Social Security

Social Security Bulletin

Vol. 80, No. 4, 2020

IN THIS ISSUE:

The *Social Security Bulletin* (ISSN 1937-4666) is published quarterly by the Social Security Administration, 250 E Street SW, 8th Floor, Washington, DC 20254.

The *Bulletin* is prepared in the Office of Retirement and Disability Policy, Office of Research, Evaluation, and Statistics. Suggestions or comments concerning the *Bulletin* should be sent to the Office of Research, Evaluation, and Statistics at the above address. Comments may also be sent by e-mail to ssb@ssa.gov.

Errata Policy: If errors that impair data interpretation are found after publication, corrections will be posted as errata on the web at https://www.ssa.gov/policy/docs/ssb/v80n4/index.html.

SSA Publication No. 13-11700
Produced and published at U.S. taxpayer expense

Social Security Bulletin

Volume 80 • Number 4 • 2020

Article

Perspectives

Can Informational Interventions Be Effective Policy Tools? An Initial Assessment of the *Social Security Statement*

by Barbara A. Smith*

The Social Security Administration employs an informational intervention—mailing Social Security Statements*—to inform workers about their potential benefits. I use linear probability models and agency administrative data to analyze the effect of* Statement *receipt on the age at which workers claim their Social Security retirement benefits. I compare results for individuals who received one or multiple* Statement *mailings by age 62 with those who received none during the 1975–2007 study period. I find that workers who received multiple* Statement *mailings were significantly more likely to claim retirement benefits at later ages than were other workers, and that* Statement *receipt is positively associated with employment at ages 62–70. I also compare the relative effects of an educational outreach (*Statement *mailings) and a direct policy change (involving the full retirement age) on claiming behavior and find that the magnitudes of the two effects are similar.*

Introduction

Recent research suggests that retirement-related informational interventions may influence worker behavior. For example, when workers at a university were provided with retirement-income projections and plan enrollment information, they increased their annual contributions to employer-provided retirement accounts (Goda, Manchester, and Sojourner 2014). Offering employees of credit unions an online financial education program increased reported retirement plan participation, emergency savings, and budget use (Collins and Urban 2016). Sending informational nudges to state government workers approaching retirement age resulted in increased contributions to their retirement savings plans (Clark and others 2017).

In this study, I assess the effect of providing information about an important benefit that most workers will receive—the Social Security retirement benefit. The *Social Security Statement* (or, simply, the *Statement*) is a major outreach initiative of the Social Security Administration (SSA). It provides workers with estimates of the benefits they can expect to receive if they claim at age 62 (the earliest age of eligibility), their full retirement age (FRA), or age 70 (when delayed retirement credits stop accruing). When SSA began mailing earnings and benefit statements to workers in 1995, one of the primary purposes was to provide workers with information on their Social Security benefits to help them plan their financial futures. The *Statement* has been widely acknowledged as one of the federal government's most important public communications (Jackson 2005). It stands as the largest customized mailing ever undertaken by a federal agency (SSA, n.d.)

Selected Abbreviations

BLS	Bureau of Labor Statistics
CWHS	Continuous Work History Sample
FICA	Federal Insurance Contributions Act
FRA	full retirement age
HRS	Health and Retirement Study
LPM	linear probability model

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Selected Abbreviations—*Continued*

PIA	primary insurance amount
RET	retirement earnings test
SSA	Social Security Administration

Providing this information is important because the calculation of Social Security retirement benefits depends on complex rules that are not easy to understand. Those rules include factors such as individuals' marital histories, their work histories, and the age at which they choose to receive benefits. Many individuals are not aware that the benefit amount is affected by the age at which they claim. Claiming before FRA results in permanently reduced monthly benefits, and delaying claiming until after FRA permanently increases the monthly amount. The *Statement* provides detailed information on important program aspects, such as the reduction in benefits for early claiming, that might alter claiming behavior.

My research suggests that receipt of the *Statement* has a significant effect on the age at which workers claim their retirement benefits. Previous research found that receipt of the *Statement* increases knowledge of Social Security (Mastrobuoni 2011; Smith and Couch 2014a). This study is the first to find that receipt of the *Statement* has a statistically significant effect on behavior in addition to its effect on knowledge. I find that receipt of one *Statement* has no significant effect on the likelihood of claiming benefits at age 62, but it does significantly increase the likelihood of claiming at ages 64 and 65. In addition, I find that the receipt of two or more *Statements* has a statistically significant negative effect on the likelihood of claiming at age 62 and a statistically significant positive effect on the likelihood of claiming at ages 64 and 65. I also find that the effect of *Statement* receipt varies by race, sex, and earnings level; and that receiving a *Statement* has statistically significant effects on the likelihood of employment at ages 62 through 70.

The effects of two policy changes coincided with the implementation of *Statement* mailings. The first policy change established higher FRAs for workers born after 1937. Although it was enacted in 1983, this change began to affect workers reaching the earliest eligibility age of 62 in 2000, the same year the *Statement* was first sent to all eligible workers aged 25 or older. The FRA for each birth cohort from 1938 through 1943 is 2 months higher than that of the preceding cohort.[1] With higher FRAs, the permanent reduction for a monthly benefit claimed at age 62 increases. Such additional reductions are likely to encourage workers to claim later in order to receive a larger monthly benefit.

The second policy change eliminated the retirement earnings test (RET), effective 2000, for Social Security retired-worker beneficiaries once they attained FRA. The RET reduces monthly benefit amounts for individuals who claim benefits, continue to work, and earn more than a specified limit; until 2000, it applied even after FRA. Eliminating a reduction in benefits at FRA would likely increase the prevalence of claiming at FRA. My study addresses these two policy changes in different ways, discussed later.

My analysis draws on the rich administrative data in SSA's Continuous Work History Sample (CWHS). The CWHS is a 1 percent sample that allows me to examine Social Security benefit claiming behavior from 1975 through 2007. I also exploit the fact that SSA initially limited *Statement* mailings to selected age groups of older workers in a given year. These phased mailings allow me to distinguish recipients from nonrecipients and thereby assess the effect of one-time and multiple *Statement* receipt.

Background

This section summarizes the history of the *Statement* and reviews previous research on its effects.

Statement *Implementation*

The *Statement* traces its origins to the Omnibus Budget and Reconciliation Act of 1989, which amended the Social Security Act to require SSA to issue estimated-benefit and earnings-history statements beginning in 1995.[2] The legislation mandated that SSA mail these statements annually to workers aged 60 or older in fiscal year 1995 and, in fiscal years 1996 through 1999, to workers turning 60 during those years. The legislation also required SSA to send annual estimated-benefit and earnings-history statements to all eligible workers aged 25 or older beginning in fiscal year 2000. "Eligible workers" were defined as those with a Social Security number and having wages or net earnings from self-employment. SSA accelerated the legislated mailing schedule to include increasingly younger recipients during fiscal years 1996 through 1999.[3] As shown in Table 1, this modification enabled the agency to increase the volume of mailings gradually over time.

Table 1.
***Statement* mailings in fiscal years 1995–2002**

Fiscal year	*Statements* mailed	Recipients' ages	Recipients' birth years
1995	7.0 million	60 or older	1935 or earlier
1996	5.5 million	58–60	1936–1938
1997	12.4 million	53–58	1939–1944
1998	20.7 million	47–53	1945–1951
1999	26.6 million	40–47	1952–1959
2000	134.7 million	25 or older	1975 or earlier
2001	135.6 million	25 or older	1976 or earlier
2002	137.9 million	25 or older	1977 or earlier

SOURCE: Smith and Couch (2014b).

NOTE: The fiscal year begins in October of the previous year. For example, fiscal year 1995 began on October 1, 1994, and ended on September 30, 1995.

Workers born in 1937 or earlier would have received one *Statement*, in either fiscal year 1995 or fiscal year 1996, before attaining age 62. Workers born in 1938 or later would have received at least two *Statements* before attaining age 62: one in the 1990s, as a member of one of the age groups designated to receive *Statements*; and the second (and any subsequent ones) beginning in fiscal year 2000, when *Statements* were mailed to all eligible workers aged 25 or older.

SSA staggered the *Statement* mailings throughout each year, with workers receiving their *Statements* about 3 months before their birthdays. In fiscal year 2010, the last full fiscal year of mailings to all eligible workers aged 25 or older, SSA sent more than 151 million *Statements*. That worked out to about 12.5 million *Statements* mailed each month and about 420,000 delivered each day. Fewer *Statements* have been mailed in the fiscal years since 2010. In March 2011, the agency suspended *Statement* mailings for budgetary reasons. Beginning in September 2014, SSA resumed *Statement* mailings, targeting workers reaching ages 25, 30, 35, 40, 45, 50, 55, and 60 or older in the year; but effective January 2017, mailings were restricted to workers aged 60 or older who had not created an online *my* Social Security account, which provides access to the *Statement* electronically.

Prior to SSA's *Statement* mailings, the only way for workers to find out what they would receive if they claimed benefits was to call SSA's toll-free phone number for information or make an appointment to visit an SSA field office. For several years, the *Statement* provided information on benefits automatically and annually to all eligible workers, freeing them from potentially waiting on the phone or going into a field office.

Legislation determines the content of the estimated-benefit and earnings-history statements. The Omnibus Budget and Reconciliation Act of 1989 specified that *Statements* must contain the worker's earnings history and Social Security and Medicare taxes paid; estimated retirement benefits payable if claimed at the earliest eligible retirement age (62), FRA, and age 70; estimated disability and survivor benefits payable on the worker's earnings record; and a description of the benefits payable under Medicare. The Social Security Protection Act of 2004 further mandated that the *Statement* include sections on the Windfall Elimination Provision (WEP) and the Government Pension Offset (GPO) beginning in 2007. The WEP and the GPO may reduce Social Security benefits for workers and spouses, respectively, if the workers receive pensions from employment not covered by Social Security.[4] Over time, the design, content, and placement of information in the *Statement* have undergone slight changes. Appendix A presents a facsimile *Statement* from 2006.[5]

Statement *Effect on Knowledge and Behavior*

Smith and Couch (2014a) analyzed the *Statement*'s effect on the Social Security knowledge of younger workers, using data from surveys commissioned by SSA. That study compared workers who did not receive a *Statement* in 1998 with those who did receive a *Statement* in 2001. The authors compared the percentages of respondents who correctly answered each of three questions about Social Security program aspects and three questions addressing Social Security benefits. Both before and after *Statement* receipt, younger workers' knowledge was stronger in program-level aspects than in benefit-specific aspects. In 2001,

after distribution of the *Statement*, close to 90 percent of younger workers knew about SSA's programs, the financing of program benefits, and the relationship between benefits and earnings. However, even after *Statement* receipt, only about 70 percent of respondents knew that FRAs are higher for members of later birth cohorts, and less than 50 percent knew that benefits are inflation-indexed. Smith and Couch concluded that the gap in knowledge about benefits poses potential risks for the retirement security of younger workers and suggested several ways SSA could direct their outreach efforts.

Biggs (2010) used data from the 1994 through 2008 waves of the Health and Retirement Study (HRS) to analyze the effectiveness of the *Statement* in improving the public's knowledge of their Social Security retirement benefit levels. The HRS asks participants either to estimate their future retirement benefit amounts (if they have not yet claimed) or to report their actual benefit levels (if they are current beneficiaries). Biggs measured the accuracy of the estimated benefits when compared with realized benefits before and after the 1995 implementation of the *Statement*. He found that the initial mailings of the *Statement* did not result in more accurate estimates of retirement benefit levels but suggested that receipt of additional *Statements* might do so.

Mastrobuoni (2011) used data from the 1992 through 2000 HRS waves to study how the receipt of one's first *Statement* affected Social Security knowledge and the retirement behavior of workers aged 55 to 70. The author used HRS questions about expected retirement age and expected Social Security benefits (for workers) and retirement age and benefit levels (for retirees). Following respondents over time, Mastrobuoni compared the expectations with the actual outcomes for those who received a *Statement* and those who did not. He found that older workers who had not previously contacted SSA about their benefits were 20 percentage points more likely to be able to provide an estimate of their future retirement benefits if they had received a *Statement* than if they had not. However, he found no statistically significant changes in benefit claiming ages following receipt of the *Statement*. Mastrobuoni stated that his results called into question the likelihood that an informational intervention can affect behavior. He concluded that the information provided in the *Statement* was not sufficient to change workers' claiming patterns and called for more research on the *Statement*'s effect on behavior.

In another related study, Liebman and Luttmer (2015) conducted a randomized field experiment that provided information on Social Security (not duplicative of the information in the *Statement*) to 2,500 workers aged 60 to 65. The authors provided information on longevity, how benefits increase with claiming age, and the effect of the RET. They examined whether this informational intervention affected employment and benefit claiming. The intervention included an informational mailing and a 15-minute online tutorial. A year later, respondents answered a follow-up survey. The authors found that the individuals who received the intervention, which pointed out potential advantages of working longer and delaying claiming, were 4.2 percentage points more likely to be working at the 1-year follow-up. They found no statistically significant effect of the information on the likelihood of claiming benefits.

My research extends Mastrobuoni's study by examining the effect of receiving multiple *Statements*, rather than just one, on behavior. My data source, the CWHS, has much larger samples than the HRS and covers the years 1975 through 2007. Thus, I am able to study a larger number of individuals over a longer period. I extend the Liebman and Luttmer (2015) study by looking in depth at the effect of one aspect of their intervention—an informational mailing, which in this case is the *Social Security Statement*.

Data and Study Variables

This study uses longitudinal data from the CWHS, a major source of Social Security program statistics and workforce data. It is the oldest major longitudinal sample data source in the Federal statistical system. It evolved from the recordkeeping system created to meet the requirement in a 1939 amendment to the original Social Security Act that eligibility for benefits be determined based on quarters of coverage, an earnings-based measure of employment duration.

The CWHS is a 1 percent sample of the agency's administrative data. It can be described as a stratified-cluster probability sample of all possible Social Security numbers (SSNs). The population from which the 1-percent sample is selected consists of the 1 billion possible nine-digit SSNs. The SSNs are stratified geographically (with place of application for the SSN indicated by the first three digits) and chronologically by date of SSN assignment (the fourth and fifth digits). The last four digits in the SSN are random serial numbers. The actual sample is selected on the basis of specified numbers in positions six through nine of the SSN (Smith 1989).

The CWHS is selected from workers whose earnings are reported to SSA. Thus, the CWHS contains Federal Insurance Contributions Act (FICA)-covered summary earnings from 1937 to the present; and annual detailed earnings, Medicare taxable compensation, and total compensation from 1978 to the present. It also contains demographic information such as birth and death dates, place of birth, race, and sex. Most relevant for this project, it contains information related to the administration of SSA's retirement and disability programs, such as benefit application and entitlement dates, benefit amounts, and payment status. Once selected for inclusion in the CWHS, an individual remains in the sample for life.

The CWHS is well suited to address my research questions about the effect of *Statement* receipt on benefit claiming and employment because it provides a large and accurate source of longitudinal data on Social Security retirement benefits and on earnings, which are used to determine employment status. It also contains the exact date of entitlement for Social Security benefits. The exact date is important because this project examines the effect of *Statement* receipt on age at claiming of Social Security benefits. There are some disadvantages, however, to the use of administrative data. For example, the CWHS has no information on health status, education, or family characteristics. Of concern for this project, it also contains no information on *Statement* receipt.

Demographic and Economic Variables

Because the administrative data do not include many demographic or economic variables, this study uses dummy variables to account for other factors that might influence the age at which workers claim their Social Security retirement benefits. For instance, I use dummy variables to control for year effects. Year dummies, in theory, capture demographic and economic changes in the year of benefit claiming that might have affected the claiming decision. Year dummies can also capture policy and program changes that were occurring in the year when benefits were claimed.

Policy and Program Variables

As mentioned earlier, two notable policy changes took effect in 2000, when the *Statement* was first mailed to all eligible workers aged 25 or older. Workers who reached age 62 (the earliest age of eligibility to claim retired-worker benefits) in 2000 were members of the first birth cohort whose FRA is higher than 65. Also beginning in 2000, the RET was eliminated for beneficiaries on attaining their FRA.

