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Trade-offs in intergenerational family care provision

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Abstract
With an aging U.S. population, there is an increasing need for elderly care. One aspect of family care that is poorly understood is the trade-off for the generation of grandparents between the provision of care and support for their elderly parents and provision of care for their grandchildren. I evaluate the impact of a parent's death on the likelihood of an individual providing child care to grandchildren using the Health and Retirement Study and find that such a death leads to an increase in the likelihood of child care, suggesting that many grandparents would provide child care services if they did not have prior elderly care and support obligations. There is a positive effect of this additional care of grandchildren on fertility for individuals' only daughters and daughters who do not live within 10 miles of grandparents. However, there is no increase in labor force participation for these groups.

Keywords Child care · Elderly care · Labor force participation · Fertility · Gender

JEL classification J13 · J14 · J22

1 Introduction

Many Americans care for their grandchildren or their elderly parents at some point. In 2016, about 25% of employed mothers in the U.S. with children under the age of six relied on a relative as a primary caregiver (National Center for Education Statistics, 2017). At the same time, the elderly population is growing in the U.S. The share of the population over the age of 65 has grown to about 17% in the 2021 American Community Survey. Nearly all of the U.S. elderly population requiring long-term support services receive some assistance from a family caregiver. There are currently about three and a half adults aged 18–64 for each person over the age of

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65, but this is projected to decrease to about two and half younger adults per older person in the next few decades (Redfoot et al., 2013; Vespa et al., 2018).

The generation of individuals that care for both their elderly parents and children or grandchildren has been termed the "sandwich generation." Figures 1 and 2 show caregiving provided to older and younger generations by age group using the American Time Use Survey (ATUS) and Health and Retirement Study (HRS). The figures show that caregiving to both older and younger generations for respondents is increased between the ages of 55 to 75. Existing research on the sandwich generation has focused largely on exploring their characteristics and the extent of their caregiving burden. Moreover, much of this literature addresses own child care as opposed to care of grandchildren.

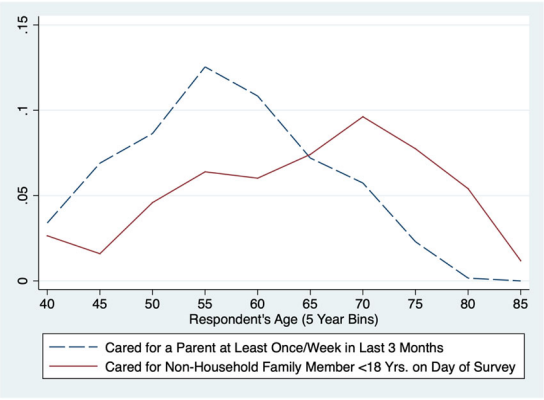

Fig. 1 Care provision to older and younger generations by age, ATUS. Note: Figure 1 contains respondent-level data from the 2018 American Time Use Survey (ATUS). Respondent-level care information is shown by 5-year respondent age bins, starting with 36–40 years of age. Care of parents includes care due to chronic conditions related to aging. Child care information is from a one day time diary, while care of parents is based on responses to questions about eldercare provided during the last three months

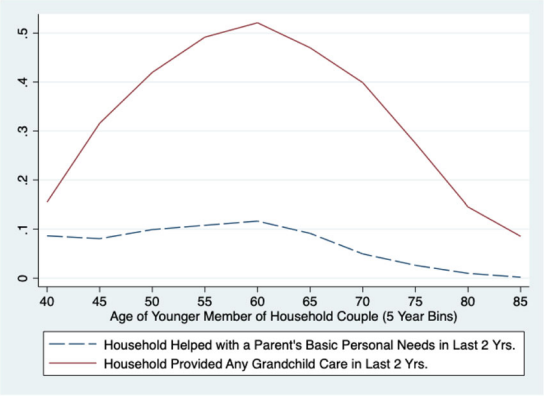

Fig. 2 Share of households providing care to older and younger generations, HRS. Note: Figure 2 contains household-level data from the Health and Retirement Study from 1996–2014 organized by 5-year bins of youngest age between primary respondent and spouse if the respondent is part of a married couple, starting with an age range of 41–45 years. Parental assistance references care of respondent households' parents

This study explores the extent to which one type of care obligation affects the other, specifically measuring the impact of parental support obligations on the amount of care provided to grandchildren. I use household and individual level panel data from multiple generations in the HRS that is centered around a set of older respondents, many of whom have both elderly parents and grandchildren alive. This main generation of interest is referred to as the "sandwich generation" and its members "young seniors" or "main respondents" in the empirical analysis. In particular, I evaluate the impact of a young senior's loss of a parent on her likelihood of caring for her grandchildren and find that such a death leads to a 13–14% increase in hours spent caring for grandchildren, or an additional 19–20 minutes per week. Moreover, a young senior is 6.3% more likely to provide at least 100 hours of care to an individual child's children. Many grandparents would provide child care services if they did not have prior elderly care obligations. To my knowledge, this is the first paper to document the negative impact of parental support obligations, largely in the form of elderly care, on grandchild care in the U.S.

I furthermore study the impacts on adult children, heterogeneity of the care effects, and possible mechanisms. Using the sample of children of main survey respondents, I find an increase in fertility upon the parent's death for young seniors' only adult daughters and daughters who do not live within 10 miles of respondents. I do not find similar fertility effects for adult sons, highlighting the particularly important role of the maternal grandparents as caregivers. This also importantly could be relevant in the search for explanations of falling U.S. birth rates.[1] There are not detectable overall effects of the death of a young senior's parent on the employment status of his/her adult children.

Additional heterogeneity analysis suggests that the positive effect of the loss of an elderly parent on child care weakens when siblings live near elderly parents, likely because elderly care obligations are reduced. The effect is also weaker when children live within 10 miles of a young senior or elderly parents live within 10 miles of a young senior, suggesting that longer travel times to care recipients exacerbate the care trade-off. Relocation, work status of young seniors, health status of young seniors, or financial transfers are not the primary mechanisms through which the effect is occurring. Rather, it seems that a reallocation of time from one care activity to another is the primary mechanism.

The rest of the paper is structured as follows. Section 2 reviews the existing literature on grandchild care, parental elderly care, and the relationship between the care types. Section 3 describes the data analyzed in the main analysis, while Section 4 explains the methods used. A set of results, including an exploration of mechanisms and heterogeneity, are explored in Section 5. Concluding remarks are offered in Section 6.

2 Literature review

There is a small literature that describes the sandwich generation and explores the relationship between elderly care and child care provision. Pierret (2006) uses NLSYW data to show that those providing time or money transfers to both parents and children are wealthier and more likely to be married and out of the labor force

[1] See Kearney et al. (2022) for a detailed exploration of other possible causes.

and provide total intrafamily transfers of $18 billion and 2.4 billion hours each year.[2] Grundy and Henretta (2006) examine cross-sectional data from Great Britain and find that having more adult children is associated with a lower likelihood of parental elderly care provision. Miller and Sedai (2022) explore the relationship between different types of caregiving and alternate activities, suggesting that child care provision reduces leisure time and parental care reduces home production. Building upon existing studies, my analysis relies on extensive panel data to eliminate selection issues. This study also answers a new question, determining the impact of a reduction in parental support obligations on the alternate activity of grandchild care provision.

2.1 Grandchild care

The existing literature on grandchild care provision examines its impact on the parents who benefit from the care provision, the grandchildren receiving care, and the grandparents providing care. Studies of the relationship between grandchild care provision and mother's labor force participation find a positive relationship. Compton and Pollak (2014) find that living within close proximity to a grandmother increases a mother's probability of employment and labor force participation by 4-10 percentage points likely due to childcare provision. Bratti et al. (2018) find that retirement eligibility of a grandmother increases a mother's probability of labor force participation by 11%. Posadas and Vidal-Fernandez (2013) find that the availability of grandparental child care provision significantly increases mothers' labor force participation by 9 percentage points. Several other studies also find a positive relationship between grandparent child care provision and mother's labor force participation (Aparicio-Fenoll & Vidal-Fernandez, 2015; Cardia & Ng, 2003; Dimova & Wolff, 2011). Studies of the impact of grandparent provision of child care on grandchild outcomes find heterogenous impacts in comparison to formal care settings by the degree to which the household is advantaged (Del Boca et al., 2018). A broader related literature suggests intergenerational transfers and influence from grandparents may impact the outcomes of grandchildren (Braun & Stuhler, 2018; Ferrie et al. 2021; Lindahl et al. 2015; Long & Ferrie, 2018). Okun and Stecklov (2021) show that death of a parent leads to a reduction in fertility of the deceased parent's children, while García-Morán and Kuehn (2017) and Eibich and Siedler (2020) similarly find positive fertility impacts of grandparent availability. This study expands upon the existing grandchild care literature by determining that increased grandchild care provision due to a reduction in parental support obligations increases fertility for some adult daughters, but does not increase labor force participation.

