

THE EFFECT OF EARLY SOCIAL SECURITY RETIREMENT BENEFIT RECEIPT ON
POVERTY AMONG OLDER WOMEN

A Thesis
submitted to the Faculty of the
Graduate School of Arts and Sciences
of Georgetown University
in partial fulfillment of the requirements for the
degree of
Master of Public Policy
in Public Policy

By

Marisa Paige Reed Shenk, B.A.

Washington, D.C.
April 11, 2020

Copyright 2020 by Marisa Paige Reed Shenk
All Rights Reserved

THE EFFECT OF EARLY SOCIAL SECURITY RETIREMENT BENEFIT RECEIPT ON POVERTY AMONG OLDER WOMEN

Marisa Paige Reed Shenk, B.A.

Thesis Advisor: Eliane Catilina, Ph.D.

ABSTRACT

This paper estimates the effect of early receipt of Social Security retirement benefits on poverty among older women using data from the RAND version of the Health and Retirement Study (HRS). Women are particularly vulnerable to poverty in old age due to their longer projected lifespans and often shorter earnings histories and lower retirement benefits compared to men. Women are also more likely than men to provide informal care to aging family members, and widows and divorcees may face additional disadvantages. Building on cumulative disadvantage theory, this paper focuses on older women and considers the interactions of health, caregiving responsibilities, and early Social Security receipt decisions on subsequent incomes relative to poverty 12 to 24 years after entering the HRS survey. I find that older women who received Social Security retirement benefits before reaching their full retirement age have lower household income relative to poverty in the last five of the seven survey years examined. Although there is no significant relationship for the full sample in the first two outcome years examined, I find that older women in certain disadvantaged groups who received benefits early have lower household income relative to poverty.

ACKNOWLEDGEMENTS

This thesis is dedicated to the many researchers who have shaped my perspectives on aging and entitlement policy and guided me to be a better researcher, as well as to those caregivers who have enriched my life and asked for nothing in return.

With gratitude and love,
Marisa Paige Reed Shenk

TABLE OF CONTENTS

I. Introduction	1
II. Background	4
III. Literature Review.....	8
IV. Conceptual Framework.....	13
V. Data and Methods	16
VI. Descriptive Statistics	21
VII. Empirical Analysis	26
VIII. Policy Discussion.....	35
IX. Conclusion	38
Appendix: Additional tables	40
References.....	44

LIST OF TABLES

Table V.1. Ages in the Health and Retirement Survey by cohort and wave	18
Table VI.1. Baseline characteristics.....	22
Table VI.2. Characteristics 12 years after survey entry.....	24
Table VI.3. Characteristics by receipt of early Social Security retirement benefits over time.....	25
Table VII.1. Initial cohort outcomes.....	27
Table VII.2. Subsequent cohort outcomes.....	30
Table VII.3. Coefficients on receipt of early Social Security retirement benefits' relationship with later income.....	33
Table A.1. Baseline characteristics (received Social Security retirement benefits early)	40
Table A.2. Baseline characteristics (did not receive Social Security retirement benefits early) ..	41
Table A.3 Characteristics of initial cohort over time (received Social Security retirement benefits early)	42
Table A.4. Characteristics of initial cohort over time (did not receive Social Security retirement benefits early).....	43

I. INTRODUCTION

As many as 1 in 7 adults age 65 and older lived in poverty in the U.S. in 2017 (Cubanski et al., 2018). Women are especially likely to experience poverty in their old age, partially exacerbated by their higher likelihoods to provide informal care outside of the labor market, become widowed, and live longer lives than men. Building on cumulative disadvantage theory, this thesis examines whether early receipt of Social Security retirement benefits predicts lower incomes among older women. Because the goal of Social Security is to alleviate poverty conditions, paired with the facts that individuals who receive benefits early may do so due to relieve economic hardship and that the U.S. population is aging rapidly, this is an important question to understand. The interactions of early receipt and other characteristics may also suggest the need for more progressive benefits or ways to recognize informal caregiving in social welfare and social insurance policy.

Older adults face rising health care costs and diminishing purchasing power as they use up private savings but lack new sources of income, and may be forced to rely on their personal networks or public benefits for support. Although Medicare covers basic health expenses, it does not cover long-term services and supports, which are an increasing need for adults who live longer lives and require assistance with activities of daily living. For older adults without access to large private savings or family members who can provide unpaid support, a growing number of functional limitations can drive this population into unexpected poverty in the last years of their lives. This is an increasing concern for the U.S., as adults age 65 and older are projected to account for more than 20 percent of the population by 2030 (U.S. Census Bureau, 2018).

Women are particularly vulnerable to poverty in old age due to their longer projected lifespans and often shorter (and lower) earnings histories which entitle them to lower retirement benefits. Since women earn, on average, less than men over their lifetimes, many women collect spousal benefits because those are higher than their own retirement benefits. Women are also more likely than men to provide informal care to aging family members, which can put more strain on limited resources in pre- or post-retirement years. Widows and divorcees may face additional disadvantages, having planned on their spouse's income and benefits to sustain their income later in life – although they are eligible for survivor benefits, this income replaces both their spouse's retirement benefits and their own spousal benefits.

Economic pressures and failing health conditions may lead older adults to begin claiming Social Security benefits as early as 62, three to five years short of the full retirement age. Claiming benefits early guarantees that every subsequent month of benefits will be reduced, even if the worker lives several more decades. Thus, although access to early retirement benefits may be necessary in the short-term, claiming benefits early will lead to a permanent reduction in income in the future. This may be particularly harmful to women. Many women have taken more time out of the formal labor market for caregiving than men, which means they are less likely to have a full 35 years' worth of earnings to count toward their retirement calculation, and thus each year they retire early means including another zero-earnings year in their benefit calculation. It can also have adverse effects on African Americans, whose life expectancy is lower than life expectancy among non-Hispanic whites.^a In general, older workers in poor health or with shorter life expectancies may be disadvantaged because they may claim benefits early in

^a In 2017, black males at 65 had a life expectancy of 16.4 more years (81.4) while white females had a life expectancy of 20.6 more years (85.6) (Centers for Disease Control and Prevention [CDC], 2017).

order to access needed Social Security income, and then either accept lower retirement benefits themselves or leave a widowed spouse with permanently lowered survivor benefits.

This thesis will examine whether early receipt of Social Security benefits leads to lower incomes among older women. For younger retirees, early retirement benefits may alleviate poverty by providing earlier access to a new income stream. However, as retirees age the lower benefit amounts are expected to be less effective at lifting them out of poverty. Early receipt of retirement benefits may be especially harmful to women who have taken more time out of the formal labor market, whether on the intensive margin (decreased hours worked) or extensive margin (not working), due to providing informal care. Research has shown that caregiving may increase the probability of experiencing poverty by intensifying the negative effects on income of stopping work and declining health (Wakabayashi & Donato, 2006). This thesis builds on that research by examining whether the effect of receiving retirement benefits early is intensified among caregivers, those who experience unexpected health shocks later in life, and women who become widowed or divorced late in life.

II. BACKGROUND

Social Security

The Social Security Act was passed in 1935 to provide older adults with a type of social insurance, an entitlement which all workers are guaranteed to receive if they meet the eligibility criteria. Survivor benefits and the disability insurance program were later added in 1939 and 1954, respectively. In 1983, Congress passed legislation inching up the full retirement age from 65 to 67 for those born between 1938 and 1960. The increase in the full retirement age reflects a financial need for both more workers and fewer retirees in the program. The program has long faced concerns of insolvency due to its pay-as-you-go structure: each month's benefits are paid in part from a trust fund and in part from taxes collected from current workers. The Old-Age and Survivors Insurance (OASI) Trust Fund is currently projected to run out in 2034, though it could be bolstered through a variety of changes such as increasing taxes or incentivizing more workers to join the workforce or delay retirement. Cuts to benefits may be necessary if these changes do not occur, which could leave more older adults in unexpected poverty.

Social Security was initially developed to provide a social safety net to retirees whose savings had been wiped out by the Great Depression, and it has continued to play a large role in protecting older Americans from poverty; the Center on Budget and Policy Priorities estimates that Social Security lifted 15 million adults age 65 and older out of poverty in 2017 (Romig, 2019). The average monthly benefit (around \$1,500 a month) helps the majority of retirees pay for their basic living expenses. The replacement rate (which measures benefits relative to preretirement income) in the U.S. is lower than in many other countries, but the benefit calculation is progressive and designed to protect lower income workers: workers with lower

lifetime incomes have a higher replacement rate. The tax that funds Social Security benefits, however, is regressive, taking a flat 6.2 percent from workers' income up to \$132,900 after which additional income is not taxed.

Workers may choose to receive retirement benefits as early as age 62 if they are not already receiving disability benefits, which convert to retirement benefits automatically when the individual reaches full retirement age. For each month between actual retirement age and full retirement age, benefits are reduced by $\frac{5}{9}$ of a percent for the first 36 months (adding up to 20 percent) and then $\frac{5}{12}$ of a percent for any additional months (adding up to 10 percent for workers whose full retirement age is 67). Workers may also delay receipt of retirement benefits, earning additional credits for each month between full retirement age and age 70; credits range from 3 to 8 percent per year (based on birth cohort), leading to as big a bonus as 32 percent for those born between 1943 and 1954 who retire at age 70 or later. Most workers, however, claim retirement benefits upon reaching either the early or the full retirement age.

Married individuals are entitled to spousal benefits if they exceed their own retirement benefits. Spousal benefits are generally 50 percent of the spouse's full retirement amount. If the *spouse* retired early, spousal benefits are reduced by $\frac{25}{36}$ of a percent for the first 36 months (adding up to 25 percent) and then $\frac{5}{12}$ of a percent for any additional months, similar to retirement benefits. Thus, spousal benefits may range from 32.5 to 50 percent of the spouse's full benefit amount. Spousal benefits are not affected by the timing of the worker's retirement, but survivor benefits, which exactly replace the worker's retirement benefits if higher than the surviving spouse's, are permanently reduced if the worker retired early.