Variable Representing Receipt of the *Statement*

Because there is no variable in the administrative data indicating whether a worker received a *Statement*, this study assumed receipt or nonreceipt based on birthdates. *Statement* receipt was assumed for any individual of an age cohort that was scheduled to receive one in the implementation phase from fiscal year 1995 through fiscal year 1999, and for all individuals in fiscal year 2000 and later when all eligible workers aged 25 or older were sent one.[6] For example, workers born 1939–1944 are assumed to have received a *Statement* in fiscal year 1997, when the agency plan called for mailing one to all eligible workers aged 53 through 58. According to the distribution schedule, workers born from 1933 through 1937 would have received just one *Statement* before age 62, during the implementation phase. Workers born in 1938 or later would have received two or more *Statements* before age 62. For workers born before 1960, one of the *Statements* would have been received during the implementation period. To account for receipt of the *Statement*, this study created a variable that was set equal to 1 if workers would have received a *Statement* based on their date of birth and 0 otherwise.

Depending on the estimation model, workers who received a *Statement* were placed in one of three groups:

- those who received at least one *Statement* before age 62 and were born from 1933 through 1945,
- those who received only one *Statement* before age 62 and were born from 1933 through 1937, or
- those who received two or more *Statements* before age 62 and were born in 1938 or later.

Workers who did not receive a *Statement* before age 62 were born from 1913 through 1932. This group is the same across all models.

Variables Representing the Varying FRAs

The differing FRAs for workers in the 1938 and later birth cohorts first began to affect benefit-eligible workers in 2000. The Social Security Act of 1935 had established a universal FRA of 65. In 1983, Congress enacted amendments—including the introduction of gradually increasing FRAs for later birth cohorts—to extend the financial stability of the Social Security program. The FRA rises in 2-month increments for successive birth cohorts, beginning with the 1938 cohort and reaching 66 for the 1943 cohort—thus affecting workers reaching age 62 in 2000 through 2005. When retirement benefits are claimed prior to a worker's FRA, they are reduced by an actuarially fair

amount to account for the additional time over which they will be received. The maximum monthly benefit reduction for early claiming is larger for workers with higher FRAs. For example, claiming at 62, the earliest age of eligibility, results in a 20 percent reduction in "full" monthly benefits (that is, benefits claimed at FRA) for a worker whose FRA is 65 but a 25 percent reduction for a worker whose FRA is 66. The larger monthly benefit reductions faced by workers with higher FRAs might result in declines in pre-FRA claiming if workers want to ensure a certain level of monthly benefits in retirement. Thus, as the higher FRAs have begun affecting retirement-age workers, we might expect to see declines in claiming at the earlier eligibility ages of 62 and 63 and increases in claiming at ages closer to FRA, such as 64 and 65.

This study uses a dummy variable for each FRA affecting the study sample members, from 65 and 2 months to 66. These dummies are represented as follows:

- $FRA65\_2_{it}$ = 1 if the individual was born in 1938, for whom the FRA is 65 and 2 months; else 0.
- $FRA65\_4_{it}$ = 1 if the individual was born in 1939, for whom the FRA is 65 and 4 months; else 0.
- $FRA65\_6_{it}$ = 1 if the individual was born in 1940, for whom the FRA is 65 and 6 months; else 0.
- $FRA65\_8_{it}$ = 1 if the individual was born in 1941, for whom the FRA is 65 and 8 months; else 0.
- $FRA65\_10_{it}$ = 1 if the individual was born in 1942, for whom the FRA is 65 and 10 months; else 0.
- $FRA66_{it}$ = 1 if the individual was born during 1943 through 1954, for whom the FRA is 66; else 0.

The Effect of Eliminating the RET at FRA

The Senior Citizens Freedom of Work Act of 2000 eliminated the RET for Social Security beneficiaries who have attained FRA. The RET reduces monthly Social Security benefits for current beneficiaries with work earnings exceeding specified amounts; however, any benefits withheld are credited back once the beneficiary attains FRA, resulting in a permanent increase in monthly benefits. The elimination of the RET at the FRA affected workers aged 65 or older in our study. Evidence suggests that the 2000 RET reform resulted in beneficiaries claiming benefits earlier than they would have without the reform (Olsen and Romig 2013). Therefore, we should expect to see some increase in benefit claiming at age 65. The overall effect on earlier benefit claiming is likely to be small, however, because most individuals in the 65–69 age group apply for benefits before reaching FRA. Also, the RET directly affects only about 5 percent of retired-worker beneficiaries each year because the majority of those individuals who are still working earn less than maximum specified by the RET (Olsen and Romig 2013). Research that examined how the elimination of the RET at FRA affected expected claiming age found that this effect was not significant among men aged 51–61 (Michaud 2008). For the reasons listed above and because of the limited covariates in the administrative data, this study does not control for the effect of the RET on benefit claiming.

Sample Size

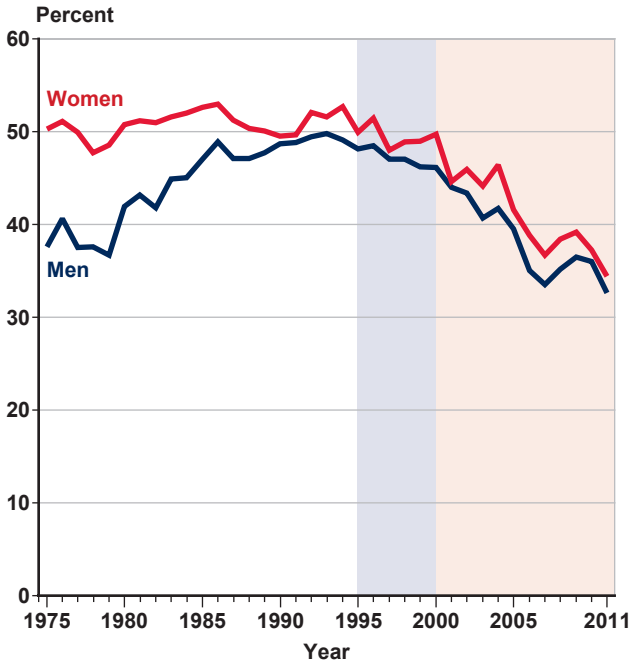
The analysis looks at how *Statement* receipt affects claiming behavior for workers overall, by sex, by race (white, black), and by earnings level (low, high). The sample size for all workers aged 62 to 70 is 586,415. The sample sizes for male and female workers are 323,846 and 262,569, respectively. The sample size for non-Hispanic white workers is 510,197 and for non-Hispanic black workers is 52,797. The sample size for both low and high earners is 292,969.

Methodology

I begin by calculating the percentage of fully insured workers born 1913–1949 who claimed a retirement benefit on their own earnings record at age 62. Fully insured workers have at least 10 years of earnings and are therefore eligible to receive retirement benefits. Chart 1 plots the pattern of these age-62 claiming rates for 1975–2011. The rate increased for men until around the mid-1990s and afterward began to decline. Starting around 2000, the decline appears to become steeper. SSA began sending out the *Statement* to selected groups of older workers in 1995 and to all eligible workers aged 25 or older in 2000. Thus, there appears to be a correlation between *Statement* mailings and the decline in retirement benefit claiming at age 62.

I then estimate the effect of *Statement* receipt on claiming behavior and employment using a linear probability model (LPM). The LPM allows me to compare the probability of claiming (or being employed) at ages 62 through 70 for workers who received a *Statement* and those who did not. The dependent variable in this analysis is binary, equaling 1 if the worker claimed (or was employed) at a given age and equaling 0 otherwise. The advantage of using the LPM is that the coefficients are easy to interpret. For example, the coefficient on the dummy variable for receipt of the

Chart 1.
Fully insured workers who claim retired-worker benefits at age 62, by sex: 1913–1949 birth cohorts (in percent)



SOURCE: Author's calculations using data from the CWHS.

Statement can be interpreted as the change in the probability or likelihood of claiming at a given age—say, 62—if a *Statement* has been received.

I use three variations of the LPM:

- Model 1 estimates the effect of *Statement* receipt on the likelihood of claiming benefits at a given age, controlling for year effects.
- Model 2 estimates the effect of *Statement* receipt on the likelihood of claiming benefits at a given age, controlling for the varying FRAs.
- Model 3 estimates the effect of *Statement* receipt on the likelihood of employment, controlling for the varying FRAs.

For each model, I look at the effect of *Statement* receipt first for all workers and then separately by sex and race. For Model 2, controlling for the varying FRAs, I also look at the effect of *Statement* receipt by earnings level.

This project focuses on workers aged 62–70 in the years 1975–2007. This study period begins 20 years prior to the introduction of the *Statement* mailings and follows sample members who turned 62 in 1995, after receiving the first *Statement* mailing, for more than 10 years. I follow individuals through age 70 because monthly Social Security retirement benefits increase with each month the worker delays claiming, up to age 70. I use data only through 2007 to avoid possible complications arising from the Great Recession and the suspension of *Statement* mailings in 2011. Nonetheless, I am able to look at responses for the first 13 years of mailings.

Estimating the Effect of the *Statement* on Benefit Claiming

For Models 1 and 2, I use a separate equation for each year of age at which Social Security retirement benefits can be claimed, 62 through 70, using data for the calendar years 1975 through 2007. I set the binary dependent variable for each equation equal to 1 if retirement benefits were claimed at that age and 0 otherwise. I do not make distinctions by month within a claiming year. For example, I assume that claiming at age 62 and 0 months and at age 62 and 11 months are the same. Independent variables include the dummy variable for *Statement* receipt as well as dummy variables to capture the effects of demographic and economic factors that might influence when workers claim their retirement benefits.

In Model 1, I am able to compare the two periods of the *Statement*'s implementation. In the first period, from 1995 to 1999, workers in selected age groups received just one *Statement* before age 62. In the second period, from 2000 to 2007, all workers aged 25 or older received annual *Statements*, and thus received multiple *Statements* before age 62. Therefore, I am able to compare the effects of receiving one and multiple *Statements* on claiming behavior. This LPM is written as:

$$\text{Claim}^{j}_{it} = \alpha + \beta_1 \text{SSS1}_{it} + \beta_2 \text{SSS2}_{it} + \beta_3 \text{YR}_{it} + \varepsilon_{it} \qquad (1)$$

where

- Claim^{j}_{it} = 1 if the individual claimed benefits at this age; else 0, for j = ages 62 through 70.
- SSS1_{it} = 1 if the individual received only one *Statement* before age 62 (birth years 1933 through 1937); else 0.
- SSS2_{it} = 1 if the individual received two or more *Statements* before age 62 (birth years 1938 through 1945); else 0.
- YR_{it} (dummy for year effects from 1975 through 2007) = 1 in the year the individual turns 62; else 0.

In this model, the dummies representing varying FRAs would be collinear with the dummies representing year effects, so I omit the FRA dummies.

In Model 2, I specifically control for the incremental variation in the FRAs from 65 to 66, which began to affect potential age-62 claimants in the sixth year of *Statement* mailings (2000). Including these dummy variables for the FRA in the estimations, along with the dummy variable for receipt of a *Statement*, allows me to separate the effect of the mailings from that of the varying FRAs. I am not able to look separately at receipt of one and of multiple *Statements* because the varying FRAs and the periods in which workers would have received multiple *Statements* coincide, so that the dummy variables would be collinear. Nonetheless, I think this specification provides useful estimates of the *Statement*'s effect on benefit claiming as well as the responsiveness of claiming to changes in the FRA. The LPM is written as:

$$\begin{aligned}\text{Claim}^{j}_{it} = {} & \alpha + \beta_1 \text{SSS}_{it} + \beta_2 \text{FRA65\_2}_{it} + \beta_3 \text{FRA65\_4}_{it} \\ & + \beta_4 \text{FRA65\_6}_{it} + \beta_5 \text{FRA65\_8}_{it} \\ & + \beta_6 \text{FRA65\_10}_{it} + \beta_7 \text{FRA66}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

where

- $\text{Claim}^{j}_{it} = 1$ if the individual claimed benefits at this age; else 0, for j = ages 62 through 70.
- $\text{SSS}_{it} = 1$ if the individual received at least one *Statement*[7] before age 62 (birth years 1933 through 1945); else 0.
- $\text{FRA65\_2}_{it} = 1$ if the individual was born in 1938, for whom the FRA is 65 and 2 months; else 0.
- $\text{FRA65\_4}_{it} = 1$ if the individual was born in 1939, for whom the FRA is 65 and 4 months; else 0.
- $\text{FRA65\_6}_{it} = 1$ if the individual was born in 1940, for whom the FRA is 65 and 6 months; else 0.
- $\text{FRA65\_8}_{it} = 1$ if the individual was born in 1941, for whom the FRA is 65 and 8 months; else 0.
- $\text{FRA65\_10}_{it} = 1$ if the individual was born in 1942, for whom the FRA is 65 and 10 months; else 0.
- $\text{FRA66}_{it} = 1$ if the individual was born during 1943 through 1954, for whom the FRA is 66; else 0.

Estimating the Effect of the *Statement* on Employment

Claiming Social Security retirement benefits and deciding to work are separate and independent decisions. Individuals have four options with respect to claiming benefits and working.[8] They can either:

- Claim benefits and continue to work,
- Claim benefits and stop working,
- Delay claiming benefits and continue to work, or
- Delay claiming benefits and stop working.

With Model 3, I examine whether individuals continued to work in response to the mailings or stopped working. For this portion of the analysis, I use an equation similar to equation (2) above, substituting a binary dependent variable that equals 1 for those who have earnings at each age 62 through 70 (and are therefore employed), and 0 if they do not, for EMP^{j}_{it}. I use the same independent variables: dummies controlling for *Statement* receipt and dummies controlling for the varying FRAs. The LPM is written as:

$$\begin{aligned}\text{EMP}^{j}_{it} = {} & \alpha + \beta_1 \text{SSS}_{it} + \beta_2 \text{FRA65\_2}_{it} + \beta_3 \text{FRA65\_4}_{it} \\ & + \beta_4 \text{FRA65\_6}_{it} + \beta_5 \text{FRA65\_8}_{it} \\ & + \beta_6 \text{FRA65\_10}_{it} + \beta_7 \text{FRA66}_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

where

- $\text{EMP}^{j}_{it} = 1$ if the individual was employed at this age; else 0, for j = ages 62 through 70.
- $\text{SSS}_{it} = 1$ if the individual received at least one *Statement* before age 62 (birth years 1933 through 1945); else 0.
- $\text{FRA65\_2}_{it} = 1$ if the individual was born in 1938, for whom the FRA is 65 and 2 months; else 0.
- $\text{FRA65\_4}_{it} = 1$ if the individual was born in 1939, for whom the FRA is 65 and 4 months; else 0.
- $\text{FRA65\_6}_{it} = 1$ if the individual was born in 1940, for whom the FRA is 65 and 6 months; else 0.
- $\text{FRA65\_8}_{it} = 1$ if the individual was born in 1941, for whom the FRA is 65 and 8 months; else 0.
- $\text{FRA65\_10}_{it} = 1$ if the individual was born in 1942, for whom the FRA is 65 and 10 months; else 0.
- $\text{FRA66}_{it} = 1$ if the individual was born during 1943 through 1954, for whom the FRA is 66; else 0.

I use FICA earnings data reported in the CWHS to create my employment variable. For each birth year from 1916 through 1945, I create an earnings variable for ages 62 through 70 that is equal to recorded FICA earnings. For younger birth cohorts (born from 1938 through 1945), I am not able to create an earnings variable for all ages from 62 through 70, given that members of these cohorts had not reached age 70 by my last year of analysis (2007). If my earnings variable is positive, I assume the individual was employed. For example, if the earnings variable for an individual aged 62 is positive, then I set EMP^{j}_{it} equal to 1 when j = 62.

