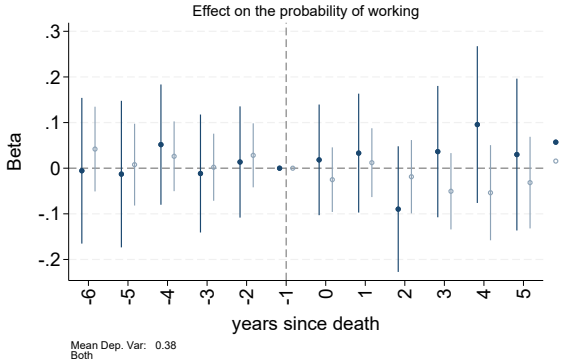
Labor outcomes

Figure A4 (a) shows the effect of the death of an elderly person on the probability of working. There is no conclusive pattern observed; for women, the probability of working appears to change slightly after the end of caregiving responsibilities, while for men, there is no significant change. Figures A5(a) and A6(a) further break down these effects by non-cohabitating and cohabitating caregivers. For non-cohabitating caregivers, there is a slight increase in the probability of working for women, indicating that the burden of caregiving may have previously limited their employment opportunities. In contrast, cohabitating caregivers show no increase, possibly due to ongoing responsibilities within the household.

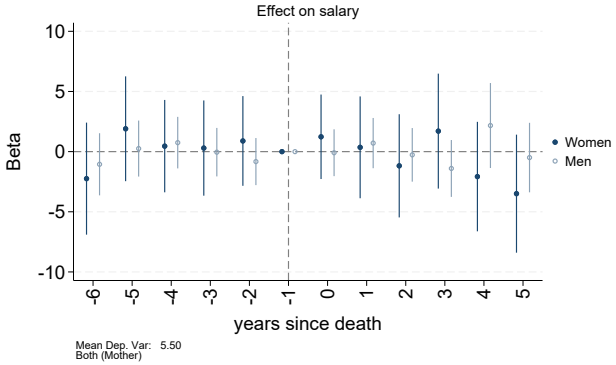
The effect on salary is depicted in Figure A4 (b). Overall, there is little change in salary immediately following the end of caregiving, with both men and women showing relatively stable salary levels, although women's salaries are lower than men's in absolute terms. Figure A5 (b) and Figure A6 (b) provide insights into non-cohabitating and cohabitating caregivers, respectively. Non-cohabitating women caregivers exhibit a slight increase in salary post-caregiving, which may reflect their return to jobs that were previously unattainable due to caregiving duties. On the other hand, cohabitating women caregivers show a significant decrease in salary, suggesting that their labor market engagement remains constrained even after caregiving ends, or that they may have to return home to attend to ongoing household responsibilities.

Figure A4(c) illustrates the effect on the probability of reporting a salary. For both genders, the probability remains relatively stable over time, with minor fluctuations. Figure A5(c) and Figure A6(c) further detail these effects for non-cohabitating and cohabitating caregivers.

Figure A4: Effects of the End of Caregiving



(a) Probability of Working

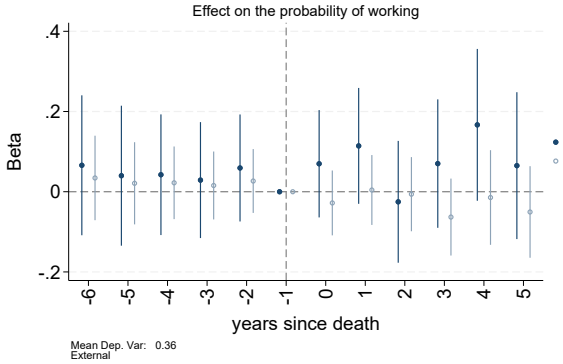


(b) Salary

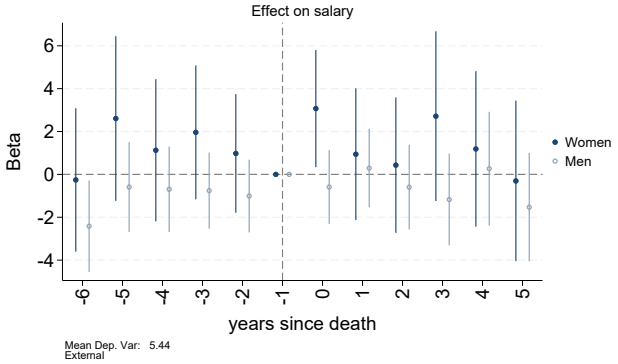
(c) Probability of Reporting Salary

Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person,only parent alive cohabitating and non-cohabitating, on the probability of working (top left), salary (top right), and reporting salary (bottom) over time, for men and women.

