Women Working Longer:

Labor Market Implications of Providing Family Care

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Abstract

The labor force participation rates of women have risen dramatically over the past several decades. Much has been made of the increase in the numbers of women with young children who are now participating in the labor market despite the demands on their time at home. At older ages, women face similar competing demands on their time in the form of care for elderly family members. Due to increasing life expectancy, women who are now in their 50s and early 60s are more likely than ever to have a living parent and are thus more likely to be at risk of needing to provide care. In this chapter, we analyze the prevalence of the provision of long-term care for a representative sample of women in their pre-retirement years and look to see how this caregiving affects employment. We find a significant positive trend across cohorts in the need to provide care and a significant effect of caregiving on work, with caregiving reducing the probability of work by just over 8 percent and the number of hours worked by 4 percent. Our cohort analysis points to a growing impact of caregiving over time and suggests that the lack of affordable long-term care options can have a substantial impact on employment rates.

I. Introduction

The aging of the U.S. population brings with it a number of difficult issues for our economy. As the declining number of workers per retiree places increasing financial pressure on the Social Security and Medicare programs, the concurrent increase in longevity portends a growing risk that elderly individuals will exhaust their economic resources, further taxing the resources of the working age population. The growing number of retired elderly will also impose greater demands on our health care system, including the need to provide long-term care for those elderly with dementia and other disabilities.

As policy makers and economists have repeatedly noted, the impacts of population aging can be dampened to a large extent by increasing labor force participation among older workers and delaying the transition to retirement. And indeed, recent trends appear to be in this direction: the decades-long shift towards early retirement among men has reversed and women are continuing to participate in the labor force in growing numbers and at older ages. Numerous factors, many addressed in this volume, can provide some explanation for these trends: changes in marriage and divorce rates, shifts in pension coverage, and improvements in health. In this chapter, we consider the role of competing demands on a woman's time, focusing in particular on the potential need to care for elderly family members. We examine how this caregiving role has evolved over time and how it might impact women's labor market behavior as they approach retirement age.

An extensive literature exists about the relationship between childcare and labor force participation, but somewhat less is known about the effect of caregiving for parents and spouses on employment behavior. This caregiving can impose an enormous burden on the caregiver—a burden measured not just in terms of the emotional stress and physical tasks borne by the caregiver, but also in the opportunity cost of the caregiver's time. Time spent caregiving may come at the expense of time in the labor force, the ability to invest in a career and experience wage growth, and the risk of reduced or lost retirement benefits. These labor market outcomes may lead the caregivers themselves to be far less prepared to finance their own retirement, and more dependent on families and public support later in life, than they would have been absent such caregiving experience.

The burden on potential caregivers is also likely to increase as the population ages. The demand for long-term care in the U.S. projected to increase sharply over the coming decades. Coming generations of retirees will likely have fewer children than those that were responsible for the baby boom, so the burden of care will need to be shared by fewer siblings. In addition, daughters, who traditionally provided much of the care, are increasingly likely to have strong attachments to the labor force, meaning that the opportunity cost of care is likely to be greater. Finally, divorce rose throughout the 1970s meaning that the current generation of elderly might be less likely to have a spouse present. Thus, even men, who traditionally relied on care from a spouse, may lack support in old age, and absent a spouse, children (daughters) may again be called on to provide assistance. Conversely, the increase in the fraction of the population that is unmarried may reduce the caregiving burden on women as fewer women will face the prospect of potentially caring for parents-in-law in addition to their own parents.

In this chapter, we use ten waves of data from the Health and Retirement Study (HRS), spanning nearly 20 years, to examine the labor force and caregiving behavior of women. We first document the extent of care for both elderly parents and parents-in-law and for spouses. Because our interest is on the relationship between caregiving and work, we will focus solely on parent and parent-in-law care for the majority of our analyses. Caregiving to elderly parents and in-laws peaks for women in their fifties. Few women at these ages are caring for their spouses, who are likely to be only a few years older and thus still in good health. Care for spouses does not become significant until somewhat older ages and so is less relevant for labor market behavior.

Our sample consists of women who are first observed during their prime working years, and we follow them for the duration of the survey period. We primarily use observations from three cohorts from the Health and Retirement Study (HRS), and depending on the specific cohort, follow women for anywhere from six to 18 years. We find that approximately one-third of the women in our sample provided care for an elderly parent, parent-in-law, or spouse at some point during the window of observation, with the majority of this care being for parents. We also find that caregiving for parents and parents-in-law has a significant negative effect on employment, reducing the probability of working by 3.3 percentage points on a mean of 41 percent, or 8 percent when calculated across the whole of the sample period. Caregiving also results in a reduction of approximately 1.3 hours of work per week. We find a consistent trend

across cohorts with more recent cohorts facing a greater risk of providing care and a significantly larger negative effect on employment.

Our chapter is organized as follows. The next section provides some background on the provision of informal care in the United States, and Section III describes our data in detail. In Section IV, we illustrate patterns of caregiving for our population of women, including the type of care provided and the amount of hours of care supplied. Section V provides an analysis of labor market behavior as a function of caregiving using OLS and fixed effects analyses. A final section concludes and offers avenues for future work.

II. Background

Though the need for long-term care is already pervasive, the demand is expected to increase sharply with the aging of the population. It is estimated that 69 percent of individuals reaching age 65 will need help with the Activities of Daily Living (ADLs) at some point in their lives.[1] Of these, one-fifth will require sustained assistance over a period of five or more years (Kemper et al., 2006). For the vast majority of individuals, this care will come from family members, primarily from wives and daughters. Among those in the community receiving help with ADLs, 66 percent receive help exclusively from family members, 26 percent receive assistance from both family (informal) and paid (formal) care providers, and just 9 percent rely only on formal care (Doty, 2010). This reliance on informal care means that family members shoulder much of the burden of caregiving.

The economic value of this care is immense. Feinberg et al. (2011) estimate that the value of informal care in 2009 exceeded $450 billion. This figure is more than twice the estimated value of formal care and is equivalent to approximately 19 percent of national health care expenditures (O'Shaughnessy, 2014).[2] Thus, while there is great concern about the level and growth of health care expenditure in the United States, in ignoring the economic value of informal care, our official statistics are missing an important component of the true cost and

[1] The activities of daily living (ADLs) include basic tasks such as bathing, eating, dressing, and toileting.
[2] According to the National Health Policy Forum (O'Shaughnessy, 2014), Americans spent $219 billion on paid long-term care for the elderly in 2012. In that year, this expenditure represented 9.3 percent of all U.S. personal health care spending. Adding the value of informal care to this amount provides clear evidence that caring for the elderly is an enormously important economic activity.

significantly underestimating the economic impact of health care costs for the elderly. Furthermore, because these imputations are calculated by simply multiplying the hours of care provided by an hourly wage, we also likely underestimate the true economic cost borne by the caregivers if lost earnings or declines in earnings growth exceed the inferred wage.

The National Association of Insurance Commissioners (2016) reports that 10 percent of caregivers cut back on hours worked because of the demands of caregiving while an estimated 6 percent of caregivers leave paid work entirely. Seventeen percent of caregivers take a leave of absence, and 4 percent reportedly turn down promotions. The figures from a 2015 survey by Genworth (2016) are even starker: 11 percent of caregivers lost their jobs due to caregiving, and 52 percent had to reduce work hours by an average of 7 hours per week. Twenty six percent of those surveyed reported missed career opportunities. The latter figure is suggestive of a broader phenomenon in which caregivers invest less intensively in a job because of other responsibilities. They may also do so in less obvious ways than turning down promotions, such as not volunteering for important, high visibility assignments, not putting in overtime to ensure that projects are done in a timely manner, or simply not accepting extra responsibility in the anticipation of greater wage increases in the future.