Results

As noted earlier, the percentage of workers claiming benefits at age 62, the most popular age to claim Social Security retirement benefits, has been declining since the mid-1990s. The mid-1990s is also when the *Statement* was first mailed automatically to selected age groups of older workers. Beginning in 2000, the *Statement* was sent to all eligible workers aged 25 or older. The estimates I present here are intended to measure the effect that receiving the *Statement*, with its information about claiming age and benefit amounts, had on workers' claiming and employment decisions. Because delaying claiming and working longer would lead to larger monthly benefits for the rest of their lives, evidence that workers altered their decisions in this way would imply that the information they received informed their choices. Coefficient values for the independent variables range between 0 and 1 in value. For ease of interpretation, they are presented as percentages.

Effect of Statement *Receipt on Benefit Claiming*

Table 2 shows the estimated effects of the *Statement* mailings, controlling for year effects (Model 1) and for the varying FRAs (Model 2). In both models, *Statement* receipt is associated with a significantly greater likelihood of claiming at age 65: by 2.68 percentage points when controlling for the varying FRAs, and by 2.31 percentage points and 4.64 percentage points—depending on the number of *Statements* received—when controlling for year effects.[9] Also in both models, receipt of the *Statement* was associated with significantly decreased claiming at younger ages. Model 2, controlling for the varying FRAs, showed a decrease in the likelihood of claiming at age 63 of 0.90 percentage point and a decrease in the likelihood of claiming at age 64 of 2.18 percentage points. Model 1, controlling for year effects, showed a decrease in the likelihood of claiming at age 62 of 3.36 percentage points for those receiving multiple *Statements*. Both models suggested that workers were less likely to claim at earlier ages following receipt of the *Statement* and more likely to claim at age 65, although the patterns of timing differ somewhat across the models. For ages 66 through 70, there was no clear pattern of effect of the mailings between the two models.

As a final note, in Model 2, at age 63, the magnitude of the *Statement*'s negative effect was larger, at 0.90 of a percentage point, than that of any of the FRA dummies, whose absolute values ranged from 0.05 to 0.46. At ages 64, 65, and 67, the magnitude of the *Statement* effect was at the lower end of the range of magnitudes for the FRA dummies, with values of −2.18, 2.68, and 0.18, respectively. At ages 69 and 70, the magnitude

Table 2.
Effect of *Statement* receipt and FRA on the probability of claiming a retirement benefit at a given age: All workers

Variable	62	63	64	65	66	67	68	69	70
				Model 1: Controlling for year effects only					
Intercept	50.22	6.08	10.24	11.98	1.17	2.01	0.51	0.46	0.68
One *Statement* received	-1.83	-0.08	2.82***	2.31***	-0.45	-1.45***	0.04	0.05	0.16
Multiple *Statements* received	-3.36***	0.27	1.64***	4.64***	-0.34	-1.25***	0.01	0.03	0.15
				Model 2: Controlling for the varying FRAs					
Intercept	48.95	7.16	13.76	11.94	1.04	0.73	0.55	0.60	0.52
At least one *Statement* received	-0.44	-0.90***	-2.18***	2.68***	0.15	0.18***	-0.10	-0.12***	0.35***
FRA									
65 and 2 months	-1.65***	0.09	0.31	1.99***	-0.37	0.20	0.06	0.01	-0.03
65 and 4 months	-3.54***	0.19	-0.98**	4.12***	-0.19	0.11	0.01	0.20	0.24
65 and 6 months	-4.48***	-0.11	-2.54***	6.43***	-0.12	0.12	0.23***	0.09	0.27***
65 and 8 months	-5.62***	0.05	-3.14***	7.34***	0.13	0.44***	0.03	0.01	0.54***
65 and 10 months	-5.99***	-0.38	-3.38***	8.30***	0.79***	0.51***	0.09	0.18	0.71***
66	-8.74***	0.46*	-3.52***	-3.25***	14.33***	0.72***	0.06	-0.27***	-0.61***

SOURCE: Author's calculations using data from the CWHS.

NOTES: Estimates are from an LPM. Number of observations = 586,415.

* = statistically significant at the $p = 0.05$ level; ** = statistically significant at the $p = 0.02$ level; *** = statistically significant at the $p = 0.01$ level.

of the *Statement* effect was, at −0.12 and 0.35 respectively, somewhere in the middle of the range of effects for the FRA dummies. I cite these comparisons simply to note that estimates of the effect of the mailings on behavior are similar to those of changing policy by raising FRAs for later birth cohorts.

Estimating the Effect of the Statement *on Benefit Claiming by Sex and Race*

Whereas Table 2 shows the *Statement*'s effect on the likelihood of benefit claiming for all workers, Table 3 shows its effect on the likelihood of claiming benefits separately for men and women, again controlling for year effects and for the varying FRAs. The results for men and women in Model 1 were similar to those for all workers in magnitude and sign. However, receipt of the *Statement* was associated with a smaller change in the likelihood of claiming benefits for women than for men at claiming ages 62 and 65. For example, receipt of multiple *Statements* was associated with a reduction in the likelihood of claiming at age 62 by 3.81 percentage points for men and by 2.90 percentage points for women. Receipt of multiple *Statements* was associated with an increase in the likelihood of claiming at age 65 by 5.32 percentage points for men and 3.94 percentage points for women. However, receipt of one *Statement* was associated with a larger increase in the likelihood of claiming at age 64 for women (3.08 percentage points) than for men (2.60 percentage points).

The Model 2 results provide a possible explanation for the insignificant effect of *Statement* receipt on the likelihood of benefit claiming for all workers at age 62. For men, receipt of at least one *Statement* was associated with a significant and positive effect on the likelihood of claiming benefits at age 62, by 2.18 percentage points. For women, receipt of the *Statement* was associated with a reduction in the likelihood of claiming at age 62 by 3.99 percentage points. In this model, as in the model controlling for year effects, the *Statement*'s effect on the likelihood of benefit claiming was smaller for women than for men for most ages. The effect of the *Statement* was also less likely to be significant for women than for men.

There are several possible explanations for why women's claiming may be less affected by *Statement* receipt than men's. For example, many of the women in my study are likely to be married. Studies show that married women tend to retire from the labor force when their husbands do, with the result that they might be less influenced by the *Statement*'s estimates of their benefits (Johnson 2004). Other studies suggest that

Table 3.
Effect of *Statement* receipt on the probability of claiming a retirement benefit at a given age, by sex

Variable	62	63	64	65	66	67	68	69	70
				Model 1: Controlling for year effects only					
				Men					
Intercept	49.41	6.80	10.96	13.78	1.26	2.32	0.42	0.31	0.18
One *Statement* received	-2.35	-0.52	2.60***	3.11***	-0.49	-1.85***	0.00	0.04	0.15
Multiple *Statements* received	-3.81***	-0.08	1.81**	5.32***	-0.43	-1.67***	0.03	0.10	0.12
				Women					
Intercept	51.19	5.24	9.39	9.87	1.06	1.64	0.61	0.64	1.28
One *Statement* received	-1.23	0.78	3.08***	1.40	-0.40	-0.99***	0.08	0.06	0.16
Multiple *Statements* received	-2.90**	0.69	1.49	3.94***	-0.24	-0.77***	-0.02	-0.06	0.17
				Model 2: Controlling for the varying FRAs					
				Men					
Intercept	45.13	7.87	15.00	14.02	1.14	0.77	0.55	0.60	0.37
At least one *Statement* received	2.18***	-1.37***	-2.86***	2.93***	0.20	-0.25***	-0.19***	-0.28***	-0.08
				Women					
Intercept	53.96	6.23	12.14	9.23	0.91	0.67	0.55	0.59	0.71
At least one *Statement* received	-3.99***	-0.26	-1.23***	2.61***	0.10	-0.08	0.02	0.08	0.85***

SOURCE: Author's calculations using data from the CWHS.

NOTES: Estimates are from an LPM. Number of observations = 323,846 men, 262,569 women.

** = statistically significant at the p = 0.02 level; *** = statistically significant at the p = 0.01 level.

the real or perceived relative advantages of various retired-worker and spousal benefit claiming scenarios might encourage wives to retire early and thus be less influenced by *Statement* receipt to delay claiming (Munnell and Soto 2005). Finally, women are more likely than men to be a caregiver for an elderly or sick family member and thus be less likely to have the option to delay claiming.

Table 4 shows the effect of *Statement* receipt on the likelihood of claiming benefits for white and black workers, controlling for year effects and for the varying FRAs. Because white workers constitute a large majority of the study sample, their results were, not surprisingly, similar to those for all workers.[10] In Model 1, the results for white workers are almost identical to those for all workers overall in sign, magnitude, and significance. For black workers, receipt of the *Statement* had a significant effect only at age 67, when it reduced the likelihood of claiming by 1.43 percentage points if one *Statement* was received and by 1.23 percentage points if multiple *Statements* were received.

In Model 2, the results for white workers are also very similar in sign, magnitude, and significance to those for all workers. The effect of *Statement* receipt on the likelihood of claiming for black workers is negative and significant at ages 63 and 64, and positive and significant at age 65.

Health status and socioeconomic factors might explain why *Statement* receipt has no significant effect on claiming for black workers at ages 62, 64, and 65 in Model 1 and why the negative effect on claiming at age 63 in Model 2 is so much smaller for black workers than for white ones. Older black workers are more likely than older white workers to have higher rates of diabetes, hypertension, and obesity—chronic conditions that can lead to disability. Black Americans also have lower life expectancy than white Americans (Martin and Murphy 2014). A higher prevalence of chronic health conditions and higher mortality is likely to result in early benefit claiming and a reduced likelihood of delaying claiming. On average, black workers also have lower educational attainment and lower earnings than white workers (Bureau of Labor Statistics [BLS] 2018). Individuals with lower earnings are less likely to have additional sources of retirement income to complement the benefits they receive from Social Security. Thus, black workers will be less financially likely to have the option to delay claiming of benefits—both because they are less likely to be able to continue to work and because they are less likely to have alternative sources of retirement income.

Table 4.
Effect of *Statement* receipt on the probability of claiming a retirement benefit at a given age, by race

Variable	62	63	64	65	66	67	68	69	70
Model 1: Controlling for year effects only									
White									
Intercept	51.36	6.10	10.55	11.88	1.01	1.88	0.47	0.40	0.72
One *Statement* received	-1.54	0.11	2.74***	2.27***	-0.50	-1.47***	-0.03	0.06	0.08
Multiple *Statements* received	-3.28***	0.16	1.70***	4.76***	-0.32	-1.31***	-0.14	0.02	0.12
Black									
Intercept	44.37	6.07	7.48	11.12	1.54	2.37	0.64	0.70	0.32
One *Statement* received	1.03	0.21	2.18	0.86	-0.31	-1.43***	-0.23	-0.41	0.44
Multiple *Statements* received	-1.02	1.37	1.33	2.28	-0.62	-1.23**	0.21	-0.19	0.14
Model 2: Controlling for the varying FRAs									
White									
Intercept	49.82	7.09	14.03	12.00	0.93	0.65	0.48	0.56	0.49
At least one *Statement* received	0.09	-0.86***	-2.29***	2.51***	0.11	-0.21***	-0.09	-0.17***	0.35***
Black									
Intercept	42.87	7.86	10.89	10.31	1.79	1.17	0.93	0.73	0.64
At least one *Statement* received	1.45	-0.18**	-1.84***	2.34***	-0.18	-0.29	-0.49***	-0.23	0.18

SOURCE: Author's calculations using data from the CWHS.

NOTES: Estimates are from an LPM. Number of observations = 510,197 white, 52,797 black.

** = statistically significant at the p = 0.02 level; *** = statistically significant at the p = 0.01 level.

Estimating the Effect of the Statement *on Benefit Claiming by Earnings Level*

The effect of *Statement* receipt on benefit claiming varies across earnings levels. As a proxy for earnings, I use the primary insurance amount (PIA), which is the monthly retirement benefit workers receive if they claim at their FRA. The PIA is directly linked to earnings: As an individual's lifetime earnings increase, so does the PIA.[11] I calculated the median PIA and then used Model 2, controlling for the varying FRAs, to estimate the *Statement*'s effect on claiming age for all workers, for those with a PIA less than the median, and for those with a PIA greater than the median.

Receipt of at least one *Statement* by age 62 had different effects on the two earnings groups (Table 5). For those with PIAs below the median, receipt of the *Statement* was associated with a decrease in the likelihood of claiming at age 62 by 4.07 percentage points. For those with PIAs above the median, receipt of the *Statement* was associated with an increase in the likelihood of claiming at age 62 by 3.36 percentage points.

These differing results might be explained by the relationship between earnings level and the likelihood of having other retirement savings. Higher earners have greater access to both defined benefit and defined contribution retirement plans than do lower earners (BLS 2017). Higher earners also participate in available employer-provided plans at higher rates than do lower earners. Further, higher earners are more likely to have personal retirement savings in addition to their employer-offered retirement plans. Given these other sources of retirement income, higher earners, who are also likely to receive higher Social Security benefits, might decide to claim early and let their 401(k) and personal saving investments appreciate. Lower earners, on the other hand, are less likely to have other sources of retirement income. Because they will be more dependent on Social Security benefits for their retirement income, lower earners may be more likely to continue to work and delay claiming to increase the amount of the Social Security benefits they will receive.

Table 5.
Effect of *Statement* receipt and FRA on the probability of claiming a retirement benefit at a given age, by own PIA relative to the median: Model 2 (controlling for the varying FRAs)

Variable	62	63	64	65	66	67	68	69	70
				Workers whose PIA is greater than the median					
Intercept	42.74	8.44	17.81	16.76	1.23	0.85	0.62	0.70	0.50
At least one *Statement* received	3.36***	-1.58***	-4.09***	3.00***	0.08	-0.43***	-0.34***	-0.42***	0.14***
FRA									
65 and 2 months	-1.63	0.10	0.62	2.17***	-0.63	0.07	0.10	0.08	0.02
65 and 4 months	-2.95***	0.35	-1.93***	5.09***	-0.52	0.06	0.06	0.14	0.30*
65 and 6 months	-3.58***	-0.45	-4.27***	8.21***	-0.29	0.32	0.23	0.28*	0.34***
65 and 8 months	-5.31***	-0.23	-5.27***	10.46***	-0.03	0.40***	0.20	0.16	0.82***
65 and 10 months	-6.42***	-0.88	-6.15***	11.40***	0.84***	0.65***	0.29***	0.42***	1.15***
66	-8.58***	0.02	-6.01***	-6.05***	20.42***	0.96***	0.19**	-0.13	-0.63***
				Workers whose PIA is less than the median					
Intercept	55.21	5.88	9.68	7.11	0.85	0.60	0.49	0.49	0.54
At least one *Statement* received	-4.07***	-0.27	-0.43	1.94***	0.20	0.10	0.17***	0.19***	0.57***
FRA									
65 and 2 months	-1.46	0.03	-0.24	1.32***	-0.07	0.37*	0.04	-0.05	-0.07
65 and 4 months	-4.09***	-0.02	0.01	2.79***	0.19	0.16	-0.04	0.28	0.18
65 and 6 months	-5.40***	0.25	-0.68	4.20***	0.06	-0.09	0.24	-0.11	0.19
65 and 8 months	-6.14***	0.39	-0.81	4.67***	0.31	0.46***	-0.14	-0.17	0.24
65 and 10 months	-5.77***	0.18	-1.31***	5.63***	0.74***	0.36***	-0.12	-0.08	0.25
66	-9.12***	0.96***	-0.84***	0.00	8.25***	0.46***	-0.09	-0.43***	-0.62

SOURCE: Author's calculations using data from the CWHS.

NOTES: Estimates are from an LPM. Number of observations = 585,938 (all workers), with 292,969 workers each with PIAs greater and less than the median (sample omits 477 workers with PIAs at the median).

* = statistically significant at the $p = 0.05$ level; ** = statistically significant at the $p = 0.02$ level; *** = statistically significant at the $p = 0.01$ level.

This offsetting difference by earnings level might explain why I find the overall effect of *Statement* receipt on claiming at age 62 to be insignificant. As noted above, the effect of *Statement* receipt on the likelihood of claiming at age 62 was positive for workers with a PIA above the median (3.36 percentage points) and negative for those with a PIA below the median (−4.07 percentage points).