2.2 Elderly care

A variety of other papers study the impact of elderly care on labor force participation within the U.S. and Europe, most finding a negative relationship between caregiving

[2] Others have provided descriptions of this generation using alternate data sources. For example, Wiemers and Bianchi (2015) use the Panel Study of Income Dynamics (PSID) to explore recent trends in the "sandwich generation."

and labor force participation (Fevang et al., 2012; Kolodziej et al., 2018; Schmitz & Westphal, 2017; Skira, 2015). Skira (2015) uses the HRS, developing a structural model to understand the impact of changes in leave provision on labor force participation. Wang (2021) uses the HRS and finds that parental health shocks lead to increases in the probability of working for primary earners and high-wage second earners. Fevang et al. (2012) explores the impact of a lone elderly parent requiring care and the subsequent effects of the sick parent's death in Norway. This method is somewhat similar to the one used in this paper, but focuses on the caregiver's labor supply and government assistance outcomes. The authors find negative labor supply impacts of elderly care provision. Finally, women have been found to be more likely to reduce labor force participation as a result of informal care, but men are only slightly less likely to provide time transfers (Carmichael & Charles, 2003; Friedman et al., 2015). This study expands the literature on impacts of elderly care obligations to include time spent providing grandchild care as an outcome.

3 Data

In order to explore time transfers of the sandwich generation of grandparents, I utilize the Health and Retirement Study (HRS), a national panel survey of Americans over the age of 50 and their spouses. The analysis in this paper relies on HRS biennial survey data from 1996 to 2014, which includes 10 survey waves. I rely on the RAND HRS Family Data 2014 (V1), as well as the RAND HRS Longitudinal File 2014 (V2). In this dataset there are 1136 households once I cut the data to include only households with members born between 1931 and 1941, those with at least three years of data, are married couples, have at least one grandchild at some point in the survey period, and do not have missing data on key characteristics. This sample is the set of households which face a change in the trade-off between elderly care and grandchild care during the survey period, ranging in age from 55 to 65 in the first wave used and from age 73 to 83 during the final wave.[3] Three different observation levels are used: household level, individual main respondent level, and child level. The primary analysis in this paper is conducted using data collapsed to the household level, summarizing data for two household members, for each survey year. In supplemental analyses, I also use individual-level data for each main household member in my main sample. Finally, I use separate data organized at the level of each child of a main respondent in the main sample.

Key variables of interest at the household level include number of parents alive, number of parents needing help with personal care, number of grandchild care hours, and number of parental care hours. Number of parents alive for each household is the count of parents still alive for both the respondent and spouse. The number of parents needing help with personal care indicates the number of parents between the respondent and spouse that need help with basic personal needs such as dressing, eating, or bathing. The number of grandchild care hours is the total of the

[3] This age cohort also corresponds to the original HRS cohort, the only one surveyed in 1996, while other cohorts were added later. Eliminating the requirement that individuals are present in the data for at least three years does not change the magnitude or significance of the results.

respondent's estimate of childcare hours provided and the spouse's estimate of hours provided during the two year survey period.[4] Finally, the number of parental care hours includes hours that either the respondent or spouse helped either household member's father, mother or both parents with basic personal needs such as dressing, eating and bathing added to the number of hours that either the respondent or spouse helped either household member's father, mother or both parents with errands, household chores and transportation.

In the household-level sample, 30.0% of observations (household-survey year) are currently caring for grandchildren only, 8.6% of households are currently providing elderly personal care only, and 8.1% of households are currently providing both grandchild care and elderly personal care. Sixteen percent of households are providing both types of care in 1996, the first survey year in the sample. Forty percent of all observations have cared for elderly parents at some point in the survey period and also cared for grandchildren at some point, though not necessarily simultaneously.

Full baseline summary statistics for households who do and do not have at least one parent alive are contained in Table 1. Within both household types, about half are currently providing at least 100 hours a year of grandparental child care to at least one child and there is not a significant difference in their estimated hours of care. Households with at least one parent alive have on average 1.5 parents alive and about about half will ever care for their parents. There is no difference in the share of children that live within 10 miles of the main household respondents. Those with no parents alive are 2.6–2.9 years older and have children that are 1.6–2.3 years older than those main household respondents with parents alive. Nearly all households have at least one grandchild in 1996.[5]

4 Empirical analysis

The primary goal of my analysis is to evaluate the impact of a change in elderly care needs on the provision of grandchild care in the HRS sample. I use household fixed effects to control for underlying differences in the amount of care provided by a household regardless of elderly care needs. Households that provide elderly care are much more likely to provide grandchild care, likely due to the closeness of family members or a set of underlying family norms. By utilizing fixed effects, I can isolate the effect of changes in the need for elderly care over time within a household on the provision of grandchild care.

In order to assess the impact of parental care requirements on grandchild care provision, in my main analysis I use the number of parents living for both members of a couple as a proxy for the resources (time or money) required for parental care. Even with household fixed effects, it is possible the decision to care for a family member or not is

[4] If only a range of childcare hours is given by respondents and spouses who do not know or refuse to give the number of hours provided, the minimum and maximum range values are averaged to create care estimates for such individuals.

[5] Several studies find that becoming a grandparent reduces a grandmother's labor force participation (Frimmel et al., 2017; Ho, 2015; Rupert & Zanella, 2018). Because 99% of households already have a grandchild in the first wave that is utilized, this study is not complicated by the time use impacts of becoming a grandparent.

Table 1 Baseline (1996) Grandparental Household Characteristics by Whether Any Parents Are Alive

	None Alive	At Least One Alive	Difference
Share Ever Providing Grandchild Care	0.79	0.81	−0.02
			(0.026)
Share Currently Providing Grandchild Care	0.50	0.51	−0.01
			(0.033)
Mean Number of Grandchild Care Hours	338.4	355.4	−16.95
			(50.96)
Mean Number of Parents Alive	0	1.54	−1.54***
			(0.029)
Mean Number of Parents In Need of Help with Personal Care	0	0.33	−0.33***
			(0.021)
Share Ever Providing Elderly Care	0.06	0.52	−0.46***
			(0.024)
Share Currently Providing Elderly Care	0.06	0.16	−0.10***
			(0.020)
Share with Any Child Living Within 10 Miles	0.62	0.66	−0.04
			(0.029)
Mean Share of Adult Children Working Full-Time	0.75	0.72	0.03*
			(0.018)
Mean Share of Household Working Full-Time	0.34	0.51	−0.17***
			(0.025)
Mean Age Youngest Child	29.5	27.9	1.6***
			(0.37)
Mean Age Oldest Child	38.1	35.8	2.3***
			(0.31)
Mean Number of Sons	2.0	1.8	0.2**
			(0.09)
Mean Number of Daughters	1.8	1.8	−0.0
			(0.09)
Share of Children Who are Married	0.67	0.65	0.03
			(0.018)
Share with ≥1 Grandchild in 1996	0.99	0.99	−0.01
			(0.007)
Mean Age Younger HH Member	59.0	56.4	2.6***
			(0.25)
Mean Age Older HH Member	62.7	59.8	2.9***
			(0.30)
Mean Number of Years of Education in Household	12.5	12.6	−0.08
			(0.16)
Mean Self-Reported Health in Household (1-Excellent, 5-Poor)	2.4	2.2	0.1***
			(0.05)
Number of Survey Years	9.2	9.0	0.2
			(0.011)
Number of Households	439	697	–

Sample contains married couples with at least 3 years waves of data, eventually have at least one grandchild, and who have a member born between 1931 and 1941. Mean values are shown for each variable based on whether any parents are alive in the first year of data included in the analysis, 1996. Standard errors for the differences in means in parentheses. All values are weighted

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

time-varying. That is, an individual may have times in which she chooses to work and not provide any care and times in which she chooses to not work and only provide care. In this case, only exploring the relationship between parental care and grandchild care within a household will not capture the effect of parental support needs on grandchild care. I argue that, conditional on year and age of the respondent, parental death within a household is an exogenous shock that unambiguously reduces the parental care requirements of an individual in the short-run.