Workers may continue earning income after claiming retirement benefits, but their benefits are reduced based on a percentage of income if the worker is below full retirement age. Although the withheld payment is paid back after the worker reaches full retirement age, and thus claiming retirement benefits may not coincide with fully retiring, I generally refer to “retirement” as the time when retirement benefits are claimed.

This thesis will examine the effects of either a worker or her spouse “retiring” before their full retirement age. Although a secondary earner’s benefits may not be reduced if only the primary earner claimed benefits early, I am including either spouse because women are more likely to become widowed and claim survivor benefits and because income relative to poverty, my main outcome, is measured on the household level.

Caregiving and cumulative disadvantage theory

Cumulative disadvantage (or cumulative advantage) theory refers to the accumulation of disadvantages (or advantages) such as education, income, and other factors over time that helps explain divergences in life outcomes. A pair of researchers have used this framework to examine income inequality among older adults in the 1980s and 2010, though it has also been applied to health and other outcomes including disparities by gender and race (for a more comprehensive overview of this research, see Crystal, Shea, & Reyes, 2017). They have found evidence that education in particular leads to large differences in income among older adults, despite the progressive distribution of Social Security benefits. This thesis examines several characteristics that could contribute to poverty in old age.

In line with Crystal and Shea's work, this thesis includes education and income from earlier in life, which can work in tandem to create disparate outcomes. It also includes health and mental health, which can result from differences in health and socioeconomic measures earlier in life and can also contribute to disparate earnings in pre-retirement years. In addition, it focuses on characteristics that may uniquely disadvantage older women: caregiving and widowhood or divorce. For example, women are more likely than men to provide informal care, and to spend more time providing care on average than male caregivers (AARP, 2015). Although the poverty rate has declined for widows from nearly 20 percent to 13 percent between 1994 and 2014, it remains several times higher than the poverty rate among married women (Munnell, Sanzenbacher, & Zulkarnain, 2019). Much of this change in poverty can be attributed to increases in education and work among women, leaving older women with the least education or work experience still at high risk for experiencing poverty.

III. LITERATURE REVIEW

There is a large body of evidence examining the determinants of retirement decisions, focusing on both health and financial incentives. Access to health insurance or Social Security retirement benefits can either induce workers to stay in the labor force or transition to retirement (Boskin & Hurd, 1977; Karoly & Rogowski, 1994; Nyce et al., 2013). Changes in self-reported health of self or spouse can also affect retirement age (McGarry, 2004; van den Berg, Elders, & Burdorf, 2010). Some evidence suggests that economic variables may be more important than health (Bazzoli, 1985). Shultz, Morton, and Weckerle (1998) examine both push (negative) and pull (positive) factors that induce older adults into voluntary or involuntary early retirement. Using a subsample from the 1992 wave of the Health and Retirement Study (HRS), Shultz et al. found that push factors including poor health were the most important factors for involuntary retirement, while voluntary retirees were more likely to cite a desire to spend time with their spouses or otherwise pursue leisure. The retirees who considered themselves voluntarily retired reported higher incomes before retiring and better health after retiring.

However, there exists a much smaller literature on family composition and health and the consequent effects on retirement decisions. For example, Kubicek et al. (2011) developed a model of work and family predictors of early retirement for married older adults, finding evidence that in addition to economic and health factors, marital satisfaction was a strong predictor of early retirement.

Caregiving responsibilities, both for aging parents and spouses, have traditionally fallen disproportionately to women. This thesis thus focuses on older women and considers the interactions of health, caregiving responsibilities, spouse's health or mortality, and early

retirement decisions on the subsequent probability of experiencing poverty. Below I discuss three relevant streams of literature, focusing first on caregiving and its interactions with the labor force, next on the connection between health, caregiving, and poverty, and finally on a smaller literature on early retirement and poverty.

Informal caregiving and labor force participation

Many studies have covered the tradeoffs between informal caregiving and formal labor force participation. Caregiving and employment are often seen as substitutes. However, Lilly, Laporte, and Coyte (2007) conducted a systematic review of caregiving in the U.S. and other developed countries and found that caregivers do not differ from non-caregivers in their labor force participation, though the *intensity* of caregiving is associated with reduced work hours or dropping out of the labor market entirely.

This effect may be especially true for women. Using the HRS, Lee and Tang (2013) found that women who provided care to elderly parents had a lower employment probability than non-caregivers, and Johnson and Lo Sasso (2006) found that middle-aged female caregivers had reduced working hours. Wakabayashi and Donato (2005) used the National Survey of Families and Households and found that new female caregivers reduced their weekly hours and annual earnings. Pavalko and Henderson (2006) examined female caregivers using the National Longitudinal Survey of Young Women. They found that caregivers with flexible work hours or unpaid leave were more likely to remain employed, but still had high psychological distress.

There is also a growing literature on the causality between caregiving and retirement decisions for older women. For example, using the National Survey of Older Americans Act

(OAA) program participants, Longacre et al. (2017) found that many nonworking caregivers reportedly exited the labor market due to caregiving demands. Working caregivers who reported that caregiving interfered with their work also reported higher levels of emotional stress.

Several studies on this topic have utilized longitudinal data, particularly the HRS. Using the HRS, studies have shown that providing care to spouses lowers the probability that women return to work after retirement (Gonzales, Lee, & Brown, 2017) and that the arrival of a new grandchild is associated with an increase in retirement (Lumsdaine & Vermeer, 2014). Pavalko and Artis (1997), using the National Longitudinal Study of Mature Women (NLSMW), found that women aged 45 to 62 were equally likely to become caregivers of ill or disabled family members or friends in 1987 regardless of their employment status in 1984 – but that caregivers were more likely to reduce their work hours and exit the labor force than non-caregivers. However, they also found that characteristics associated with leaving the labor force did not differ much between caregivers and non-caregivers, suggesting that caregiving may merely accelerate exit among the female population least attached to the labor force. Using the same data source, Jacobs et al. (2017) found that women who provide informal care are more likely to retire and provided evidence that caregiving can be treated as exogenous to retirement decisions. As Jacobs et al. (2017) found, including care for spouses and other family members rather than only parental care seems to increase the connection between caregiving and retirement. Thus, where possible, this thesis includes care for parents, spouses, and grandchildren.

Health, caregiving, and poverty

The need for informal care of aging parents may be linked to income inequality through multiple pathways, since lower income may both necessitate unpaid care – which could lead to reduced work and income for the caregiver – and lead to lower transfers of wealth to children. Combining the 1992 and 2000 HRS waves, Wakabayashi and Donato (2006) found that women living in poverty in 2000 were more likely to have been parental caregivers in 1992. Parental caregivers were more likely to report declining health and stopping work over the next eight years, all of which likely contributed to their higher observed poverty rates and public assistance in the 2000 wave. Similarly, using the HRS waves from 2006 to 2010, another study found evidence both that female caregivers of elderly parents were more likely to be in lower-income households later in life and that women in lower-income households were more likely to give parental care later in life (Lee, Tang, Kim, & Albert, 2014). Poverty and poor health are also strongly associated with each other (Kahn & Pearlin, 2006; McDonough & Berglund, 2003).

Similarly, the need for informal care of a spouse could lead to poverty through the spouse's early exit from the labor market (resulting in decreased income and Social Security benefits), increased medical costs borne by the couple, or through the caregiver's reduced labor force participation. To the best of my knowledge, no studies have attempted to disentangle these avenues to poverty.

Early retirement and poverty

There is a small literature on the effects of retirement decisions on poverty among older households. Although it is difficult to disentangle health, income, family, and retirement

characteristics and decisions from each other and determine an effect on poverty status, a few studies have examined the effects of retirement age on elderly household poverty. However, most of these studies have been outside of the U.S. (Cremer & Pestieau, 2003; Cribb & Emerson, 2019). A closely related paper by Diebold, Moulton, and Scott (2017) using the HRS found that married men who delayed claiming retirement benefits reduced the risk of their widows entering poverty. Choudhury and Leonesio (1997) used the NLSMW and found that long-term economic status, rather than adverse events such as widowhood in later years, was more important for predicting poverty in older women in 1991-1992. Although Social Security benefits are associated with a reduction in elderly poverty in the U.S. (Engelhardt & Gruber, 2004), the introduction of early claiming before the full retirement age was associated with an increase in elderly poverty by about one percentage point (Engelhardt, Gruber, & Kumar, 2018). Further, Sass, Sun, and Webb (2013) report that married men often claim Social Security earlier than would maximize their household benefits, reducing survivor benefits and potentially exposing widows to poverty. Additionally, Coile et al. (2002) examined older men and found that although many men received benefits earlier than would be optimal, many early retirees actually delayed their receipt of Social Security retirement benefits.

This thesis aims to fill the gap in the literature by focusing directly on the relationship between early retirement benefit receipt and poverty among older women. However, because many other factors impact both retirement decisions and poverty rates, my approach relies on a cumulative disadvantage framework that incorporates caregiving, health, and other characteristics.

IV. CONCEPTUAL FRAMEWORK

As discussed in previous chapters, this thesis investigates the relationship between early receipt of Social Security benefits and poverty among older women. Because people between age 62 and full retirement age who collect retirement benefits early may face additional challenges and may receive greater economic security through Social Security benefits due to their health, work history, and other characteristics, I expect that those who collect benefits early may see an immediate increase in income and decrease in their likelihood of experiencing poverty. Older workers who face the prospect of low wages or high medical bills may choose to receive benefits early in order to access a new income stream and keep themselves out of poverty. In the longer run, I expect to see a mildly negative relationship between early receipt and income due to the reduced benefit levels accruing to older adults, especially those who may have faced additional disadvantages. Specifically, I will test whether receiving Social Security benefits early leads to decreased income relative to poverty among women after retirement age, controlling for individual characteristics as well as caregiving activities prior to retirement age.