Complete departures from the labor force are relatively easily documented, and many researchers have examined labor market responses on this extensive margin (Bolin et al., 2008; Carmichael, et al, 2010; Ettner, 1996; Heitmueller, 2007; Johnson and Lo Sasso, 2006; McGarry, 2003; Van Houtven et al., 2013). It is more difficult to measure a reduction in hours and considerably harder to capture a reduction in effort on the job. For these reasons, fewer researchers have studied the impact of caregiving on the intensive margin of labor supply. Among those that have, results differ widely. Whereas Van Houtven et al. (2013) report that helping parents with errands and personal care has no impact on hours worked, when examining the intensive and extensive margin together, Johnson and Lo Sasso (2006) find that those women who provide care to an elderly parent reduce hours of work by approximately 40 percent. With such sizable reductions can come a loss of benefits on the job, such as health insurance or pension contributions, and a reduction in wage growth. Because the burden of care is borne

primarily by women, these losses could help explain the much higher poverty rates for older women relative to men.[3]

III. Data

Our data are drawn from the first ten waves of the Health and Retirement Study (HRS). The HRS is a panel survey that is approximately representative of the U.S. population ages 51 or older and their spouses or partners (see Volume Appendix on the HRS). The original cohort consists of individuals born in 1931 to 1941 who were first interviewed in 1992 and have been interviewed biennially thereafter. In 1998, three additional cohorts consisting of older and younger groups were added to the study to make the sample approximately representative of the target population. Refresher cohorts were added in 2004 and 2010 to fill in the population ages 51 to 56 as respondents aged out of that bracket. The survey continues to interview all respondents biennially until they die or leave the sample.

Because we are interested in the relationship between caregiving and work, we focus our attention on three "cohorts" of the survey: members of the original HRS cohort who were born between 1931 and 1941 and who were thus 51 to 61 when first observed in 1992, those in the "War Babies" (WB) cohort born between 1941 and 1947 (ages 51 to 56 in 1998), and the "Early Baby Boomer" (EBB) cohort, born from 1948 to 1953 (ages 51 to 56 in 2004).[4] In order to maintain a similar age-span across cohorts, we divide the original HRS sample into two groups: the "Early HRS" born between 1931 and 1935 (ages 57 to 61 when first observed), and the "Late HRS" who were born between 1936 and 1941, and who, like our other cohorts, were approximately 51-56 when they entered the survey. We refer to these cohorts as EHRS and LHRS, respectively.

[3] Although recent work (Bee and Mitchell, this volume) suggests that retirement income may be under-reported, it is not clear if under-reporting differentially affects the estimated poverty rates of men and women, or poverty rates overall.

[4] Individuals in the two other cohorts, "Asset and Health Dynamics of the Oldest Old" (AHEAD) and "Children of the Depression Era" (CODA), were first observed when they were 70 years old or older and 68 to 74, respectively. Because our interest is in labor market behavior and most of the women in these cohorts had already exited from the labor market by the time they were first interviewed, we do not use them for our analyses. We also exclude from all analyses women from the 2010 Early Baby Boom Minority Over-Sample (EBB MOS), who were added to the EBB cohort in 2010.

Because spouses and partners of HRS respondents are interviewed regardless of age, there are individuals younger than 51 in the survey. (For the same reason, there are also individuals older than 61 (or 56) when first observed.) We include these individuals in our sample but "reassign" them to the cohort in which they fall based on their own birth year. For example, a husband who was born in 1947 and who was interviewed as part of the "War Babies" cohort might well have a spouse who was born in 1950. We would consider her to be part of the "Early Baby Boomers" cohort based on her birth year. Likewise, we include women who are married to men in the older AHEAD (born 1923 or earlier) and CODA (born 1924 to 1930) samples who themselves are young enough so that their birth year places them in one of the more recent cohorts. However, because these women are not considered "sample persons" until their cohort is included in the HRS sampling frame, the HRS assigns them a zero person weight. To maintain a population representative sample, we restrict our sample to observations with positive person weights, and these women thus do not contribute to our analysis until they reach the appropriate age. With this sampling scheme, we have a total sample size of 9,498 women and 60,989 person-wave observations. This sample includes 2,305 women considered to be in the Early HRS (EHRS) cohort, 3,171 in the Late HRS (LHRS) cohort, 2,050 from the WB cohort, and 1,972 from the EBB cohort. Using observations from the different cohorts gives us an unbalanced sample with a varying number of observations per respondent and observations in different calendar years.

Our central variables of interest are derived from a question regarding whether the respondent provided care:

> *Did you (or your husband / wife / partner) spend a total of 100 or more hours (since the previous wave / in the last two years) helping your (parents / mother / father) with basic personal activities like dressing, eating and bathing?*

The question asks about total care for the respondent-couple, but follow-up questions allow us to identify the number of hours provided by each individual. We define a woman as a caregiver if the above question is answered affirmatively for care to either parents or parents-in-law and the woman contributes positive hours of care. The 1992 and 1994 interviews differed slightly in that they asked about assistance provided over the previous 12 months rather than the

(approximately) two-year span between interviews.[5] Similarly, in all interview waves except 1994, respondents were asked to report caregiving only if it exceeded a total of 100 hours; in 1994, the threshold was 50 hours. We have not corrected the data for the difference in hours or the period of time covered by the question.

We also look (briefly) at care for a spouse. This information comes from a separate set of questions posed to the care recipient (i.e., the caregiver's husband or partner in our case—or a proxy if that person is unable to respond to the survey):

> *Let's think for a moment about the help you receive that we just talked about….. During the last month, on about how many days did [HELPER] help you?*

This information was not collected in 1992 or 1994, so in those years we are limited to examining only care for parents and parents-in-law. Note also that whereas caregiving to parents and parents-in-law is measured as the total number of hours provided since the previous interview, care to spouses is measured as the number of hours of care provided in the *past month*. Thus, not only do we fail to capture the full extent of caregiving among those providing spousal care, but we also completely miss care that ceased a month or more prior to the interview date.

IV. Descriptive Analysis

The relationship between caregiving and work, and the impact of any labor market effects on lifetime earnings, likely depends strongly on the age at which caregiving occurs. In Figure 1, we stack observations from the four birth cohorts in our sample and show the fraction of women providing care at each age. Our focus for most of the chapter is on care for parents and parents-in-law. But, for comparison, we include care for spouses and partners as well as the fraction of women providing either of these types of care.[6]

[5] The median time between interviews is two years, so the questions generally refer to caregiving over a period of approximately two years. We cannot impute a two-year total for the 1992 and 1994 interviews because we do not know if care was provided continuously over this period at the same rate.

[6] The prevalence of parent-in-law care is low, reaching 2 percent at its peak, and follows the same path with respect to age as care to parents. For ease of exposition, we combine the two types of parental care. All analyses presented here were done with the types of parental care separated as well.

As the figure illustrates, caregiving for parents peaks around age 56 and falls thereafter as fewer parents remain alive and those that do become sufficiently infirm that they require formal care. Conversely, caregiving for a spouse, while important, does not become a widespread phenomenon until the respondents are in their late-60s, by which time many of these women will have already left the labor force independent of the need to provide care.