Specifically, the regression model that I rely on is the following:

$$Y_{h,t,a} = \alpha_0 + \alpha_1 P_{h,t} + \mathbf{X}'_{\mathbf{h,t}}\beta + \mu_h + \lambda_t + \theta_a + \epsilon_{h,t} \quad (1)$$

where $Y_{h,t}$ is an outcome for household h in year t, $P_{h,t}$ is a measure of the number of grandparents' parents who are still alive, $\mathbf{X}_{h,t}$ is a vector of controls, μ_h is a household fixed effect, λ_t is a survey year fixed effect, and θ_a is a fixed effect for age measured in five-year bins. Survey weights are used and standard errors are clustered at the household level unless otherwise noted. I utilize the household fixed effects empirical approach described above to present estimated coefficients related to the impact of a parental death on elderly care and grandchild care allocations.

In the household-level analysis, the primary outcomes of interest are hours of grandchild care provided by the household and whether grandchild care was provided by the household. In the individual respondent analysis, similar outcomes are used, but they only incorporate care at the individual respondent level as opposed to the aggregated household level. Finally, in the analysis conducted on the sample of adult children of respondents, the main outcome of interest includes an indicator for whether main respondents, parents of the adult children, contributed at least 100 hours of childcare for their children, grandchildren of the main respondents. The adult child-level analysis also includes as outcome variables employment of adult children and number of children that adult children have, a measure of fertility. Child-level analysis includes child-level fixed effects.

There could be multiple pathways through which the number of parents alive may impact grandchild care, as support of elderly parents may require both time and money. In order to explore whether a simple reallocation of time from one care activity to another is the primary mechanism through which parental mortality status impacts grandchild care, I explore impacts of the death on household characteristics, such as employment, health status, and financial transfers to children, and use these as controls in the primary regressions.[6] If a change in time spent caring for elderly parents is the only mechanism through which a parent's mortality status impacts time spent caring for grandchildren, one could use the number of parents alive as an instrument for time spent caring for elderly parents in order understand the causal impact of time spent caring for elderly parents on time spent caring for grandchildren. I include this analysis with the caveat that the exclusion restriction will not hold if there are alternative mechanisms that are not ruled out.

[6] If a respondent is more likely to retire upon a parent's death, this frees up time to care for grandchildren and may increase care. If the inclusion of the young senior household's employment status as a potential mediating variable in the main regressions does not change the relationship between the number of parents alive and hours spent caring for grandchildren, however, then the care time reallocation mechanism is supported over the employment mechanism.

As a robustness check, I also estimate event study regressions and present the results graphically. This analysis tests for possible trends that might be driving my main results. These models rely only on variation provided by respondents who lost one parent during the sample time frame or never had any parents alive so that the results are not confounded by the loss of multiple parents.

Specifically, I estimate the following regression equation to create the event study graphs:

$$Y_{r,t,a} = \alpha_0 + \sum_{l=-T}^{T} \alpha_l P^l_{r,t} + \mathbf{X}'_{\mathbf{r,t}}\beta + \mu_r + \lambda_t + \theta_a + \epsilon_{r,t} \quad (2)$$

where $Y_{r,t}$ is an outcome for respondent r in year t, $P^l_{r,t}$ is an indicator for being l time periods relative to r's parental death, $\mathbf{X}_{r,t}$ is a vector of controls, λ_t is a survey year fixed effect, and μ_r is a respondent fixed effect.[7] The omitted wave is the first wave in which the full time between survey waves was spent with no parents alive. In this manner, the "treatment" is perceived as the parent being alive and included respondents with a parent never alive are "never-treated" units.

5 Results

Overall, the results present a trade-off facing the sandwich generation and suggest that grandchild care may decline as elderly parents continue to live longer and require additional care. I find a negative impact of number of parents alive on care of grandchildren as measured using total hours and also hours above a minimum threshold. Heterogeneity analysis suggest that young seniors' child care decisions are most affected by their own parents' deaths as opposed to spouse's parents' deaths, particularly when parents were not living near other siblings, and particularly when only a single parent had been living. Mechanisms, such as relocation of young seniors or children, employment status, and financial transfers do not seem to explain changes in care choices. Finally, analysis of the behavior of young seniors' adult children suggests the fertility of adult daughters changes, while there is not an overall effect on employment status of adult children.

5.1 Grandchild care

The main results from estimating equation (1) on grandchild care provision are reported in Tables 2 and 3. In Table 2, the outcome is number of hours of grandchild care by household members within the previous two years. In columns (1) and (2), I find that there is a positive correlation between elderly care and child care, which suggests that households have "high care" and "low care" periods. Additionally, in columns (3) and (4), I find that there is not a significant correlation between the number of parents that need help and grandparent childcare. A respondent may be more likely to report that a parent needs help if he actually is helping the parent, so the number of self-reported parents that need help may be still partly capturing actual care provision instead of

[7] The HRS is a biennial panel, thus each l period is separated by two years.

parental support needs. However, if parental support needs and grandchild care are negatively related, it is not surprising that the coefficients are smaller in columns (3) and (4) than in columns (1) and (2) because they may be closer to measuring actual support needs than reported provision of care to parents. The number of parents alive is likely a much more reliable measure of parental support needs than either actual care provision or reported number of parents needing help and therefore is the preferred independent

Table 2 Impact of Parental Death on Household Grandchild Care Provision

	Ln (Number of Hours Spent Providing Grandchild Care)					
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(Hours Spent Caring for Parents)	0.028*	0.026*				
	(0.015)	(0.015)				
Number of Parents In Need of Help with Personal Care			0.001	0.002		
			(0.080)	(0.080)		
Number of Parents Alive					−0.141**	−0.131*
					(0.071)	(0.070)
Controls	NO	YES	NO	YES	NO	YES
Mean Hours of Care	246.3	246.3	246.3	246.3	246.3	246.3
Observations	14,753	14,752	14,753	14,752	14,753	14,752

Full sample contains couples with at least 3 years worth of data at some point in survey period. Each observation is a household-year observation. All specifications include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects. Additional controls include ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 3 Impact of Parental Death on Household Grandchild Care Provision, At Least 100 Hours to a Child

	Grandchild Care Provided					
	(1)	(2)	(3)	(4)	(5)	(6)
Ln (Hours Spent Caring for Parents)	0.001	0.000				
	(0.002)	(0.002)				
Number of Parents In Need of Help with Personal Care			−0.016	−0.016		
			(0.013)	(0.013)		
Number of Parents Alive					−0.024**	−0.023*
					(0.012)	(0.012)
Controls	NO	YES	NO	YES	NO	YES
Mean Dep. Var.	0.38	0.38	0.38	0.38	0.38	0.38
Observations	14,753	14,752	14,753	14,752	14,753	14,752

Any grandchild care provided variable is an indicator for whether at least one child reported using the respondent or spouse for at least 100 hours of child care between survey waves, a two year period. Full sample contains couples with at least 3 years worth of data at some point in survey period. Each observation is a household-year observation. All specifications include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects. Additional controls include ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

variable of interest. The results in columns (5) and (6) show that for each additional living elderly parent, the number of hours spent caring for a grandchild drops by 13–14%, or about 19–20 minutes per week.[8]

If a reallocation of time from one care type to the other is the only path through which the parental death impacts grandchild care, then one might use the number of parents alive as an instrument for hours of care provided to parents to evaluate the causal effect of hours spent caring for parents on hours spent caring for grandchildren. I include these results in Table 12. For each additional hour of care provided to parents, young seniors spend about 0.43 hours, or 26 minutes, less on grandchild care.[9]

In Table 3, I focus on whether any child reported using the respondent or spouse for at least 100 hours of care during the last two years. I find no correlation between hours spent on elderly care and the probability of providing grandchild care. Similarly, there is not a significant relationship between number of parents in need of help with personal care and whether child care is provided. I find that for each additional living parent, the probability a household spent anytime caring for a grandchild drops by 2.3–2.4 percentage points. This decrease corresponds to about a 6.3% decrease in the probability a household provides at least 100 hours of grandchild care.