The effect of *Statement* receipt on the likelihood of claiming at age 65 was positive for workers with a PIA above the median (3.00 percentage points) as well as for those with a PIA below the median (1.94 percentage points). Although the effect of *Statement* receipt on the likelihood of claiming at ages 63 and 64 was negative for workers with PIAs both above and below the median, it was significant only for those with PIAs above the median (−1.58 percentage points at age 63 and −4.09 percentage points at age 64). For those with PIAs below the median, receipt of the *Statement* had a small but significant positive effect on the likelihood of claiming at ages 68, 69, and 70 (0.17 percentage point, 0.19 percentage point, and 0.57 percentage point, respectively). For workers with PIAs above the median, receipt of the *Statement* had a small but significant negative effect on the likelihood of claiming at ages 67, 68, and 69, and an even smaller positive and significant effect on claiming at age 70.

Estimating the Effect of the Statement *on Employment*

Based on a broader CWHS sample, Table 6 shows the estimated effect of *Statement* receipt on the probability of being employed. I find that receipt of at least one *Statement* was associated with a significant increase in the percentage of individuals working. The estimates suggest that, at each age, the likelihood of working increased between 5 percentage points and 7 percentage points as a result of receiving a *Statement*. In other words, *Statement* receipt was associated with increased likelihood of being employed at ages 62 through 70. All of the FRA dummies were significant but the magnitude was less than half that of the *Statement* dummy. I also looked at the effect of *Statement* receipt on the likelihood of working by sex and race. What was true for all workers was also true for men and women and for black and white workers: Receipt of the *Statement* was associated with a 4–7 percentage point increase in the likelihood of working (not shown).

Robustness Results

The models I use contain a limited number of covariates, such as sex and race, and I used those covariates to separate the sample into different groups of interest. To determine if my results may have been driven by unobserved factors, I tested three different specifications to check the robustness of the effect of *Statement* receipt on claiming. The first specification included adding a trend term to my models to provide an additional control for exogenous changes in my dependent variable that are not explained by other variables. Second, to test whether the estimation framework itself might result in spurious results, I randomly assigned receipt of the *Statement* to individuals who never could have received one. The third specification added a variable to control for changes in the economy that might have affected when workers claimed their Social Security retirement benefits.

Table 6.
Effect of *Statement* receipt and FRA on the probability of being employed at a given age: All workers, Model 3 (controlling for the varying FRAs)

Variable	62	63	64	65	66	67	68	69	70
Intercept	38.40	32.53	28.32	25.21	21.10	18.32	16.43	14.73	13.21
At least one *Statement* received	5.11***	5.70***	6.22***	6.40***	6.72***	6.69***	6.24***	5.85***	5.45***
FRA									
65 and 2 months	2.10***	1.74***	1.14**	1.08**	1.47***	1.68***	1.76***	1.76***	0.00
65 and 4 months	2.22***	1.69***	1.60***	1.75***	2.55***	2.58***	2.38***	0.00	0.00
65 and 6 months	1.85***	2.31***	2.46***	2.57***	3.21***	2.80***	0.00	0.00	0.00
65 and 8 months	2.48***	3.12***	3.31***	3.28***	-3.71***	0.00	0.00	0.00	0.00
65 and 10 months	2.72***	3.40***	3.78***	3.75***	0.00	0.00	0.00	0.00	0.00
66	4.01***	4.95***	5.16***	0.00	0.00	0.00	0.00	0.00	0.00

SOURCE: Author's calculations using data from the CWHS.

NOTES: Estimates are from an LPM. Number of observations = 836,415.

** = statistically significant at the p = 0.02 level; *** = statistically significant at the p = 0.01 level.

When I added a trend term to the model with year dummies, I found that the direction of the *Statement*'s effect on the likelihood of claiming was the same as in the original model: a negative effect at ages 62 and 67 and a positive effect at ages 64 and 65 (Table 7). However, the magnitude of the effect of the *Statement* increased. For example, the effect of receipt of one *Statement* before age 62 on the likelihood of claiming at age 62, which was insignificant in the original model, was significant and negative in the model with the trend term. In addition, the effect of receiving multiple *Statements* on the likelihood of claiming at age 62 was −3.36 percentage points in the original model but −4.57 percentage points in the model with the trend term.

Adding a trend term to model 2 (controlling for varying FRAs) resulted in some changes in sign from the original specification of the *Statement*'s effect on the likelihood of claiming at ages 62 through 70 (Table 8). However, the overall pattern of a reduction in early claiming and an increase in later claiming remained. For example, the effect of the *Statement* on the likelihood of claiming at age 65 was 2.68 percentage points in the original model and 2.94 percentage points in the model with the trend term. Without the time-trend term, controlling for the varying FRAs led to an insignificant effect on claiming at age 62; but controlling for the time trend led to a negative and significant reduction in claiming of 4.27 percentage points. Thus, including the trend term

Table 7.
Effect of receiving one versus multiple *Statements* on the probability of claiming a retirement benefit at a given age, controlling for year effects: Robustness tests with alternative estimation models

Model	62	63	64	65	66	67	68	69	70
				One* Statement *received before age 62					
Original estimates	-1.83	-0.08	2.82***	2.31***	-0.45	-1.45***	0.04	0.05	0.16
Alternative estimates									
Trend term	-2.84***	0.59	4.24***	2.91***	-0.62	-1.87***	0.00	-0.01	0.03
Randomized	0.24	-0.10	-0.19	0.00	-0.03	0.00	0.00	0.01	0.03
Per capita income	-0.13	-0.83*	0.30	1.24***	-0.16	-0.70***	0.11	0.15	0.38***
				Multiple* Statements *received before age 62					
Original estimates	-3.36***	0.27	1.64***	4.64***	-0.34	-1.25***	0.01	0.03	0.15
Alternative estimates									
Trend term	-4.57***	0.87	3.35***	5.36***	-0.54	-1.76***	-0.04	0.04	0.00
Randomized	0.24	-0.10	-0.19	0.00	-0.03	0.00	0.00	0.01	0.03
Per capita income	-1.72**	-0.64	-0.89	3.54***	-0.05	-0.51***	0.08	0.13	0.38***

SOURCE: Author's calculations using data from the CWHS.

NOTES: Original estimates are from an LPM.

* = statistically significant at the $p = 0.05$ level; ** = statistically significant at the $p = 0.02$ level; *** = statistically significant at the $p = 0.01$ level.

Table 8.
Effect of receiving at least one *Statement* on the probability of claiming a retirement benefit at a given age, controlling for the varying FRAs: Robustness tests with alternative estimation models

Model	62	63	64	65	66	67	68	69	70
Original estimates	-0.44	-0.90***	-2.18***	2.68***	0.15	0.18***	-0.10	-0.12***	0.35***
Alternative estimates									
Trend term	-4.27***	0.10	2.07***	2.94***	-0.22	-0.64***	-0.44***	-0.12***	-0.19***
Randomized	0.24	-0.10	-0.18	0.00	-0.03	0.00	0.00	0.01	0.03
Per capita income	-0.52	-0.92***	-2.20***	2.66***	0.15	-0.18***	-0.10	-0.12***	-0.35***

SOURCE: Author's calculations using data from the CWHS.

NOTES: Original estimates are from an LPM.

*** = statistically significant at the $p = 0.01$ level.

generally resulted in larger estimated reductions in early claiming.

The second robustness test involved randomizing receipt of the *Statement*. By randomly assigning mailings to individuals prior to the time when *Statements* were actually mailed, I tested whether the estimation approach employed in the analysis inappropriately found implementation effects.

As noted earlier, there was no variable in the administrative data I used that indicated whether a worker had received a *Statement*; but using workers' birth dates and the *Statement* implementation schedule, I was able to estimate which workers were likely to have received one and which were not. I assumed that workers who were the appropriate ages to receive a *Statement* according to SSA's implementation schedule actually received one.

To test the validity of my estimation approach, I randomly assigned and coded workers to have received a *Statement* in periods when they would not have, based on the implementation schedule and their birth year. Forty-four percent of all individuals in the sample potentially received a mailing; so, among those who could not, I randomly assigned 44 percent to the category of having falsely received a mailing. I then added a variable to my models that captured the effect of the random falsely received *Statement*. Tables 7 and 8 show the results of including a randomized variable representing the effect of receiving a falsely targeted *Statement* in the models controlling for year effects and the varying FRAs, respectively. The effect of the random falsely targeted *Statement* mailings was not significant in any of the models.

The third robustness test involved adding a variable to capture the effect of changes in the economy that occurred during the period when SSA was sending out the *Statement*. I tested the effect on benefit claiming of changes in four macroeconomic variables: the unemployment rate, the inflation rate, the interest rate on 3-month certificates of deposit, and the percentage change in per capita personal income. The values of these variables were for the year in which the worker turned 62. I derived the unemployment rate and inflation rate values using BLS data, the interest rate values using data from the Federal Reserve Bank of St. Louis, and the personal income values using data from the Bureau of Economic Analysis.[12]

All four variables had a similar effect on the relationship between receipt of the *Statement* and the likelihood of claiming at given ages. For simplicity, I limit the discussion to the effects of the change in per capita personal income.

Table 7 shows the effect of adding a macroeconomic variable to Model 1 (controlling for year effects). Receipt of the *Statement* still had a negative (but insignificant) effect on the likelihood of claiming benefits at age 62 and a significant positive effect on the likelihood of claiming benefits at age 65, but in both cases the magnitude of the effect was reduced. This suggests that the age at which benefits were claimed was also affected by what was happening in the larger economy. In fact, the macroeconomic variables had direct negative impacts on the likelihood of benefit claiming at both age 62 and age 65, with the magnitude varying between 1 and 2 percentage points in most cases.

Table 8 shows the effect of adding a macroeconomic variable to Model 2 (controlling for the varying FRAs). Receipt of the *Statement* still had a negative effect on the likelihood of claiming benefits at age 62 and a significant positive effect on the likelihood of claiming benefits at age 65. In this model, the magnitude of the *Statement*'s effect on benefit claiming is similar to that of the original specification and the specification including the trend term. Also, in the FRA model, the magnitude of the direct effect of the macroeconomic variables on claiming at ages 62 and 65 was very small, less than 0.5 percentage point in most cases.

Discussion

This study is the first empirical analysis to demonstrate that *Statement* mailings had a statistically significant effect on the age at which workers claim their Social Security retirement benefits. Evidence herein suggests that workers who received a *Statement* were less likely on average to claim retirement benefits at age 62, the earliest claiming age, and more likely to claim at ages 64 or 65 than workers who did not receive a *Statement*. The effect of the *Statement* mailings on benefit claiming varied across demographic groups, being greater for men than for women, for white workers than for black workers, and for higher earners than for lower earners. Workers who received a *Statement* were also more likely to remain employed at older ages than workers who did not receive a *Statement*.

Mastrobuoni (2011) found that receipt of one *Statement* did not have a significant effect on benefit claiming behavior. I extended that research to look at the

effect of receiving multiple *Statements*. I also found that receipt of one *Statement* did not have a significant effect on the likelihood of claiming benefits at 62, the age at which the largest number of people claim. However, I found that receipt of multiple *Statements* had a significant negative effect on the likelihood of claiming at age 62.

Liebman and Luttmer (2015) found that a one-time experimental intervention with several aspects—including informational mailings, online tutorials, specific information about Social Security, and vignettes—increased the likelihood that individuals were still working 1 year later by more than 4 percentage points. Yet the authors were unable to identify which of these aspects was the most important to that behavioral response. I extended their research by focusing on a single aspect of their intervention, an informational mailing: in this case, the *Social Security Statement*. I found that an informational mailing by itself can affect behavior. I also found statistically significant effects of the *Statement* on employment, similar in magnitude to those found by Liebman and Luttmer.

My results suggest that informational interventions could be a policy tool for promoting retirement security, along with complementary approaches such as tax incentives to encourage retirement saving and automatic enrollment in state-administered individual retirement accounts for workers whose employers do not offer retirement plans. I found that the *Statement* mailings increase the likelihood that recipients delay the claiming of retirement benefits, which results in a higher monthly benefit for the rest of the claimant's life. (Social Security benefits represent a significant proportion of the retirement income of all but the highest lifetime earners.) I also found that receipt of the *Statement* increased the likelihood of employment at ages 62 through 70. More time spent working results in more years of earnings and, consequently, increased Social Security retirement benefits. One implication of my findings is that low-cost informational interventions, in addition to direct policy levers, might be effective in increasing the retirement security of older Americans, by both raising the level of their retirement benefits through delayed claiming and increasing their employment at older ages.

Currently, SSA mails the *Statement* only to workers aged 60 or older who have not created a *my* Social Security account with which to access the *Statement* electronically. My findings on the effect of the *Statement* on benefit claiming suggest that the agency might consider outreach efforts to encourage more workers to sign up for a *my* Social Security account and, for those who have already created an online account, to check it more regularly. Whereas the agency sent *Statements* to more than 151 million workers in the last full year of mailings in 2010, only about 50 million workers had created a *my* Social Security account as of June 2020.

Limitations and Future Directions

A major limitation of the administrative data I use is the absence of information on health status, education, and family characteristics, and limited information on nonearnings income. Any of these variables might affect the age at which workers claim. Another limitation of my research is that I do not control for a major policy change: the elimination of the RET at FRA.

These limitations suggest several directions for future work. One obvious extension of this research would be to control for the change in the RET. Another extension would involve constructing a control variable for earnings. Possible examples of such a control variable might be lifetime earnings or average earnings for ages 45–55. Another extension could involve developing a way to control for compositional changes in the cohorts I study. These compositional changes might include education, race/ethnicity, the share of workers who are immigrants, and marital history.

Future work might include extending my analysis of how earnings levels are associated with the effect of *Statement* receipt on benefit claiming by looking at deciles or quintiles rather than the two broad categories of above and below the median PIA. This article examines how *Statement* receipt changes the claiming age from, for example, 62 to 63. Future work could focus on how *Statement* receipt affects the number of months by which claiming was delayed. In this article, if a worker delayed claiming from age 62 and 0 months to 62 and 11 months, we would not see any change in claiming age. Looking at ages in terms of months rather than years might reveal an even larger effect of the *Statement* on claiming.

Prevent identity theft—protect your Social Security number

Your Social Security Statement

Prepared especially for Susan J. Jones

October 2, 2006

www.socialsecurity.gov

See inside for your personal information →

FF F 0001 000000001 01 SP 0.390
SUSAN J. JONES
6300 SECURITY BLVD
BALTIMORE MD 21235

What's inside...

What Social Security Means To You

This *Social Security Statement* will help you understand what Social Security means to you and your family. This *Statement* can help you better plan for your financial future. It gives you estimates of your Social Security benefits under current law. Each year, we will send you an updated *Statement* including your latest reported earnings.

Be sure to read this *Statement* carefully. If you think there may be a mistake, please let us know. That's important because your benefits will be based on our record of your lifetime earnings. We recommend you keep a copy of this *Statement* with your financial records.

Social Security is for people of all ages...
It can help you whether you're young or old, male or female, single or with a family. It's there for you when you retire, but it's more than a retirement program. Social Security also can provide benefits if you become disabled and help support your family when you die.

Work to build a secure future...
Social Security is the largest source of income for most elderly Americans today. It is very important to remember that Social Security was never intended to be your only source of income when you retire. Social Security can't do it all. You also will need other savings, investments, pensions or retirement accounts to make sure you have enough money to live comfortably when you retire.

About Social Security's future...
Social Security is a compact between generations. For more than 60 years, America has kept the promise of security for its workers and their families. But now, the Social Security system is facing serious future financial problems, and action is needed soon to make sure that the system is sound when today's younger workers are ready for retirement.