Figure 2 illustrates the cumulative burden of care and gives the fraction of women *ever* providing care by a given age, again disaggregating by type of care recipient. If we consider 65 to be the normal retirement age for these cohorts, we see that 32 percent of our sample had provided care to a parent, parent-in-law, or spouse prior to this point in the life course.[7] One quarter of women had been caregivers for parents or parents-in-law. Even these large numbers may understate the true extent of caregiving if some women provided care prior to entering the survey. In results not shown, if we restrict the sample to those women with a living parent or parent-in-law at some point during our window of observation, the fraction of women ever providing care rises to more than 50 percent.[8]

One can imagine that there might be differences across cohorts in the age at which care begins and in to whom this care is provided. As noted earlier, among these cohorts, sib-ships have increased over time (recall that the most recent cohort are members of the "baby boom"), thereby reducing the need for any one child to provide care for a parent. In addition, the labor force attachment of women has increased over time, likely increasing the opportunity cost of providing care and perhaps also decreasing the amount of care provided.[9] Conversely, on the demand side, more recent cohorts may be more likely to have parents alive than earlier cohorts making them *more* likely to provide care. Yet, if frailty is declining, the parents of the more recent cohorts may be less in need of help at a given age than parents of earlier cohorts.

[7] The full retirement age for most women in our sample is older than 65. Those born in 1937 or earlier have a full retirement age of 65. For women born later, the full retirement age increases gradually, reaching 66 years for women in our EBB cohort.

[8] Note that our sample is not a balanced panel; the decline in "ever caregiving" after age 65 is due to changes in the composition of the sample as the cumulative value for any one woman obviously cannot decline over time.

[9] Bee and Mitchell (this volume) report that among those born between 1921 and 1925 (in the oldest HRS cohort) labor force participation at age 57 was 46 percent, compared with a 61 percent participation rate for the cohort born between 1944 and 1948.

In Figure 3, we show caregiving by age and by cohort. Here, and for the remainder of the chapter, we focus solely on care to parents and parents-in-law, ignoring care for spouses. The most striking observation is that caregiving among the two HRS cohorts (early and late), particularly the "early" one, is substantially lower during the respondent's late fifties and early sixties than is the case for the more recent cohorts. We hypothesize that this difference is due, in part, to the shorter lifetimes of their parents born a generation before.[10] The two more recent cohorts show greater levels of caregiving across the span of ages we observe, reaching 10 to 11 percent at the peak. As expected, caregiving declines with age, as parents die and the women themselves become frailer. For both HRS cohorts and for the WB cohort, caregiving to parents and parents-in-law falls steeply as women enter their late sixties. For our earliest cohort, whom we follow for a longer period and to older ages, the fraction of women providing care approaches zero by age 75.

Figure 4 reports the cumulative probabilities of providing care to parents and parents-in-law by cohort and age. The same patterns are evident as in Figure 3: caregiving is substantially lower among the earlier HRS cohort and is highest for the two most recent cohorts. By the oldest ages, less than 20 percent of the early HRS cohort had provided care to a parent or parent-in-law, compared with 30 percent of the late HRS and even slightly more for the WB cohort. Even for the EBB cohort, which is observed just until age 66 (for its oldest members) and for which we have just four waves of data, 30 percent of women were already observed to have provided some care to parents or in-laws by the time they reached their early sixties.

A key factor determining the effect of caregiving on labor market behavior is the amount of time devoted to care. Figure 5 illustrates the distribution of combined hours of care to parents and parents-in-law over a two-year period, conditional on a non-zero amount. Whereas the lowest category (0, 100] is the most common, with 25 percent of the sample providing this level of care, a substantial fraction, 10 percent, provided more than 2000 hours of care across the past two years, or approximately 20 hours per week if this care is uniformly distributed over the interval. An even larger fraction, 12 percent, provided 1000 to 2000 hours. If spread evenly over

[10] As shown in Appendix Table A1, the two HRS cohorts are significantly less likely to have parents alive than other groups: 47 percent of early HRS respondents had a living parent/parent-in-law in the first wave, compared with 70 percent of late HRS respondents and 74 percent of those belonging to the two more recent cohorts.

a full year, these amounts would be equivalent to a regular job, but because this care need not have taken place uniformly over the time period, the magnitudes are difficult to interpret. Even so, it seems safe to conclude that, for many caregivers, the burden is substantial and is likely to impact the caregiver's labor supply and wellbeing.

Having demonstrated the extent and intensity of caregiving, another question relevant for our analysis of the relationship between caregiving and work is whether the women who select into caregiving differ from the overall population. To address this question, in Table 1, we report the means and standard errors of a set of demographic and economic variables for our sample as a whole and separately by caregiving status.[11] We define four "types" of women. (1) Those who are observed to be providing care to parents or parents-in-law on (or before) the first interview at which they appear with positive person weights.[12] (2) Those who begin providing care at some later point during the survey window after the first appear with positive weight. (3) Those who are never observed to provide care but who have living parents or parents-in-law and are thus "at risk" of needing to provide care. (4) Those who have neither living parents nor parents-in-law and therefore will not be "at risk" of providing care based on our measure.[13] An observation in Table 1 is a woman, and unless otherwise indicated, the data are taken from the first interview in which the woman appears with a positive person weight.

The average age of our respondents is 54.3, and 68 percent are married. Among the women in our sample, 17 percent are non-white, and 8 percent are Hispanic. While 54 percent of

[11] We weight using the person-specific weights provided by the HRS. For a woman who enters the sample as the spouse of an age-eligible husband but who is not age-eligible, the HRS assigns a zero person weight until the woman's birth-year cohort is added to the sample. We adhere to this weighting scheme.

[12] In Table 1, we define a woman's "first interview" as the interview in which she first has a positive person weight. As was mentioned above, some women are first interviewed as part of a cohort that is not their birth cohort, and when this occurs, they are assigned zero person weights until their birth cohort is first interviewed. When defining these women's caregiver statuses in Table 1, we still make use of the information from the period before they first had positive sample weights. It is in this sense that we observe a woman "before" her "first interview."

[13] In Appendix Table A1, we present the means of the variables in Table 1 by cohort. Age varies by cohort as expected, but there are also significant differences in schooling with the most recent cohort twice as likely as the earliest to have graduated from college. There is a monotonic decline in the number of children across cohorts, a rise in financial resources, and a significant rise in employment probabilities. Importantly for our study, the probability of having a living parent or parent-in-law at the respondent's first interview increases from 0.47 for the earliest cohort to 0.74 percent for the most recent cohort, suggesting a greater "risk" of needing to provide care among more recent groups.

the sample have a high school education or less, 25 percent attended some college, and 21 percent have college degrees. With respect to the potential need to provide care, 56 percent have living parents, and 34 percent have living parents-in-law (69 percent have either parents or parents-in-law or both). The majority of these women (67 percent) are working when first observed (49 percent are working full-time), and the average annual earnings of workers conditional on being non-zero is $37,900. (All dollar denominated values in this chapter are measured in 2010 dollars.) For 75 percent of those with a spouse, the spouse is working, and the average earnings of these spouses is $68,900 (conditional on being non-zero), far greater than the earnings of their working wives. Among the entire sample, 28 percent provide care to parents or parents-in-law at some point in the survey period, and 7.5 are observed providing care at their first interview. Among the caregivers, the average amount of time spent caring for parents and in-laws over the previous two-year period is 752 hours.[14]

When looking across groups, those not "at risk" of caring for parents are older, are more likely to be non-white or Hispanic, and have lower schooling levels. All of these differences are consistent with a shorter life expectancy and thus a lower probability of having parents still alive. Focusing on just those with parents or parents-in-law, the differences in these demographic variables by caregiving status are small and seldom significantly different from zero. Whereas one might have expected caregivers to have a lower opportunity cost of time, the differences between either group of caregivers and those who do not provide care (but are "at risk") in the probability of working are not significantly different from zero, nor are the differences in the number of hours worked or earnings. Those who eventually provide care do have significantly lower household income when first measured though this may be partly due to the fact that fewer of these women are married.