5.2 Heterogeneity

In order to understand care response heterogeneity by gender and which spouse's parents are impacted, I next focus on individual respondent level analysis. Specifically, I re-estimate equation (1) focusing only on the impact of living parents of individual main respondents, as well as their spouse's parents, on their own caregiving decisions and separate the results by gender. These results are reported in Tables 4 and 5, which show as outcomes respondent's reported number of child care hours and whether the respondent reported any child care, respectively. Both tables show that young seniors of both genders respond most strongly to their own parents' mortality status (columns (3) and (7)) in comparison to their spouse's parents' mortality status. Females provided 20% fewer hours of child care while a parent was alive, or about 16 fewer minutes per week, while men provided 25% fewer hours, or about 12 minutes per week. Females were 3.7 percentage points less likely to provide any child care while a parent was alive. There is not a statistically significant effect of spouse's parents' mortality status in any case, though point estimates still suggest there may be small reductions in care. There is some evidence of a negative effect of number of own parents in need of personal care on number of hours of child care provided by male respondents in Table 4, column (6). The effects are overall very similar regardless of the gender of the respondent.

Next, I further break down the analysis by the household composition of living parents. Table 13 analyzes possible differential effects of a parent loss on care by whether the lost parent was the only parent of the respondent or spouse still alive. One might expect different effects for several reasons. Parents who are part of a

[8] Table 11 shows a similar change in hours once the sample is cut to households that ever provide child care.

[9] Section 5.3 provides support for the exclusion restriction, but the preferred specification is the reduced form result in Table 2, as it is meaningful with fewer necessary assumptions.

Table 4 Impact of Parental Death on Individual Grandchild Care Hours by Gender

	Ln (Number of Hours Spent Providing Grandparental Child Care)							
	Female Sample				Male Sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln (Hours Spent Caring for Own Parents)	0.031				−0.013			
	(0.023)				(0.025)			
Number of Own Parents In Need of Help with Personal Care		−0.052				−0.219*		
		(0.139)				(0.124)		
Number of Own Parents Alive			−0.205*				−0.250**	
			(0.120)				(0.109)	
Number of Spouse's Parents Alive				−0.158				−0.059
				(0.141)				(0.100)
Mean Hours of Care	139.5	139.5	139.5	139.5	86.2	86.2	86.2	86.2
Observations	8119	8119	8119	8119	10,662	10,647	10,662	10,662

Individual sample is based on respondent-level responses within a household separated into female and male respondents. Individuals in the sample are part of couples with at least 3 years worth of data at some point in survey period. Each observation is a respondent-year observation. The outcome ln (number of grandparental child care hours) is based on the respondent's estimate of child care hours provided. Controls include indicators for five year age bins for the respondent, survey wave indicators, household fixed effects, ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 5 Impact of Parental Death on Individual Grandchild Care (Extensive Margin) by Gender

	Any Grandchild Care Provided							
	Female Sample				Male Sample			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln (Hours Spent Caring for Own Parents)	−0.002				−0.003			
	(0.004)				(0.004)			
Number of Own Parents In Need of Help with Personal Care		−0.018				−0.021		
		(0.024)				(0.023)		
Number of Own Parents Alive			−0.037*				−0.027	
			(0.020)				(0.019)	
Number of Spouse's Parents Alive				−0.027				−0.008
				(0.024)				(0.018)
Mean Dep. Variable	0.22	0.22	0.22	0.22	0.24	0.24	0.24	0.24
Observations	8119	8119	8119	8119	10,662	10,647	10,662	10,662

Individual sample is based on respondent-level responses within a household separated into female and male respondents. Individuals in the sample are part of couples with at least 3 years worth of data at some point in survey period. Each observation is a respondent-year observation. The outcome variable indicates whether the respondent reported any grandchild care hours. Controls include indicators for five year age bins for the respondent, survey wave indicators, household fixed effects, ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$, *$p < 0.1$

Table 6 Heterogeneity by Relative Proximity, Female Sample

	Ln (Number of Hours Spent Providing Grandchild Care)			Any Grandchild Care Provided		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Own Parents Alive	−0.261*	−0.343**	−0.357**	−0.043*	−0.059**	−0.061**
	(0.139)	(0.160)	(0.150)	(0.023)	(0.027)	(0.025)
Num. of Own Parents Living within 10 mi. of Respondent	0.171			0.035*		
	(0.181)			(0.021)		
Num. of Children Living within 10 mi. of Respondent		0.185			0.040**	
		(0.125)			(0.020)	
Num. of Children within 10 mi. of Respondent X Num. of Parents Alive		0.243			0.036	
		(0.170)			(0.030)	
Num. of Own Parents Alive X Any Siblings Living within 10 mi. of Parents			0.296*			0.046*
			(0.153)			(0.026)
Sample Restricted to Respondents With Living Siblings	NO	NO	YES	NO	NO	YES
Observations	8119	7962	6976	8082	7925	6943

Female sample is based on female respondent-level responses within a household. Females in the sample are part of couples with at least 3 years worth of data at some point in survey period. Each observation is a respondent-year observation. Living siblings are siblings of respondents, while own parents are respondents' parents. Controls include indicators for five year age bins for the respondent, survey wave indicators, household fixed effects, ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

couple may be able to still provide assistance to one another. There may also be larger differences in the change in elderly care provision on the extensive margin versus the intensive margin, as the additional cost of caring for one's mother when already caring for one's father, particularly if they are living together, is likely to be less than the additional cost of caring for one's mother when no other parent is alive. The effects in Table 13 are as expected in columns (1) and (3), with the negative impact of an only living parent on child care provision being significant, while there is no impact of both parents living. Columns (2) and (4) show that, for the full sample of individual respondents of both genders, own parents have a greater impact on child care provision than spouse's parents. Columns (5)-(8) explore heterogeneity further by gender of the respondent. Interestingly, the parent that has the strongest impact on care in each case is the male respondent's final living parent, whose presence impacts both child care provision by females and males in married couples.

Impacts of a death on care provision may also vary in magnitude due to distance between young seniors and family care recipients. In Tables 6 and 7, I evaluate at the respondent-level whether impacts of a respondent's own parent's death are heterogeneous by proximity of children and proximity of parents.[10] Table 6 shows results for only females, with a stronger care trade-off for respondents with parents living farther away (columns (1) and (4)) and children living farther away (columns (2) and (5)), though these differences aren't all statistically significant. Examination of the impacts of siblings living near parents in columns (3) and (6) reveals that having a

[10] Close proximity is defined by a 10 mile distance from respondents following questions in the survey instrument.

Table 7 Heterogeneity by Relative Proximity, Male Sample

	Ln (Number of Hours Spent Providing Grandchild Care)			Any Grandchild Care Provided		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Own Parents Alive	−0.213*	−0.481***	−0.360**	−0.023	−0.067***	−0.033
	(0.124)	(0.136)	(0.177)	(0.022)	(0.025)	(0.032)
Num. of Own Parents Living within 10 mi. of Respondent	−0.107			−0.011		
	(0.179)			(0.033)		
Num. of Children Living within 10 mi. of Respondent		0.288***			0.049***	
		(0.098)			(0.017)	
Num. of Children within 10 mi. of Respondent X Num. of Parents Alive		0.373**			0.068**	
		(0.161)			(0.031)	
Num. of Own Parents Alive X Any Siblings Living within 10 mi. of Parents			−0.067			−0.061
			(0.249)			(0.039)
Sample Restricted to Respondents With Living Siblings	NO	NO	YES	NO	NO	YES
Observations	10,662	10,475	8394	10,350	10,164	8122

Male sample is based on female respondent-level responses within a household. Males in the sample are part of couples with at least 3 years worth of data at some point in survey period. Each observation is a respondent-year observation. Living siblings are siblings of respondents, while own parents are respondents' parents. Controls include indicators for five year age bins for the respondent, survey wave indicators, household fixed effects, ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

sibling that lives near parents reduces the impact of a parent loss on child care provision. The results for males in Table 7 show that again effects are stronger when children live farther away from respondents and the difference is statistically significant. The differential effects of proximity of siblings and proximity to parents are different in sign than the female results and are not significant.