There are three major decisions that each older adult must make in my framework, and several exogenous shocks that could impact both their decisions and their outcomes. The decisions include the age at which to receive Social Security retirement benefits, whether to work or retire at each age, and whether to provide unpaid care to a family member. For some individuals, these decisions may be made involuntarily, such as when work is unavailable or a spouse requires care that is not covered by insurance. Nonetheless, these three decisions may be nested within each other and each is expected to impact the likelihood of experiencing poverty in old age. For example, the longer one works and delays receiving retirement benefits, the lower

the predicted likelihood of poverty. The more unpaid care given during working years, the less income earned and the higher the predicted likelihood of poverty.

Caregiving and work or retirement decisions are assumed to be jointly determined among older women and thus must be controlled for in my model. This is mostly true on the intensive margin. For example, there is evidence that caregivers are likely to reduce their work hours, and that caregivers who provided more care were more likely to retire (Jacobs et al., 2017; Johnson & Lo Sasso, 2006; Lee & Tang, 2013; Lilly, Laporte, & Coyte, 2007; Wakabayashi & Donato, 2005). Providing care for a family member or friend may reflect financial need among one's network of support, a commitment to family or community, or weak labor force prospects. Once providing care, caregivers may reduce their work hours, drop out of the labor force, or remain working longer depending on their financial situation. Because providing care to a family member such as a spouse or parent could have effects on retirement income aside from its effects on the caregiver's work decisions and income in the present and Social Security retirement benefits in the future, it is important to control for it in the model relating retirement to future income. The model also controls for other characteristics that could affect the decision to provide unpaid care or receive retirement benefits early as well as later poverty status, including marital status, health, and income. Because there are many other factors that could affect both the decisions to provide informal care or receive retirement benefits before the full retirement age and the likelihood of experiencing poverty that are intrinsic to a person or their work history, the model controls for other personal characteristics as well as income and work history.

Income relative to poverty will be examined for all women in the HRS sample who reach their full retirement age or older. Earlier in life, poverty is expected to be lower since older adults

may have access to pensions, Social Security benefits, and their own or their spouse's income. Later into retirement, poverty is expected to be higher. However, there will be a smaller pool of people who reach the oldest age groups, so the results will be less generalizable. Early receipt of Social Security benefits is expected to increase poverty among the oldest age groups who are expected to have fewer sources of income and will rely more on Social Security; for this group, a lower Social Security check is expected to have a larger effect on experiencing poverty compared to the younger groups. The interaction with informal caregiving or a negative health shock is expected to intensify the negative relationship between early retirement and later income.

V. DATA AND METHODS

Sample

This research relies on data from the Health and Retirement Study (HRS). The RAND HRS Longitudinal data file includes 13 waves from 1992 to 2016. The RAND HRS Family data file is also longitudinal and contains data from 1992 to 2014. The Longitudinal file contains core demographic, economic, and health information and the Family file contains detailed information about spouses, children, and grandchildren, including information about informal caregiving. The RAND HRS Fat Files include information about spousal caregiving that was not included in the longitudinal files.

In order to focus on older women's retirement decisions, I will include women who receive Social Security benefits at or after age 62. Those who received benefits prior to age 62 are likely recipients of disability benefits that are converted to retirement benefits upon reaching retirement age. Women in three of the seven cohorts reach age 65 prior to 2016 and were sampled prior to age 62 and are thus included in the analysis (see table V.1). The initial cohort, born between 1931 and 1941, have been interviewed every other year starting in 1992, thus there is full information on this sample between the ages of 61 and 75. War babies (born 1942-1947) were interviewed starting in 1998 and have full information between the ages of 56 and 69. Early baby boomers (born 1948-1953) have been interviewed since 2004 and thus only have full information from age 56 to 63. Women born before 1930 were sampled starting with the Asset and Health Dynamics Among the Oldest Old (AHEAD) study (in 1993 and 1995) and then merged with the HRS starting in 1998. Thus, this sample has information on older women but does not have information about their characteristics prior to age 68, so they are excluded.

Table V.1. Ages in the Health and Retirement Survey by cohort and wave

Wave	Year of interview	Initial cohort (1931-1941)	War babies (1942-1947)	Early baby boomers (1948-1953)
1	1992	51-61		
2	1993/1994	53-63		
3	1995/1996	55-65		
4	1998	57-67	51-56	
5	2000	59-69	53-58	
6	2002	61-71	55-60	
7	2004	63-73	57-62	51-56
8	2006	65-75	59-64	53-58
9	2008	67-77	61-66	55-60
10	2010	69-79	63-68	57-62
11	2012	71-81	65-70	59-64
12	2014	73-83	67-72	61-66
13	2016	75-85	69-74	63-68

Notes: Older and younger individuals are observed in each wave and cohort because spouses of respondents are also included in the survey regardless of age, but only the ages of the primary eligible spouses are displayed. Grayed boxes indicate years that are not included in the analysis because the majority of respondents were younger than the full retirement age.

Model

This thesis examines income relative to poverty using an ordinary least squares model, which will estimate the marginal effect of early Social Security retirement benefit receipt on income. Household income is used to measure poverty consistent with how means-tested government programs assess eligibility. The federal poverty line is adjusted every year, and thus it varies depending on the year in which income is observed. The income to poverty ratio is constructed based on household income, the number of people in the household, and the appropriate poverty threshold for each particular year and size of household.

The key independent variable is an indicator of whether or not a woman or her spouse received Social Security between age 62 and the worker's full retirement age (in months). For those born in 1937 or earlier, full retirement age is 65. For those born between 1938 and 1942,

full retirement age increased by 2 months for each year of birth. For those born between 1943 and 1954 (which covers the rest of the sample), full retirement age is 66.

To control for variation in prior income and work history, I include usual work hours, predicted household Social Security retirement income, and retirement indicators. Usual work hours is a continuous variable that is set to 0 if the respondent is not working. Respondents missing usual work hours are excluded. For 1992, 1998, 2004, and 2010, the HRS constructed prospective Social Security wealth measures for pre-retirees based on employment and earnings records. I use the household-level predicted Social Security retirement income constructed by RAND, which includes retirement benefits, spousal benefits, and survival benefits for the respondent and their spouse. Because it only includes respondents who have not started receiving Social Security benefits, I include it in the first interview period for each cohort only. These predicted retirement income measures should control for all earnings history prior to the first interview. Finally, I include an indicator for whether the respondent considers herself “retired” in later waves, which is separate from Social Security receipt.

I include an indicator of whether the respondent was a caregiver during the first interview period. Caregiving includes any unpaid care to spouses, parents, or grandchildren. In the initial cohort, there is no information about care provided to spouses to include, but in later cohorts it includes assistance with basic personal needs or activities of daily living (ADLs) and instrumental activities of daily living (IADLs). ADLs include dressing, eating, and bathing while IADLs cover a broader spectrum of assistance with errands, household chores, and transportation. The HRS asks who provided help with these activities, if anyone; if the respondent’s spouse names them, I count the respondent as a caregiver. Parents include the

respondent's parents as well as the spouse's parents, and care for any of these parents includes assistance with ADLs or IADLs. The HRS asks about the hours of care given per year to grandchildren. The HRS does not ask about unpaid care given to adult children or other non-family members, so these types of caregiving are not included in my model.

Other controls include health, marital status, number of children, and age. Health plays an important role in employment and retirement decisions; poor health can also increase the likelihood of experiencing poverty by exhausting a person's savings or decreasing their ability to take on additional employment in retirement. Self-reported measures of health have been shown to be inconsistent and subjective both between and within individuals. I thus include number of ADLs, number of IADLs, number of conditions, a mental health score, and indicators for having a BMI above 30 or ever smoking. The first wave did not ask as many questions about health, so in that model I use a self-reported health status rather than ADLs or IADLs. For marital status, I include widowed; divorced or separated; never married; and married or partnered (excluded category). I also include age and number of children ever born.

The model uses random effects rather than fixed effects because the key independent variable does not vary over time. The HRS includes a rich set of variables to control for individual characteristics that could influence the key independent and dependent variables. Thus, I also control for unchanging characteristics among older women including education, race, and employment history. I model each cohort separately due to changes in variables and the economy that could bias my results. Additionally, the initial cohort contains a larger sample with different ages than the later cohorts.

$$\begin{aligned}
& \text{income relative to poverty}_{it} \\
&= \beta_0 + \beta_1 \text{household early receipt of SS benefits}_i + \beta_2 \text{caregiver}_{i1} \\
&+ \beta_3 \text{health}_{it} + \beta_4 \text{health}_{i1} + \beta_5 \text{marital status}_{it} + \beta_6 \text{marital status}_{i1} \\
&+ \beta_7 \text{age}_{it} + \beta_8 \text{age}_{i1} + \beta_9 \text{education}_i + \beta_{10} \text{race}_i + \beta_{11} \text{work hours}_{i1} \\
&+ \beta_{12} \text{work hours}_{it} + \beta_{13} \text{predicted household SS income}_{i1} + \beta_{14} \text{retired}_{it} \\
&+ \beta_{15} \text{number of children}_i + u_{it} + \varepsilon_{it}
\end{aligned}$$

VI. DESCRIPTIVE STATISTICS

Table VI.1 shows the baseline characteristics of the individuals included in the model, together and by cohort. Across all three cohorts, the average age in the first period was 55, and 85 percent were white. Just under half of the sample (48 percent) had some college or a college degree, and almost three-quarters (72 percent) were married or living with their partner. Only 14 percent reported being in fair or poor health and the mean number of chronic health conditions was 1.1 (out of 8 conditions: hypertension, diabetes, cancer, lung disease, heart problems, stroke, psychological problems, and arthritis). In the first period, about 7 percent of the sample provided assistance with activities of daily living (ADLs) to one of their parents or a spouse's parent.