The strongest difference is in the number of siblings and particularly the number of sisters, with both groups of caregivers having significantly fewer sisters than the non-caregivers. These descriptive results and the small differences between groups appear to belie the standard

[14] For comparison, we find that 13 percent of our full sample ever provided care for a spouse or partner during the survey period. Despite the lower prevalence of this type of care, there are indications that providing care to a spouse or partner is more intensive, averaging 126 hours *in the past month*. However, without knowing for how many months care was provided, it is not possible to compare the intensities of the two types of care.

economic intuition that the women who choose to care for a parent or parent-in-law would be selected from those with weaker attachments to the labor force. Instead, the differences indicate the role of chance in that the women who are more likely to need to provide care are the ones that have fewer substitutes within the family.

V. Regression Analysis

With this information as background, we now turn to a multivariate analysis that allows us to examine changes in labor market behavior surrounding caregiving controlling for other factors that might also impact the decision. Again, because our focus is on labor market outcomes and because the majority of spousal care comes at older ages (and also because we have incomplete information on spousal care), we limit our regression analyses to the caregiving of parents and parents-in-law. In order to understand how caregiving can affect the likelihood of women working longer, and how this probability may be changing over time, we first analyze the relationship between individual characteristics and the decision to provide care before turning our attention to the relationship between caregiving and work.

In our analysis of caregiving behavior, we are interested in determining how much of the differences across cohorts in the observed propensity to provide care might be due to changes in demographic characteristics that themselves have changed over time—factors such as fertility, schooling, or marital status—and how much is due to unobserved factors, such as the pull of familial obligations, that may also vary across cohorts. Whereas in our graphical analysis we adhered to the categorical birth cohorts, in our regressions we employ year of birth in lieu of cohort dummy variables, which we recognize are arbitrarily defined. Later, in our analysis of labor market outcomes, we also include interactions between birth year and caregiving to assess the extent to which the effect of caregiving on work changes over time.

A. Determinants of caregiving

Table 2 reports results from regressions that model the probability that a woman in our sample provides care to a parent or parent-in-law during a particular survey period. The three columns report the coefficient estimates from three linear probability models. The first column includes birth year (minus 1941) as the only regressor. The second column adds dummy

variables for single years of age, and the third column adds a variety of other covariates. The covariates in the third specification include the number of living parents and the number of living in-laws at the previous interview; the age of the eldest parent or in-law at the prior interview; the numbers of living siblings and sisters; a categorical measure of education; a count of the respondent's children; indicators for whether the respondent is non-white, Hispanic, married, in fair or poor health, or has any children under the age of eighteen; quartiles of lagged wealth; and measures from the previous interview of years of work experience and tenure on the current job (the latter of which is set to zero for those not previously working). These variables are intended to account for numerous differences between the different birth cohorts that could explain observed differences in caregiving behavior.

When we look at the simple correlation between birth year and caregiving, we see the same strong differences in caregiving behavior across cohorts that we documented earlier in our figures. In particular, women born more recently are much more likely to provide care to parents or parents-in-law than are women from earlier cohorts. As we progressively add more right-hand-side variables, it is apparent that much of the observed differences in caregiving patterns across cohorts may be attributed to other factors. Simply accounting for age reduces the magnitude of the coefficient estimate on year of birth by more than half. The coefficient is again cut in half with the addition of other controls in the third column. In each case, the change in the estimate is statistically significant and different from zero, yet birth year itself remains a significant factor in predicting caregiving.[15]

We find that many of our explanatory variables are important predictors of caregiving behavior. The most obvious predictor is having living parents at the previous interview, which positively predicts caregiving to parents or in-laws. The age of the eldest parent or in-law, likely a good proxy for need, is also positively related to care. Interestingly, although the dependent variable is caregiving to parents *and/or* parents-in-law, having living parents-in-law significantly reduces the likelihood of providing care.

[15] Estimating each pair of models jointly as a set of seemingly unrelated regressions and testing equality of the coefficients on birth year minus 1941 strongly rejects equality in each instance.

The gendered nature of caregiving is readily apparent in these estimates: having additional siblings has no effect on the likelihood of providing care, but having additional sisters significantly decreases the probability of providing care, with each sister reducing the probability by approximately one-third of a percentage point. Married women and those with children under 18 are considerably less likely to provide care, owing perhaps to the greater competition for their time. Non-white women are more likely to provide care as, surprisingly, are those in poor health.

Perhaps more related to the goal of this volume are the associations between caregiving and measures of labor force attachment. On the one hand, years of experience, a measure of lifetime attachment, positively predicts caregiving. The result conforms with the results in our descriptive analysis where we found that caregivers do not appear to be negatively selected on characteristics associated with success in the labor market. On the other hand, we find that lagged tenure on the current job, a proxy for current market attachment, negatively predicts care.

Finally, we note the significantly positive coefficient on birth year despite the inclusion of numerous controls for observable differences across cohorts. Being born ten years later is associated with a statistically significant 0.73 percentage point increase in caregiving, which is an 11 percent increase relative to the estimation sample mean of 6.4 percent. This finding suggests the existence of additional omitted time-varying determinants of caregiving, with more recent cohorts more apt to provide care.

This “cohort effect” works in concert with other factors that vary across cohorts, leading towards the greater care among more recent cohorts seen so prominently in the figures. The more recent cohorts are significantly more likely to have living parents during their prime working years than the earlier cohorts, increasing the likelihood that they provide care. They are also less likely to be married, this too increasing caregiving. However, as members of the baby boom generation, the youngest in our sample are also more likely to have sisters who could function as alternative providers, suggesting lower rates of caregiving. They are also more likely to delay childbearing and therefore to have younger children when parents begin to need care, again suggesting lower rates of caregiving. Yet, the net effect of all of these factors is a significant trend towards increasing caregiving by more recent cohorts.

B. Determinants of work

In Table 3, we investigate the effect of caregiving on work, examining both the binary decision to work and the number of hours worked conditional on employment. Our primary right-hand-side variable of interest is the indicator variable "Currently Caring for Parent/In-Law," which is equal to one if the respondent reports providing care to a parent or parent-in-law during the survey period and zero otherwise. We also include a measure of prior caregiving ("Previously Cared for Parent/In-law") that is equal to one if the respondent reports such caregiving at a previous interview but is *not* currently providing care, and is equal to zero otherwise.[16] This measure allows us to assess whether caregiving has an effect after the care ceases. We again include a measure of birth-year as well as interactions between birth-year and our caregiving measures, allowing us to assess whether the effect of caregiving on work differs across cohorts. In addition to these variables, we include many of the same demographic and socio-economic characteristics as in the caregiving models.

In analyzing the relationship between work and caregiving, it is likely that unobservable factors affect both outcomes. Consider industriousness or conscientiousness, for example. Individuals who are less industrious may be less likely to work or work fewer hours and may similarly be unlikely to take on the burden of care.[17] Because we have multiple observations per respondent, we include individual fixed effects to control for these unobserved characteristics. The first column in each pair reports results from a linear probability model, and the second displays the results from a specification with individual fixed effects.

In our OLS estimates from column (1), we see that both measures of caregiving are significantly negatively related to work. Those providing care are 3.4 percentage points less likely to work on a mean of 41.3 percent, or approximately 8 percent. Those who previously provided care but are not currently doing so are 1.9 percentage points less likely to be working, more than a 4 percent decrease relative to the mean. These estimates are significant at the 1 and 5 percent levels, respectively. The latter finding suggests that caregiving does appear to have a

[16] We note that previous care is not perfectly measured in our data because we do not observe caregiving histories for women prior to their entry into the survey.
[17] This possibility is related to the work of Freeman (1997), who finds that individuals who volunteer their labor are highly skilled and have a high opportunity cost of time.

long-term effect.