5.3 Mechanisms

There are several paths through which a parent's death could lead to increased child care transfers to adult children, including relocation, change in employment status, or changes in financial well-being. In Table 14, columns (1) and (2) show estimates of the relationship between living within 10 miles of a child and probability of providing child care that are positive, as it is easier to provide care frequently when a child live nearby. Results in columns (3)-(8) show that there does not seem to be relocation from outside 10 miles to within 10 miles in response to a parent's death.

The relationship between parental care needs and labor force participation may explain the relationship between parent mortality status and child care provision. In Table 15, I estimate the effects of parental death on the employment status of the household members in the "sandwich generation". I find that providing grandchild care is associated with a decrease in the share of the household (respondent and spouse) working full-time

by 0.003, or a 1.4% decrease. This correlation is consistent with the literature and makes sense because as grandparents leave the workforce they are more likely to help out their children with child care. In columns (3) of Table 15, I find that caring for an elderly parent lowers the share of household members working full-time, however, having an additional parent alive increases the share of the members of the household working full-time by 0.025, a 12% effect. Households could be providing both additional time and money to help their parents.[11] Household members may be waiting until a parental death to retire due to medical or formal care costs of parents, which would explain a rise in free time for child care after the death. However, as shown in columns (7) and (8), including share of the household working as a control variable did not alter the main result, so that does not seem to be the primary explanation.[12]

Next I explore health impacts as a mechanism. It may be the case that physical or mental health of the young seniors is worse while elderly parents are alive if their care requirements are high. This could indirectly cause reduced levels of grandchild care. Table 16 explores a regression of mean household self-reported health on number of parents alive and does not find a significant relationship between the two. Table 17 contains similar results using a measure of mean household mental health as an outcome.[13] In both tables with health outcomes, the inclusion of the health measures in the main analysis leaves the coefficients largely unchanged and significant, supporting a shift in care from parents to grandchildren as a mechanism.[14]

Finally, I examine whether financial transfers to children may change in response to a death. The response is ex ante unclear because respondents may be substituting financial transfers for child care transfers while a parent is alive, which would suggest that a parent death would decrease transfers, or a parent may receive an inheritance upon a parent death that would increase transfer levels. Financial transfers impact the overall welfare of adult children in addition to care transfers, too, so this analysis allows for a greater understanding of overall impacts on the welfare of children. In Table 18, results in column (1) suggest a positive relationship between parental care hours offered by young senior respondents and financial transfers to children, while column (3) shows that each additional parent that is alive lowers the probability of any financial transfer to a child by 3 percentage points, or 7%. Total transfers, including both child care and financial transfers, increase upon a parent's death, so child care is only part of the total welfare impact.[15] However, once I include an indicator for provision of a financial transfer to a child as a control in the main

[11] The sum of all transfers to any parent significantly decreases following a parental death.

[12] Each of the potential mechanisms is endogenous. Therefore, the causal relationship between each mechanism and the amount of grandchild care provided cannot be separately identified. It is also true that I cannot fully rule out each of these other mechanisms as contributing to the negative impact of parents being alive on provision of child care to grandchildren.

[13] Self-reported health is scaled from 1 to 5, where a 1 indicates excellent health and a 5 indicates poor health. The mental health outcome measure is the score on the Center for Epidemiologic Studies Depression (CESD) scale based on 8 indicators. A point is assigned for each indicator where poor mental health is indicated so that the range of values is between 0 and 8 with higher numbers indicating worse mental health.

[14] See Table 2 (columns (5) and (6))) for comparison.

[15] Money have gone to elderly parents or have been saved in case it was needed for elderly parents prior to their death. After the death, that money may then be available to give to adult children.

specification, again the results are unchanged, suggesting that changes to parent wealth are not driving changes in child care provision. As employment, health, and financial transfers do not seem to be mediating the relationship between number of parents alive and grandchild care, the effect of parents alive seems to be coming from time reallocation from elderly care to child care.

5.4 Impact on children

The final sample for analysis is organized at the child level, with each observation being a child of a respondent in the main sample. Usage of this sample allows for exploration of heterogeneous impacts on care transfers by proximity and child gender, as well resulting employment and fertility responses of children. In Table 8 I estimate the impact of a parent loss on child care received by individual children. The main effects, in columns (1) and (5), on child care provided to female and male children, respectively, follow the results from the respondent household analysis. They are nearly as large in magnitude, despite the fact that the children being studied individually are in many cases only one child of several, as household in the sample have 3-4 children on average. Male children are less likely to be currently receiving child care transfers from main respondents than female children, with likelihoods of 0.15 and 0.2, respectively. Columns (2) and (6) show estimates of differential effects according to the adult child has a sister, while columns (3) and (7) show differential effects based on whether the adult child has a brother. While sisters of adult children do provide competition in child care provision, they do not lead to differential impacts of a parental loss on child care provision. Brothers of adult children do have impacts on the likelihood of provision. Finally, columns (4) and (8) show that living within 10 miles of a respondent increases likelihood of care by about 6-8 percentage points and, for female children, the negative effect of a parental loss on child care transfers disappears if a child lives within 10 miles of the main respondent household. This is likely due to the added difficulty of caring for multiple generations at the same time when at least one generation lives far away.

Table 9 shows impacts of additional child care on fertility choices of adult children. While there are no average impacts in the full sample of children by either gender, results in column (2) suggest that there is a reduction in the number of children a female has with each respondent's parent living in the presence of no sisters. This may be partly explained by the fact that daughters are more likely to be recipients of child care transfers. A daughter with no sisters may receive more child care and therefore her fertility is more responsive to changes in the overall ability of respondents, her parents, to provide child care. Sisters may also help each other with childcare, making grandparent care less essential. The impact on daughters with no sisters is approximately a 5% decrease in their average number of children. Additionally, results for the sample of female children in column (4) suggest similarly that there are negative fertility effects of respondents' parents being alive on daughters who do not live within 10 miles of respondents, which corresponds to the group whose child care receipt is most affected.[16]

[16] There are no extensive margin fertility impacts found. Fertility and employment results are robust to the inclusion of a control for financial transfers, suggesting again that a change in child care provision is likely the main driver of child impacts. Fertility results may not indicate effects on completed fertility, but possibly just delayed fertility.

Table 8 Impact of Parental Death on Childcare Received, Child-Level Analysis

	Received at Least of 100 Hrs of Childcare from Parents in Last 2 Yrs							
	Female Sample (Child)				Male Sample (Child)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of (Respondent's & Spouse's) Parents Alive	−0.016**	−0.025*	0.005	−0.031***	−0.022***	−0.021**	−0.024**	−0.022***
	(0.008)	(0.015)	(0.015)	(0.008)	(0.007)	(0.008)	(0.010)	(0.008)
Child Has a Sister		−0.066***				−0.062***		
		(0.022)				(0.019)		
Child Has a Sister X Num. of Parents Alive		0.010				−0.002		
		(0.016)				(0.003)		
Child Has a Brother			0.036				−0.002	
			(0.023)				(0.005)	
Child Has a Brother X Num. of Parents Alive			−0.027*				0.002	
			(0.016)				(0.004)	
Child Lives Within 10 mi. of Respondent				0.085***				0.062***
				(0.012)				(0.010)
Child Lives Within 10mi. of Resp. X Num. Parents Alive				0.048***				0.002
				(0.012)				(0.010)
Coefficient Sums								
(Number of Parents Alive) + (Child Has a Sister X Num. Par. Alive)		−0.014*				−0.022***		
		(0.008)				(0.007)		
(Number of Parents Alive) + (Child Has a Brother X Num. Par. Alive)			−0.022***				−0.023***	
			(0.008)				(0.008)	

Table 8 continued

	Received at Least of 100 Hrs of Childcare from Parents in Last 2 Yrs							
	Female Sample (Child)				Male Sample (Child)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(Number of Parents Alive) + (Child ≤ 10 mi. Away X Num. Par. Alive)				0.017				−0.020*
				(0.012)				(0.011)
Mean Dep. Variable	0.20	0.20	0.20	0.20	0.15	0.15	0.15	0.15
Observations	25,013	25,013	25,013	24,452	25,404	25,404	25,404	24,654

