

# *Early claiming of higher-earning husbands, the survivor benefit, and the incidence of poverty among recent widows\**

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## **Abstract**

Social Security provides survivor benefits to lower-earning spouses of deceased workers entitled to a retirement benefit. The value of the survivor benefit depends on a number of factors including the deceased worker's claim age. We use the Health and Retirement Study and a discrete time hazard model to analyze how the claim age of married men influences the likelihood that their spouse will enter poverty in widowhood. We find that delayed claiming is associated with reduction in a widow's poverty risk. The magnitude of this relationship varies significantly with the claim age, Social Security dependence, and survivor benefit dependence.

*JEL CODES:* H55, I32, J14

*Keywords:* Social Security, survivor benefit, claiming behavior.

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## **1 Introduction**

In the USA, the widow(er)s of deceased workers are entitled to receive a survivor benefit from Social Security. These benefits are paid to the lower-earning spouse; all but 3% of the current recipients are women (Social Security Administration, 2014a). These widows may receive up to 100% of their deceased husbands' retirement benefit which is a function of his earnings history and the age at which he claimed the benefit (the 'claim age'). Under this current framework, any adjustment in the amount of the husband's monthly retirement benefit related to his claim age applies in equal measure to his spouse's monthly survivor benefit. The husband's monthly retirement

\* The authors would like to thank Robert Clark and the anonymous reviewers for their suggestions and comments. They also thank Susie Camilleri for editorial support. Opinions and errors are solely those of the authors and not of the institutions with which the authors are affiliated.

benefit increases (or decreases) if his claim age is later (or earlier) and, generally speaking, so does his widow's survivor benefit. Indeed, a husband's claim age can affect the value of the survivor benefit by as much as 60%, depending on when he claims between the ages of 62 and 70. Most men claim on or shortly after their 62nd birthday (Johnson *et al.*, 2013). As a result, many widows receive a sharply reduced survivor benefit (Sass *et al.*, 2007, 2013; Social Security Administration, 2014a). Missing from the literature, however, is empirical evidence that this reduction results in a lower standard of living for affected widows.

The aim of this study is to examine whether and to what extent a husband's claim age affects his widow's poverty status. Using a discrete-time hazard model we estimate the relationship between the husband's claim age and the likelihood that his spouse enters poverty in widowhood. We focus on a sample of women from the Health and Retirement Study (HRS) widowed between 1993 and 2012 who receive survivor benefits based on their husband's earnings history. We find that delayed claiming on the part of the husband is associated with a significant decrease in the likelihood that his widow will enter poverty in widowhood. Our results suggest that there are diminishing marginal returns to delayed claiming with the result that the reduction in risk of a widow's entering poverty is greatest at the earliest ages of Social Security eligibility. We also find that a husband's claim age has the greatest impact on widows who receive a large majority of their income from Social Security as well as on those widows who receive most of their Social Security income in the form of a survivor benefit. Taken together, our results suggest that even modest delays in the husband's claiming decision can significantly reduce the risk of poverty for widows who depend on survivor benefits as a principal source of income. Thus, it may be important to better inform married Social Security beneficiaries about the link between the primary earner's claim age and the amount of the secondary earner's survivor benefit or to modify this provision of the Social Security benefit formula.

## 2 Background

### 2.1 Poverty in widowhood

For many elderly women, widowhood is associated with a substantial reduction in household income from all sources and an elevated risk of poverty (Karamcheva and Munnell, 2007; Gillen and Kim, 2009). In the years immediately following the death of their husbands, the average income of elderly women declines by over 50% (Zick and Holden, 2000; Sevak *et al.*, 2004). The loss of the husband's Social Security retirement benefit accounts for almost half of this reduction (Zick and Holden, 2000). With few sources of retirement income based on their own employment or earnings history (Munnell and Sass, 2008), many women experience a sharp decline in their income-to-needs and a marked increase in the likelihood of becoming poor in widowhood (Zick and Holden, 2000; Sevak *et al.*, 2004). Indeed, among the elderly, the prevalence of poverty is highest for widows, who comprise 20% of all Social Security beneficiaries but account for 43% of all beneficiaries in poverty.<sup>1</sup>

<sup>1</sup> Authors' calculations based on data from the Social Security Administration (2014b).

However, after decades of decline, the poverty rate for elderly widows is now roughly equivalent to the overall poverty rate for the US population. In 2012, 12.6% of elderly widows lived in poverty, down from roughly 40% in the late 1960s (Social Security Administration, 2014b; Weaver, 2010). The evidence suggests that an increase in survivor benefits starting in 1972 was responsible for a substantial portion of this improvement (Weaver, 2010). The pivotal 1972 Social Security Amendments increased the ceiling on the amount widows were entitled to receive based on their husbands' earnings record up to 100% of their full retirement benefit. This reform reduced the poverty rate of widows by as much as 33% (Weaver, 2010). Despite this considerable progress, elderly widows still have a disproportionate risk of poverty due to the fact that they are much more likely to live just above the poverty line than the rest of the population (Burkhauser *et al.*, 1994; Smeeding and Sandstrom, 2005). Almost four in ten elderly widows have an income below 150% of the federal poverty line (FPL) compared with one in five Americans generally.<sup>2</sup>

Social Security is the primary source of income and financial stability for most widows. On average, widows over the age of 65 receive 65% of their total household income from Social Security. Over 20% of widows depend on Social Security alone for all of their income and over 40% depend on Social Security for 80% or more of their income (Social Security Administration, 2014b). Depending on the widow's own earnings history, some or all of the Social Security income she receives is in the form of a survivor benefit. Of the 4 million survivor benefit recipients, half receive a survivor benefit based entirely on their spouse's retirement benefit.<sup>3</sup> These widows are not entitled to their own retirement benefit due to citizenship or an insufficient history of earnings in covered employment.<sup>4</sup> On average, these 'survivor-only' beneficiaries receive a monthly survivor benefit of \$1,200. The other half are 'dually entitled' to a retirement benefit based on their own earnings history as well as a survivor benefit. The average combined benefit paid to dually entitled widows totaled \$1,400 in 2012, of which approximately half were survivor benefits (Social Security Administration, 2014a).

Survivor benefits promote an adequate standard of living by establishing an income floor for widows. The husband's actual retirement benefit determines the threshold at which this floor is set. Depending on the timing of his decision, a widow's monthly income from her survivor benefit can vary by as much as 60%. The earlier he chooses to claim before age 70, the more her survivor benefit income is reduced. According to the Social Security Administration (2014a), widows whose husbands claim early receive almost \$4,000 less each year in survivor benefits compared with widows whose husbands did not claim early. Sass *et al.* (2007) estimate that the value of the average widow's annual survivor benefit falls by 25% – from \$18,700 to \$13,950 – when her husband claims at age 62 as opposed to age 66. They project

<sup>2</sup> Authors' calculations based on estimates from the 2013 CPS March Supplement.

<sup>3</sup> Authors' calculations based on estimates from the 2013 CPS March Supplement and data from the SSA's Annual Statistical Supplement to the Social Security Bulletin, 2013.