We also find that that the labor supply of more recent cohorts is more likely to be impacted by the decision to provide care than is true for earlier cohorts. A woman born ten years later is an additional 3.3 percentage points less likely to be working if she is providing care to a parent or in-law. In contrast, the negative impact on work of having previously been a caregiver does not appear to vary with year of birth.

The other explanatory variables operate as expected: non-whites are significantly less likely to work, as are those in poor health and those who are married. Work increases with education and decreases with wealth. Women with more lifetime work experience and those with longer tenure on their current job (both measured at the previous interview) are more likely to be working. Even accounting for differences in these observables, cohort differences in work behavior remain visible: ceteris paribus, a woman born ten years later is 3.5 percentage points, or eight and a half percent, more likely to be working.

Looking at the fixed effects results in the second column, the estimated effect of caregiving on work is similar to the OLS specification. Contemporaneous caregiving is associated with a reduction in the probability of working of 3.3 percentage points. The effect remains significant at the 1 percent level. The effect of having previously provided care is also similar in magnitude to the OLS estimate, although here it is not significantly different from zero. Both previous and current caregiving have significantly larger negative impacts on more recent cohorts, though the estimate underlying the latter claim is significant at only the 10 percent level.

The third and fourth columns repeat the analysis with hours worked conditional on employment as the dependent variable. While there does not appear to be a significant effect of caregiving on hours worked in the OLS specification, the fixed effects regression results indicate that women who are currently providing care or who previously did so, work approximately 1.3 fewer hours per week than non-caregivers.[18] These results are significant at the five and ten percent levels, respectively. Relative to a mean of 34 hours worked per week, these effects

[18] We note that previous research has shown that workers often do not have the flexibility to vary hours on a current job (Hurd and McGarry, 1993).

represent 4 percent decreases in hours. The impact does not appear to differ by birth year. Other effects are as expected: more educated individuals work longer hours; non-whites, married women, those in poor health, and those with greater wealth work fewer hours. Conditional on working, those with more lifetime work experience and more tenure on the current job work longer hours. We find small differences by birth year suggesting that more recent cohorts work slightly longer hours, but the result is just marginally significant.

VI. Conclusion

The retirement of the baby boom and the aging of the population more generally present a number of challenges. Two of the most pressing are the need to care for the elderly and the need to retain a large and productive workforce when this large cohort reaches retirement age. These two issues are interrelated in that workers, particularly women, may reduce their labor force participation in order to care for an elderly parent. In this paper, we examined the relationship between work and caregiving.

We find that caregiving is quite prevalent, with approximately one-third of our sample of women in their fifties and early sixties providing care at some point during our window of observation. Because we are focusing on prime age working women, the majority of care provided is for elderly parents. Were we to extend our window of observation, we would see even more care, with much of this later care provided to spouses. However, it is unlikely that such care would affect labor market behavior to a significant extent given the age the women in our sample would be.

We also observe different caregiving patterns across the HRS birth cohorts, with younger cohorts providing significantly more care in their fifties and early sixties than women born a decade or so earlier. We find that these differences are explained to some extent by observables correlated with birth year. Perhaps the most dominant and obvious explanation is that, because of increases in longevity, more recent cohorts are more likely to have living parents during the prime age working years, and thus experience a greater likelihood of providing care. Yet, even after accounting for differences in this “risk” of needing to provide care, and controlling for other

factors such as schooling and labor force attachment, we still that find later cohorts provide more care to parents, possibly suggesting a change in attitudes towards family care.

We find a relationship between caregiving and work similar to what has been documented in previous studies. Using both ordinary least squares and fixed effects specifications, we find a significant effect of caregiving on the probability of work, with the OLS estimate implying a reduction of 3.4 percentage points and the fixed effects estimate a nearly identical 3.3 percentage point reduction. Notably, the effect of caregiving on work also appears to be persistent. In our OLS specification, we find that women who previously provided care but are not currently doing so are 1.9 percentage points less likely to be working. The fixed effect estimate is similar in magnitude but not significantly different from zero. In contrast to some previous work (e.g., Van Houtven et al., 2013), when we control for individual fixed effects, we find a small but significant reduction in hours worked for those currently or previously caregiving.

Taken together, the results in our chapter indicate that changes in family caregiving responsibilities are unlikely to explain why women are working longer than in the past. Instead, if anything, caregiving responsibilities may have dampened the trend towards longer work lives.

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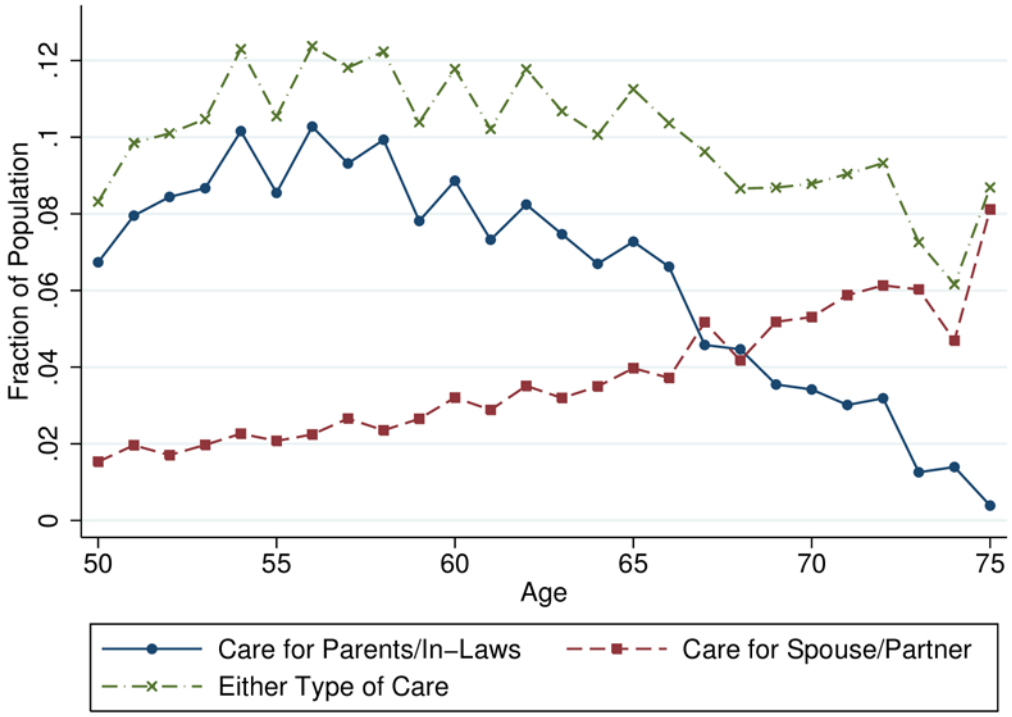
Table A1. Means of selected variables, by cohort