The cohorts were similar in many respects, though they differed in the ages included due to the survey's design. The initial cohort sampled individuals age 51 to 61 in 1992, while the war babies and early baby boomers cohorts sampled individuals age 51 to 56 (in 1998 and 2004, respectively). The later cohorts also had higher levels of education, and were more likely to provide care to a parent or grandchild (instrumental activities of daily living or IADLs and care to grandchildren were not asked about in the first wave). The appendix includes full baseline characteristics of women by cohort and by whether or not they received Social Security retirement benefits early (Appendix Tables A.1-A.2).

In the second period examined, 12 years after the initial interview, the average age was 68 (Table VI.2). By design, all the individuals in the analysis sample had already reached their full retirement age. Although still in the majority, fewer women were married or living with their partner (63 percent), and 15 percent were widowed. About one in five women reported being in fair or poor health and the average number of chronic conditions was 2.1, both increases from the

Table VI.1. Baseline characteristics

Variable	All three cohorts	Initial cohort	War babies	Early baby boomers
Female	100.0	100.0	100.0	100.0
Age (mean)	54.8	55.8	53.0	54.6
Caregiving	21.5	6.0	40.0	46.1
Provided care (IADL or ADL) to parent or spouse's parent	N/A	N/A	26.7	28.1
Provided care (ADL only) to parent or spouse's parent	6.9	6.0	8.1	8.1
Provided care to grandchild or great-grandchild	N/A	N/A	13.6	20.8
Provided care to spouse	N/A	N/A	3.2	0.7
Less than HS	15.2	18.9	11.3	8.5
HS or GED	36.7	42.0	31.6	25.1
Some college or college degree	48.1	39.1	57.2	66.4
White	85.4	87.6	84.0	78.8
Black	10.4	9.3	10.9	13.8
Other race	4.3	3.1	5.1	7.4
Married or partnered	72.3	76.8	67.9	62.3
Divorced	19.0	15.1	22.8	27.1
Widowed	4.3	4.6	3.6	4.9
Never married	4.4	3.4	5.7	5.8
Number of children ever born (mean)	2.7	3.0	2.4	2.3
Usual work hours (mean)	27.7	24.8	31.5	31.7
Fair or poor health (self-reported)	13.8	12.6	14.2	18.9
Number of chronic conditions (mean)	1.1	1.1	1.0	1.2
Obese	24.5	21.5	27.6	30.4
Ever smoked	49.4	50.7	50.3	41.1
Depression score (mean)	0.6	0.0	1.4	1.3
Predicted lifetime Social Security income (\$)				
... if retired at 62	–	133,821	135,054	213,852
...if retired at FRA	–	157,459	152,325	228,976
... if retired at 70	–	159,058	165,675	236,017
Year of survey		1992	1998	2004
Sample size	3,581	2,788	533	260

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: ADLs = activities of daily living; BMI = body-mass index; GED = general educational development; HS = high school; IADLs = instrumental activities of daily living. N/A = not available due to limitations in the data. Average predicted lifetime Social Security income across years not displayed because it is measured in nominal terms.

baseline survey. About 16 percent of the sample received Social Security retirement benefits at or after their full retirement age, and 76 percent of women or their spouses received benefits before their full retirement age. Overall, about 5 percent of households were below the poverty line in the second period.

There were large observed differences in the cohorts. More than 80 percent of the initial cohort received benefits early, compared to only 55 percent of the early baby boomers cohort. Women in the initial cohort were more likely to consider themselves retired (64 percent) compared to women in the later cohorts (25 and 7 percent). Household income and assets, which are not inflation-adjusted because the years are not pooled in the analysis, were higher in later cohorts.

In later periods, 12 to 18 years after entering the survey, there are striking differences between women who received Social Security retirement benefits early and those who did not (Table VI.3). Women who waited to claim benefits until their full retirement age or later were more likely to be a caregiver, have a college degree, be non-white, be divorced or never married, and be below the poverty threshold but have a higher average income to poverty ratio than women who received benefits early. The difference in poverty rates increases over time, from 3.3 to 8.9 percentage points between 12 and 18 years after survey entry. The appendix includes full characteristics of the initial cohort by year and by whether or not they received Social Security retirement benefits early (Appendix Tables A.3-A.4).

The correlation coefficient between receiving SS retirement benefits early and experiencing poverty 12 years after entering the survey sample is -0.05. Not controlling for any other characteristics, this weak relationship is expected because the purpose of Social Security benefits

Table VI.2. Characteristics 12 years after survey entry

	Women	Initial cohort	War babies	Early baby boomers
Age (mean)	68.4	69.3	67.0	66.8
Married with partner	63.3	66.4	50.0	64.8
Divorced	16.7	12.4	28.2	21.3
Widowed	15.2	17.8	12.9	7.7
Never married	4.8	3.3	8.8	6.2
Usual work hours	8.3	6.7	9.4	13.2
Considered retired	47.2	64.2	24.8	6.8
Fair or poor health (self-reported)	20.3	22.2	19.3	14.1
Number of ADLs (mean)	0.2	0.2	0.2	0.1
Number of IADLs (mean)	0.2	0.3	0.3	0.1
Number of chronic conditions (mean)	2.1	2.1	2.3	2.1
Obese	30.6	27.0	37.0	37.6
Ever smoked	49.6	50.5	53.2	42.8
Depression score (mean)	1.2	1.3	1.0	1.1
Key variables				
Respondent or spouse received SS benefits before FRA (early receipt)	75.5	81.4	74.6	54.8
Received SS benefits at or after FRA	16.1	14.7	15.3	21.8
Did not begin receiving SS benefits	8.4	3.8	10.2	23.4
Age at which respondent started receiving SS benefits (if ever)	63.5	63.3	63.8	64.4
Households below poverty threshold	5.0	5.2	5.7	3.6
Household income to poverty ratio (mean)	5.98	5.41	6.72	7.31
Household income (mean)	–	56,293	83,286	101,320
Household assets (mean)	–	524,690	638,232	518,102
Survey year		2004	2010	2016
Sample size	2,465	2,009	196	260

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: ADLs = activities of daily living; BMI = body-mass index; FRA = full retirement age; IADLs = instrumental activities of daily living; SS benefits = Social Security retirement benefits. Average household income and assets across years not displayed because they are measured in nominal terms.

is to reduce the prevalence of poverty among older households. Having access to this income early can lift low-income households out of poverty (leading to a negative correlation) or can have long-term impacts on poverty by reducing income (leading to a positive correlation).

However, since this time period only observes women a few years after their full retirement age,

Table VI.3. Characteristics by receipt of early Social Security retirement benefits over time

	Received early	Did not receive early	Received early	Did not receive early	Received early	Did not receive early	Received early	Did not receive early
	12 years		14 years		16 years		18 years	
Age received SS benefits (if ever)	63.0	66.0	63.1	65.9	63.1	66.1	63.1	66.3
Caregiver	18.3	25.2	15.1	19.3	17.4	21.9	18.3	21.5
Less than HS	15.8	15.3	16.9	20.5	14.9	19.2	14.0	18.9
HS or GED	42.4	21.9	42.2	26.3	41.6	26.4	41.2	25.7
Some college or college degree	41.8	62.8	40.9	53.2	43.5	54.4	44.8	55.4
White	88.8	82.1	88.8	77.9	88.6	79.1	88.7	78.7
Black	7.7	12.1	7.9	16.5	7.7	14.6	7.7	15.7
Other race	3.6	5.8	3.2	5.6	3.6	6.3	3.6	5.6
Married or partnered	66.5	53.2	65.1	47.4	62.9	43.6	60.1	41.3
Divorced	13.5	26.6	12.5	26.8	13.8	27.1	13.0	26.7
Widowed	15.5	14.2	18.6	17.8	19.4	19.1	22.6	20.8
Never married	4.4	6.0	3.8	7.9	3.9	10.2	4.3	11.1
Household below poverty threshold	4.3	7.0	4.6	11.1	4.5	10.5	4.6	13.5
Household income to poverty ratio	5.6	7.1	5.1	5.7	5.2	7.0	4.8	5.6
Sample size	1,932	533	2,238	526	2,409	576	2,222	521

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: FRA = full retirement age; SS benefits = Social Security retirement benefit

analyzing the longer-term relationship between early benefits receipt and poverty will allow me to examine changes over time and interactions with other contributors to low economic status.

VII. EMPIRICAL ANALYSIS

Using ordinary least squares models, I examine the relationship between early Social Security retirement benefit receipt and household income to poverty ratios. By controlling for differences in earnings history through predicted Social Security wealth as well as other characteristics that could influence income later in life such as marital status and health, I attempt to isolate the relationship between early retirement and later income. The results support my hypothesis that there is a negative relationship between receiving Social Security retirement benefits early and income scaled to the poverty ratio later in life, though it does not necessarily intensify over time, and it may be too early or the data may be too limited to tell whether older women in the war babies or early baby boomers cohorts will experience the same patterns as the initial HRS cohort.

Initial cohort

Table VII.1 shows the results of my regression estimates for the initial cohort in the 12 to 24 years after survey entry. The top half of the table includes estimates of the relationships between baseline characteristics and subsequent household income to poverty ratios, and the bottom half of the table includes characteristics concurrently measured with the outcome. The variance in baseline characteristics is partially due to changes in the sample (as women age into the sample or leave the survey), but there are still several consistent patterns. Of the baseline characteristics, education and race are consistently associated with household income to poverty ratios. Women with college degrees have significantly higher income to poverty ratios than women with less than high school or a GED (about 200 to 300 percentage points higher, since an income to poverty ratio of 100 is normalized as 1 here). Women who are black or otherwise non-white have

significantly lower income to poverty ratios (about 100 percentage points). Caregiving, number of children, and marital status at baseline do not have strong relationships with income to poverty, and self-reported poor health is the only health variable with a moderately consistent (and negative) relationship with income to poverty.