<sup>4</sup> To receive Social Security benefits a worker must demonstrate proof of US citizenship or lawful immigration status.

that this reduction is, in theory, sufficiently large to move 13% of widows into poverty and 23% below 125% of the FPL, assuming that these widows had little or no income from other sources. Their results, however, do not provide evidence of an empirical link between his claim age and his spouse's well-being in widowhood.

Over time, the share of men claiming at later ages has increased but this trend has been modest. Among recent retirees, almost half claimed at age 62 and only one-quarter waited to claim on or after their full retirement age (Haaga and Johnson, 2012) despite the fact that the economic losses associated with early claiming have increased substantially over time as a result of low prevailing interest rates, increased life expectancies, and increases in the delayed retirement credit (Shoven and Slavov, 2013). Interestingly, married men appear no less likely than single men to claim early despite the expected effect of this decision on their spouses (Haaga and Johnson, 2012; Shoven and Slavov, 2014). Of course, job losses, limited financial assets, or poor health may leave many of these men with no choice but to claim their benefits early, though the empirical evidence suggests that even absent these circumstances, men tend to claim early (Li *et al.*, 2008; Sun and Webb, 2011). Empirical analyses of the claiming decision reveal that higher educational attainment, sustained labor force activity, and better overall health are consistently associated with delays in claiming among men (Coile *et al.*, 2002; Haaga and Johnson, 2012; Shoven and Slavov, 2014). The key unanswered questions that we seek to address are whether early claiming actually reduces the economic well-being of widows; if so, to what extent; and which types of widows are most affected.

## 2.2 Benefit calculation

The provisions that determine Social Security survivor benefit eligibility and monthly benefit amounts are complex. To simplify this discussion, we will consider only those eligibility requirements and benefit determinations that apply to non-disabled widows who are not currently caring for a child. In order to receive a survivor benefit, a widow's husband must have received, or been eligible to receive, a retirement benefit based on his earnings history. Second, a widow is not eligible for a survivor benefit until age 60, regardless of whether her husband claimed his retirement benefit before he died. Third, a widow who remarries before age 60 may no longer be eligible to receive a survivor benefit based on her deceased, former, spouse's retirement benefit. Finally, a widow must be the lower-earning spouse to receive a survivor benefit. More specifically, the amount of the deceased husband's retirement benefit must exceed the amount of any retirement benefit his widow is eligible to receive based on her own earnings record.

The monthly survivor benefit amount that a widow is entitled to receive equals 100% of the retirement benefit amount her husband was paid or promised prior to his death. In effect, the husband's retirement benefit acts as a ceiling for the survivor benefit amount. The more substantial his earnings history and the longer he postpones his claiming decision, the higher the ceiling he sets on this amount. Any adjustment in the amount of his monthly retirement benefit applies equally to the survivor benefit. Holding earnings constant, a widow's monthly survivor benefit is smallest when her

husband claims at age 62 and largest when he claims at age 70. For each month that he claims early between age 62 and his full retirement age, her survivor benefit, as a share of his full retirement benefit amount, is reduced by 0.56 percentage points, or 6.7 percentage points per year.<sup>5</sup> Between his full retirement age and age 70, the monthly reduction climbs to 0.667 percentage points per month, or 8 percentage points per year.<sup>6</sup> However, the penalty for the husband's decision to claim early on the survivor benefit is subject to a floor of 82.5% of his primary insurance amount (PIA) – the monthly retirement benefit amount the husband receives when he claims at his full retirement age.

In certain circumstances, the widow's age when she claims her survivor benefit can affect the amount she receives. A woman who enters widowhood before her own full retirement age may reduce her survivor benefit by claiming it early, regardless of her husband's claim age. If both the husband and widow claimed early, the widow receives the smaller of two possible survivor benefit amounts: one reduced by her husband's retirement benefit claim age or one reduced by her own survivor benefit claim age. By comparison, the penalty for early claiming by a widow is smaller than that of her spouse. Each month the widow claims before her full retirement age may reduce her survivor benefit by 0.396%, or 4.75% annually. This penalty does not apply to women widowed after their full retirement age – only the husband's claim age can impact the amount these women receive.

Table 1 displays the distribution of monthly survivor benefit amounts associated with the hypothetical claim ages of a husband and those of his widow for her survivor benefit. In this example, we have made the following assumptions: both spouses have a full retirement age of 66, the husband's PIA is equal to \$1,300, and the widow is not entitled to receive her own retirement benefit. The amounts in the shaded area of the table indicate the combination of claim ages in which the husband's early claim age is entirely responsible for determining his widow's survivor benefit amount. These shaded cells also represent the point at which widows should no longer postpone their decision to claim their benefit. The amounts in the non-shaded area demonstrate that a widow can significantly reduce her survivor benefit amount by claiming early, even if her husband waited until age 70 to claim.

When the husband and the widow each have their own, earned Social Security retirement benefit, the relative value of each benefit is also an important determinant of a widow's survivor benefit amount. Widows not entitled to their own retirement benefit due to a limited earnings history are entitled to receive a survivor benefit equivalent to 100% of their deceased spouses' retirement benefit. Widows entitled to their own retirement benefit on account of their own earnings history receive a smaller share of their husbands' retirement benefit amount. These 'dually entitled' widows receive a survivor benefit equivalent to the difference between their own retirement benefit and that of their deceased spouse. Thus, the value of a widow's

<sup>5</sup> The husband's full retirement age is also known as his normal retirement age, which is determined by his year of birth. The full retirement benefit amount refers to the amount that he is entitled to receive if he claims at his full retirement age.

<sup>6</sup> These rates apply to workers born between 1943 and 1954.

Table 1. *The effect of widow and spouse claim ages on the value of the survivor benefit*

		Husband's retirement benefit claim age (FRA = 66)								
		<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<b>66</b>	<u>67</u>	<u>68</u>	<u>69</u>	<u>70</u>
Widow's Survivor Benefit claim age (FRA = 66)	60	930	930	930	930	930	1,004	1,078	1,153	1,227
	61	992	992	992	992	992	1,071	1,151	1,230	1,309
	62	1,053	1,053	1,053	1,053	1,053	1,137	1,221	1,306	1,390
	63	1,073	1,073	1,115	1,115	1,115	1,205	1,294	1,383	1,472
	64	1,073	1,073	1,127	1,177	1,177	1,271	1,365	1,459	1,553
	65	1,073	1,073	1,127	1,213	1,239	1,338	1,437	1,536	1,635
	<b>66</b>	1,073	1,073	1,127	1,213	1,300	1,404	1,508	1,612	1,716
	67	1,073	1,073	1,127	1,213	1,300	1,404	1,508	1,612	1,716
	68	1,073	1,073	1,127	1,213	1,300	1,404	1,508	1,612	1,716
	69	1,073	1,073	1,127	1,213	1,300	1,404	1,508	1,612	1,716
	70	1,073	1,073	1,127	1,213	1,300	1,404	1,508	1,612	1,716