Figure A5: Effects of the End of Caregiving (non-cohabitating)



(a) Probability of Working

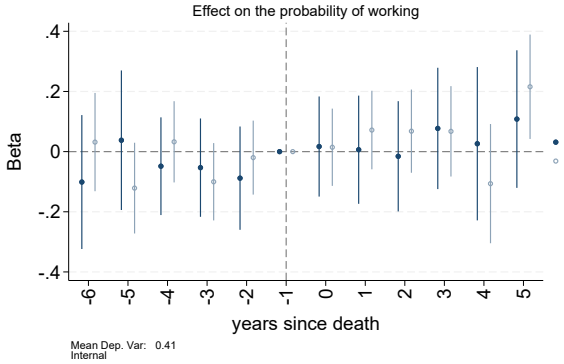


(b) Salary

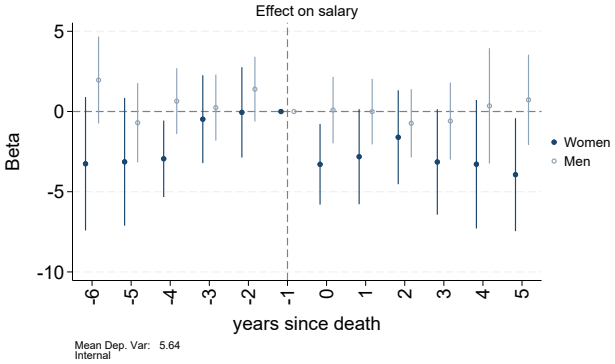
(c) Probability of Reporting Salary

Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person,only parent alive non-cohabitating during the analyzed period, on the probability of working (top left), salary (top right), and reporting salary (bottom) over time, for men and women.

Figure A6: Effects of the End of Caregiving (cohabitating)



(a) Probability of Working



(b) Salary

(c) Probability of Reporting Salary

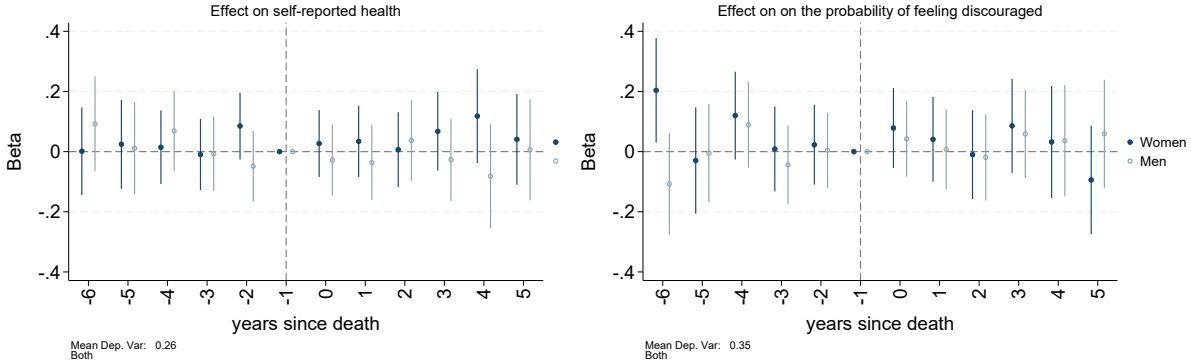
Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person, cohabitating during the analyzed period, on the probability of working (top left), salary (top right), and reporting salary (bottom) over time, for men and women. The results show a similar impact and direction even when excluding cases where only elderly parents in the household are considered.

Health outcomes

At a general level, without distinguishing by the sex of the elderly, no significant changes are observed in self-reported health before and after the end of caregiving, as shown in Figure A7(a).