Table VII.1. Initial cohort outcomes

Survey year	2002	2004	2006	2010	2012	2014	2016
Baseline characteristic							
Age	0.21 (0.60)	-0.20 (0.35)	-0.33 (0.22)	-0.29 (0.36)	-0.26 (0.22)	0.57 (0.50)	-0.57** (0.22)
Caregiver	-0.12 (0.58)	0.56 (0.84)	-1.04*** (0.36)	0.18 (0.74)	0.23 (0.79)	-0.16 (0.73)	1.14 (1.01)
HS or GED	0.41 (0.35)	0.20 (0.27)	0.78 (0.57)	0.025 (0.26)	0.66*** (0.20)	0.62** (0.29)	0.15 (0.42)
College	3.76*** (0.69)	3.23*** (0.58)	2.74*** (0.41)	2.48*** (0.54)	2.61*** (0.34)	2.79*** (0.43)	2.17*** (0.47)
Black	-0.36 (0.30)	-1.12*** (0.34)	-0.79** (0.37)	-1.01*** (0.28)	-0.61** (0.26)	-0.85*** (0.30)	-0.64** (0.24)
Other race	-1.02** (0.48)	-0.55 (0.81)	-0.23 (0.51)	-0.27 (0.90)	-0.40 (0.41)	-0.50 (0.72)	-0.84* (0.47)
Number of children	-0.16 (0.12)	-0.073 (0.089)	0.024 (0.078)	0.0071 (0.077)	0.025 (0.072)	-0.097 (0.096)	-0.073 (0.065)
Widowed	0.047 (0.74)	1.13 (2.14)	0.32 (0.47)	-0.25 (1.02)	0.26 (0.46)	0.44 (1.18)	-0.33 (0.65)
Divorced	0.061 (0.61)	0.035 (0.98)	0.034 (0.38)	-0.58 (0.48)	0.57** (0.27)	-0.079 (0.64)	0.27 (0.74)
Never married	-0.15 (1.00)	-0.31 (1.53)	3.56 (2.44)	-3.22 (2.59)	1.40 (1.17)	-0.43 (1.09)	-0.062 (0.93)
Usual work hours	-0.012 (0.0095)	-0.0077 (0.0077)	0.0061 (0.0095)	0.0070 (0.0058)	-0.0021 (0.0045)	0.0069 (0.0073)	-0.0057 (0.0078)
Poor health	-1.36* (0.70)	-0.39 (0.29)	0.14 (0.68)	-0.53* (0.30)	-0.46** (0.22)	-0.86** (0.33)	-1.08*** (0.34)
Conditions	0.25 (0.23)	0.10 (0.17)	0.26 (0.29)	-0.047 (0.14)	-0.020 (0.13)	-0.040 (0.16)	0.15 (0.19)
BMI	-0.76* (0.43)	-0.20 (0.35)	-0.23 (0.33)	-0.86* (0.51)	-0.32 (0.26)	-0.35 (0.43)	-0.84*** (0.27)
Smoke	-7.80 (7.57)	1.30 (1.42)	1.30* (0.77)	2.25*** (0.79)	1.27** (0.47)	0.85 (1.13)	-0.022 (0.92)
Mental health	-0.39 (0.40)	-0.18 (0.30)	0.59 (1.26)	-0.70 (0.63)	-0.25 (0.36)	-0.13 (0.67)	3.57 (3.39)

Survey year	2002	2004	2006	2010	2012	2014	2016
Current characteristic							
Early SS benefits	-0.55 (0.43)	-0.46 (0.39)	-1.85** (0.70)	-1.03** (0.44)	-0.88*** (0.27)	-0.72** (0.27)	-1.07** (0.42)
Age	-0.30 (0.57)	0.076 (0.32)	0.28 (0.24)	0.26 (0.40)	0.16 (0.22)	-0.66 (0.53)	0.43** (0.21)
Widowed	-1.44** (0.68)	-0.15 (1.59)	-1.99*** (0.31)	-0.24 (0.87)	-1.51*** (0.26)	-0.97* (0.52)	-1.29** (0.53)
Divorced	-1.96*** (0.52)	-1.57** (0.71)	-2.50*** (0.35)	-1.44** (0.56)	-2.35*** (0.36)	-2.08*** (0.43)	-1.88** (0.73)
Never married	-2.62*** (0.97)	-1.93 (1.36)	-1.75 (1.41)	1.77 (2.73)	-2.22* (1.26)	-2.38*** (0.83)	-1.67* (0.99)
Usual work hours	0.063*** (0.018)	0.069* (0.036)	0.031** (0.014)	0.069 (0.055)	0.041** (0.019)	0.046** (0.020)	0.029 (0.020)
Retired	-0.87 (0.65)	0.21 (0.83)	-0.61* (0.35)	-0.25 (0.70)	-0.87* (0.47)	-0.75 (0.50)	-0.24 (0.56)
Poor health	0.039 (0.62)	-0.84** (0.32)	-0.83*** (0.18)	0.44 (0.75)	-0.086 (0.38)	0.16 (0.43)	-0.54 (0.40)
ADLs	0.30 (0.49)	-0.11 (0.13)	-0.093 (0.26)	0.55 (0.53)	0.013 (0.081)	0.11 (0.13)	-0.12 (0.13)
IADLs	0.040 (0.22)	0.049 (0.16)	-0.12 (0.24)	-0.21 (0.29)	-0.047 (0.083)	-0.015 (0.12)	0.0026 (0.16)
Conditions	-0.18 (0.19)	-0.21 (0.24)	0.11 (0.18)	-0.30 (0.25)	-0.066 (0.084)	0.047 (0.13)	0.12 (0.18)
BMI	0.23 (0.55)	-0.23 (0.33)	-0.45 (0.37)	0.39 (0.70)	0.21 (0.29)	-0.45 (0.37)	-0.043 (0.42)
Smoke	7.85 (7.69)	-1.73 (1.36)	-0.54 (0.81)	-1.76** (0.68)	-0.99** (0.47)	-0.46 (1.05)	0.84 (0.89)
Mental health	0.022 (0.11)	0.068 (0.13)	-0.031 (0.11)	-0.23** (0.11)	-0.12** (0.053)	-0.26*** (0.086)	-0.12* (0.072)
Predicted SS income	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	2,009	2,406	2,495	2,291	2,146	1,916	1,638
R-squared	0.088	0.038	0.095	0.085	0.139	0.079	0.094

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: benefits = Social Security retirement benefit. Robust standard errors in parentheses.

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

In the later periods, other characteristics have strong relationships with income relative to poverty. Early Social Security benefit receipt is negatively associated with income to poverty 16 to 24 years after entering the survey. In 2008 (16 years), women who received Social Security

retirement benefits early had 185 percentage points lower income to poverty ratios than those who did not receive benefits early. Although in later years the relationship is less negative, it is still statistically significant. Marital status has a consistent relationship with income to poverty, with women who are divorced experiencing much lower ratios (144 to 250) and women who are widowed or who never married also generally having lower ratios compared to still-married women. Continuing to work (usual work hours) has a small positive relationship with income to poverty in most years, while poor health or mental health have moderate negative relationships with income to poverty, though the signs change between years, indicating a more nuanced or varying relationship.

Subsequent cohorts

Table VII.2 shows the regression results for the war babies and early baby boomers cohorts. There are few consistent patterns in the relationships between baseline characteristics and income to poverty ratios. While college education has a positive relationship with income to poverty, it is only statistically significant for the early baby boomers cohort. Similarly, women who are black or otherwise non-white have lower income to poverty ratios, though the relationship is only statistically significant in later years. Most of the marital status and health characteristics change signs between years or have no statistically significant relationship with income to poverty ratios.

Some patterns become clearer between current characteristics and income to poverty ratios. Divorcees and widows have significantly lower income to poverty ratios than still-married women. Poor health is also negatively related to income to poverty for war babies, especially in

later years. Although only statistically significant for war babies in 2012, there is a consistently negative relationship between receiving Social Security retirement benefits early and income relative to poverty. Early baby boomers have a particularly large negative relationship, though it is not statistically significant.

Table VII.2. Subsequent cohort outcomes

Survey year	War babies				Early baby boomers
	2010	2012	2014	2016	2016
Baseline characteristic	1998	1998	1998	1998	2004
Age	0.21 (1.53)	0.81 (0.63)	0.17 (0.73)	0.29 (0.47)	-0.43 (1.25)
Caregiver	0.60 (1.66)	0.52 (0.54)	-1.10 (0.89)	-0.13 (0.67)	-2.27* (1.28)
HS or GED	-1.34 (2.18)	-0.71 (1.04)	-0.41 (1.35)	0.022 (1.11)	2.34 (1.77)
College	2.49 (2.24)	0.91 (0.97)	1.78* (1.05)	1.49 (0.99)	3.07** (1.35)
Black	-1.22 (1.35)	-0.77 (0.52)	-1.65** (0.75)	-1.78*** (0.63)	-1.74 (1.13)
Other race	2.06 (3.05)	-1.29 (0.83)	-0.39 (1.43)	-1.20 (0.83)	1.44 (1.55)
Number of children	-0.23 (0.36)	-0.23 (0.17)	-0.65 (0.40)	-0.19 (0.19)	-0.088 (0.40)
Widowed	4.82 (4.24)	1.12 (0.84)	-1.27 (2.23)	3.07** (1.36)	5.07 (3.60)
Divorced	7.59** (3.74)	0.82 (0.96)	1.25 (1.79)	-0.028 (0.91)	3.99 (2.51)
Never married	-5.51* (2.76)	-1.31 (1.44)	-2.78 (1.93)	-4.05*** (1.33)	0.47 (2.49)
Usual work hours	0.039 (0.047)	-0.00059 (0.020)	0.031 (0.024)	0.026 (0.018)	0.035 (0.040)
Poor health	-0.95 (1.36)	-0.35 (0.70)	-0.051 (1.03)	1.28 (0.80)	1.36 (1.80)
Conditions	-0.33 (0.49)	-0.44 (0.28)	-0.21 (0.37)	-0.33 (0.28)	-0.16 (0.52)
BMI	-0.41 (1.93)	-0.52 (0.66)	-0.84 (0.66)	-1.13 (0.69)	-0.47 (1.12)
Smoke	2.27 (4.00)	-5.02*** (1.66)	2.55 (2.37)	0.015 (1.39)	-1.14 (0.89)
Mental health	0.62 (0.46)	-0.18* (0.094)	-0.16 (0.21)	-0.17 (0.16)	-0.85* (0.49)