*Notes:* FRA, full retirement age. The amounts in the table assume the husband's primary insurance equals \$1,300 and that both spouses are born between 1943 and 1954 and whose FRA is, therefore, age 66. This table is a modified version of the one presented by Shoven and Slavov (2013).

survivor benefit falls as a widow's own retirement benefit approaches parity with that of her deceased husband.<sup>7</sup>

### 3 Method

#### 3.1 Discrete-time hazard model

We use a discrete-time hazard model to assess the relationship between the timing of the husband's Social Security claiming decision and the likelihood that his spouse enters poverty in widowhood. This analytical framework is useful for describing whether, and when, a subject experiences some event (e.g., poverty) when time is measured in discrete intervals (Singer and Willett, 2003). For this purpose, we constructed a panel data set comprised of women who we observe entering widowhood. We re-organized the panel data into a person-period data set in which widow  $i$  contributed  $j$  rows, where  $j$  represents the number of periods in which widow  $i$  was observed. The first row of data for each widow represents her initial period of widowhood and the point at which she becomes 'at risk' of entering poverty for the first time as a

<sup>7</sup> Consider a married couple in which the husband received a monthly retirement benefit of \$1,300 and his wife receives no retirement benefit of her own. When the husband dies, his widow will receive a monthly survivor benefit in the amount of \$1,300. If, instead, the wife was entitled to a monthly retirement benefit of \$800 of her own, she would again receive \$1,300 following her husband's death, but the survivor benefit represents only \$500 of this amount.

widow. Each widow remains in the estimation sample as long as she is at risk. A widow is no longer at risk (1) after her first transition into poverty or (2) through censoring (discussed below). The result from this framework is a data set that is unbalanced due to the fact that the women have spells of widowhood of differing lengths.

Discrete-time methods are used to examine the hazard rate which is defined here as the conditional probability that the widow enters poverty in period  $j$  given that she did not enter poverty in a prior period. Within this framework, the hazard is typically modeled as a logit function, which has the following form:

$$\ln\left(\frac{\lambda(t_{ij})}{1 - \lambda(t_{ij})}\right) = \beta \textit{ClaimAge\_Husband}_i + \delta X_{ij} + \theta Z_i + \alpha D_j \quad (1)$$

The claim age of the husband of widow  $i$  is identified by *ClaimAge\_Husband* and is measured in years and months. The time-varying and time-invariant covariates measured for widow  $i$  in time period  $j$  are indicated by  $X$  and  $Z$ , respectively. The time structure of the hazard (log-odds that the event occurs) is measured by  $D$ , a vector of period-specific intercepts that indicate each of the  $j$  time periods. We are most interested in the parameter estimate  $\beta$  on the husband's claim age. This coefficient indicates the estimated change in the log-odds that a widow enters poverty associated with a 1-year increase in her husband's claim age, adjusting for the other covariates. We report all coefficients from equation (1) as odds-ratios by computing their exponentiated values. We also report the average marginal effect (AME) of *ClaimAge\_Husband* on the probability that a widow enters poverty to provide a more meaningful metric of the magnitude of the implied changes. This conversion allows for a more substantive interpretation of the results from equation (1), while also accounting for the non-linearity of this relationship, which is inherent in the estimation of a logistic regression model. The relationship implied in the regression results is constrained to be constant across each time period. Alternate specifications that relax this constraint failed to detect a non-constant effect and resulted in more poorly fitting models.

We are also interested in the coefficients on two separate terms (not shown) that identify the interaction of the husband's claim age with relevant measures of the Social Security benefits paid to the widow. The coefficients on these terms assess the differential effect of a husband's claim age on his widow's likelihood of entering poverty according to the share of the total household income she derives from Social Security in widowhood and according to the percentage of her Social Security income she receives in the form of a survivor benefit (based on her husband's earnings history) as opposed to her own retirement benefit. The control variables include demographic, socio-economic, and health status measures to account for the characteristics and circumstances of the widow as well as those for the husband, prior to his death.

## 4 Data

### 4.1 HRS

To estimate our hazard models, we use data from the HRS, a longitudinal panel study that follows a representative sample of elderly Americans as they make the transition from work into retirement. Every 2 years the HRS collects socio-economic, health,

and demographic information from more than 26,000 Americans over the age of 50. Using the RAND data file of the HRS waves from 1992 to 2012, we are able to piece together data on Social Security claiming decisions, the onset of widowhood, and the financial circumstances of widowed women who receive survivor benefits. Earnings records from the Social Security Administration (SSA) are linked to data in the HRS for a subsample of respondents. We used data from this linked sample to identify husbands entitled to a retirement benefit and widows entitled to a survivor benefit.

#### 4.2 Sample restrictions

The HRS contains data on 7,726 women who were widowed at some point in their lives. Yet, our estimation sample comprises only a small fraction of these women due primarily to data limitations and, to a far lesser extent, sample restrictions that we impose to isolate the appropriate sample for examining our research question and to address concerns related to endogeneity.

Most widows were excluded from our sample due to data limitations. First, we limit our sample to widows whose husbands died between 1994 and 2012 such that we start with a sample equal to 3,202 widows. This restriction is necessary to observe the onset of widowhood for each widow in the sample and thus avoid significant and intractable problems associated with left-censored data (Singer and Willett, 2003). This restriction also has the benefit of allowing us to incorporate data on the deceased husbands of the widows in our sample into our hazard models as we can observe them in at least one wave of the HRS prior to their deaths. Second, we must observe the husband's claim age for each widow in this analysis and missingness in this variable results in the loss of 1,668 widows, which reduces the usable sample to 1,534.<sup>8</sup> We also must observe the earnings history of both spouses in order to establish whether the widow is the secondary earner and, therefore, entitled to receive a survivor benefit. However, these data are only available for those HRS respondents who consented to having their HRS survey responses matched to their administrative records from the SSA. This restriction further reduces the sample to 802 widows who remain 'reasonably representative' of the full HRS sample (Haider and Solon, 2000).

The sample was then restricted to include only those widows entitled to receive a survivor benefit. To identify these widows, we compared the expected present value of the Social Security retirement benefit promised to each spouse based on their own earnings history data from the SSA.<sup>9</sup> Only those women with a relatively less substantial earnings history compared with their husband were included in the sample, which consequently equals 625.

Three additional restrictions are required due to data limitations in the HRS. The first restriction excludes women widowed before their full retirement age, which

<sup>8</sup> Most of this missingness is due to the fact that the survey questions used to construct this measure were skipped for a majority of respondents for unknown reasons in the 1994 and 1996 waves (Chien *et al.*, 2014).