Today there are almost 36 million Americans age 65 or older. Their Social Security retirement benefits are funded by today's workers and their employers who jointly pay Social Security taxes — just as the money they paid into Social Security was used to pay benefits to those who retired before them. Unless action is taken soon to strengthen Social Security, in just 11 years we will begin paying more in benefits than we collect in taxes. Without changes, by 2040 the Social Security Trust Fund will be exhausted.* By then, the number of Americans 65 or older is expected to have doubled. There won't be enough younger people working to pay all of the benefits owed to those who are retiring. At that point, there will be enough money to pay only about 74 cents for each dollar of scheduled benefits. We will need to resolve these issues soon to make sure Social Security continues to provide a foundation of protection for future generations as it has done in the past.

Social Security on the Net...
Visit *www.socialsecurity.gov* on the Internet to learn more about Social Security. You can read our publications, use the *Social Security Benefit Calculators* to calculate future benefits, apply for retirement, spouse's or disability benefits, or subscribe to *eNews* for up-to-date information about Social Security.

Jo Anne B. Barnhart
Commissioner

* These estimates of the future financial status of the Social Security program were produced by the actuaries at the Social Security Administration based on the intermediate assumptions from the Social Security Trustees' Annual Report to the Congress.

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Your Estimated Benefits

***Retirement**	You have earned enough credits to qualify for benefits. At your current earnings rate, if you stop working and start receiving benefits...
	At age 62, your payment would be about . . . . . $ 661 a month
	If you continue working until. . .
	your full retirement age (66 years), your payment would be about . . . . . $ 1,000 a month
	age 70, your payment would be about . . . . . $ 1,403 a month
***Disability**	You have earned enough credits to qualify for benefits. If you become disabled right now...
	Your payment would be about . . . . . $ 888 a month
***Family**	If you get retirement or disability benefits, your spouse and children also may qualify for benefits.
***Survivors**	You have earned enough credits for your family to receive survivors benefits. If you die this year, certain members of your family **may** qualify for the following benefits:
	Your child . . . . . $ 683 a month
	Your spouse who is caring for your child . . . . . $ 683 a month
	Your spouse who reaches full retirement age . . . . . $ 910 a month
	Total family benefits cannot be more than . . . . . $ 1,454 a month
	Your spouse or minor child may be eligible for a special one-time death benefit of $255.
Medicare	You have earned enough credits to qualify for Medicare at age 65. Even if you do not retire at age 65, be sure to contact Social Security three months before your 65th birthday to enroll in Medicare.

***Your estimated benefits are based on current law. Congress has made changes to the law in the past and can do so at any time. The law governing benefit amounts may change because, by 2040, the payroll taxes collected will be enough to pay only about 74 percent of scheduled benefits.**

We based your benefit estimates on these facts:

Your date of birth . . . . . March 4, 1948
Your estimated taxable earnings per year after 2005 . . . . . $28,072
Your Social Security number (only the last four digits are shown to help prevent identity theft) XXX-XX-9876

How Your Benefits Are Estimated

To qualify for benefits, you earn "credits" through your work — up to four each year. This year, for example, you earn one credit for each $970 of wages or self-employment income. When you've earned $3,880, you've earned your four credits for the year. Most people need 40 credits, earned over their working lifetime, to receive retirement benefits. For disability and survivors benefits, young people need fewer credits to be eligible.

We checked your records to see whether you have earned enough credits to qualify for benefits. If you haven't earned enough yet to qualify for any type of benefit, we can't give you a benefit estimate now. If you continue to work, we'll give you an estimate when you do qualify.

What we assumed — If you have enough work credits, we estimated your benefit amounts using your average earnings over your working lifetime. For 2006 and later (up to retirement age), we assumed you'll continue to work and make about the same as you did in 2004 or 2005. We also included credits we assumed you earned last year and this year.

Generally, estimates for older workers are more accurate than those for younger workers because they're based on a longer earnings history with fewer uncertainties such as earnings fluctuations and future law changes.

These estimates are in today's dollars. After you start receiving benefits, they will be adjusted for cost-of-living increases.

We can't provide your actual benefit amount until you apply for benefits. **And that amount may differ from the estimates stated above because:**

(1) Your earnings may increase or decrease in the future.
(2) Your estimated benefits are based on current law. **The law governing benefit amounts may change.**
(3) Your benefit amount may be affected by **military service, railroad employment or pensions earned through work on which you did not pay Social Security tax.** Following are two specific instances. You can also visit ***www.socialsecurity.gov/mystatement*** to see whether your Social Security benefit amount will be affected.

Windfall Elimination Provision (WEP) — If you receive a pension from employment in which you did not pay Social Security taxes and you also qualify for your own Social Security retirement or disability benefit, your Social Security benefit may be reduced, but not eliminated, by WEP. The amount of the reduction, if any, depends on your earnings and number of years in jobs in which you paid Social Security taxes, and the year you are age 62 or become disabled. To estimate WEP's effect on your Social Security benefit, visit ***www.socialsecurity.gov/WEP-CHART***. In 2006, the maximum monthly reduction is $328. For more information, please see *Windfall Elimination Provision* (Publication No. 05-10045) at ***www.socialsecurity.gov/WEP***.

Government Pension Offset (GPO) — If you receive a pension based on federal, state or local government work in which you did not pay Social Security taxes and you qualify, now or in the future, for Social Security benefits as a current or former spouse, widow or widower, you are likely to be affected by GPO. If GPO applies, your Social Security benefit will be reduced by an amount equal to two-thirds of your government pension, and could be reduced to zero. Even if your benefit is reduced to zero, you will be eligible for Medicare at age 65 on your spouse's record. To learn more, please see *Government Pension Offset* (Publication No. 05-10007) at ***www.socialsecurity.gov/GPO***.

Your Earnings Record

Years You Worked	Your Taxed Social Security Earnings	Your Taxed Medicare Earnings
1966	$ 1,620	$ 1,620
1967	3,237	3,237
1968	3,451	3,451
1969	4,255	4,255
1970	4,285	4,285
1971	915	915
1972	134	134
1973	415	415
1974	977	977
1975	0	0
1976	182	182
1977	4,484	4,484
1978	4,485	4,485
1979	0	0
1980	0	0
1981	0	0
1982	0	0
1983	0	0
1984	1,760	1,760
1985	8,680	8,680
1986	9,221	9,221
1987	7,519	7,519
1988	6,238	6,238
1989	8,208	8,208
1990	$ 2,365	$ 2,365
1991	5,664	5,664
1992	16,662	16,662
1993	18,648	18,648
1994	9,166	9,166
1995	18,966	18,966
1996	24,304	24,304
1997	18,388	18,388
1998	18,238	18,238
1999	23,491	23,491
2000	25,542	25,542
2001	30,522	30,522
2002	28,645	28,645
2003	3,097	3,097
2004	21,838	21,838
2005	28,072	28,072

Total Social Security and Medicare taxes paid over your working career through the last year reported on the chart above:

Estimated taxes paid for Social Security:		Estimated taxes paid for Medicare:	
You paid:	$21,861	You paid:	$5,033
Your employers paid:	$21,861	Your employers paid:	$5,033

Note: You currently pay 6.2 percent of your salary, up to $94,200, in Social Security taxes and 1.45 percent in Medicare taxes on your entire salary. Your employer also pays 6.2 percent in Social Security taxes and 1.45 percent in Medicare taxes for you. If you are self-employed, you pay the combined employee and employer amount of 12.4 percent in Social Security taxes and 2.9 percent in Medicare taxes on your net earnings.

Help Us Keep Your Earnings Record Accurate

You, your employer and Social Security share responsibility for the accuracy of your earnings record. Since you began working, we recorded your reported earnings under your name and Social Security number. We have updated your record each time your employer (or you, if you're self-employed) reported your earnings.

Remember, it's your earnings, not the amount of taxes you paid or the number of credits you've earned, that determine your benefit amount. When we figure that amount, we base it on your average earnings over your lifetime. If our records are wrong, you may not receive all the benefits to which you're entitled.

Review this chart carefully using your own records to make sure our information is correct and that we've recorded each year you worked. You're the only person who can look at the earnings chart and know whether it is complete and correct.

Some or all of your earnings from **last year** may not be shown on your *Statement*. It could be that we still were processing last year's earnings reports when your *Statement* was prepared. Your complete earnings for last year will be shown on next year's *Statement*. **Note:** If you worked for more than one employer during any year, or if you had both earnings and self-employment income, we combined your earnings for the year.

There's a limit on the amount of earnings on which you pay Social Security taxes each year. The limit increases yearly. Earnings above the limit will not appear on your earnings chart as Social Security earnings. (For Medicare taxes, the maximum earnings amount began rising in 1991. Since 1994, **all** of your earnings are taxed for Medicare.)

Call us right away at **1-800-772-1213** (7 a.m.–7 p.m. your local time) if any earnings for years **before last year** are shown incorrectly. If possible, have your W-2 or tax return for those years available. (If you live outside the U.S., follow the directions at the bottom of page 4.)

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Some Facts About Social Security

About Social Security and Medicare...

Social Security pays retirement, disability, family and survivors benefits. Medicare, a separate program run by the Centers for Medicare & Medicaid Services, helps pay for inpatient hospital care, nursing care, doctors' fees, and other medical services and supplies to people age 65 and older, or to people who have been receiving Social Security disability benefits for two years or more. Your Social Security covered earnings qualify you for both programs. For more information about Medicare, visit ***www.medicare.gov*** or call **1-800-633-4227** (TTY **1-877-486-2048** if you are deaf or hard of hearing).

Here are some facts about Social Security's benefits:

Retirement — If you were born before 1938, your full retirement age is 65. Because of a 1983 change in the law, the full retirement age will increase gradually to 67 for people born in 1960 and later.

Some people retire before their full retirement age. You can retire as early as age 62 and take your benefits at a reduced rate. If you continue working after your full retirement age, you can receive higher benefits because of additional earnings and special credits for delayed retirement.

Disability — If you become disabled before full retirement age, you can receive disability benefits after six months if you have:

- enough credits from earnings (depending on your age, you must have earned six to 20 of your credits in the three to 10 years before you became disabled); and
- a physical or mental impairment that's expected to prevent you from doing "substantial" work for a year or more *or* result in death.

Family — If you're eligible for disability or retirement benefits, your current or divorced spouse, minor children or adult children disabled before age 22 also may receive benefits. Each may qualify for up to about 50 percent of your benefit amount. The total amount depends on how many family members qualify.

Survivors — When you die, certain members of your family may be eligible for benefits:

- your spouse age 60 or older (50 or older if disabled, or any age if caring for your children younger than age 16); and
- your children if unmarried and younger than age 18, still in school and younger than 19 years old, or adult children disabled before age 22.

If you are divorced, your ex-spouse could be eligible for a widow's or widower's benefit on your record when you die.

Receive benefits and still work...

You can continue to work and still get retirement or survivors benefits. If you're younger than your full retirement age, there are limits on how much you can earn without affecting your benefit amount. The limits change each year. When you apply for benefits, we'll tell you what the limits are at that time and whether work would affect your monthly benefits. When you reach full retirement age, the earnings limits no longer apply.

Before you decide to retire...

Think about your benefits for the long term. Everyone's situation is different. For example, be sure to consider the advantages and disadvantages of early retirement. If you choose to receive benefits before you reach full retirement age, your benefits will be permanently reduced. However, you'll receive benefits for a longer period of time.

To help you decide when is the best time for you to retire, we offer a free booklet, *Social Security — Retirement Benefits* (Publication No. 05-10035), that provides specific information about retirement. You can calculate future retirement benefits on our website at ***www.socialsecurity.gov*** by using the *Social Security Benefit Calculators*.

There are other free publications that you may find helpful, including:

Understanding The Benefits (No. 05-10024) — a general explanation of all Social Security benefits;

Your Retirement Benefit: How It Is Figured (No. 05-10070) — an explanation of how you can calculate your benefit;

Windfall Elimination Provision (No. 05-10045) — how it affects your retirement or disability benefits;

Government Pension Offset (No. 05-10007) — an explanation of a law that affects spouse's or widow(er)'s benefits; and

Identity Theft And Your Social Security Number (No. 05-10064) — what to do if you're a victim of identity theft.

We also have other leaflets and fact sheets with information about specific topics such as military service, self-employment or foreign employment. You can request Social Security publications at ***www.socialsecurity.gov*** or by calling us at **1-800-772-1213**.

If you need more information-- Visit ***www.socialsecurity.gov/mystatement*** on the Internet, contact any Social Security office, call **1-800-772-1213** or write to Social Security Administration, Office of Earnings Operations, P.O. Box 33026, Baltimore, MD 21290-3026. If you're deaf or hard of hearing, call TTY **1-800-325-0778.** If you have questions about your personal information, you must provide your complete Social Security number. If your address is incorrect on this *Statement*, ask the Internal Revenue Service to send you a Form 8822. We don't keep your address if you're not receiving Social Security benefits.

Para solicitar una *Declaración* en español, llame al 1-800-772-1213

Notes

Acknowledgments: I thank Jason Brown, Steve Robinson, Irena Dushi, Chris Tamborini, and Erica Ciccotto for their thoughtful and substantive comments and suggestions.

[1] The FRA for workers born in 1943–1954 is 66. For each birth cohort from 1955 through 1960 it is 2 months higher than that of the preceding cohort. The FRA is 67 for workers born in 1960 or later.

[2] This section summarizes the detailed history of the *Statement* presented in Smith and Couch (2014b).

[3] Note the relationship between fiscal year mailings and calendar year age thresholds. SSA times the *Statement* mailing for 3 months before the worker's birthday. Thus, *Statements* targeted to workers reaching a targeted age in a given calendar year—for example, 1999—were actually mailed in fiscal year 1999 (October 1998–September 1999).

[4] For more information, see Social Security Advisory Board (2009, 8).

[5] The 2006 sample is representative of the format of the *Statements* mailed from 1995 through 2007. Although the *Statement* underwent minor formatting and wording changes in that period, the information on estimated benefits and the earnings record remained the same.

[6] See note 3.

[7] In this model, receipt of more than one *Statement* overlapped the years in which the varying FRAs affected newly eligible claimants. Thus, it was not possible to use two dummies for *Statement* receipt, as is done in the model with year dummies, to control for the effect of *Statement* receipt.

[8] For detailed descriptions, see https://www.ssa.gov/benefits/retirement/matrix.html.

[9] All changes described as "significant" in this article refer to statistical significance.

[10] I also calculated model estimates for Hispanic workers. The results were very similar to those for black workers and are not shown here.

[11] For example, for a worker reaching age 62 in 2018, the PIA would equal the sum of 90 percent of the first $10,740 of average annual wage-inflation-adjusted earnings, plus 32 percent of average annual wage-inflation adjusted earnings from $10,741 to $64,764, plus 15 percent of average annual wage-inflation-adjusted earnings exceeding $64,764.

[12] For the underlying unemployment rate data, see https://www.bls.gov/cps/cpsaat01.pdf. For a tabulation of the underlying inflation rates based on BLS data, see https://inflationdata.com/Inflation/Inflation_Rate/HistoricalInflation.aspx. For the underlying interest rate data, see https://fred.stlouisfed.org/series/IR3TCD01USQ156N. For a tabulation of the underlying per capita personal income values based on data from the Bureau of Economic Analysis, see https://united-states.reaproject.org/analysis/comparative-trends-analysis/per_capita_personal_income/tools/0/0/.

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SSA. *See* Social Security Administration.

How Did the Reintroduction of the *Social Security Statement* Change Workers' Expectations and Plans?

by Philip Armour*

This article examines how the reintroduction of Social Security Statement *mailings from September 2014 through December 2016 affected recipients' expectations about Social Security benefits and their benefit claiming decisions. During the reintroduction period,* Statements *were mailed to workers reaching multiple-of-5 ages, enabling a comparison of results for 2016 recipients, 2014/2015 recipients, and reintroduction-period nonrecipients. I fielded a specialized American Life Panel (ALP) survey to elicit recall of and reactions to receiving the* Statement *and used earlier ALP modules to control for respondents' prior Social Security knowledge. I find that recipients remember and value the information provided in the* Statement*, although the effects quickly diminish after receipt. Recipients were likelier than nonrecipients to expect future benefits but were also more likely to expect Congress to enact future benefit cuts. Married female recipients were more likely to expect spousal benefits, and recipients overall were more likely to change their planned claiming age.*

Introduction

Workers who pay Social Security payroll taxes can become insured against the loss of earnings because of retirement or disability, but what kinds of benefits do they expect to receive? Moreover, how do the Social Security Administration's (SSA's) communications shape these expectations?