Survey year	War babies				Early baby boomers
	2010	2012	2014	2016	2016
Current characteristic					
Early SS retirement benefit receipt	-1.78 (2.53)	-1.17* (0.66)	-2.48 (1.71)	-1.33 (0.89)	-3.00 (2.05)
Age	-0.34 (1.78)	-0.61 (0.61)	0.071 (0.70)	-0.15 (0.42)	1.64 (1.61)
Widowed	-5.41** (2.05)	-2.83*** (0.65)	-1.19 (2.14)	-2.99*** (0.79)	-3.11 (2.49)
Divorced	-11.9*** (3.83)	-3.22*** (0.73)	-3.78** (1.56)	-2.21** (0.92)	-4.55** (1.80)
Never married	2.17 (3.59)	-1.03 (1.37)	-2.24 (1.35)	2.01* (1.06)	-0.39 (1.61)
Usual work hours	-0.027 (0.046)	0.037 (0.028)	0.0037 (0.034)	0.012 (0.036)	-0.095* (0.054)
Retired	-0.95 (1.60)	-0.36 (0.90)	-1.50 (1.19)	-2.57** (1.03)	-1.35 (1.34)
Poor health	-0.29 (1.42)	-0.89 (0.58)	-3.33*** (1.14)	-1.58*** (0.54)	0.40 (1.65)
ADLs	-0.22 (0.52)	0.075 (0.33)	0.92 (1.06)	0.63* (0.32)	0.23 (0.78)
IADLs	-0.35 (0.71)	0.42 (0.36)	2.39 (1.46)	-0.45* (0.26)	-1.17 (0.73)
Conditions	0.84 (1.03)	0.082 (0.28)	-0.37 (0.46)	0.57 (0.59)	-0.35 (0.67)
BMI	-2.14 (1.87)	-0.18 (0.70)	-0.80 (0.76)	-1.03 (0.90)	-0.14 (1.08)
Smoke	-0.78 (2.90)	5.21*** (1.67)	-0.40 (2.62)	1.47 (1.58)	-
Mental health	-0.75 (0.49)	-0.17 (0.14)	-0.041 (0.36)	-0.40* (0.23)	0.91** (0.44)
Predicted SS income	Yes	Yes	Yes	Yes	Yes
Observations	191	351	483	446	258
R-squared	0.175	0.266	0.153	0.175	0.283

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: benefits = Social Security retirement benefit. Robust standard errors in parentheses.

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

The small sample size of these later cohorts limits the statistical power of these results and may make it difficult to determine the relationship between early Social Security retirement benefit receipt and poverty in the long term.

Subgroup analysis

I also examine the relationship between early Social Security retirement benefit receipt and income in later life by subgroups that may be associated with economic disadvantages. Previous research has shown that caregiving may intensify the effects of negative economic events such as retirement and declining health (Wakabayashi & Donato, 2006). I only examine the initial cohort due to concerns about further splitting the small sample sizes in the later cohorts. I include caregiving, (current) marital status, education, race, and health; the analyses include the same control variables, though only the relationship between early retirement and income is presented (Table VII.3).

In the first outcome period (2004), both early retirement and caregiving have insignificant negative relationships with later income in the full sample. Among caregivers, however, early retirement is associated with a 300 percentage point lower income to poverty ratio, controlling for other characteristics. Similarly, women who were never married, had less than a high school education, or were black or another non-white race have lower income to poverty ratios if they received Social Security retirement benefits early. The opposite is true for women who reported fair or poor health in the initial survey, though in later years the relationship becomes negative. In 2006, this is true for women who were never married, married, or black. Non-white women have particularly negative relationships in later years, though they are not always statistically significant. The pattern is not as clear in later years (2008-2016), though the full sample shows a negative relationship between early receipt and income in those years.

Table VII.3. Coefficients on receipt of early Social Security retirement benefits' relationship with later income

Survey year	2004	2006	2008	2010	2012	2014	2016
Baseline characteristics							
Caregiving	-3.00** (1.45)	-0.32 (0.48)	2.27 (2.44)	-0.55 (0.43)	-0.16 (0.72)	-1.92** (0.74)	-1.86 (2.82)
No caregiving	-0.32 (0.48)	2.27 (2.44)	-0.55 (0.43)	-0.16 (0.72)	-1.92** (0.74)	-1.86 (2.82)	-0.96** (0.44)
Less than HS	-1.45** (0.61)	-0.57 (0.35)	-0.66** (0.31)	-0.27 (0.27)	-0.92** (0.36)	-0.78** (0.32)	-0.69 (0.48)
HS or GED	-0.14 (0.34)	-0.77 (0.61)	-2.94 (1.94)	-0.87** (0.42)	-0.040 (0.37)	-0.41 (0.25)	0.035 (0.36)
College	-0.083 (0.93)	-0.15 (1.01)	-1.50** (0.63)	-1.45 (0.90)	-1.28** (0.53)	-0.85 (0.52)	-1.52** (0.68)
White	-0.34 (0.50)	-0.40 (0.44)	-1.98** (0.86)	-0.89* (0.52)	-0.83*** (0.29)	-0.67* (0.33)	-1.13** (0.49)
Black	-1.30** (0.59)	-0.56*** (0.20)	-0.94*** (0.31)	-1.21*** (0.33)	-0.78* (0.39)	-0.82** (0.34)	-0.55 (0.36)
Other race	-1.39* (0.78)	-1.26 (1.83)	-2.67* (1.35)	-4.57** (2.02)	-1.97 (1.18)	-3.38* (1.91)	-0.20 (2.28)
Fair or poor health	0.47** (0.23)	-0.23 (0.49)	-3.44 (2.06)	-0.46 (0.86)	-0.49 (0.55)	-0.40 (0.58)	-0.65** (0.31)
Excellent, very good, or good health	-0.62 (0.51)	-0.43 (0.47)	-1.30*** (0.41)	-1.06** (0.53)	-0.94*** (0.31)	-0.80** (0.32)	-1.15** (0.47)
Current characteristics							
Widowed	-0.42 (0.54)	2.21 (1.89)	-0.74** (0.32)	0.45 (1.19)	-0.16 (0.29)	0.39 (0.78)	-0.074 (0.41)
Divorced	-0.15 (0.35)	0.24 (0.71)	-0.79** (0.34)	-0.93** (0.35)	-0.66** (0.27)	-0.62 (0.49)	-1.63 (1.01)
Married or partnered	-0.65 (0.70)	-1.83** (0.73)	-1.68** (0.63)	-2.31*** (0.70)	-1.09** (0.50)	-1.54*** (0.50)	-1.48 (1.05)
Never married	-1.93** (0.81)	-1.11* (0.59)	4.02 (5.26)	-0.80 (0.59)	-2.30 (1.78)	-0.25 (0.35)	0.54 (0.79)
Fair or poor health	0.86 (1.20)	0.070 (0.37)	-1.74 (1.36)	-0.59 (0.62)	-0.29 (0.33)	0.63** (0.31)	-0.083 (0.57)
Excellent, very good, or good health	-0.78 (0.51)	-0.46 (0.56)	-1.44*** (0.48)	-1.28** (0.57)	-1.16*** (0.34)	-1.16*** (0.39)	-1.46** (0.64)

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: GED = general educational development; HS = high school.

Takeaways from empirical evidence

In this chapter I presented results over several years. There is no significant relationship between early Social Security retirement benefits and income to poverty ratios 12 years into the survey, when women were on average 69 years old. In 2008-2016, there is a consistently significant negative relationship for the initial cohort, indicating income to poverty ratios between 72 to 185 percentage points lower than for women who did not receive benefits early, controlling for other characteristics.

The later cohorts consistently have negative relationships between early retirement and income, though they are not statistically significant and have fewer later years to examine. The women were on average only 67 years old 12 years into the survey, two years younger compared to the initial cohort, and the samples are much smaller, making the results difficult to compare.

Finally, there are interesting differences in the subgroups in the first outcome years. Women who provided care to a parent in the initial survey year and received Social Security retirement benefits early were more likely to have lower income to poverty ratios 12 years into the survey, compared to those who did not receive benefits early. This was also true among women with characteristics associated with disadvantage, including race, education, and marital status, even when the full sample did not have the same result. Among women who reported poor or fair health in 1992, those who received benefits early had higher income to poverty ratios in 2004, but lower ratios in later years.

VIII. POLICY DISCUSSION

My findings indicate that receiving Social Security retirement benefits before full retirement age is negatively associated with income later in life after controlling for individual characteristics both at entry to the survey and at the time of outcome measurement. This finding persists over the course of the latter 10 years available in the data. Additionally, being nonwhite, having poor health before retirement, not attending college, becoming widowed or divorced, and having a poor mental health score are consistently associated with lower income as the cohort of women ages into their 70s and 80s. These findings suggest that receiving Social Security retirement benefits early may have long-term negative consequences for income inequality, particularly for black women and women reporting good health before retirement. Although being unmarried was associated with lower income compared to being married in the full model, among those who were married at the time of outcome measure, early Social Security retirement benefit receipt was consistently associated with lower incomes. This could reflect the fact that income is measured at the household level, and married women who are splitting lower retirement benefits (as compared to those who started receiving benefits at or after full retirement age) are relatively more disadvantaged than unmarried women who receive lower retirement benefits for themselves.