<sup>9</sup> The RAND Corporation calculated these measures using data from the administrative records of the SSA. Because the expected present value of these benefits is, all else equal, slightly higher for women due to higher survival probabilities, this restriction may have removed some women from the sample who will in fact receive survivor benefits. However, it is not possible to determine the number of women affected by this restriction without access to the restricted Social Security data.



reduces the sample to 348. This restriction is necessary because the HRS data do not distinguish between the claim ages for retirement, spousal, or survivor benefits for secondary earners entitled to each. Without this information, we cannot establish whether women widowed before their full retirement age receive a survivor benefit amount determined by their husband's claim age or their own survivor benefit claim age.<sup>10</sup>

The second restriction removes widows entitled to one of several survivor benefits bequeathed to her from previous marriages. As explained above, a widow who remarries before age 60 forfeits her entitlement to a survivor benefit based on the earnings record of her previous husband. However, women with multiple spells of widowhood may be entitled to receive one of multiple survivor benefits when at least one of her marriages began after her 60th birthday. In these instances, she must choose between the survivor benefits bequeathed to her from previous marriages. However, it is not possible for us to determine which deceased spouse is the source of the survivor benefits paid to these women. To ensure that we have the claim age of the correct husband, we remove these widows from the sample, which then equals 332. In other words, our sample is limited to women entering the spell of widowhood in which they are first eligible to receive one survivor benefit.

The third restriction removes the widows of husbands who received disability benefits. The claim age in the HRS can refer to either disability or retirement claiming. Workers who receive disability have no official retirement benefit claim age because the SSA automatically converts their disability benefit to their retirement benefit when recipients reach their full retirement age. To avoid conflating disability claiming with retirement benefit claiming, we remove widows whose husbands received disability benefits at any point in time before dying such that the sample equals 272. We also removed widows with spouses who reported receiving Social Security benefits before age 61 and 9 months, the age when workers are first eligible to file for their benefit, reducing the sample to 251. These 21 spouses may have received Social Security benefits before age 62 due to disability or their reported claim ages may be subject to measurement error.

We also imposed one last sample restriction to reduce, but not rule out, the potential for omitted variable bias in our estimation. We remove those women who were already living below the poverty line in the period prior to the one in which they entered widowhood such that the sample is reduced to 236. These widows may have continued to live in poverty regardless of when their husbands claimed Social Security, in which case, our hazard models would mistake the continuation of their pre-widowhood poverty trend for an initial poverty transition in widowhood. Also, if early claiming is more prevalent among already poor households, then the inclusion of previously poor widows may bias our results towards finding a higher (or lower) correlation between a husband's claim age and his widow's poverty risk.

<sup>10</sup> By contrast, these data limitations pose no such problems for women widowed after their full retirement age because their own survivor benefit claim ages cannot affect their survivor benefit amount (see [Table 1](#)). In addition, this data limitation does not pose the same problem for primary earners who are not eligible to receive spousal or survivor benefits based on their spouse's earnings history; therefore, their reported claim ages represent the month in which they claimed their retirement benefit, the only benefit to which they are entitled.

Table 2. *Hazard of falling into poverty among female widows who receive a survivor benefit based on their spouse's earnings history, 1994–2012*

Two-year period of widowhood	Number at risk at the beginning of the interval	Proportion of widows who enter poverty
First	197	0.102
Second	138	0.043
Third	89	0.034
Fourth	58	0.069

Finally, missingness in the variables included in the specification of equation (1) results in a final sample for analysis comprises 197 widows. The effect of each restriction on the sample size is summarized in Table 2A of the online Appendix.

### 4.3 Estimation sample

The data for these widows are pooled into a person-year data set containing 482 non-unique observations. We follow these widows through their first four periods of their widowhood. We truncated our observation window because we observe very few widows for an extended period of time. As additional waves of the HRS become available, a more comprehensive analysis will become possible as the number of women with longer widowhood durations increases.

Table 2 summarizes the distribution of poverty entry rates by period for widows in the estimation sample. The rates in the table describe a widow's unadjusted likelihood of first entering poverty in a given period conditional on being at risk of entering poverty at the beginning of that period, often referred to as the hazard rate. Examining the first row of the table, we see that of the 197 widows in the sample, 20 entered poverty in the first interval of their widowhood. Looking at the results in the second row, we see that the number of widows at risk of entering poverty has fallen to 138. This decline represents removal of the 20 widows who entered poverty in the first interval from the estimation sample as well as the 39 widows considered censored at the time of the first follow-up. The censored observations in this analysis are those widows we do not observe entering poverty because it has not occurred by the end of the observation period or due to some other intervening event such as death, remarriage, or attrition from the HRS survey sample.

The third column of Table 2 presents the proportion of widows known to have not become poor in previous intervals, who then became poor. Looking again at the first two periods, we see that 10.2% of widows entered poverty in their first 2 years of widowhood. In the second period, 4.3% of the 138 non-censored widows at risk of becoming poor for the first time as a widow entered poverty in the second period. The distribution of these hazard rates over time describes the baseline hazard function defined by the coefficients on the period identifiers in equation (1). The hazard of poverty entry appears to be the highest for those widows immediately following their

entry into widowhood. The hazard rate then declines and then rises again as the duration of widowhood increases. This implies that widows are at the highest risk of entering poverty immediately following the death of their husband and over extended durations of widowhood. This pattern is consistent with those from previous studies tracking the change in poverty rates among women at the onset of widowhood and over time (Zick and Holden, 2000; Sevak *et al.*, 2004).

#### 4.4 Dependent and explanatory variables

The dependent variable in our analysis, *poverty*, indicates the occurrence of the event of interest, whether or not a widow's income falls below the poverty threshold in a given wave. The RAND Data file identifies the poverty status of the households for the 5 biennial waves between 2002 and 2012. Following the steps outlined by RAND, we determined the poverty status of each household in the HRS from 1992 to 2000. The dichotomous variable *poverty* is coded 1 if the widow's household income fell below the applicable poverty threshold set by the US Census in the previous year and 0 otherwise.

Our explanatory variable of interest, *ClaimAge\_Husband*, measures the age of the widow's husband when he claimed Social Security before his death. To construct this continuous measure we divided the husband's claim age, measured in months, by 12.<sup>11</sup> We calculate a similar measure of secondary interest for each widow in the sample, *ClaimAge\_Widow*, using her reported claim age. This measure can refer to the widow's claim age for her own retirement benefit, her spousal benefit, or her survivor benefit; the HRS data does not distinguish between them. On account of our sample restrictions, the widow's claim age cannot affect the survivor benefit amount she receives. However, it can affect the value of any retirement benefit she receives. We include *ClaimAge\_Widow* to disentangle changes in Social Security income associated with changes in *ClaimAge\_Husband* on her survivor benefit amount from those changes associated with the impact of her claim age on her own retirement benefit, should she receive one.