This article aims to answer these questions by analyzing how the reintroduction of automatic *Social Security Statement* mailings, which took place from September 2014 through December 2016, affected recipients' expectations. During that period, approximately two-fifths of working-age adults in the United States received personalized *Social Security Statements*, with information on their coverage status and projected benefit amounts, by mail. The brief reintroduction of *Statement* mailings provided a research opportunity with which to field a new survey in the RAND Corporation's American Life Panel (ALP) that would follow up on previous ALP surveys on respondents' Social Security knowledge, expectations, and plans. Using the follow-up survey, which was fielded in 2017, this analysis estimates how Social Security expectations and plans *changed* among those who had recently received a *Statement*, relative to those who had not.

I find that respondents who received a *Statement* in the mail were more likely than nonrecipients to expect any Social Security benefits and, for married women, to expect spousal benefits. *Statement* recipients were also more likely to change their planned Social Security benefit claiming age.

However, these changes were not uniform: The less knowledge respondents had about Social Security before the *Statement*'s reintroduction, the more the *Statement* affected their benefit expectations. Although

Selected Abbreviations

ALP	American Life Panel
HRS	Health and Retirement Study
SSA	Social Security Administration

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The research reported herein was funded by a grant (no. RRC08098401-09) from the Social Security Administration as part of the Retirement Research Consortium through the University of Michigan Retirement Research Center.

this finding may not be surprising—those who are well-informed about Social Security are already aware of whether they are covered, regardless of having recently received a *Statement*—the change in expected Social Security claiming age after *Statement* receipt *was not* reduced by greater prior knowledge. Further, *Statement* recipients did not change their expected claiming age in a single direction—roughly similar proportions increased and decreased their expected claiming age after receiving a *Statement*, resulting in zero net effect. Finally, all the estimated effects of *Statement* receipt diminished quickly: Results were strongest among those who received the *Statement* in the past year, but were statistically indistinguishable from zero for those who received the *Statement* 2 or more years prior.

Overall, these results point to a strong role for SSA communications in shaping individuals' expectations about their future benefits; in particular, whether they will receive benefits at all and at what age they plan to claim them. Individuals value this information highly, whether in the form of the *Social Security Statement* or an online *my* Social Security account, and the magnitude of the results implies that SSA communications can be influential, but with varying effects. Accurately assessing their effect requires a rich knowledge of individuals' expectations before and after the introduction of such campaigns.

Knowledge, Expectations, and the Social Security Statement

Social Security provides income support for retired and disabled workers, and for many such beneficiaries, Social Security is the primary source of income (Bee and Mitchell 2017). Current workers' understanding of program incentives shapes their expectations and their work and saving decisions, which in turn affect their economic security during retirement; but workers may harbor misperceptions about their entitlements (Rohwedder and van Soest 2006). In the last 10 years, a range of studies have sought to quantify not only the level of Social Security knowledge and expectations of future benefits, but also how SSA's communications can affect such knowledge and expectations. The most widely distributed communication from SSA is the subject of this analysis: the *Social Security Statement*.

In 1988, SSA began providing standard-format benefit statements for individuals who requested them, and in October 1994, SSA initiated automatic *Statement* mailings, targeting different age groups in different years (Smith and Couch 2014b).[1] From 2000 to 2011, *Statements* were sent annually to all individuals aged 25 or older who were not receiving Social Security benefits and whose mailing addresses were available from tax filings.[2] As they do today, the *Statements* contained personalized information about:

- Old-Age, Survivors, and Disability Insurance benefits, including projected retirement benefit levels if claimed at the earliest eligible age (62), the full retirement age (65 to 67, depending on birth year), and age 70 (the maximum age for delayed retirement credits);
- the monthly Disability Insurance benefit to which the worker, if covered, was currently entitled; and
- estimated survivor benefits for the workers' family.

To estimate the benefits, SSA used the individual's earnings history, current to the calendar year before the *Statement*'s release.

Consistent with the scale of the mailings, the accuracy of recent addresses reported on tax forms, and the salience of receiving a document from SSA with personalized benefit information, sizable majorities of *Statement* recipients in the 1990s remembered receiving it, according to prior research. Greenwald and others (2010) estimated that more than two-thirds of individuals to whom *Statements* were sent recalled receiving them.[3] Of those who recalled receipt, 83 percent to 90 percent reported having read it carefully, with over 90 percent remembering that it contained personalized benefit calculations. Findings from the General Accounting Office (1996, 1997, 1998, 2000) and Government Accountability Office (2005) were consistent with those of Greenwald and others.

Not only did people remember receiving the *Statement*: Their knowledge about Social Security benefits increased as well. Several studies exploited the phased rollout of *Statement* mailings in the late 1990s to compare results among different groups and infer its causal effect. Mastrobuoni (2011) found that the expected future retirement-benefit levels of Health and Retirement Study (HRS) participants were more accurate after receiving a *Statement*. Smith and Couch (2014a) found that younger workers' knowledge of Social Security rose after the *Statement*'s introduction, but those workers exhibited persistent gaps in knowledge on topics not specifically covered in the *Statement*. Cook, Jacobs, and Kim (2010) found that the *Statement* increased recipients' knowledge about and confidence in Social Security.

Furthermore, information about Social Security benefits can affect behavior: Armour (2018) found that

Disability Insurance application rates increased among those who received a *Statement*, particularly among those with preexisting work-limiting health conditions. Liebman and Luttmer (2015), implementing their own information intervention as a randomized controlled trial in an Internet panel survey, found that employment among older respondents increased after they were informed about the structure of the Retirement Earnings Test.

These results confirmed earlier findings that not all workers fully understand their Social Security benefits, and that information outreach can both increase their knowledge *and* change their behavior. However, these studies had limited information on individuals' knowledge and expectations about Social Security before *Statement* receipt. Such measures are needed for accurate estimation of the *Statement*'s effect for two reasons. First, the *Statement*'s effect is likely to be strongest among those least knowledgeable before they receive it. Averaging the effects over an entire population will thus tend to bias any estimates toward zero. Second, the *Statement*'s effect on expectations will depend on what expectations an individual held before *Statement* receipt. The latter point is not just one of bias: If similarly sized fractions of the population overestimate and underestimate benefits, then averaging the estimates could suggest a zero effect, even if the *Statement* strongly affected all recipients' expectations. However, such repeated measures of knowledge and expectations were not available during the *Statement*'s introduction in the late 1990s.

Now, by contrast, such measures are available. Although SSA stopped mailing the *Statement* in March 2011 for budgetary reasons, the Joint Explanatory Statement to the Consolidated Appropriations Act of 2014 directed SSA to develop a plan that would "include a significant restoration of the mailing of statements." Instead of restoring the previous dissemination strategy of mailing a *Statement* to every adult worker aged 25 or older every year, SSA restricted the mailings to workers aged 25, 30, 35, 40, 45, 50, 55, and 60 or older who did not have an online *my* Social Security account, beginning in September 2014 (Smith 2015).[4] This reintroduction provided an opportunity to compare pre- and post-2014 measures of Social Security knowledge and benefit expectations among ALP respondents, and to design a new ALP survey module to uncover differences in expectations between those who received a *Statement* during its reintroduction and those who did not.

Data

To measure the *Statement*'s effect on workers' expectations about Social Security, I fielded a new ALP survey module in 2017. The ALP is a nationally representative Internet panel survey of adults aged 18 or older. Begun in 2006, it had more than 6,000 active participants as of January 2020. In contrast with other surveys that field a "core" questionnaire at regular intervals, the ALP offers respondents new survey modules as researchers develop them, with 532 such modules fielded to date. The ALP thus presents two advantages pertinent to this analysis: First, researchers can merge a given respondent's answers across every module that the respondent has completed; and second, a researcher can target a module to certain respondents based on the specific prior modules they have completed. I thus fielded a 2017 module targeted to respondents who completed both a 2010 module testing respondents' knowledge of Social Security and a 2013 module eliciting respondents' expectations about Social Security benefits.[5] The 2010 and 2013 modules allow for observation of expectations and knowledge before the *Statement*'s 2014 reintroduction, and the 2017 module provides measures of how expectations changed after the brief reintroduction period, in which some individuals received *Statements* and others did not.

The 2010 module included a seven-question sequence on general Social Security knowledge. I follow Greenwald and others (2010) in constructing a Social Security Literacy Score, ranging from 0 to 7, measuring each respondent's knowledge about Social Security along a number of dimensions such as types of eligibility, claiming age, benefit taxation, and inflation adjustment. The 2010 Literacy Score provides a baseline measure of Social Security knowledge among all respondents at the time automatic *Statement* mailings to all workers aged 25 or older were ending. Because the information in the *Statement* should theoretically have a larger effect on those who are least knowledgeable about Social Security, this baseline measure enables me to estimate *Statement* effects for individuals with different initial levels of knowledge. Prior *Statement* research was limited to a single estimate, regardless of how much a *Statement* recipient might already have known about Social Security.

The 2013 module asks respondents whether they expect to receive Social Security benefits, and if so, when they expect to claim them and how large they expect their benefits to be. It also asks for respondents'

views on the likelihood that Congress will cut Social Security benefits in the next 10 years. These questions allow measurements not available in prior research: Identifying the size and direction of the *Statement*'s effect should depend on its recipients' prior expectations. For example, information on future benefits is entirely novel for individuals who did not think they were covered by Social Security until receiving the *Statement*, and we would expect the *Statement* to have its largest effect on such individuals.

I restricted my target sample to individuals who had completed the 2010 and 2013 modules, had a sufficient work history to be covered by Social Security, and had not been receiving Social Security benefits in 2013. The resulting set of 875 respondents completed my ALP module on Social Security knowledge, expectations, and communications in August or September of 2017. Respondents whose ages reached a multiple of 5 from September 2014 through December 2016 received a *Statement* in the mail and all other respondents did not receive a *Statement* in the reintroduction period. For all respondents, I observed Social Security knowledge and expectations before *Statement* mailings were reintroduced. These circumstances allow me to estimate how Social Security knowledge and expectations *changed* among the general population, how it changed differently for those who had recently received a *Statement*, and how the changes varied by personal characteristics and prior Social Security knowledge.

The 2017 module also included questions on access to SSA knowledge more generally: For example, "have you registered for an online *my* Social Security account that allows you to observe your earnings history and projected benefit?" "Have you accessed this account in the past year?" "Have you received a *Social Security Statement* in the mail in the past year?"

At the end of the survey, respondents were prompted to provide open-ended comments. Few respondents did so, but their comments provided qualitative evidence of how some individuals interact with the information provided by SSA. For example:

- "After SSA stopped sending the yearly statement I signed up online so I could view the information and create a PDF to save."
- "I didn't ever use the site or telephone info or stop by the local office until I was already on the verge of retirement, so the info I got was more in line with finding out what my status was, not for use in planning future activities."

Methodology and Results

My research design reflects the circumstances of the *Statement*'s reintroduction. After ceasing automatic mailings in March 2011, SSA resumed mailings in September of 2014, with two important changes. First, individuals with *my* Social Security accounts would receive reminder emails once a year to view their *Statement* online in place of a paper *Statement* in the mail. Second, individuals without *my* Social Security accounts would receive a paper *Statement* in the mail 3 months before every fifth birthday at ages 25 through 55, or every annual birthday at ages 60 or older until benefits were claimed (Smith 2015). Because the ALP survey respondents report their ages and whether they have *my* Social Security accounts (and when they signed up for them), I can determine how recently they were mailed a *Statement*.[6]

The information available to two individuals can vary, even if they are the same age and neither has a *my* Social Security account. For example, consider two otherwise identical individuals who differ only in the month they were born. One turned 30 in December 2014, and hence received a *Statement* for the first time in almost 4 years in September 2014, just as *Statement* mailings were reintroduced. The other turned 30 in November 2014 and, under the original reintroduction-period mailing plan, would not receive a *Statement* until August 2019, 3 months before turning 35; that is, almost 5 years later, and nearly 8 years after the 2011 cessation of universal *Statement* mailings.[7] Because their circumstances otherwise are the same and they face the same economic and informational environments, any difference in how their Social Security expectations changed from 2013 to 2017 can be attributed to the *Statement*.

I compare results not only between 30-year-olds and 31-year-olds, but also between individuals who received a *Statement* from September 2014 to December 2016 and those who did not—respectively accounting for about 53 percent and 47 percent of the sample—across the age distribution. Additionally, I observe pre-*Statement* Social Security knowledge from the 2010 ALP module discussed above. I fit linear probability models to estimate the differential effects of receiving a *Statement* in 2014 or 2015, receiving one in 2016, and not receiving one since the discontinuation of universal mailings in 2011.[8] I control for a range of demographic characteristics, establish a baseline level for Social Security knowledge, and isolate the effect of *Statement* receipt on respondents' benefit

expectations. Furthermore, because the effect of the *Statement* should depend on how informed individuals are *prior to receipt*, I include prior knowledge both as a control and as a mediating influence, allowing the effect of the *Statement* to differ by level of knowledge before *Statement* receipt.

The intuition behind my analysis is that although respondents' expectations may naturally change between 2013 and 2017, the only reason that the changes should *differ* among the groups that received *Statements* in this period is receipt of the *Statement* itself. This conclusion will hold if the pattern of resuming *Statement* mailings in late 2014 to individuals who are about to reach multiple-of-5 ages is as good as an experiment in which *Statements* are randomly sent out, because reaching a multiple-of-5 age is unrelated to any of the outcomes of interest. I test this assumption to the extent I can by comparing respondents' pre-2014 socioeconomic and demographic characteristics with their *Statement* recipient category, and I find no statistically significant or quantitatively large differences.[9]

Receipt and Expectations of Social Security Benefits by Statement*-Receipt Group*

Table 1 presents respondents' expectations about Social Security benefits, as of both 2013 and 2017, by information category (*my* Social Security accountholder, reintroduction-period *Statement* nonrecipient, 2014/2015 *Statement* recipient, 2016 *Statement* recipient). Descriptive statistics, some of which are shown in Table 1 and in Appendix Table B-1, suggest that

Table 1.
Social Security benefit expectations of 2013 nonbeneficiaries, as of 2013 and by exposure to SSA communications as of 2017

Measure	2013	2017				
		All	*my* Social Security account-holders	Individuals without a *my* Social Security account		
				No *Statement* received since 2011	*Statement* received in—	
					2014 or 2015	2016
			Values			
Percentage receiving benefits in 2017	. . .	12	20	10	3	15
Individuals not receiving benefits						
Percentage expecting to receive benefits in the future	62	69	70	64	71	78
Expected age at first benefit receipt (years)	65.7	66.4	66.7	66.3	66.1	66.6
Expected monthly benefit amount ($) [a]	1,407.67	1,521.21	1,665.44	1,412.35	1,465.65	1,567.14
			Standard deviations			
Percentage receiving benefits in 2017	. . .	32	40	30	16	35
Individuals not receiving benefits						
Percentage expecting to receive benefits in the future	49	46	46	48	46	42
Expected age at first benefit receipt (years)	4.5	3.4	3.4	3.3	3.6	3.4
Expected monthly benefit amount ($) [a]	776.00	927.99	803.96	919.62	1,126.04	784.92
Observations	875	875	316	277	171	111

SOURCE: Author's calculations based on various ALP survey modules.

NOTES: Data are weighted averages.

. . . = not applicable.

a. If benefits are expected.

my Social Security accountholders[10] are systematically distinct from the general population: They are more likely to be receiving Social Security benefits, more knowledgeable about Social Security, more likely to expect to receive disability benefits, and generally more educated. They likewise were more knowledgeable about Social Security in 2010, before *my* Social Security accounts were introduced. I present statistics for them here for general comparison, but as mentioned in note 6, I omit them from the causal analysis of the effect of the *Statement* given their inherent differences from nonaccountholders.