There are several policy implications resulting from these findings. First, there are many proposals to reform Social Security aimed at either alleviating poverty or increasing the program's solvency, ranging from increasing benefits to turning the entitlement into a personal savings account under which the earner has the option to choose investment strategies. My findings show an association for older women between income and "disadvantages" including

race, education, marital status, poor health, and caregiving. Given the systemic barriers to income equality that have persisted throughout several generations in the U.S., particularly for minorities and women, my results do not support a change that would benefit higher earners and endanger the wellbeing of lower earners such as switching to a private savings plan or subjecting benefits to market risks.

There are several options for increasing Social Security benefits for individuals most in need of financial assistance, which my results support. Increasing survivor benefits or oldest old's benefits may especially help widows. However, my results indicate that marital status – or indeed any personal characteristic – alone may not drive differences in incomes or poverty rates. Introducing minimum benefit plans or reforming special minimum benefits or SSI to focus on low-income older adults would benefit those in the greatest need, including those who outlive their savings.

Caregiving credits may increase equity in initial benefit allocation, but my findings do not strongly support the need for additional support for former caregivers. However, the data does not include all types of caregiving, including care to children, and it only includes one point-in-time measure. In practice, a caregiver credit would increase benefits for people who reduced their work for long periods of time in order to provide care – and not necessarily those who provided care for a shorter period of time or found a different balance of formal work and informal care. Instead, my findings support the need for additional financial support for older women with any disadvantage – whether that disadvantage is from their marital status, race, health, education, or earnings history. Receiving reduced Social Security retirement benefits (by taking them early) was associated with lower income across many such characteristics.

Other policies aimed at alleviating poverty could either help or hurt older adults. Universal basic income may appeal to younger workers, but may hurt older adults who may have financial needs beyond a “universal” amount designed to help everyone. Paid family leave policies, on the other hand, could support middle-age workers at a crucial working age. Rather than providing caregiving credits, which would delay financial support until the worker reached retirement age, paid family leave could help workers stay in the labor force and maintain their earnings histories in order to qualify for their own retirement benefits. Expanding long-term services and supports (LTSS) is also an avenue to support both middle-age and older adults, including those who currently provide care to parents or those who do not have the flexibility to stop working to provide such care. Coverage could be expanded under Medicaid or funded through a social insurance program similar to Medicaid or Medicare to ensure home and community-based services (HCBS) are available to individuals with disabilities and functional limitations that may come with age. This would both reduce the need for additional financial assistance and the financial and nonpecuniary costs of institutionalization.

IX. CONCLUSION

This thesis sought to examine the relationship between early receipt of Social Security retirement benefits and income later in life. I focused on women, who are more likely to experience poverty and widowhood in older age than men. My analysis used longitudinal data to examine outcomes for up to 24 years. I found a significant negative relationship, as expected, in the latest years of my data with income to poverty ratios between 72 to 185 percentage points lower for women who received benefits early, controlling for other characteristics. In earlier years, I found significant negative relationships among certain disadvantaged subgroups, including black women, former caregivers, and those with less education.

The small sample size and limited measures available, particularly of health and caregiving, mean that it is possible that there are relationships in the real world that I am unable to examine in my data. In particular, the latter two cohorts I examine are quite small and thus I am unlikely to observe a statistically significant relationship unless it is very large. Future research could examine alternate data sources with more comprehensive measures of health and caregiving throughout a woman's working years.

There could be endogeneity between economic conditions or other factors at the time of Social Security receipt that influence both the decision to retire and income later in life (such as a recession impacting both the retirement decision and income from private savings). Because I only have one large cohort, I am unable to fully generalize my findings to future generations due to differences in the aging population. Nevertheless, I do find interesting results that hold true for several years. Although the later cohorts are smaller, as the Baby Boomer generation continues to age it would be instructive to consider the effects of early retirement for this cohort in which

women were more likely to work. Other research areas include disentangling the effects on long-term poverty of older adults attributable to personal shocks such as changes in marital status or health, and to large-scale shocks such as recessions or (recently) pandemics.

Older adults in general are more vulnerable to experiencing poverty due to changes in the economy or their health than many others. The Coronavirus Disease 2019 (COVID-19) pandemic highlighted the fragility of the U.S. economy and health care system in ways that were unimaginable to the public. Other uncertainties abound particularly for older adults, including drastic changes in health and loss of income or family members. Older women, who take on many caregiving roles and have longer life expectancies than men, are more likely to face financial – not to mention emotional and psychological – burdens and to experience poverty as they age. The largest program intended to keep older adults out of poverty, Social Security, needs to be protected and bolstered now more than ever. My results suggest that benefits should be targeted at low-income adults regardless of the reason for their poverty, rather than, for example, reforms or credits targeted specifically at widows or caregivers. However, as healthcare expenses increase, covering LTSS and making care more affordable may help the current generation of older adults, as well as their children, avoid poverty. Other supportive policies aimed at keeping workers in the labor market, such as paid family leave, could go a long way in increasing economic security for multiple generations.

APPENDIX: ADDITIONAL TABLES

Table A.1. Baseline characteristics (received Social Security retirement benefits early)

Variable	All three cohorts	Initial cohort	War babies	Early baby boomers
Female	100.0	100.0	100.0	100.0
Age (mean)	54.9	55.7	53.1	54.6
Caregiving	19.3	5.9	39.9	49.7
Provided care (IADL or ADL) to parent or spouse's parent	N/A	N/A	25.2	32.0
Provided care (ADL only) to parent or spouse's parent	6.6	5.9	7.4	8.5
Provided care to grandchild or great-grandchild	N/A	N/A	14.3	20.8
Provided care to spouse	N/A	N/A	3.1	0.3
Less than HS	15.4	18.4	10.8	8.2
HS or GED	41.6	45.4	35.3	33.3
Some college or college degree	43.0	36.1	53.9	58.5
White	87.4	89.1	86.0	80.0
Black	9.2	8.2	9.8	14.8
Other race	3.4	2.8	4.2	5.2
Married or partnered	74.6	80.1	65.8	62.6
Divorced	17.4	13.3	24.3	25.5
Widowed	4.1	3.6	4.7	5.4
Never married	3.9	3.1	5.1	6.5
Number of children ever born (mean)	2.8	3.1	2.4	2.4
Usual work hours (mean)	26.5	23.5	31.7	31.7
Health				
Fair or poor health (self-reported)	13.1	12.0	12.3	22.1
Number of chronic conditions (mean)	1.1	1.1	1.1	1.2
Obese	24.0	21.1	27.9	32.3
Ever smoked	51.0	52.1	50.5	45.3
Depression score (mean)	0.5	0.0	1.4	1.2
Predicted lifetime Social Security income (\$)				
... if retired at 62	144,763	138,478	132,844	217,724
...if retired at FRA	166,840	163,207	151,086	233,038
... if retired at 70	173,411	165,748	166,618	241,396
Survey year		1992	1998	2004
Sample size	2,538	2,088	303	147

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: ADLs = activities of daily living; BMI = body-mass index; IADLs = instrumental activities of daily living. N/A = not available due to limitations in the data.

Table A.2. Baseline characteristics (did not receive Social Security retirement benefits early)

Variable	All three cohorts	Initial cohort	War babies	Early baby boomers
Female	100.0	100.0	100.0	100.0
Age (mean)	54.5	55.9	52.9	54.7
Caregiving	26.1	6.3	40.3	42.0
Provided care (IADL or ADL) to parent or spouse's parent	N/A	N/A	28.9	23.6
Provided care (ADL only) to parent or spouse's parent	7.6	6.3	8.9	7.7
Provided care to grandchild or great-grandchild	N/A	N/A	12.6	20.8
Provided care to spouse	N/A	N/A	3.3	1.1
Less than HS	14.9	20.2	12.0	8.9
HS or GED	26.6	31.4	26.3	15.7
Some college or college degree	58.5	48.4	61.7	75.4
White	81.2	82.9	81.1	77.5
Black	12.7	12.9	12.5	12.6
Other race	6.1	4.2	6.3	9.9
Married or partnered	67.4	66.7	70.8	61.9
Divorced	22.2	20.8	20.7	28.9
Widowed	4.9	8.0	2.0	4.2
Never married	5.4	4.6	6.6	5.0
Number of children ever born (mean)	2.6	2.9	2.4	2.2
Usual work hours (mean)	30.3	28.9	31.0	31.6
Health				
Fair or poor health (self-reported)	15.5	14.3	16.9	15.2
Number of chronic conditions (mean)	1.0	1.1	0.9	1.1
Obese	25.5	22.6	27.3	28.3
Ever smoked	46.1	46.5	50.1	36.4
Depression score (mean)	0.8	0.0	1.5	1.3
Predicted lifetime Social Security income (\$)				
... if retired at 62	142,806	119,336	138,143	209,395
...if retired at FRA	160,385	139,582	154,057	224,303
... if retired at 70	164,886	138,248	164,358	229,825
Survey year		1992	1998	2004
Sample size	1,043	700	230	113

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: ADLs = activities of daily living; BMI = body-mass index; IADLs = instrumental activities of daily living. N/A = not available due to limitations in the data.