#### 4.5 Control variables

Of course, many of the same factors that affect a husband's claim age also influence the likelihood that his widow will become poor in widowhood. For example, married couples with a history of low-earnings will have lower Social Security benefits and may also be more inclined to claim early due to a further reduction in their earnings potential in old age and inadequate retirement wealth. In this case, it is the couples' history of low-earnings or the factors that contributed to low earnings, such as low education, poor health, and/or unemployment that explains why widows in these households enter poverty in widowhood as opposed to the timing of the husbands'

<sup>11</sup> We created a second continuous measure that indicated the number of months that the husband claimed before or after his full retirement age. This measure controls for the gradual increase in the full retirement age for successive cohorts beginning with those born after 1937. There were no meaningful differences in our results, so we decided to use the more intuitive claim age measure, *ClaimAge\_Husband* though all results are available upon request.

claiming decision. With this understanding, we control for the relevant characteristics of the widow's husband and their household, measured prior to his death, in addition to those measured for the widow. The variables for the husband are measured once at the most recent follow-up interview prior to his death. The variables measured for the widow are a combination of lagged and contemporaneous time-varying and time-invariant covariates. Despite our effort to control for as many of these confounding factors as possible, our research design is not sufficiently rigorous to warrant a causal interpretation of our results. Table 1A in the Appendix provides a detailed description of all covariates included in this analysis.

When specifying our model, we are careful to avoid overcontrolling for those factors that may mediate the relationship between *ClaimAge\_Husband* and *poverty*. Most notably, we do not control for Social Security income because we assume that this factor is the only plausible mechanism through which *ClaimAge\_Husband* affects *poverty*. More precisely, a husband's claim age affects the value of his widow's survivor benefit and therefore helps determine the amount of Social Security income she receives after he dies. The change in her Social Security income attributable to the effect of his claim age on her survivor benefit may, in turn, affect her poverty status in widowhood. If we were to adjust our estimates for her Social Security income by controlling for it in our model, we would remove the only variation relevant for evaluating our relationship of interest, the indirect link between his claim age and her poverty risk. Instead, we control for the widow's income from all sources other than Social Security.

We also control for the relative importance of Social Security to the widow's total household income as well as the share of her Social Security income that she receives in the form of a survivor benefit. To estimate these measures, we calculate the ratio of her Social Security income to her total household income (*SocSecIncl/TotInc*) and the proportion of her Social Security income that she receives in the form of a survivor benefit (*SurvivorBen/SocSecInc*).<sup>12</sup> As these variables approach parity, the widow's dependence upon Social Security and the survivor benefit increases, respectively, and the husband's claim age becomes a more important determinant of her total household income and her risk of entering poverty in widowhood. To determine whether the relationship between the husband's claim age and his widow's poverty risk is a function of *SocSecIncl/TotInc* and *SurvivorBen/SocSecInc*, each of the measures is interacted with *ClaimAge\_Husband*.

#### 4.6 Descriptive statistics

Table 3 displays the sample means of the explanatory variables included in this analysis. The means in the second column of the table are estimated using the widow's data from the first period of her widowhood. The last column includes sample means for a more representative sample of widows in the HRS. Looking at the means, a few notable characteristics of our sample emerge. First, neither spouse postpones their claiming decision long after turning age 62 which is consistent with

<sup>12</sup> We estimate the numerator of the survivor benefit ratio (*SurvivorBen*) as one minus the present value of the widow's retirement benefit divided by the present value of her husband's retirement benefit.

Table 3. Characteristics of widows in their first year of widowhood

Variable	Widow in sample <sup>1</sup>	Husband <sup>2</sup>	Widows in HRS <sup>3</sup>
Pr (enter poverty)	0.11		0.13
Husband claim age	63.8		
Widow claim age	62.8		
Age of the widow	71.7		71.3
Age of widow at widowhood	71.1		70.8
Spousal age gap in years ( $YoB_{Widow} - YoB_{Husband}$ )	2.70		4.54
Number of children	3.36		3.44
White	0.96		0.90
Black	0.04		0.07
Other	0.01		0.04
Less than a high school degree	0.20	0.19	0.18
High school degree but no college	0.65	0.57	0.67
College graduate	0.16	0.24	0.15
Currently working (lagged)	0.23	0.18	0.26
Number of household residents	1.31		1.45
Number of years employed (Lifetime)	27.6	40.4	29.7
Financial wealth (\$000s; lagged)	21.9		18.7
Housing wealth (\$000s; lagged)	19.5		14.4
Household income (non- <i>SocSec</i> ; \$000s; lagged)	61.2		56.8
<i>SocSec/TotInc</i>	0.67	0.37	0.53
<i>SurvivorBen/SocSecInc</i>	0.55		
Household's Social Security wealth (\$000s)	215.5		112.2
Pension income	0.54		0.52
Long-term financial planner (lagged)	0.66	0.74	0.65
Covered by Medicare	0.90	0.98	0.67
Out-of-pocket medical expenditures (\$000s; lagged)	3.52	5.75	3.93
Reports being in good health (lagged)	0.80	0.50	0.75
Health condition(s) limits work (lagged)	0.25	0.55	0.33
Number of physical limitations (lagged)	1.07	1.87	1.13
Health worsened (lagged)	0.28		0.28
Number of chronic conditions (lagged)	1.88	2.77	1.99
Body mass index	27.4	26.7	27.4
Northeast	0.16		0.17
Midwest	0.38		0.37
South	0.26		0.26
West	0.20		0.20
<i>N</i>	197		1,326

<sup>1</sup> This sample includes widows who receive a survivor benefit and were widowed after their full retirement age.

<sup>2</sup> The means for the husbands were derived from the last wave in which they were observed prior to their deaths.

<sup>3</sup> This sample includes all widows observed entering widowhood in the HRS with data linked to the Social Security Administration and with non-missing values for the variables in the table. To maximize the sample size of this group we do not report the means for the variables with high levels of missingness such as the claim ages of each spouse.

Table 4. Ordinary least squares regression of Social Security income on the claim ages of the husband in Period 1

	Model 1	Model 2	Model 3
<i>ClaimAge_Husband</i>	883.4** (315.4)	668.1** (319.5)	663.6** (318.4)
<i>ClaimAge_Widow</i>	-130.3 (175.4)	-107.7 (164.4)	-151.0 (169.9)
Year fixed effects	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
Socio-economic controls		Yes	Yes
Health status			Yes
<i>N</i>	197	197	197

Notes: The dependent variable is the amount of Social Security income the widow receives in her first year of widowhood. The control variables are outlined in Table 3. The variable *SurvivorBen/SocSecInc* is omitted from this analysis as it is a function of the dependent variable. \*\*\*Statistically significant at the 0.01% level. \*\*Statistically significant at the 0.05% level. \*Statistically significant at the 0.10% level.

the distribution of claim ages in the population. Second, our sample is overwhelmingly white. One reason for this is that African American women are much less likely to be eligible for survivor benefits on account of their marital history (Iams and Tamborini, 2012). In addition, African American women were disproportionately restricted from the estimation sample because they were more likely to enter widowhood prior to their full retirement age than their white counterparts due to the black-white life expectancy differentials. While necessary to avoid potential confounds, this restriction also increased the average age of the widows in the sample. Another notable feature of the sample is that widows tend to receive a majority of their income from Social Security and that this income also tends to be in the form of a survivor benefit. On average, widows in the sample receive 68% of their income from Social Security, more than half (55%) of which they received in the form of a survivor benefit. These averages are consistent with those reported by Social Security Administration (2014a) for the population of widows who received this benefit in 2012. The dependence of widows on these benefits reflects, in part, the lower labor force participation of the widows relative to their deceased spouses. For the most part, the estimation sample is similar to the larger, more representative sample of widows in the HRS but the exclusion restrictions appear to result in a more advantaged sample of widows, a matter to which we return later.