The analysis of the probability of feeling discouraged presents more nuanced findings. Figure A7(b) shows the overall effect on the probability of feeling discouraged, with minor fluctuations before and after the end of caregiving. However, in Figure A9(b), which focuses on cohabitating caregivers, an increase in the probability of feeling discouraged is observed before the event, but it is not possible to assume any specific mechanism behind this trend.

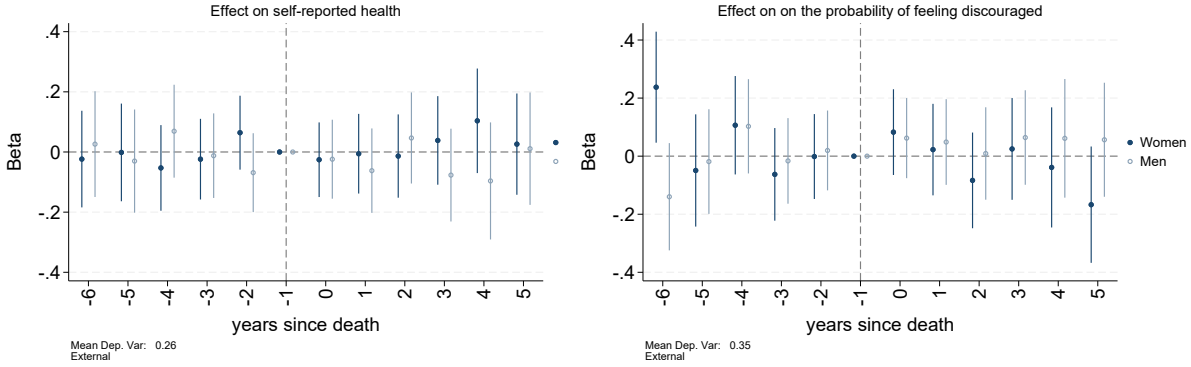
Figure A7: Effects of the End of Caregiving



(a) Self-reported health (b) Probability of feeling discouraged

Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person,only parent alive cohabitating and non-cohabitating, on the probability of improve self-reported health (left) and on the probability of feeling discouraged (right) over time, for men and women.

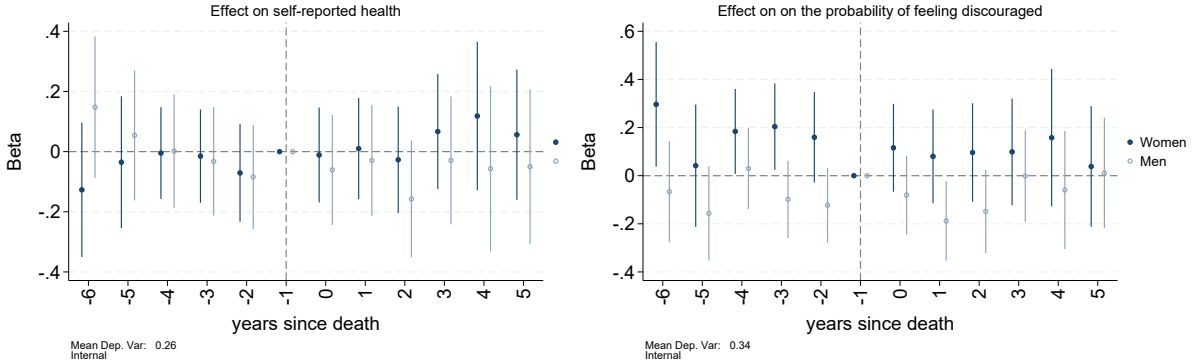
Figure A8: Effects of the End of Caregiving (non-cohabitating)



(a) Self-reported health (b) Probability of feeling discouraged

Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person,only parent alive non-cohabitating during the analyzed period, on the probability of improve self-reported health (left) and on the probability of feeling discouraged (right) over time, for men and women.

Figure A9: Effects of the End of Caregiving (Cohabitating)



(a) Self-reported health

(b) Probability of feeling discouraged

Source: ENNViH 2002-2009. The graphs show the effect of the death of an elderly person, cohabitating during the analyzed period, on the probability of improve self-reported health (left) and on the probability of feeling discouraged (right) over time, for men and women.The results show a similar impact and direction even when excluding cases where only elderly parents in the household are considered.

List of Figures

List of Tables