Table A.3. Characteristics of initial cohort over time (received Social Security retirement benefits early)

	12 years	14 years	16 years	18 years	20 years	22 years	24 years
Age received SS benefits (if ever)	62.9	63.0	63.0	63.0	63.0	63.0	63.0
Caregiver	5.5	5.9	5.9	6.1	6.0	6.0	6.0
Less than HS	19.4	19.3	17.8	16.5	15.9	16.0	15.4
HS or GED	46.0	44.7	45.2	45.1	44.3	43.6	42.5
Some college or college degree	34.7	36.0	37.0	38.4	39.7	40.4	42.1
White	89.8	89.5	89.6	89.9	89.8	89.9	90.4
Black	7.3	7.7	7.5	7.4	7.4	7.1	6.9
Other race	2.9	2.8	2.9	2.7	2.8	3.0	2.7
Married or partnered	70.2	67.0	63.7	60.1	56.6	52.3	49.2
Divorced	9.3	10.2	10.7	10.4	10.1	9.7	10.0
Widowed	17.9	20.1	22.9	25.7	30.0	33.7	37.0
Never married	2.6	2.7	2.7	3.8	3.4	4.2	3.9
Household below poverty threshold	4.4	4.8	4.6	5.7	6.5	5.9	6.9
Household income to poverty ratio	5.3	5.1	4.8	4.5	4.1	4.5	4.4
Sample size	1,630	1,979	2,055	1,888	1,766	1,577	1,380

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: FRA = full retirement age; SS benefits = Social Security retirement benefit

Table A.4. Characteristics of initial cohort over time (did not receive Social Security retirement benefits early)

	12 years	14 years	16 years	18 years	20 years	22 years	24 years
Age received SS benefits (if ever)	65.7	65.8	65.8	65.8	65.9	66.0	65.8
Caregiver	6.7	6.7	7.0	6.5	7.4	7.6	6.4
Less than HS	22.3	22.3	21.0	20.0	19.2	19.2	18.3
HS or GED	29.5	29.3	28.3	28.6	28.2	26.2	24.9
Some college or college degree	48.2	48.5	50.7	51.4	52.6	54.6	56.8
White	80.7	80.5	81.8	81.2	83.9	83.1	84.2
Black	13.9	14.1	13.0	13.7	12.8	13.3	13.1
Other race	5.3	5.5	5.2	5.2	3.3	3.6	2.6
Married or partnered	49.9	43.4	41.6	39.3	39.5	37.6	33.1
Divorced	26.1	26.5	28.0	25.6	27.3	26.0	25.6
Widowed	17.6	24.0	24.0	26.9	25.2	27.8	33.2
Never married	6.4	6.1	6.4	8.2	8.0	8.6	8.1
Household below poverty threshold	8.7	10.6	8.7	11.7	12.8	11.7	8.6
Household income to poverty ratio	5.8	5.4	6.1	5.1	4.6	4.9	5.0
Sample size	379	427	440	403	380	339	282

Source: RAND HRS Longitudinal File and RAND HRS Family Data File.

Notes: FRA = full retirement age; SS benefits = Social Security retirement benefit

REFERENCES

AARP (2015). Caregiving in the U.S. – AARP 2015 Report.

<https://www.aarp.org/content/dam/aarp/ppi/2015/caregiving-in-the-united-states-2015-report-revised.pdf>

Bazzoli, G. J. (1985). The early retirement decision: New empirical evidence on the influence of health. *Journal of Human Resources*, 214-234.

Boskin, M. J., & Hurd, M. D. (1977). The effect of Social Security on early retirement. *Journal of Public Economics*, 10, 361-377.

Centers for Disease Control and Prevention (2017). Life expectancy. Retrieved from

<https://www.cdc.gov/nchs/fastats/life-expectancy.htm>

Choudhury, S., & Leonesio, M. V. (1997). Life-cycle aspects of poverty among older women. *Social Security Bulletin*, 60(2), 17.

Coile, C., Diamond, P., Gruber, J., & Jousten, A. (2002). Delays in claiming social security benefits. *Journal of Public Economics*, 84(3), 357-385.

Cremer, H., & Pestieau, P. (2003). Social insurance competition between Bismarck and Beveridge. *Journal of Urban Economics*, 54(1), 181-196.

Cribb, J., & Emmerson, C. (2019). Can't wait to get my pension: The effect of raising the female early retirement age on income, poverty and deprivation. *Journal of Pension Economics & Finance*, 18(3), 450-472.

Crystal, S., Shea, D. G., & Reyes, A. M. (2017). Cumulative advantage, cumulative disadvantage, and evolving patterns of late-life inequality. *The Gerontologist*, 57(5), 910-920.

- Cubanski, J., Orgera, K., Damico, A., & Neuman, T. (2018). How many seniors are living in poverty? National and state estimates under the official and supplemental poverty measures in 2016. *Henry J. Kaiser Family Foundation*, March, 2. Retrieved from <https://www.kff.org/medicare/issue-brief/how-many-seniors-live-in-poverty/>
- Diebold, J., Moulton, J., & Scott, J. (2017). Early claiming of higher-earning husbands, the survivor benefit, and the incidence of poverty among recent widows. *Journal of Pension Economics & Finance*, 16(4), 485-508.
- Engelhardt, G. V., & Gruber, J. (2004). *Social security and the evolution of elderly poverty* (No. w10466). National Bureau of Economic Research.
- Engelhardt, G. V., Gruber, J., & Kumar, A. (2018). *Early Social Security Claiming and Old-Age Poverty: Evidence from the Introduction of the Social Security Early Eligibility Age* (No. w24609). National Bureau of Economic Research.
- Gonzales, E., Lee, Y., & Brown, C. (2017). Back to work? Not everyone. Examining the longitudinal relationships between informal caregiving and paid work after formal retirement. *The Journals of Gerontology: Series B*, 72(3), 532-539.
- Jacobs, J. C., Van Houtven, C. H., Laporte, A., & Coyte, P. C. (2017). The impact of informal caregiving intensity on women's retirement in the United States. *Journal of Population Ageing*, 10(2), 159-180.
- Johnson, R. W., & Lo Sasso, A. T. (2006). The impact of elder care on women's labor supply. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, 43(3), 195-210.

- Kahn, J. R., & Pearlin, L. I. (2006). Financial strain over the life course and health among older adults. *Journal of Health and Social Behavior*, 47(1), 17-31.
- Karoly, L. A., & Rogowski, J. A. (1994). The effect of access to post-retirement health insurance on the decision to retire early. *ILR Review*, 48(1), 103-123.
- Kubicek, B., Korunka, C., Hoonakker, P., & Raymo, J. M. (2010). Work and family characteristics as predictors of early retirement in married men and women. *Research on Aging*, 32(4), 467-498.
- Lee, Y., & Tang, F. (2015). More caregiving, less working: Caregiving roles and gender difference. *Journal of Applied Gerontology*, 34(4), 465-483.
- Lee, Y., Tang, F., Kim, K. H., & Albert, S. M. (2014). The vicious cycle of parental caregiving and financial well-being: A longitudinal study of women. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 70(3), 425-431.
- Lilly, M. B., Laporte, A., & Coyte, P. C. (2007). Labor market work and home care's unpaid caregivers: A systematic review of labor force participation rates, predictors of labor market withdrawal, and hours of work. *The Milbank Quarterly*, 85(4), 641-690.
- Longacre, M. L., Valdmanis, V. G., Handorf, E. A., & Fang, C. Y. (2017). Work impact and emotional stress among informal caregivers for older adults. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 72(3), 522-531.
- Lumsdaine, R. L., & Vermeer, S. J. (2015). Retirement timing of women and the role of care responsibilities for grandchildren. *Demography*, 52(2), 433-454.
- McDonough, P., & Berglund, P. (2003). Histories of poverty and self-rated health trajectories. *Journal of Health and Social Behavior*, 198-214.

- McGarry, K. (2004). Health and retirement do changes in health affect retirement expectations? *Journal of Human Resources*, 39(3), 624-648.
- Munnell, A. H., Sanzenbacher, G. T., & Zulkarnain, A. (2019). *Why has poverty declined for widows?* Center for Retirement Research at Boston College, Number 19-4.
- Nyce, S., Schieber, S. J., Shoven, J. B., Slavov, S. N., & Wise, D. A. (2013). Does retiree health insurance encourage early retirement? *Journal of Public Economics*, 104, 40-51.
- Pavalko, E. K., & Artis, J. E. (1997). Women's caregiving and paid work: Causal relationships in late midlife. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 52(4), S170-S179.
- Pavalko, E. K., & Henderson, K. A. (2006). Combining care work and paid work: Do workplace policies make a difference? *Research on Aging*, 28(3), 359-374.
- Romig, K. (2019). Social Security lifts more Americans above poverty than any other program. *Center on Budget and Policy Priorities*, updated July, 19. Retrieved from <https://www.cbpp.org/research/social-security/social-security-lifts-more-americans-above-poverty-than-any-other-program>
- Sass, S. A., Sun, W., & Webb, A. (2013). Social security claiming decision of married men and widow poverty. *Economics Letters*, 119(1), 20-23.
- Shultz, K. S., Morton, K. R., & Weckerle, J. R. (1998). The influence of push and pull factors on voluntary and involuntary early retirees' retirement decision and adjustment. *Journal of Vocational Behavior*, 53(1), 45-57.

U.S. Census Bureau. (2018). Older people projected to outnumber children for first time in US history. Retrieved from <https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html>

van den Berg, T.I., Elders, L. A., & Burdorf, A. (2010). Influence of health and work on early retirement. *Journal of Occupational and Environmental Medicine*, 52(6), 576-583.

Wakabayashi, C., & Donato, K. M. (2005). The consequences of caregiving: Effects on women's employment and earnings. *Population Research and Policy Review*, 24(5), 467-488.

Wakabayashi, C., & Donato, K. M. (2006). Does caregiving increase poverty among women in later life? Evidence from the Health and Retirement Survey. *Journal of Health and Social Behavior*, 47(3), 258-274.