## 5 Results

### 5.1 A husband's claim age and his spouse's income in widowhood

For a husband's claim age to plausibly influence his widow's poverty risk, it must be a relevant determinant of her Social Security income in widowhood. When husbands claim later, their spouses should receive more income from Social Security in widowhood due to an increase in the survivor benefit amount. To fully examine whether and to what extent this mediating relationship exists, we regressed the widows' Social Security income on the claiming ages of their husbands. Table 4 presents the

coefficients from three nested regression models: adjusting for demographic characteristics (Model 1); socio-economic circumstances (Model 2); and health status (Model 3).

The results in columns 2–4 of Table 4 indicate that the relationship between the widow's Social Security income and the husband's claiming age is positive, substantial, and robust across each specification. The results from Model 3 suggest that a widow's annual income from Social Security increases by approximately \$663 ( $p < 0.05$ ) for each year her husband delayed claiming his benefit past age 62. This increase can represent a significant change in the typically modest incomes of most widows. The estimates suggest that an additional year of delayed claiming by the husband can increase the income of the median widow (\$24,000) by 2.8% due to the effect of delay on the amount of the survivor benefit. If he claims at age 66 as opposed to age 62, he could increase her annual income by \$2,650, or 11%. These increases are larger, as a proportion of total income, for the 40% of widows with incomes below or just above the FPL. For some, they may be sufficiently large to move them out of poverty. We will test this possibility using the discrete-time hazard model in equation (1).

## 5.2 Hazard models

The discrete-time hazard model in equation (1) yields parameter estimates of the change in the conditional odds that the widow becomes poor associated with a 1-year increase in the claim age of the husband. We express these coefficients as odds ratios with robust standard errors that are clustered at the individual level. Thus, the coefficient on our variable of interest, *ClaimAge\_Husband*, measures the expected change in the odds that a widow enters poverty for a 1-year increase in her husband's claim age. Coefficients that are less (greater) than 1 imply that the odds that a widow enters poverty for the first time in each period are reduced (increased) by a factor of  $\beta$ . However, we discuss our results in terms of the marginal change in the probability of poverty entry because the interpretation of odd-ratios is not intuitive. By converting our results into marginal changes in predicted probabilities, we generate a more meaningful metric for understanding the relationship between claiming and poverty in our analysis and we are able to examine how this relationship varies at substantively interesting values of the explanatory variables (Wooldridge, 2002; Greene, 2012; Long and Freese, 2014). The AME of a discrete change in the husband's claim age is both a conceptually and computationally appealing summary measure of the marginal effect of this variable.<sup>13</sup>

Table 5 presents the coefficients and standard errors of the coefficients of interest from a series of progressively more complex nested hazard models. We start with Model 1 that includes our variable of interest, year fixed effects, and the period-

<sup>13</sup> Current practice generally favors estimating AMEs from logistic regression over other popular methods like marginal effects at the means that can lack conceptual or computational appeal. We report the AME of discrete, rather than instantaneous, changes in the husband's claim age on the predicted probability of poverty entry for each widow because, generally speaking, infinitesimally small changes in this measure are of little practical significance. The discrete AMEs were obtained using the 'mchange' command in Stata. Long and Freese (2014) developed this command based on the related 'margins' command, which reports the instantaneous AMEs for continuous measures.

Table 5. Results for nested discrete-time hazard models of poverty entry among widowed survivor benefit recipients

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>ClaimAge_Husband</i>	0.811 (0.112)	0.734* (0.121)	0.656* (0.156)	0.536** (0.123)	0.465*** (0.121)
<i>SurvivorBen/SocSecInc</i>		0.992 (0.013)	0.989 (0.015)	0.996 (0.017)	0.989 (0.020)
<i>SocSecIncl/TotInc</i>		0.996 (0.013)	0.982 (0.018)	1.001 (0.013)	0.982 (0.023)
<i>ClaimAge_Husband</i> × <i>SocSecIncl/TotInc</i>			0.987* (0.008)		0.984* (0.008)
<i>ClaimAge_Husband</i> × <i>SurvivorBen/SocSecInc</i>				0.978*** (0.006)	0.974*** (0.007)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Demographic controls		Yes	Yes	Yes	Yes
Socio-economic controls		Yes	Yes	Yes	Yes
Health status		Yes	Yes	Yes	Yes
<i>N</i>	482	482	482	482	482
BIC	624,187.9	388,889.2	377,232.0	363,919.8	347,524.4
AME ( <i>ClaimAge_Husband</i> )	-0.013 (0.008)	-0.012* (0.006)	-0.016* (0.009)	-0.024*** (0.008)	-0.029*** (0.010)

Notes: BIC, Bayesian information criterion. The dependent variable indicates whether the widow's income was below the federal poverty line given the size of her household. The control variables are outlined in Table 3.

\*\*\*Statistically significant at the 0.01% level. \*\*Statistically significant at the 0.05% level. \*Statistically significant at the 0.10% level.



specific intercepts, then in Model 2 we add the relevant control measures for the widow and her spouse along with variables indicating the share of her Social Security income that she receives in the form of a survivor benefit (*SurvivorBen/SocSecInc*) and with the share of total household income she receives from Social Security (*SocSecInc/TotInc*), and, finally, in Models 3 through 5 we add two terms interacting *ClaimAge\_Husband* with *SurvivorBen/SocSecInc* and *SocSecInc/TotInc*.

Taken together, the odds ratio estimates suggest that the effect of the husband's claim age on the widow's likelihood of poverty entry varies according to the widow's Social Security and survivor benefit dependence. These underlying relationships were not apparent until interaction terms were included to capture these differential effects. The results from Model 5 (the model of best fit), indicate that the more dependent a widow is on Social Security, the greater the reduction in her odds of entering poverty that is associated with an additional year's delay in the husband's claim age. The effect of the husband's claim age also appears larger for widows who receive a larger fraction of their Social Security income in the form of a survivor benefit ( $p < 0.05$ ).

However, caution is necessary when interpreting the results from Model 5. First, the interacted terms are useful for changing the way in which covariates affect the outcome but, in non-linear models, little can be discerned from the magnitude, direction, or statistical significance of their coefficients (Norton and Ai, 2003; Karaca-Mandic *et al.*, 2012). The difficulty in interpreting these coefficients is due to the inherent non-linear nature of logistic regression in which the marginal change in the outcome associated with a given covariate, including interaction terms, is a function of its value as well as the values of all the other covariates included in the model. That is, the differential effects captured by interacted terms will vary, like other covariates in the model, depending on values in which the relationships are being assessed. Moreover, to the extent that the apparent differential effects exist, they will be obscured by the aggregate AMEs reported in Table 5. To obtain a more substantively meaningful interpretation of the results and examine the nature of the underlying relationships, we compute and show below the AME of a 1-year increase in the husband's claim age on the probability that a widow enters poverty at each claim age and at relevant values of each of the moderating variables.