	HRS Early	HRS Late	WB Cohort	EBB Cohort	All
Age	59.1	53.6	53.3	53.2	54.3
	[0.05]	[0.05]	[0.05]	[0.04]	[0.03]
Non-white	0.15	0.15	0.16	0.19	0.17
	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
Hispanic	0.058	0.075	0.078	0.086	0.077
	[0.00]	[0.00]	[0.01]	[0.01]	[0.00]
High School Education	0.42	0.41	0.36	0.34	0.37
	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
Some College	0.19	0.21	0.27	0.28	0.25
	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
College+	0.14	0.15	0.22	0.28	0.21
	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
Married	0.69	0.71	0.67	0.67	0.68
	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
Number of Children	3.44	3.28	2.90	2.62	2.98
	[0.05]	[0.04]	[0.04]	[0.04]	[0.02]
Household Income	65.9	78.5	92.9	105.2	89.4
	[1.55]	[2.40]	[2.47]	[3.18]	[1.27]
Assets	361.9	350.4	391.8	419.1	386.9
	[12.74]	[14.61]	[16.58]	[19.86]	[8.14]
Work 0/1	0.54	0.64	0.71	0.73	0.67
	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
Hours Worked	35.4	37.3	38.2	38.7	37.8
	[0.39]	[0.29]	[0.33]	[0.34]	[0.17]
Earnings	29.5	32.2	38.0	44.6	37.9
(conditional on earnings > 0)	[0.77]	[0.56]	[0.91]	[1.11]	[0.44]
Spouse/Partner Works 0/1	0.57	0.72	0.79	0.81	0.75
(conditional on spouse/partner)	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Spouse/Partner Earnings	53.2	62.9	67.5	81.1	68.9
(conditional on earnings > 0)	[2.35]	[3.26]	[1.90]	[3.62]	[1.49]
Work Experience (years)	23.7	21.9	24.9	25.2	24.1
	[0.30]	[0.22]	[0.25]	[0.25]	[0.13]
Tenure Current Job (years)	12.0	10.7	11.3	10.5	11.0
(conditional on working)	[0.31]	[0.21]	[0.26]	[0.26]	[0.13]
Any Parents	0.34	0.58	0.60	0.62	0.56
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Any Parents-in-law	0.20	0.35	0.36	0.39	0.34
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]
Number of Siblings	2.77	2.96	2.98	3.33	3.06
	[0.05]	[0.04]	[0.05]	[0.06]	[0.03]
Number of Sisters	1.47	1.55	1.53	1.74	1.60
	[0.03]	[0.03]	[0.03]	[0.04]	[0.02]
Parent/In-law Care at First	0.037	0.052	0.084	0.097	0.075
Interview	[0.00]	[0.00]	[0.01]	[0.01]	[0.00]
Ever Give Parent/In-law Care	0.16	0.28	0.33	0.28	0.28
	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
Parent/In-law Care Mean Hours	766.0	610.3	862.9	738.1	751.8
	[57.42]	[28.17]	[47.01]	[42.68]	[21.17]
Observations	2305	3171	2050	1972	9498

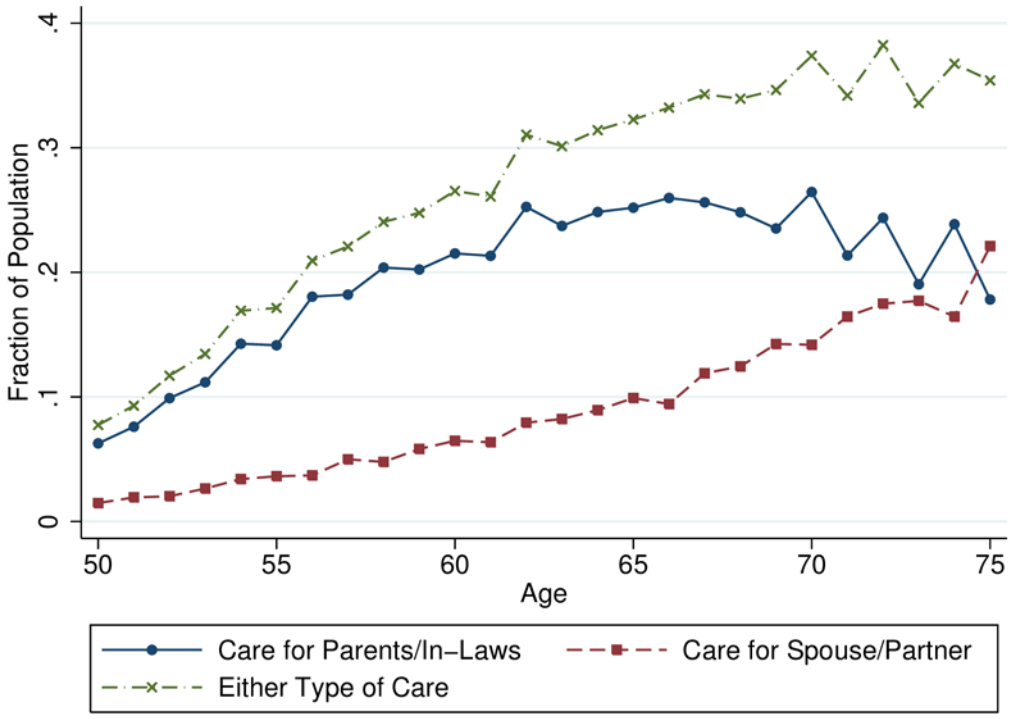
Notes: Statistics are means. Standard errors in brackets. An observation in the table is a woman. Unless otherwise indicated, the data are taken from the first interview in which the woman is assigned a positive person weight. See text for a description of the HRS cohorts.

Figure 1: Caregiving since last interview / previous two years



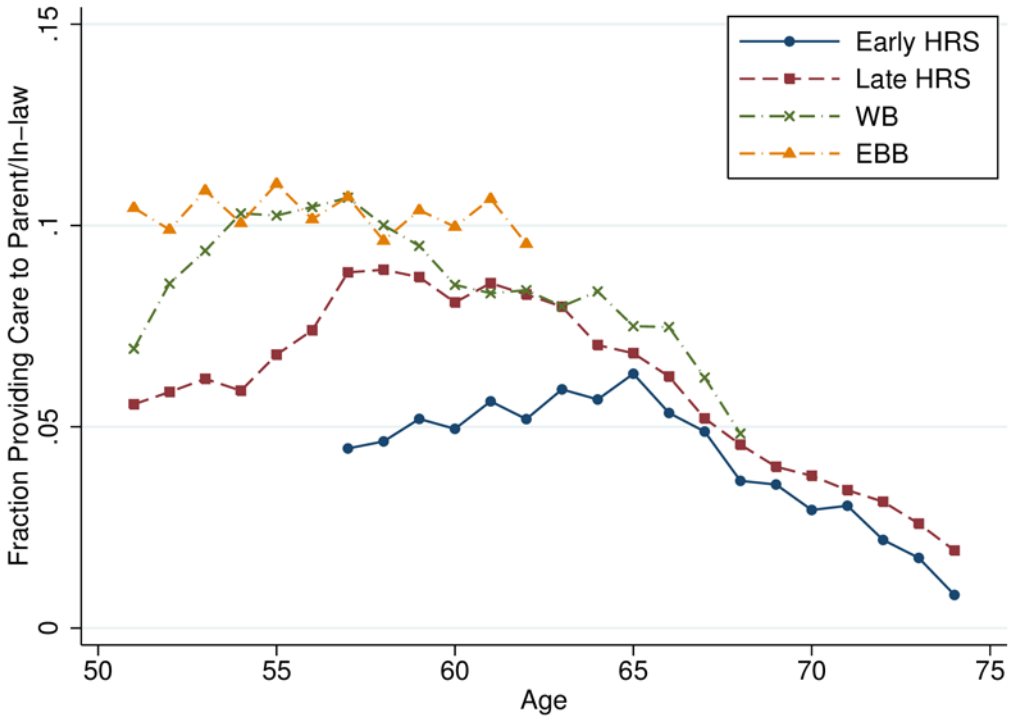
Notes: Caregiving in the last two years or since previous interview for re-interviewees. The figure uses data for women from the HRS, WB, and EBB cohorts (see text for discussion of HRS cohorts). All lines are weighted using person weights. Note that because we lack spouse/partner caregiving data in the years 1992 and 1994, we underestimate spouse/partner caregiving in those years. The series "Care for Spouse/Partner" and "Either Type of Care" should be considered lower bounds.

Figure 2: Cumulative caregiving since first observed in sample.