Individual child sample is based on child-level responses matched to each household in the main sample. Each observation is a child-year observation. The outcome variable whether the child has received >100 hours of childcare between survey waves. Number of sons and number of daughters are at the respondent-level and indicate the presences of siblings or step-siblings for the respondents' children. Controls include indicators for five year age bins for the respondent, five year age bins for the child, survey wave indicators, child fixed effects, and marital status of the child

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 9 Impact of Parental Death on Child Fertility, Child-Level Analysis

	Number of Children a Child Has							
	Female Sample (Child)				Male Sample (Child)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of (Respondent's & Spouse's) Parents Alive	−0.028	−0.117**	−0.001	−0.029*	0.011	0.021	0.005	0.016
	(0.026)	(0.054)	(0.047)	(0.029)	(0.024)	(0.026)	(0.032)	(0.027)
Child Has A Sister		0.191**				−0.000		
		(0.095)				(0.080)		
Child Has a Sister X Num. of Parents Alive		0.115**				−0.015		
		(0.055)				(0.012)		
Child Has a Brother			0.237**				0.069*	
			(0.094)				(0.036)	
Child Has a Brother X Num. of Parents Alive			−0.033				0.005	
			(0.051)				(0.015)	
Child Lives Within 10 mi. of Respondent				−0.026				−0.012
				(0.040)				(0.037)
Child Lives Within 10 mi. of Resp. X Num. Parents Alive				0.083***				−0.019
				(0.030)				(0.031)
Coefficient Sums								
(Number of Parents Alive) + (Child Has a Sister X Num. Par. Alive)		−0.003				0.006		
		(0.026)				(0.024)		
(Number of Parents Alive) + (Child Has a Brother X Num. Par. Alive)			−0.034				0.010	
			(0.029)				(0.024)	
(Number of Parents Alive) + (Child ≤ 10 mi. Away X Num. Par. Alive)				0.033				−0.002
				(0.030)				(0.030)
Mean Dep. Variable	1.87	1.87	1.87	1.87	1.69	1.69	1.69	1.69
Observations	22,763	22,763	22,763	22,426	22,923	22,923	22,923	22,550

Individual child sample is based on child-level responses matched to each household in the main sample. Each observation is a child-year observation. The outcome variable indicates the number of children that child (of a sample respondent) has. Number of sons and number of daughters are at the respondent-level and indicate the presences of siblings or step-siblings for the respondents' children. Controls include indicators for five year age bins for the respondent, five year age bins for the child, survey wave indicators, child fixed effects, and marital status of the child

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Finally, Table 10 shows estimates of the overall effect of the loss of a respondent's parent on the employment of their adult children. There are no significant effects, suggesting that the receipt of more child care is not leading adult children to work more. They may simply be utilizing more formal care or outsourcing less child care. Women affected most by changes in receipt of child care transfers are also having fewer children, though, so they may not be changing their employment status due to positive labor force participation effects of decreased fertility.

Table 10 Impact of Parental Death on Child Employment, Child-Level Analysis

	Employed (Full-time = 1, Part-time = 0.5)							
	Female Sample (Child)				Male Sample (Child)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Number of (Respondent's & Spouse's) Parents Alive	−0.003	−0.024	−0.010	−0.004	0.003	0.006	0.004	−0.002
	(0.008)	(0.015)	(0.017)	(0.009)	(0.005)	(0.006)	(0.008)	(0.006)
Child Has a Sister		−0.029				−0.001		
		(0.025)				(0.015)		
Child Has a Sister X Num. of Parents Alive		0.026				−0.005		
		(0.016)				(0.003)		
Child Has a Brother			0.023				−0.018***	
			(0.026)				(0.006)	
Child Has a Brother X Num. of Parents Alive			0.008				−0.001	
			(0.018)				(0.004)	
Child Lives Within 10 mi. of Respondent				0.012				−0.029***
				(0.011)				(0.009)
Child Lives Within 10 mi. of Resp. X Num. Parents Alive				0.001				0.013
				(0.011)				(0.008)
Coefficient Sums								
(Number of Parents Alive) + (Child Has a Sister X Num. Par. Alive)		0.002				0.001		
		(0.009)				(0.005)		
(Number of Parents Alive) + (Child Has a Brother X Num. Par. Alive)			−0.002				0.003	
			(0.008)				(0.006)	
(Number of Parents Alive) + (Child ≤ 10 mi. Away X Num. Par. Alive)				−0.002				0.010
				(0.010)				(0.007)
Mean Dep. Variable	0.65	0.65	0.65	0.65	0.89	0.89	0.89	0.89
Observations	24,295	24,295	24,295	23,963	24,395	24,395	24,395	24,040

Individual child sample is based on child-level responses matched to each household in the main sample. Each observation is a child-year observation. The outcome variable whether the child was employed full-time at the time of the survey. Number of sons and number of daughters are at the respondent-level and indicate the presence of siblings or step-siblings for the respondents' children. Controls include indicators for five year age bins for the respondent, five year age bins for the child, survey wave indicators, child fixed effects, and marital status of the child

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

5.5 Robustness checks

My empirical methodology assumes that there are not trends that explain the impacts of a respondent's parent being alive. In order to test that assumption, I estimate event study regressions on the outcomes of interest using the specification described by equation (2). In Fig. 3 I graph the α_l coefficients from that specification and label them as years away

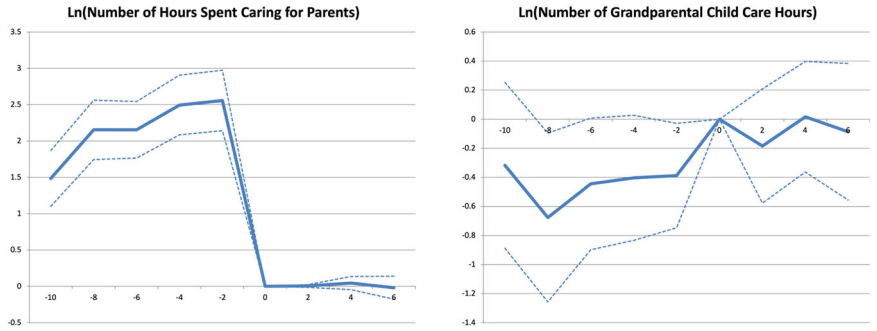

Fig. 3 Event studies of the impact of parents alive on family care hours. Note: The outcome ln(number of hours spent caring for parents) is based on the number of hours respondent and spouse both spent caring for respondent's parents. The outcome ln(number of grandparental child care hours) is based on the respondent's estimate of child care hours provided. Sample restricted to respondents that have *exactly* one living parent (the oldest generation) that passes away after at least one grandchild is born or they have no living parents throughout the sample (interpreted as the never-treated, where having a living parent is considered the treatment), but they do have grandchildren. Survey waves are two years apart. The omitted relative year, 0, is first survey year in which a parent has not been alive for any amount of time. A death shows up in − 2, but the care information reflects some period of time for which the parent was still alive. 95% confidence intervals are shown. Extreme relative periods are absorbed into $t = -10$ and $t = 6$ indicators, while observations are dropped that do not contain at least two waves of data before the death and two after the death. Controls include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects

from the omitted survey year. The omitted survey year is the first year in which the deceased parent has not been alive for any part of the period since the last survey. Therefore, the "treatment" is graphed as the impact of a parent being alive.

In the first graph, I show that the impact of a parent being alive on number of hours spent caring for a parent is significant and that there are no hours spent on care after a death, as expected. The parent care hours decline in waves farther from the death, suggesting that treatment effects decline due to lesser care needs. It might seem likely that care needs of grandchildren are also reducing farther from the treatment status change, as fewer grandchildren are likely alive. The second graph shows that this is possibly the case. After a parent loss, or a loss of treatment, care hours are stable. Prior to the loss, during the treatment period, there are significantly fewer child care hours. While the effects seem to get larger in waves farther from the death, the final point estimate slightly diminishes in magnitude, likely due to reductions in care needs.[17]

6 Conclusion

The primary contribution of this paper is to document the impact of parental support obligations on the provision of grandchild care. My analysis suggests that parental support obligations reduce grandchild care provision through time reallocation between care activities. As the share of the U.S. population that is elderly and in need

[17] Event studies with each of the alternate mechanisms as outcomes are in Appendix Figs. 4, 5, 6, and 7.

of long-term care services will likely increase in future decades, the sandwich generation may respond by reducing grandchild care provision.