### 5.3 AMEs

The results from our estimation of the average marginal effects of *ClaimAge\_Husband* from Models 1 through 5 are displayed in the bottom two rows of Table 5. The results from the table indicate that the AME of *ClaimAge\_Husband* grows larger and becomes statistically significant as the additional covariates are added to the hazard model. The AME generated from Model 5 shows that a 1-year postponement in the husband's claiming decision reduces the probability that his widow will become poor by 2.9 percentage points on average ( $p < 0.01$ ). This change represents a 27% reduction in the likelihood that a widow in our sample will enter poverty immediately after entering widowhood.

Table 6 presents the AMEs of the husband's claim age computed from Model 5 at different values of *ClaimAge\_Husband*. These estimates represent the marginal effect

Table 6. *Marginal effect of the husband's claim age on the widow's poverty hazard at each claim age and as a function of her survivor benefit and Social Security dependence*

Husband's claim age									
<u>62</u>	<u>63</u>	<u>64</u>	<u>65</u>	<u>66</u>	<u>67</u>	<u>68</u>	<u>69</u>		
−0.062***	−0.035***	−0.016***	−0.005	0.002	0.006	0.008	0.009		
(0.020)	(0.010)	(0.005)	(0.004)	(0.005)	(0.007)	(0.007)	(0.006)		
Widow's survivor benefit as a percent of her Social Security income									
<u>10</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>	<u>60</u>	<u>70</u>	<u>80</u>	<u>90</u>	<u>100</u>
0.018	0.008	−0.001	−0.010	−0.020**	−0.031***	−0.042***	−0.054***	−0.068***	−0.083***
(0.011)	(0.008)	(0.007)	(0.007)	(0.008)	(0.009)	(0.011)	(0.014)	(0.020)	(0.027)
Widow's Social Security income as a percent of total income									
<u>10</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>	<u>60</u>	<u>70</u>	<u>80</u>	<u>90</u>	<u>100</u>
−0.006	−0.012	−0.018**	−0.024***	−0.029***	−0.035***	−0.040***	−0.045***	−0.050***	−0.055***
(0.011)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.011)	(0.013)	(0.014)	(0.017)

*Note:* The figures represent the average marginal effects calculated at various claim ages of the husband, values of the widow's survivor benefit as measured as a percent of her total social security income, and amounts of the widow's social security income as a percent of total income.

\*\*\*Statistically significant at the 0.01% level. \*\*Statistically significant at the 0.05% level. \*Statistically significant at the 0.10% level.

of a 1-year delay at each age from 62 to 69 on the likelihood of a widow's poverty entry. The largest AME of the husband's claim age is associated with the husband postponing claiming from age 62 to age 63 which reduces the likelihood that his widow will enter poverty by 6.2 percentage points on average ( $p < 0.01$ ). However, there is a gradual fade out of this relationship as the AME declines monotonically across claim ages with no detectable effect of an additional 1-year delay after age 64. To be sure, claiming after age 64 will continue to increase a widow's survivor benefit income but this change does not appear to have a discernible impact on a widow's likelihood of entering poverty.

Table 6 also displays the AMEs of the husband's claim age on the poverty risk of widows at varying levels of the survivor benefit as a proportion of their total Social Security income. These estimates were also generated from Model 5 and indicate that the effect of a husband's claim age on his widow's Social Security income is largest when she receives a larger share of this income in the form of a survivor benefit as opposed to her retirement benefit. Therefore, the marginal effect of claiming delays should increase as the value of her survivor benefit increases relative to the value of her own retirement benefit. The AMEs in the second row of Table 6 show, on average, a 1-year increase in the husband's claim age is associated with a 2 percentage point ( $p < 0.05$ ) reduction in the likelihood that a widow receiving half of her Social Security income in the form of a survivor benefit. As expected, the magnitude of this estimated effect increases as her survivor benefit continues to represent a larger share of her Social Security income. The husband's claim age has no detectable impact on the likelihood that a widow enters poverty when the survivor benefit no longer represents a majority of her Social Security income.

Finally, the AMEs from Model 5 in the bottom row of Table 6 measure the marginal change in the likelihood that a widow enters poverty associated with her husband's claim age at varying levels of her Social Security dependence in widowhood. As expected, the marginal effect of a 1-year claiming delay tends to be larger for those widows who receive a larger proportion of their total household income from Social Security. The statistical significance of this relationship does not emerge until widows receive 30% or more of their income from Social Security which applies to a large majority of the widows in our sample. The median widow in our sample receives 72% of her income from Social Security. A 1-year claiming delay by the husband of this median widow is associated with a 4.0 percentage point ( $p < 0.01$ ) decline in her likelihood of entering poverty on average.

## 6 Weaknesses

### 6.1 Endogeneity and sample size issues

In this paper we have provided suggestive evidence that a spouse claiming his Social Security benefits early is associated with an increased probability that their widow will enter poverty. We are limited in our ability to make a more causal statement by a relatively small sample and concerns regarding endogeneity of the claiming decision. While the sample size is small, there is no larger data set that includes the variables

requisite to consider this question – panel data including data on retirement age, lifetime earnings, etc. for elderly individuals. Additionally, small sample sizes are common among analyses of recently widowed women (Holden *et al.*, 1988; Zick and Smith, 1991; Zick and Holden, 2000; Sevak *et al.*, 2004; Sass *et al.*, 2007; Gillen and Kim, 2009). As noted, the small sample size is more the result of data limitations in the HRS than the inclusion criteria we imposed to reduce bias. However, we did prioritize internal over external validity when the analysis required a trade-off between the two because this analysis probes whether a husband's claim age is a determinant of his widow's poverty status in widowhood. The combination of data limitations and our inclusion criteria resulted in a less representative estimation sample that comprised widows who were older, healthier, and had a higher socioeconomic status compared with the full sample of widows in the HRS. These restrictions result in a relatively affluent, less generalizable estimation sample but it is not clear whether the relationships established here would be strengthened, attenuated, or absent in a more representative sample.<sup>14</sup> On the one hand, it is possible that the financial well-being of the widows in our sample is particularly sensitive to the timing of their husband's claiming decisions. Wives tend to reduce their labor supply as their husband's earnings increase (Blau and Kahn, 2007). This means the husband's earnings advantage, while evident across the income distribution, is largest for women with higher-earning husbands (Winkler, 1998). As a result, the more affluent widows in our sample may receive a larger share of their Social Security income in the form of a survivor benefit than their less affluent counterparts. On the other hand, the women in this sample tend to be less dependent on Social Security for their income in widowhood (see Table 3). Taken together, a less affluent, more representative sample of elderly widows may receive less of their Social Security income in the form of a survivor benefit but, at the same time, they may be more dependent upon the amount they receive to maintain an income considered minimally sufficient to meet their needs. Therefore, it is not clear a priori how the results would change using a more representative sample.