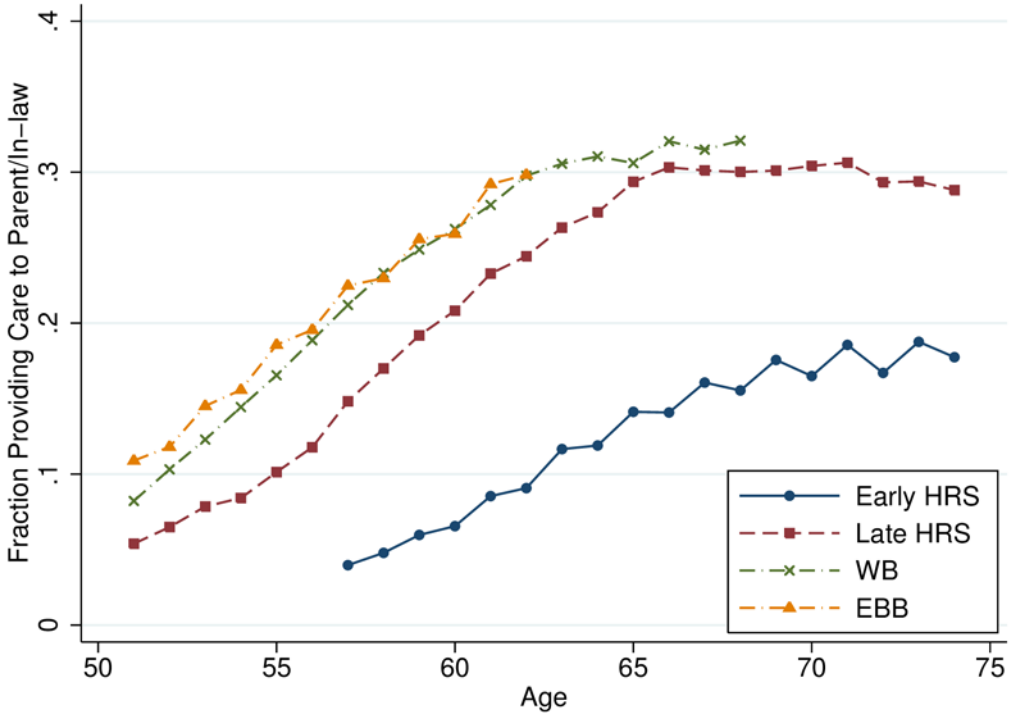
Notes: Caregiving since first observed in sample—i.e., fraction of women ever observed providing care since appearing in sample. The figure uses data for women from the HRS, WB, and EBB cohorts. All lines are weighted using person weights. Note that because we lack spouse/partner caregiving data in the years 1992 and 1994, we underestimate spouse/partner caregiving in those years. The series "Care for Spouse/Partner" and "Either Type of Care" should be considered lower bounds.

Figure 3: Caregiving to parents and parents-in-law since last interview / previous two years, by cohorts



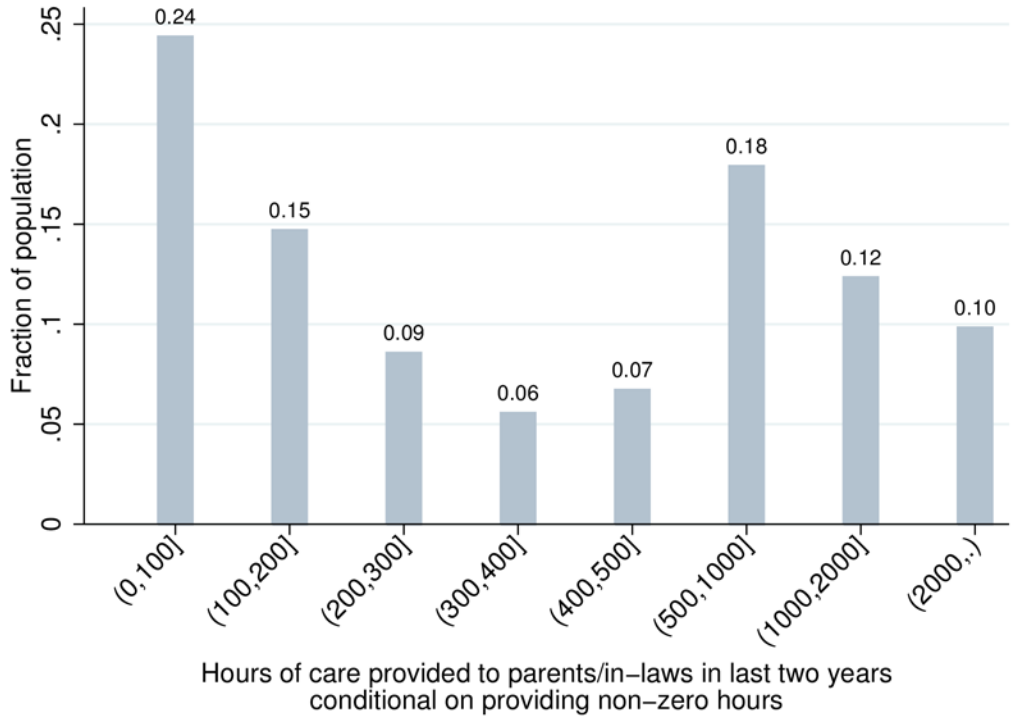
Notes: Caregiving to parents and parents-in-law in the last two years or since previous interview for re-interviewees. Each line corresponds to a different birth cohort: "Early HRS" (born 1931 to 1935), "Late HRS" (born 1936 to 1941), "WB" for "War Babies" (born 1942 to 1947), and "EBB" for "Early Baby Boom" (born 1948 to 1953). All lines are weighted using person weights. The lines are three-year moving averages, where each component of the average is weighted by the number of observations in its cohort-age cell.

Figure 4: Cumulative caregiving to parents and parents-in-law since first observed in sample, by cohorts.



Notes: Caregiving to parents and parents-in-law since first observed in sample—i.e., fraction of women ever observed providing such care since appearing in sample. Each line corresponds to a different birth cohort: "Early HRS" (born 1931 to 1935), "Late HRS" (born 1936 to 1941), "WB" for "War Babies" (born 1942 to 1947), and "EBB" for "Early Baby Boom" (born 1948 to 1953). All lines are weighted using person weights. The lines are three-year moving averages, where each component of the average is weighted by the number of observations in its cohort-age cell.

Figure 5: Distribution of care hours to parents/in-laws



Notes: Distribution of combined hours of care provided to parents and in-laws in the last two years, or since the previous interview for re-interviewees. The sample is limited to women who provided more than zero hours of combined care to parents/in-laws in the previous two years or since the last interview. The height of the bar is the fraction of women who provided hours of care in the range listed on the *x*-axis. Bars were constructed using sample weights.

Table 1: Means of selected variables by caregiver status.