As shown in Table 1, only 12 percent of 2013 nonbeneficiaries claimed Social Security benefits as of 2017.[11] Although I do not directly report an analysis of the *Statement*'s effect on claiming Social Security benefits, receiving a *Statement* had no statistically measurable effect on new receipt of Social Security income. However, the relatively small sample sizes in this study are not well suited to estimating such an effect, given both the low rate of Disability Insurance entry in the sample and the strong correlation of claiming retired-worker benefits with specific age groups.[12]

This study instead focuses on the *Statement*'s effect on *expectations*, with the most direct measure being whether an individual expects *ever* to receive Social Security benefits. Table 1 shows that the likelihood of expecting any Social Security income increases among those who more recently received a *Statement*, from 64 percent for those who had not received a *Statement* since 2011, to 71 percent among those who received one in 2014 or 2015, to 78 percent for those who most recently received one, in 2016. The amount of expected Social Security income, conditional on expecting any, also increases among respondents who more recently received a *Statement*. Expected claiming age does not exhibit a consistent pattern; however, these comparisons of means do not control for any other covariates—in particular, pre-*Statement* expectations or prior Social Security knowledge.

Although I limited my sample specifically to respondents who have worked enough to be fully insured for Social Security benefits (determined by using prior ALP modules eliciting earnings histories), more than 30 percent of respondents nevertheless reported in 2017 that they did not expect ever to receive any Social Security benefits. One potential explanation for this discrepancy is mismeasurement. The prior ALP modules did not distinguish whether earnings were covered by Social Security. Some state and local government employees, for example, are not covered by Social Security; also, some earnings may be informal and unreported. Nevertheless, Social Security covers nearly 96 percent of the workforce (Whitman, Reznik, and Shoffner 2011), suggesting that mismeasurement alone could not reasonably account for such a large fraction of respondents not expecting to receive any benefits. In contrast with prior research using only the HRS's queries on Social Security expectations, I therefore included a question on *why* these individuals did not expect to receive any Social Security benefits. Respondents could select multiple reasons and provide their own in a comment box.[13] To illustrate *why* individuals might not expect benefits, and hence the mechanisms by which the *Statement* might affect whether individuals ever expect to receive them, the responses among those who did not receive a *Statement* during the study period are listed below:

1. I won't have worked enough (27 percent)
2. My occupation isn't eligible (15 percent)
3. I won't live long enough (1 percent)
4. Social Security won't be around long enough (53 percent)
5. Other (10 percent; notably, all respondents who selected "other" indicated that they either were not currently receiving benefits or were in the process of claiming benefits, suggesting a misunderstanding of the question as asking whether they expected benefits in the *immediate* future rather than *at any time* in the future)

Recall that this study sample consists of individuals whose reported work histories are sufficient to qualify them for benefits—yet more than one-quarter of those who did not expect benefits thought they had not worked enough to be eligible. The *Statement* may contain novel and useful information for this group because it lists their earnings history and indicates their coverage status. A few individuals either misunderstood the question, considered their mortality risk high enough that they will not be able to claim Social Security benefits, or reported working in an ineligible occupation; it is not clear whether the *Statement* could affect expectations in these groups. However, the majority of respondents who did not expect to receive benefits thought that Social Security will "not be around long enough" for them to collect benefits. That is, despite having paid Social Security payroll taxes long enough to qualify them for benefits, they did not think they would receive *any* benefit. The *Statement* notes that projected payroll taxes will be sufficient to

provide about 75 percent of scheduled future benefits even if Congress does not enact changes to replenish the Social Security trust funds. Thus, to the extent that the *Statement* alters perceptions about the program's continued existence, or informs individuals that their work history is sufficient to entitle them to benefits, it may increase the likelihood that these individuals will expect a Social Security benefit in the future.

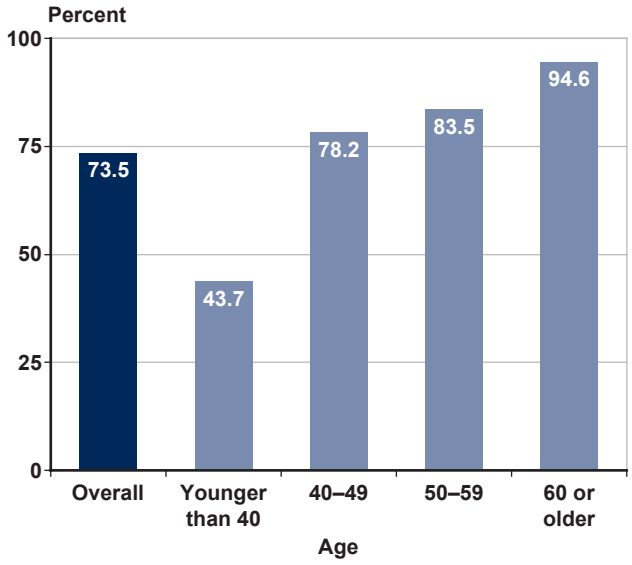
Did individuals who were sent a *Statement* remember receiving one? Chart 1 shows that 73.5 percent of all respondents who should have been sent a *Statement* in the 2014–2016 reintroduction period recalled receiving one. However, the recall rate varied by age, rising with increasingly older age groups. Less than half of *Statement* recipients younger than 40 recalled receipt, whereas 95 percent of recipients aged 60 or older recalled receipt. Future research may explore the possible reasons for this difference, which could include less accurate current addresses for younger workers, lower likelihood of opening or reading paper mail among younger workers, or simply closer attention to SSA communications among older workers nearing retirement.

Chart 2 shows that *Statement* recipients are similarly more likely to recall receiving it if it was sent more recently. Recollection of *Statement* receipt is approximately 10 percentage points higher among 2016 recipients than for 2014/2015 recipients.

I also asked respondents whether and how they found either the *Statement* or their *my* Social Security account useful (as applicable). Sixty-one percent found the *Statement* useful for retirement planning or claiming decisions, and 74 percent of *my* Social Security accountholders found the account useful for those purposes (not shown). Twelve percent of *Statement* recipients and 17 percent of *my* Social Security accountholders found their respective resources useful for claiming disability benefits, and 12 percent of *Statement* recipients and 14 percent of *my* Social Security accountholders found them useful for claiming Social Security auxiliary (that is, survivors or dependents) benefits.

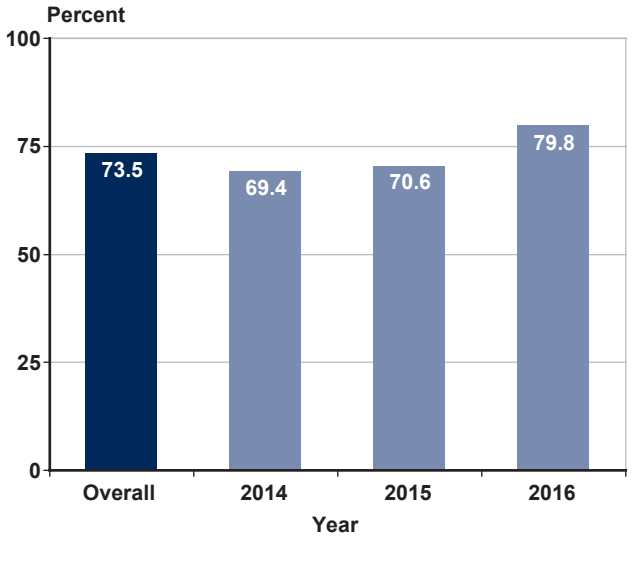
In summary, individuals generally report high levels of *Statement* receipt; most *Statement* recipients report that the information therein is useful for planning purposes; and, for a majority of those not expecting ever to receive Social Security benefits, the information in the *Statement* may be particularly relevant. With these results in hand, I turn to causal estimates of the effect of the *Statement*'s reintroduction on expectations of Social Security benefits.

Chart 1.
Percentage of ALP respondents who were mailed a *Statement* and recall receiving it, by age



SOURCE: Author's calculations based on various ALP survey modules.

Chart 2.
Percentage of ALP respondents who were mailed a *Statement* and recall receiving it, by year sent



SOURCE: Author's calculations based on various ALP survey modules.

Causal Effect of the Statement*'s Reintroduction on Expectations*

Table 2 presents evidence toward answering the questions: (1) Does sending a *Statement* increase the recipient's expectation of ever receiving Social Security benefits, and (2) Does it change the age at which people expect to claim those benefits? The results indicate that the answer to both questions is yes, although with two important caveats: The *Statement*'s effect on expectations diminishes quickly, and prior expectations and knowledge mediate its effect.

Each model specification controls for a range of sociodemographic variables and 2010 knowledge of Social Security. For all nonbeneficiary respondents, the first column shows the effect of receiving a *Statement* on the expectation of ever receiving Social Security benefits, estimated using a weighted linear probability model. The central finding: Respondents who received a *Statement* in 2016 were nearly 33 percentage points more likely to expect to receive Social Security benefits in the future than those who had not recently received a *Statement*. This effect is large and

Table 2.
Estimated effect of receiving a *Statement* on the expectations of 2013 nonbeneficiaries about future Social Security benefits, by respondent's prior knowledge and expectations: 2017 ALP respondents

Variable	Likelihood that respondent expects future Social Security benefits: All respondents [a]	Likelihood that respondent expects future Social Security benefits: Respondents who in 2013 did not expect benefits [a]	Likelihood that married female respondent expects future spousal benefits	Average reported change in expected claiming age (in years) [b]	Likelihood that respondent has changed expected retirement age [a,c]
			Coefficients		
Respondent received a *Statement* in—					
2014 or 2015	0.0937	0.1640	0.1460	-0.0854	0.1400
2016	0.3280***	0.4850*	0.2890**	-0.1070	0.2900**
Prior knowledge about Social Security [d]					
Overall (including nonrecipients)	0.0451***	0.0524**	0.0190	0.2100	-0.0190
2014 or 2015 *Statement* recipients	-0.0221	0.0010	-0.0434	-0.2530	-0.0045
2016 *Statement* recipients	-0.0492**	-0.0665	-0.0544*	0.1030	-0.0260
			Standard errors		
Respondent received a *Statement* in—					
2014 or 2015	0.1200	0.1550	0.1530	1.0700	0.1640
2016	0.1190	0.2600	0.1250	1.3660	0.1390
Prior knowledge about Social Security [d]					
Overall (including nonrecipients)	0.0143	0.0243	0.0202	0.1880	0.0233
2014 or 2015 *Statement* recipients	0.0218	0.0348	0.0259	0.2850	0.0416
2016 *Statement* recipients	0.0223	0.0538	0.0270	0.2470	0.0357
Observations	515	162	168	443	336
Mean value among *Statement* nonrecipients	0.75	0.54	0.19	66.10	0.51
R-squared	0.228	0.220	0.105	0.160	0.100

SOURCE: Author's calculations based on various ALP survey modules.

NOTES: Sample excludes pre-September 2014 *my* Social Security accountholders.

Coefficients indicate the effects relative to the reference variable (no *Statement* received since 2011).

All models include demographic controls (age, age squared, sex, race/ethnicity, marital status, and educational attainment).

Standard errors are clustered at the age level.

* = statistically significant at the $p < 0.10$ level; ** = statistically significant at the $p < 0.05$ level; *** = statistically significant at the $p < 0.01$ level.

a. Weighted linear probability regression estimates.

b. Weighted least squares regression estimates.

c. Among respondents who expected future benefits and reported an expected claiming age in both 2013 and 2017.

d. Estimated effect for each additional point on the Greenwald and others (2010) 7-point knowledge scale.

statistically significant, especially in comparison with the pre-*Statement* average of 38 percent of respondents not expecting to receive benefits (indicated in Table 1).

However, the effect was less pronounced among *Statement* recipients who had scored higher on the test of Social Security knowledge in 2010. For each additional point on the 7-point scale, the *Statement*'s effect was reduced by 4.9 percentage points among 2016 recipients. For those with the maximum possible knowledge score of 7, the *Statement* therefore had no statistically significant effect on expecting benefits. For a respondent with the average literacy score of 3.7 out of 7, the estimated effect of receiving a *Statement* was slightly less than 15 percentage points,[14] or a 19 percent increase from the baseline of *Statement* nonreceipt (not shown) in the likelihood of expecting to receive Social Security benefits.

In addition to the strong mediation of prior knowledge on the *Statement*'s effect, the recency of *Statement* receipt mattered. The *Statement*'s estimated effect on the expectation of benefits for those who received one in 2014 or 2015—9.4 percentage points—was substantially smaller than the effect for 2016 recipients (32.8 percentage points) and not statistically significant, indicating that the effect diminishes quickly as time passes after *Statement* receipt.

Prior expectations also mattered. The second column shows results of the same analysis for the subset of 162 respondents who in 2013 did not expect to receive future Social Security benefits. Although the small sample size limits the statistical precision, the estimated effect for the subset is even larger than that for all respondents: Among those who in 2013 did not expect to receive benefits in the future, receiving a *Statement* in 2016 increased the likelihood of expecting benefits by nearly 49 percentage points. Greater prior knowledge mitigated the effect among 2016 recipients, although the estimated interaction effect was not statistically significant. As with all 2013 nonbeneficiaries, recency of receipt affected expectations: The effect among 2014/2015 *Statement* recipients (16 percentage points, and not statistically significant), was lower than that for 2016 recipients.

The sample sizes for these analyses limit the statistical significance of any single estimate; however, a consistent general pattern emerges: More recent *Statements* increase the likelihood of expecting benefits, particularly among those who did not previously expect to receive benefits and those with low prior levels of knowledge about Social Security. Table 2's third column shows results of a similar estimation of *Statement* effects on expectations of spousal benefits among married female respondents. The *Statement* appears to increase expectation of receiving spousal benefits, with the effect again attenuated by level of prior knowledge and time since *Statement* receipt. The magnitude of these estimated effects implies that *frequent* mailings of *Social Security Statements* can substantially increase the share of individuals who expect ever to receive benefits, especially for those who initially were least knowledgeable about Social Security and those who might claim benefits based on others' earnings histories.

Did the *Statement* change the age at which people expected to claim benefits? The fourth column of Table 2 shows the results of tests of whether the expected claiming age differs for recent *Statement* recipients—for example, by leading individuals to plan to claim later—compared with those who have not recently received a *Statement*. I do not find a sizable or statistically significant effect of *Statement* receipt on respondents' average expected claiming age. However, there is no predictive theory about how the *Statement* would affect average claiming age: It could either increase or decrease expected claiming age because individuals could overestimate or underestimate the monthly benefit reduction from early claiming or the credits from delaying claiming.

The fifth column of Table 2 therefore reports not the changes in expected age itself, but *whether* the respondent changed his or her expected claiming age—in either direction—between the 2013 survey and the 2017 survey. To measure whether the *Statement* changed the expected claiming age, I limit the sample to those who, in both 2013 and 2017, expected to receive Social Security benefits and reported an expected claiming age.[15] The result is markedly different: Receiving a *Statement* in 2016 increased the likelihood that the respondent changed his or her expected Social Security claiming age by 29 percentage points, a large and statistically significant effect. The estimated effect for those who received a *Statement* in 2014 or 2015 was both smaller and not statistically significant. Further analyses, unreported here because of statistical power concerns but available on request,[16] found that the changes consisted of similar, offsetting fractions of respondents who raised and who lowered their expected claiming age, which is consistent with the absence of a significant overall average effect in the fourth column.

The *Statement* provides personalized information on the recipient's *scheduled* benefits; however, it also emphasizes that actual future benefits may be lower,

with the following text on its first page, in a section titled "About Social Security's future…":

> [T]he Social Security system is facing serious financial problems, and action is needed soon to make sure the system will be sound when today's younger workers are ready for retirement… We need to resolve these issues soon to make sure Social Security continues to provide a foundation of protection for future generations.