There are costs of reduced grandchild care for the generation of adult children. In 2018, annual center-based child care at the infant level in the U.S. cost about 20% of median family income in larger counties (Landivar et al., 2023). If young seniors' care of their elder parents reduces grandchild care assistance, adult children will need to rely further on other sources of child care that are costly. Perhaps more importantly, some groups may respond to a reduction in childcare transfers by delaying childbearing or having fewer children.

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Author contributions This is sole authored paper with all work completed by M.H.C.

Compliance with ethical standards

Conflict of interest The author declares no competing interests.

7 Appendix

Tables 11, 12, 13, 14, 15, 16, 17, 18, Figs. 4, 5, 6, 7

Table 11 Impact of Parental Death on Household Grandchild Care Provision, Conditional on Any Grandparental Childcare Ever Being Provided

	Ln (Number of Hours Spent Providing Grandchild Care)					
	(1)	(2)	(3)	(4)	(5)	(6)
Ln (Hours Spent Caring for Parents)	0.017	0.015				
	(0.018)	(0.018)				
Number of Parents In Need of Help with Personal Care			−0.051	−0.051		
			(0.097)	(0.097)		
Number of Parents Alive					−0.145*	−0.130
					(0.081)	(0.081)
Controls	NO	YES	NO	YES	NO	YES
Observations	11,185	11,184	11,185	11,184	11,185	11,184

Sample contains couples with at least 3 years worth of data at some point in survey period and that at some point provided >100 hours of childcare for at least one child between survey waves. Each observation is a household-year observation. All specifications include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects. Additional controls include ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 12 Impact of Hours Spent on Care of Parents on Grandchild Care Provision - Two Stage Least Squares

	Number of Hours Spent Providing Grandchild Care		
	(1)	(2)	(3)
Second Stage			
Hours Spent Caring for Parents	−0.429**	−0.422**	−0.430**
	(0.213)	(0.212)	(0.214)
First Stage	Number of Hours Spent Caring for Parents		
Number of Parents Alive	98.85***	98.31***	98.98***
	(30.12)	(30.11)	(30.10)
F-Statistic	10.77	10.66	10.81
Controls from Main Analysis	NO	YES	YES
Mechanism Controls	NO	NO	YES
Mean Hours of Care	246.3	246.3	246.3
Observations	14,753	14,752	14,387

Full sample contains couples with at least 3 years worth of data at some point in survey period. Each observation is a household-year observation. All specifications include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects. Additional controls from the main analysis include ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married. Mechanism controls include household employment status, self-reported health, mental health, and financial transfers to adult children. Number of parents alive is an instrument for hours spent caring for parents. The second stage outcome variable is number of hours spent caring for grandchildren

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 13 Impact of Parental Death on Grandchild Care by Whether Only One or Full Set of Parents Alive and Whether Own Parents or Spouse's Parents

	Full Sample				Female Sample		Male Sample	
	Any Child Care		Ln (Total Child Care Hrs)		Any Child Care	Ln (Own Child Care Hrs)	Any Child Care	Ln (Own Child Care Hrs)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
One Parent Alive Only (Own)					−0.035	−0.189	−0.041*	−0.370***
					(0.025)	(0.149)	(0.022)	(0.122)
Full Set of Parents Alive (Own)					−0.070	−0.414	−0.004	−0.063
					(0.052)	(0.296)	(0.049)	(0.278)
One Parent Alive Only (Spouse's)					−0.045*	−0.255*	−0.007	−0.008
					(0.025)	(0.149)	(0.021)	(0.120)
Full Set of Parents Alive (Spouse's)					0.032	0.145	−0.015	−0.184
					(0.093)	(0.540)	(0.041)	(0.241)
Number of Only Parents Alive (Between Resp. and Spouse)	−0.031***		−0.201***					
	(0.011)		(0.065)					
Number of Full Sets of Parents Alive (Between Resp. and Spouse)	−0.023		−0.196					
	(0.025)		(0.148)					
Number of Own Parents Alive		−0.030**		−0.218***				
		(0.014)		(0.080)				
Number of Spouse's Parents Alive		−0.016		−0.100				
		(0.014)		(0.079)				
Observations	18,961	18,961	19,326	19,326	8082	8119	10,350	10,662

Individual sample is based on respondent-level responses within a household, which are all included in columns (1) and (2), but are separated into female and male respondents in columns (3)-(6). Individuals in the sample are part of couples with at least 3 years worth of data at some point in survey period. Each observation is a respondent-year observation. The outcomes are based on the respondent's estimate of child care hours provided. Controls include indicators for five year age bins for the respondent, survey wave indicators, respondent fixed effects, ages of youngest and oldest children, whether whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 14 Impact of Parental Death on Living Near Children

	Dependent Variable: Living within 10 Miles of a Child							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Grandchild Care Provided	0.047***	0.046***						
	(0.010)	(0.010)						
Ln (Hours Spent Caring for Parents)			−0.000	−0.000				
			(0.002)	(0.002)				
Ln (Parental Care Hours)					0.002	0.002		
					(0.011)	(0.011)		
Number of Parents Alive							0.013	0.013
							(0.011)	(0.011)
Controls	NO	YES	NO	YES	NO	YES	NO	YES
Mean Dep. Var	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Observations	14,468	14,467	14,468	14,467	14,468	14,467	14,468	14,467

Full sample contains couples with at least 3 years worth of data at some point in survey period. Each observation is a household-year observation. The outcome variable indicates whether the respondent reported a child living within 10 miles. All specifications include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects. Additional controls include ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 15 Employment Status Within the Household as a Mechanism

	Share of Household Working FT			Share of Female HH Members Working FT			Grandchild Care Provided	Ln (Grandchild Care Hrs)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln (Parental Care Hours)	−0.003**			−0.005**				
	(0.002)			(0.002)				
Number of Parents In Need of Help with Personal Care		−0.006			−0.005			
		(0.010)			(0.012)			
Number of Parents Alive			0.025***			0.015	−0.022*	−0.126*
			(0.008)			(0.010)	(0.012)	(0.070)
Household Work Share Control	-	-	-	-	-	-	YES	YES
Mean Dep. Var.	0.21	0.21	0.21	0.17	0.17	0.17	0.38	246.3
Observations	14,752	14,752	14,752	14,752	14,752	14,752	14,752	14,752

Full sample contains couples with at least 3 years worth of data at some point in survey period. Each observation is a household-year observation. The outcome variable for columns (1)-(6) indicates whether the share of household members who reported working full-time. The share of household working is included as a control in columns (7) and (8). Controls include indicators for five year age bins for the respondent, survey wave indicators, household fixed effects, ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 16 Mean Self-Reported Health Status Within the Household as a Mechanism

	Mean Household Self-Reported Health			Grandchild Care Provided	Ln (Grandchild Care Hrs)
	(1)	(2)	(3)	(4)	(5)
Ln (Parental Care Hours)	0.001				
	(0.003)				
Number of Parents In Need of Help with Personal Care		0.002			
		(0.017)			
Number of Parents Alive			−0.020	−0.023*	−0.132*
			(0.015)	(0.012)	(0.070)
Household Self-Reported Health Control	-	-	-	YES	YES
Mean Dep. Var.	2.59	2.59	2.59	0.38	246.3
Observations	14,751	14,751	14,751	14,751	14,751

Full sample contains couples with at least 3 years worth of data at some point in survey period. Each observation is a household-year observation. The outcome variable for columns (1)-(3) is the mean self-reported health of a household member. The self-reported health measure is a value from 1 to 5 with higher numbers indicating worse health. It is included as a control in columns (4) and (5). Controls include indicators for five year age bins for the respondent, survey wave indicators, household fixed effects, ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 17 Mean Mental Health Status Within the Household as a Mechanism

	Mean Household Mental Health - CESD Score			Grandchild Care Provided	Ln (Grandchild Care Hrs)
	(1)	(2)	(3)	(4)	(5)
Ln (Parental Care Hours)	0.015**				
	(0.006)				
Number of Parents In Need of Help with Personal Care		0.017			
		(0.033)			
Number of Parents Alive			0.006	−0.022*	−0.133*
			(0.026)	(0.012)	(0.071)
Household Mental Health Control	-	-	-	YES	YES
Mean Dep. Var.	0.94	0.94	0.94	0.38	246.3
Observations	14,622	14,622	14,622	14,622	14,622