	Care at Later Interview	Care On / Before First Interview	Never At Risk	Never Caregiver but At Risk	All
Age	53.6	53.8	55.8	53.8	54.3
	[0.068]	[0.089]	[0.069]	[0.042]	[0.032]
Non-white	0.16	0.15	0.21	0.15	0.17
	[0.0090]	[0.013]	[0.0075]	[0.0056]	[0.0038]
Hispanic	0.071	0.068	0.078	0.080	0.077
	[0.0064]	[0.0091]	[0.0049]	[0.0042]	[0.0027]
High School Education	0.37	0.35	0.40	0.36	0.37
	[0.012]	[0.017]	[0.0090]	[0.0075]	[0.0050]
Some College	0.28	0.27	0.21	0.25	0.25
	[0.011]	[0.016]	[0.0075]	[0.0068]	[0.0044]
College+	0.22	0.24	0.15	0.24	0.21
	[0.010]	[0.015]	[0.0066]	[0.0066]	[0.0042]
Married	0.70	0.72	0.53	0.75	0.68
	[0.011]	[0.016]	[0.0091]	[0.0067]	[0.0048]
Number of Children	2.95	2.91	3.08	2.95	2.98
	[0.047]	[0.067]	[0.039]	[0.030]	[0.020]
Household Income	91.2	104.5	63.8	100.9	89.4
	[2.86]	[6.96]	[1.62]	[1.94]	[1.27]
Assets	389.3	482.5	291.2	423.4	386.9
	[17.9]	[31.0]	[12.5]	[13.4]	[8.14]
Work 0/1	0.70	0.68	0.61	0.70	0.67
	[0.011]	[0.017]	[0.0089]	[0.0072]	[0.0048]
Hours Worked	38.5	37.9	36.7	38.1	37.8
	[0.37]	[0.60]	[0.31]	[0.25]	[0.17]
Earnings	40.6	37.9	31.9	40.1	37.9
(conditional on > 0)	[1.21]	[1.44]	[0.63]	[0.70]	[0.44]
Spouse/Partner Works 0/1	0.79	0.75	0.62	0.78	0.75
(conditional on spouse/partner)	[0.012]	[0.018]	[0.012]	[0.0074]	[0.0054]
Spouse/Partner Earnings	70.1	81.5	53.8	71.8	68.9
(conditional on > 0)	[3.46]	[10.9]	[1.94]	[1.69]	[1.49]
Work Experience (years)	24.7	25.6	23.7	23.8	24.1
	[0.29]	[0.41]	[0.24]	[0.19]	[0.13]
Tenure Current Job (years)	11.4	10.5	11.1	10.9	11.0
(conditional on working)	[0.29]	[0.46]	[0.24]	[0.18]	[0.13]
Any Parents	0.91	0.72	0	0.72	0.56
	[0.0072]	[0.016]	[0]	[0.0070]	[0.0051]
Any Parents-in-law	0.46	0.36	0	0.49	0.34
	[0.012]	[0.018]	[0]	[0.0080]	[0.0050]
Number of Siblings	2.86	2.95	3.16	3.10	3.06
	[0.055]	[0.082]	[0.050]	[0.039]	[0.025]
Number of Sisters	1.45	1.48	1.67	1.63	1.60
	[0.036]	[0.054]	[0.032]	[0.025]	[0.017]
Parent/In-law Care at First	0	0.73	0	0	0.075
Interview	[0]	[0.016]	[0]	[0]	[0.0029]
Ever Give Parent/In-law	1	1	0	0	0.28
Care	[0]	[0]	[0]	[0]	[0.0046]
Parent/In-Law Care Mean	751.6	752.3	.	.	751.8
Hours	[27.6]	[31.7]	[.]	[.]	[21.2]
Observations	1638	779	2981	4100	9498

Notes: Statistics are means. Standard errors in brackets. An observation in the table is a woman. Unless otherwise indicated, the data are taken from the first interview in which the woman is assigned a positive person weight. We refer to this interview as the woman's "first interview." The samples for the columns are defined as follows. "Care On / Before First Interview" includes women who reported providing care to parents or parents-in-law at or before their first interview, as defined above. "Care at Later Interview" refers to women who did not provide care to parents or parents-in-law at or before their first interview but who were observed providing such care at a later interview. "Never At Risk" refers to women who never had living parents or parents-in-law at any point in the period of observation. "Never Caregiver but At Risk" includes women who were observed at some point with living parents or parents-in-law but who were never observed providing care to those individuals.

Table 2. Probability of Providing Care to a Parent or Parent-in-law

	Care 0/1	Care 0/1	Care 0/1
Birth year - 1941	0.0035***	0.0016***	0.00073**
	[0.00028]	[0.00035]	[0.00033]
Number Living Parents (t-1)			0.039***
			[0.0055]
Number Living In-laws (t-1)			-0.011**
			[0.0055]
Age of eldest parent/in-law (t-1)			0.0016***
			[0.000087]
Number of siblings			-0.0000027
			[0.0011]
Number of sisters			-0.0030*
			[0.0016]
High school			0.0093**
			[0.0038]
Some college			0.0027
			[0.0046]
College or more			0.0066
			[0.0053]
Nonwhite			0.011***
			[0.0038]
Hispanic			-0.000046
			[0.0053]
Number of children			-0.00047
			[0.00068]
Married			-0.0068**
			[0.0030]
Child under 18			-0.024***
			[0.0084]
Fair/poor health			0.0088***
			[0.0031]
Second wealth quartile (t-1)			0.0071**
			[0.0035]
Third wealth quartile (t-1)			0.002
			[0.0038]
Highest wealth quartile (t-1)			0.0051
			[0.0043]
Experience (t-1)			0.00034***
			[0.00011]
Current Tenure (t-1)			-0.00035**
			[0.00017]
N	46005	46005	46005
R-squared	0.006	0.012	0.105
Mean of the dependent variable	0.064	0.064	0.064

Standard errors in brackets. *** p<0.01, ** p < 0.05, * p<0.10.
Models in second and third columns include single year age dummy variables.

Table 3. Regressions of Labor Market Outcomes

	Probability of Working		Hours worked if > 0	
	OLS	FE	OLS	FE
Currently Caring for Parent/In-Law	-0.034***	-0.033***	-0.38	-1.29**
	[0.0096]	[0.012]	[0.48]	[0.56]
Current Care * (Birth Year - 1941)	-0.0033**	-0.0039*	-0.023	-0.11
	[0.0017]	[0.0022]	[0.084]	[0.100]
Previously Cared but not currently	-0.019**	-0.017	0.37	-1.27*
	[0.0084]	[0.014]	[0.49]	[0.65]
Previously Care * (Birth Year - 1941)	-0.00022	-0.0051**	-0.065	-0.099
	[0.0014]	[0.0025]	[0.081]	[0.12]
Birth Year – 1941	0.0035***		0.058*	
	[0.00068]		[0.033]	
High School	0.036***		0.19	
	[0.0084]		[0.58]	
Some college	0.056***		0.91	
	[0.010]		[0.61]	
College or more	0.070***		1.84***	
	[0.012]		[0.68]	
Nonwhite	-0.036***		-1.06***	
	[0.0079]		[0.40]	
Hispanic	0.014		0.041	
	[0.0099]		[0.66]	
Number of children	0.0091***		0.057	
	[0.0015]		[0.087]	
Married	-0.043***	-0.041***	-2.17***	-0.83
	[0.0067]	[0.011]	[0.34]	[0.55]
Child under 18 (0/1)	0.018	-0.026	-0.64	-0.94
	[0.016]	[0.017]	[0.64]	[0.71]
Fair/poor health	-0.17***	-0.068***	-0.67*	-0.27
	[0.0060]	[0.0062]	[0.40]	[0.37]
Second wealth quartile (t-1)	0.0018	-0.00088	-0.35	0.17
	[0.0072]	[0.0075]	[0.36]	[0.35]
Third wealth quartile (t-1)	-0.032***	-0.034***	-1.73***	-0.28
	[0.0086]	[0.0098]	[0.41]	[0.46]
Fourth wealth quartile (t-1)	-0.069***	-0.062***	-3.32***	-1.16**
	[0.0095]	[0.012]	[0.52]	[0.57]
Experience (t-1)	0.0068***		0.11***	
	[0.00023]		[0.018]	
Current Tenure (t-1)	0.018***		0.18***	
	[0.00033]		[0.016]	
Number of observations	46,748	46,748	18,918	18,918
R-squared	0.364	0.172	0.119	0.109
Mean of Dependent Variable	0.413	0.413	34.02	34.02

Standard errors in brackets. *** p<0.01, ** p< 0.05, * p<0.10. All models include dummy variables for single years of age.