More worrisome than sample size is the potential endogeneity in claiming decision-making that is not due to the included control variables. For example, it is possible that the observed relationship in our analysis is confounded, not by the circumstances of the husband prior to his death, but by micro- and macro-level factors prior to age 62 such as health and market wages. Unfortunately, too few waves of data are available in the HRS to control for these potentially confounding factors as well. As a result, we err on the side of caution in interpreting our estimates as suggestive rather than causal and assume that our point estimates represent the upper-bound of any true effect.

## 7 Conclusion

The vast majority of men elect to receive their retirement benefit from Social Security before their full retirement age and almost none postpone this decision until age 70

<sup>14</sup> However, our results are robust to the absence of the two exclusion restrictions that were not necessary due to data limitations in the HRS – being widowed after full-retirement age and not living in poverty prior to widowhood – although the sample size did not increase appreciably once they were removed (see Table 3A–5A in the online Appendix) because few widows were affected by these restrictions.

(Johnson *et al.*, 2013). As a result, the monthly amount that these men are entitled to receive is permanently reduced as is the survivor benefit amount their wives are eligible to receive if they should die. The link between the husband's claim age and the survivor benefit has potentially important implications for the welfare of widows, many of whom become financially vulnerable and dependent upon this benefit to replace lost income following the death of their husband. Indeed, there was a clear downward shift in the prevalence of poverty among widows following 1972 reforms that increased the amount of the survivor benefit they were eligible to receive (Weaver, 2010). Despite the slow expansion of these benefits over time, a husband can still significantly reduce the amount his spouse is eligible to receive by claiming his own retirement benefit early. In this study, the first of its kind, we examined how the timing of his decision impacts the financial security of his spouse in widowhood.

Our analysis suggests three conclusions regarding this relationship. First, while early claiming on the part of the husband is associated with a higher probability that his widowed spouse enters poverty, the returns to a delay in the husband's claiming decision are non-linear and largest at earlier claim ages. The marginal effect of continued delay appears to fade out before the full retirement age of those in this sample. These results are encouraging because they imply that it is not necessary for men to wait prolonged periods to meaningfully reduce the risk that their spouse will experience material hardship – as measured by the poverty threshold – in the event of their death.

Second, the impact of a husband's claim age on the likelihood that his widow will enter poverty depends on the extent to which the Social Security income that she receives in widowhood is in the form of a survivor benefit. The survivor benefit's share of this amount is determined by the relative value of each spouse's own retirement benefit. The larger a widow's own retirement benefit is relative to that of her deceased spouse, the less Social Security income she receives in the form of survivor benefits. The more dependent the widow is on the survivor benefit as opposed to her own retirement benefit, the more influence her husband's claim age has on her likelihood of becoming poor. The husband's claim age is not associated with changes in her risk of entering poverty until her survivor benefit represents half or more of her Social Security income. According to the Social Security Administration (2014a), most widows receive a majority of their Social Security income in the form of a survivor benefit, even among the dually entitled.

Lastly, the marginal effect of the husband's claim age on his widow's risk of entering poverty is a function of her dependence on Social Security in widowhood. Our results suggest that the husband's claim age appears to have the greatest influence on the likelihood of poverty among widows who receive a majority of their income from Social Security. According to the Social Security Administration (2014b), almost two-thirds of the widows who receive income from Social Security are in this category.

The results presented here are of broad interest to policymakers concerned about the income protection the survivor benefit provides to widows. On several occasions in the past, such concerns resulted in expansions in this benefit that have, collectively, led to a substantial improvement in the financial well-being of widows over time (Weaver, 2001, 2010; Berkowitz, 2002). This study highlights the negative consequences of linking the husband's claim age to the amount of the survivor benefit he

bequeaths to his widow. Under this provision, widows can be negatively impacted by a decision over which they may exercise no control. Equally troubling is the possibility that husbands are not aware of the implications of their decision for their spouse. Widows remain among the most financially vulnerable groups in the USA and policy-makers looking to protect them from the risk of further hardship, may consider reforms that pertain to this particular provision of the survivor benefit.

Reform options for this benefit range from improving literacy of the link between the husband's claim age and the survivor benefit to abolishing this link altogether. One possible way to achieve the former is to clearly explain or illustrate the relationship between claim ages and the survivor benefits in the Social Security Statement, which currently does neither. This is problematic because the Statement is the primary source of Social Security benefit information for most workers (Greenwald *et al.*, 2010; Smith and Couch, 2014). This may help explain why most men are either uninformed or under-informed about the claim age that maximizes the survivor benefit amount their spouses are eligible to receive (Brown and Perron, 2011). Modifications to the benefit table in the Social Security Statement could promote a better understanding of the precise effect of their claim age on the survivor benefit amount their spouse would be entitled to receive in the event of their death. This information may encourage delayed claiming on the part of the husbands in households in which it is financially feasible to postpone this decision.

The most extensive reform option is to eliminate the provision that allows the primary earner's claiming decision to affect the amount of the survivor benefit. This change would result in more adequate incomes for many widows but is less targeted and, therefore, very costly. Using data from the 1994 March Supplement to the Current Population Survey (CPS), Weaver (2001) and Anzick and Weaver (2001) estimate that without this provision, the incomes of 340,000 widows living in poverty would have been higher and between 75,000 and 90,000 of these widows would have been lifted from poverty at an annual cost of roughly \$3.1 billion. As an antipoverty measure, however, this option is highly inefficient as a vast majority of these additional expenditures accrue to the non-poor.

Another option is to add a provision that allows widows to receive a fraction of the sum of the widow's own retirement benefit and the full retirement benefit of her deceased husband (unadjusted for early or delayed claiming) if this amount exceeds what she would receive under the current benefit structure (Entmacher, 2008). Anzick and Weaver (2001) estimate that this reform would help move 204,000 widows out of poverty at an annual cost of \$4.3 billion. More than a third of this increase in expenditures would go to widows living in poverty and another 20% would go to the near-poor. By allowing the secondary earner's own retirement benefit to augment rather than replace the survivor benefit she is entitled to receive, this reform also reduces her disincentive for additional work in place under the current benefit structure (Favreault *et al.*, 2002).

Looking ahead, the sharp increase in female labor force participation and an improvement in the female-to-male earnings ratio in the post-World War II period will likely reduce the value of this benefit to widows. These changes and reforms notwithstanding, married women are far more likely to work part time than men and those who do work full time still earn significantly less than their male counterparts, both

of which contribute to a gap between Social Security retirement benefits earned by female and male workers (Munnell and Sass, 2008). Moreover, the transition away from defined benefit plans towards defined contribution plans, ensures widows will be increasingly dependent on Social Security as a source of fixed income throughout their retirement. Thus, survivor benefits will remain an important source of income for widows and the results from this analysis suggest that reforming the provision that links the husband's claim age to the amount his widow receives may be necessary to sustain and strengthen the role of this benefit as an income maintenance mechanism.

### Supplementary material

To view supplementary material for this article, please visit <http://dx.doi.org/10.1017/S1474747215000438>

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