Full sample contains couples with at least 3 years worth of data at some point in survey period. Each observation is a household-year observation. The outcome variable for columns (1)-(3) is the score on the Center for Epidemiologic Studies Depression (CESD) scale based on 8 indicators. A point is assigned for each where poor mental health is indicated so that the range of values is between 0 and 8 with higher numbers indicating worse mental health. It is included as a control in columns (4) and (5). Controls include indicators for five year age bins for the respondent, survey wave indicators, household fixed effects, ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

Table 18 Financial Transfers to Children as a Mechanism

	Any Financial Transfer to Adult Children			Grandchild Care Provided	Ln (Grandchild Care Hrs)
	(1)	(2)	(3)	(4)	(5)
Ln (Parental Care Hours)	0.005**				
	(0.002)				
Number of Parents In Need of Help with Personal Care		−0.0149			
		(0.014)			
Number of Parents Alive			−0.030***	−0.022*	−0.133*
			(0.012)	(0.012)	(0.071)
Any Financial Transfer to Children Control	-	-	-	YES	YES
Observations	14,515	14,515	14,515	14,515	14,515

Full sample contains couples with at least 3 years worth of data at some point in survey period. Each observation is a household-year observation. The outcome variable for columns (1)-(6) indicates whether the household gave financial assistance to any child. This variable is included as a control in columns (7) and (8). Controls include indicators for five year age bins for the respondent, survey wave indicators, household fixed effects, ages of youngest and oldest children, whether oldest child is between 22 and 45, whether youngest child is between between 22 and 45, and number of children that are married

***$p < 0.01$; **$p < 0.05$; *$p < 0.1$

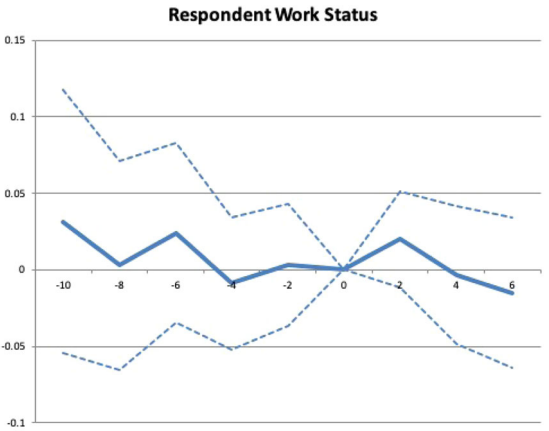

Fig. 4 Event study of the impact of parents alive on main respondent employment status. Note: The respondent work status is equal to 0 if the respondent is not working full-time and is equal to 1 if the respondent is working full-time. Sample restricted to respondents that have *exactly* one living parent (the oldest generation) that passes away after at least one grandchild is born or they have no living parents throughout the sample (interpreted as the never-treated, where having a living parent is considered the treatment), but they do have grandchildren. Survey waves are two years apart. The omitted relative year, 0, is first survey year in which a parent has not been alive for any amount of time. A death shows up in − 2, but the care information reflects some period of time for which the parent was still alive. 95% confidence intervals are shown. Extreme relative periods are absorbed into $t = -10$ and $t = 6$ indicators, while observations are dropped that do not contain at least two waves of data before the death and two after the death. Controls include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects

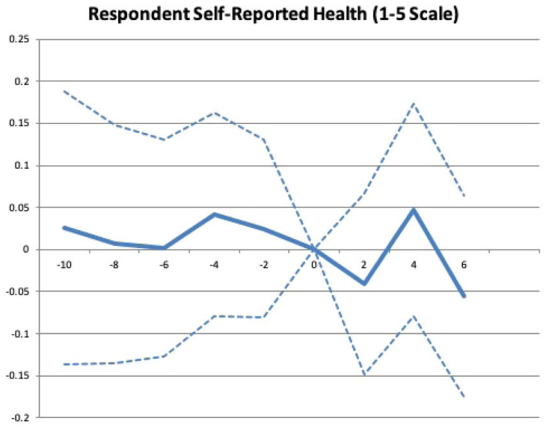

Fig. 5 Event study of the impact of parents alive on main respondent self-reported health status. Note: The respondent self-reported health is scaled from 1 to 5, where a 1 indicates excellent health and a 5 indicates poor health. Sample restricted to respondents that have *exactly* one living parent (the oldest generation) that passes away after at least one grandchild is born or they have no living parents throughout the sample (interpreted as the never-treated, where having a living parent is considered the treatment), but they do have grandchildren. Survey waves are two years apart. The omitted relative year, 0, is first survey year in which a parent has not been alive for any amount of time. A death shows up in -2, but the care information reflects some period of time for which the parent was still alive. 95% confidence intervals are shown. Extreme relative periods are absorbed into $t = -10$ and $t = 6$ indicators, while observations are dropped that do not contain at least two waves of data before the death and two after the death. Controls include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects

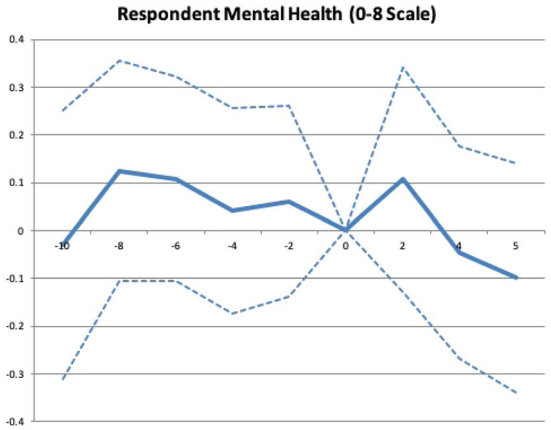

Fig. 6 Event study of the impact of parents alive on mental health status. Note: The mental health outcome measure is the score on the Center for Epidemiologic Studies Depression (CESD) scale based on 8 indicators. A point is assigned for each where poor mental health is indicated so that the range of values is between 0 and 8 with higher numbers indicating worse mental health. Sample restricted to respondents that have *exactly* one living parent (the oldest generation) that passes away after at least one grandchild is born or they have no living parents throughout the sample (interpreted as the never-treated, where having a living parent is considered the treatment), but they do have grandchildren. Survey waves are two years apart. The omitted relative year, 0, is first survey year in which a parent has not been alive for any amount of time. A death shows up in − 2, but the care information reflects some period of time for which the parent was still alive. 95% confidence intervals are shown. Extreme relative periods are absorbed into $t = -10$ and $t = 6$ indicators, while observations are dropped that do not contain at least two waves of data before the death and two after the death. Controls include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects

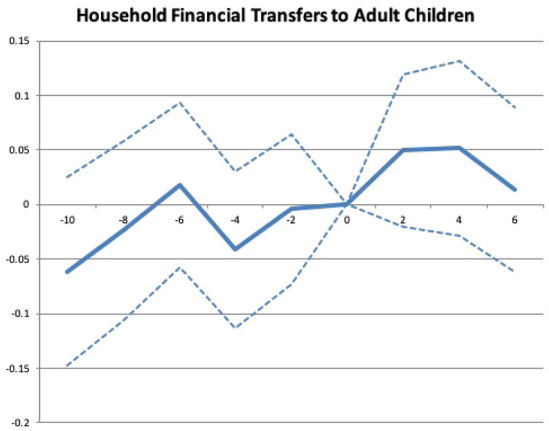

Fig. 7 Event study of the impact of parents alive on household financial transfers to adult children. Note: The transfer outcome indicates whether the household gave financial assistance to any child. Sample restricted to respondents that have *exactly* one living parent (the oldest generation) that passes away after at least one grandchild is born or they have no living parents throughout the sample (interpreted as the never-treated, where having a living parent is considered the treatment), but they do have grandchildren. Survey waves are two years apart. The omitted relative year, 0, is first survey year in which a parent has not been alive for any amount of time. A death shows up in − 2, but the care information reflects some period of time for which the parent was still alive. 95% confidence intervals are shown. Extreme relative periods are absorbed into $t = -10$ and $t = 6$ indicators, while observations are dropped that do not contain at least two waves of data before the death and two after the death. Controls include indicators for five year age bins for the respondent, survey wave indicators, and household fixed effects

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