Further, the "Your Estimated Benefits" section on the second page includes this text:

> Congress has made changes to the law in the past and can do so at any time. The law governing benefit amounts may change because, by 2033, the payroll taxes collected will be enough to pay only about 75 percent of scheduled benefits.[17]

In short, the *Statement* not only conveys personalized information about future benefit entitlements, but also reports the need for action to ensure entitlements for younger workers, because payroll tax revenue will not be sufficient to pay them in full. The *Statement* specifically mentions Congress's ability to change benefit amounts in response to the projected trust fund shortfall.

The question then arises: Does the *Statement* affect recipients' perceived probability of Social Security reform? Table 3 presents evidence that it does, based on 2017 ALP respondents' assessment of the likelihood, on a scale of 0 to 100, that Congress will make Social Security benefits less generous in the next 10 years. Respondents are asked their views on the likelihood of cuts to benefits in general—which I refer to as "overall"—as well as to their own. For example, a 61-year-old man may consider it unlikely that his own benefits will be reduced (reporting, for example, a 5 percent chance), while considering it very likely that benefits will be reduced for individuals currently in their 20s (reporting, for example, a 95 percent chance).

Table 3 shows estimated effects of recent *Statement* receipt on the *change* in the perceived probability of Congressional cuts to Social Security benefits. Among *Statement* nonrecipients, the perceived likelihood that Congress would reduce overall benefits declined by nearly 6.2 percentage points, on average, from 2013 to 2017. Similarly, among nonrecipients, the perceived likelihood of cuts to their own benefits dropped by an average of 15.2 percentage points. The general trend among nonrecipients was thus an increasing optimism about continuing the current level of benefits.

Although receiving a *Statement* did not measurably change the expected likelihood of cuts to overall benefits, it had a large and statistically significant effect on whether individuals thought their own benefits would be cut. Relative to 2013–2017 *Statement* nonrecipients, those who received a *Statement* in 2016 perceived an *increased* likelihood of future cuts to their benefits, by 9.2 percentage points. Among those who received a *Statement* in 2014/2015, the perceived likelihood

Table 3.
Estimated effect of receiving a *Statement* on the expectation that Congress will enact future cuts to Social Security benefits: Percentage-point change in perceived likelihood, 2013–2017

	Benefits overall		Respondent's own benefits	
Variable	Coefficient	Standard error	Coefficient	Standard error
Received a *Statement* in—				
2014 or 2015	-2.440	3.989	8.286**	3.459
2016	-1.969	3.988	9.195**	3.201
Statement nonrecipients	-6.2		-15.2	
Observations	463		312	
R-squared	0.113		0.193	

SOURCE: Author's calculations based on various ALP survey modules.

NOTES: Respondents were asked in 2013 and 2017 how likely, on a scale of 0 to 100, they thought a benefit cut was in the next 10 years.

Data for *Statement* recipients are weighted linear regression estimates. Data for nonrecipients are observed mean changes, provided as benchmarks for comparative purposes.

Sample is restricted to nonbeneficiaries who do not have a *my* Social Security account; regression estimates include demographic (age, age squared, sex, race/ethnicity, marital status, and educational attainment) and prior-knowledge controls.

** = statistically significant at the $p < 0.05$ level.

of future own-benefit cuts increased an estimated 8.3 percentage points relative to nonrecipients, also statistically significant. That is, the *Statement* led to a higher expected likelihood of Congressional cuts to one's own Social Security benefits, all else being equal. Yet the expected likelihood of own-benefit cuts among *Statement* nonrecipients *declined* by an even a larger amount, 15.2 percentage points. Thus, in the overall sample, the *Statement*—which contains text indicating that payroll taxes alone will not cover 100 percent of scheduled benefits if the trust fund reserves are depleted—did not so much *increase* recipients' perceived likelihood of Congress cutting benefits, but instead tempered the optimism among the general population that benefit levels will be maintained. It therefore plays a role in shaping public opinion about future Social Security reforms.

Discussion, Future Research, and Conclusion

The descriptive statistics and regression results point to measurable effects resulting from the *Statement*'s reintroduction. People remember receiving the *Statement* and find it useful. Before the reintroduction, more than 30 percent of survey respondents had reported that they did not expect ever to receive Social Security benefits, despite having qualifying work histories; but receiving a *Statement* reduced that proportion dramatically. Among respondents who in 2013 did not expect ever to receive Social Security benefits and who knew little about the program, receipt of a *Statement* led to an increase of nearly 49 percentage points in the expectation of receiving benefits in the future. That is, the *Statement* induced half of those respondents to expect future benefits.

The *Statement* also led to a greater likelihood of expecting spousal benefits among married women. Further, it led nearly one-third of recipients to change the age at which they expected to claim benefits. However, these effects diminished as time passed after the respondents received their most recent *Statements*. Although the estimated effects were both statistically significant and substantial among 2016 *Statement* recipients, no estimated effects among 2014 or 2015 *Statement* recipients were statistically significant.

The *Statement* also appears to have affected recipients' views on the likelihood of future Congressional cuts to Social Security benefits. Survey respondents overall were less likely in 2017 to expect such future cuts than they had been in 2013, but *Statement* recipients were not as optimistic as nonrecipients; the former were 8.3–9.2 percentage points more likely to expect benefit cuts than the latter.

This analysis shows that the *Statement* can contribute to shaping peoples' expectations about their own benefits and when they plan to claim them, especially if it is sent annually. These estimated effects may also explain observed patterns of increasing Social Security knowledge from 2015 to 2017 (Alattar and others 2019). This analysis is a first step in using ALP data to analyze the effect of the *Statement*'s 2014–2016 reintroduction on individuals' expectations and behavior. Future analyses can take advantage of additional survey modules eliciting responses on claiming, retirement, and saving behavior to estimate the *Statement*'s effect on those outcomes, given that administrative records cannot provide data to explore such behavioral factors. This analysis clearly shows that workers find the information contained in the *Statement* useful, and that the information affects their own expectations and claiming plans. However, because the *Statement*'s effects dissipate quickly, both the content and the frequency of communication from SSA provide important policy levers with which the agency can change individuals' perceptions about future benefits and the Social Security program more broadly.

Appendix A: Data and Methodology Details

The data used in this analysis are from various modules of the ALP, an ongoing nationally representative Internet panel survey that began in 2006 and currently has over 6,000 active respondents. Estimating the *Statement*'s effects required the following baseline measures from before 2014, when the reintroduction began:

1. Social Security knowledge, elicited in "What Do People Know" (ALP module 137), administered in 2010.
2. Social Security expectations, elicited in ALP modules named for the HRS core modules they incorporate, "HRS 2012 Module J–M" and "HRS 2012 Module N–P" (ALP modules 324 and 334, respectively), administered in 2013.
3. Earnings histories, used in establishing Social Security coverage, elicited in either "Social Security Annuity Project" (ALP module 179), administered in 2011; or "Netspar Uncertainty" (ALP module 338), administered in 2013.

To measure changes from baseline levels, I fielded ALP module 479, "Social Security Expectations," in 2017. I limited the potential sample to currently active ALP respondents who had completed ALP

modules 137, 324, and 334, and at least one of ALP modules 179 or 338. I further limited the sample to those who were not receiving Social Security benefits and who did not report signing up for a *my* Social Security account prior to the *Statement*'s reintroduction. Of the 3,056 respondents who completed ALP module 137 in 2010, 2,392 completed both of the HRS modules in 2013, 2,096 also completed either of the work history modules in 2011 or 2013, and 1,260 completed ALP module 479 in 2017. Of those 1,260, I excluded 385 respondents who were current beneficiaries, to whom SSA does not send *Statements*. The resulting study sample comprised 875 nonbeneficiaries, of whom 515 were not *my* Social Security accountholders.

To determine "prior knowledge"—or more precisely, the measure of Social Security knowledge in 2010—I relied on ALP module 137's sequence of one multiple choice and six "True or False" questions about Social Security. The correct answer to the multiple-choice question "Which of the following best describes how a worker's Social Security benefits are calculated?" is "They are based on the average of a person's highest 35 years of earnings." The "True or False" questions and answers are:

1. Spouses can receive benefits even if they're not eligible under their own work histories (True).
2. The age at which an individual claims benefits affects the benefit amount (True).
3. Benefits are adjusted for inflation after retirement (True).
4. People have to claim benefits as soon as they stop working (False).
5. Benefits can be taxed if earnings or investment income is high enough (True).
6. Individuals can receive Social Security disability benefits (True).

I followed Greenwald and others (2010) in summing the number of correct answers to assign a Social Security Literacy Score from 0 to 7 as my measure of prior SSA knowledge.[18]

The 2013 ALP modules that include the 2012 HRS core questions provide baseline information on respondent expectations about Social Security benefits, both in general and for himself or herself. Respondents were asked if they were currently receiving Social Security benefits; if not, they were asked whether they expected to receive Social Security benefits in the future; if so, they were asked at what age they expected to claim benefits and what they thought their benefit amounts would be. Respondents were also asked whether they expected Congress to make Social Security benefits overall less generous in the next 10 years, and whether they expected the same for their own benefits. I asked these same questions in the same sequence in ALP module 479, which opened to respondents in August 2017, to allow comparisons of the 2013 and 2017 responses. (The entire ALP module 479 questionnaire is available for download at https://alpdata.rand.org/index.php?page=data&p=showsurvey&syid=479.) In combination, the module on prior Social Security knowledge and the HRS modules elicited information in four broad categories:

1. views on Social Security benefits, including current receipt status, expectation of future receipt, expected benefit levels, and reason(s) for not expecting to receive benefits;
2. knowledge of how benefit levels change with different work histories and claiming ages;
3. recall and use of *my* Social Security accounts and *Social Security Statements*; and
4. general impressions of SSA communications and the Social Security programs and benefits.

Because I aim to ascribe differences in expectations to the causal effect of recently receiving a *Social Security Statement*, it is vital to control against any pre-2014 differences in characteristics among 2017 *my* Social Security nonaccountholders. Otherwise, the effects I ascribe to the *Statement* may instead be due to any such measurable differences. Fortunately, I found no statistically significant differences across sociodemographic characteristics (age, race/ethnicity, sex, marital status, education, and income), 2010 Social Security knowledge, or 2013 Social Security expectations between those who did not receive a *Statement* from 2014 through 2016, those who received one in 2014 or 2015, and those who received one in 2016. That is, the characteristics of individuals who received a *Statement* during the reintroduction period—nonbeneficiaries attaining a multiple-of-5 age—did not correlate with any measurable characteristics among those who did not.

However, the characteristics of 2017 *my* Social Security accountholders differed from those of nonaccountholders along a number of dimensions. Accountholders were 4.6 years older on average, suggesting that the higher levels of technological engagement typically observed among younger cohorts is more than offset by the importance of Social

Security benefits for older cohorts. Accountholders were also more likely than nonaccountholders to be men (51 percent versus 43 percent) and more likely to have any postsecondary education (77 percent versus 70 percent).

Moreover, among *my* Social Security accountholders (the vast majority of whom reported signing up within the preceding 5 years), knowledge of program details is systematically and statistically significantly higher than that of nonaccountholders in the 2010 module. On average, accountholders score almost 0.6 points higher than the overall mean of 3.7 on the 7-point knowledge scale. A substantial amount of selection thus underlies the opening of a *my* Social Security account, in that accountholders were more knowledgeable about Social Security *even before signing up.* This higher score is due mostly to greater knowledge of benefit eligibility: Accountholders were 10 percentage points more likely to know that claiming age can affect Social Security benefits, 11 percentage points more likely to know that spouses can receive benefits, 10 percentage points more likely to know that claiming age and retirement age can differ, and 11 percentage points more likely to know that Social Security benefits can be collected in the event of a disability. Because of these differences, my causal regression analysis excludes those who signed up for a *my* Social Security account before or during the reintroduction period.

The regression analyses use an Intention-to-Treat approach, which estimates an effect based on whether an individual *should have* been sent a *Statement* (that is, whether one attained a multiple-of-5 age), not on whether one was actually received and read—because the latter, conditional on being sent a *Statement*, might reflect inherent differences in Social Security knowledge and expectations. I therefore estimate the following linear equation,[19] with estimated treatment effects based on variables indicating whether an individual i was sent a *Statement* in year y, denoted by $1(Statement_{i,y})$:

$$\begin{aligned} Outcome_{i,2017} = {} & \alpha + \beta_{2014-2015} 1\left(Statement_{i,2014-2015}\right) \\ & + \beta_{2016} 1\left(Statement_{i,2016}\right) \\ & + \gamma_{2014-2015} 1\left(Statement_{i,2014-2015}\right) \times Knowledge_{i,2010} \\ & + \gamma_{2016} 1\left(Statement_{i,2016}\right) \times Knowledge_{i,2010} \\ & + \delta \times Knowledge_{i,2010} + \Gamma \boldsymbol{X}_{i,2013} + \varepsilon_{i,2017} \end{aligned}$$

with standard errors clustered at the age-specific level.[20]

The covariates in $\boldsymbol{X}$ include age, age squared, race/ethnicity, sex, marital status, and education. *Knowledge* refers to the summed score of correct answers from the 2010 ALP survey module on Social Security knowledge, ranging from 0 to 7. Robustness checks, with separate indicators for correctly answering each question, are consistent with findings reported in this study and are available on request.

The two β's estimate the effect in 2017 of having been sent a *Statement* in either 2014/2015 or 2016, and the two γ's estimate the mediating role of 2010 Social Security knowledge on the effect of the *Statement* in those two time periods. The control group is thus those who had not received a *Statement* since early 2011.

All estimates are weighted using the ALP's raking weights, which are constructed to match the average sociodemographic statistics of the ALP respondents with those of the overall national population (see https://www.rand.org/labor/alp/panel/weighting.html for further information on the construction and use of these weights). Although point estimates based on unweighted values differ from those reported here, none of the changes are statistically significant.

I estimate separate effects for 2014/2015 and 2016 *Statement* recipients for two reasons. First, the recency of *Statement* receipt was associated with the likelihood of recalling its receipt, as reported in Chart 2, indicating that the effect of the *Statement* may diminish over time. Thus, differences in treatment effects by time since receipt are potentially strong. Second, exploratory analyses indicated that effects varied substantially by time since receipt of a *Statement*. Splitting the analysis of the September 2014–December 2016 reintroduction period into two groups allows a comparison of effects by time since receipt, whereas splitting the analysis into many groups could limit the power to allow for statistical inference of separate effects.[21]

Appendix B

Table B-1.
Types of future Social Security benefits expected by 2013 nonbeneficiaries who expect future benefits, by exposure to SSA communications as of 2017

Benefit type	*my* Social Security accountholders	Individuals without a *my* Social Security account		
		No *Statement* received since 2011	*Statement* received in— 2014 or 2015	2016
		Percentage of respondents who expect benefits		
Retirement	96	90	91	95
Disability	7	2	6	5
Spouse	13	8	12	13
Survivor	2	2	4	4
Dependent	0	1	1	0
Don't know	2	8	5	1
		Standard deviation		
Retirement	20	30	29	21
Disability	25	15	23	21
Spouse	33	27	33	34
Survivor	12	15	20	19
Dependent	0	8	11	0
Don't know	15	27	22	12
Observations	221	194	128	81

SOURCE: Author's calculations based on various ALP survey modules.

Notes

Acknowledgments: This research would not have been possible without the efforts of the RAND American Life Panel staff, most notably David Grant, Karen Edwards, and Julie Newell. A previous version of this article was published as Michigan Retirement Research Center Working Paper No. 2017-373.

[1] Until 1999, SSA called the *Statement* the *Personal Earnings and Benefit Estimate Statement*. For brevity, I refer to both iterations as *Social Security Statements* or, simply, *Statements*.

[2] A facsimile sample *Statement* is available at https://www.ssa.gov/myaccount/assets/materials/SSA-7005-SM-SI%20Wanda%20Worker%20Near%20retirement.pdf.

[3] In this analysis, I find that just under 74 percent of those to whom SSA recently sent a *Statement* recall receiving it.

[4] The dissemination strategy would later change to eliminate *Statement* mailings to individuals younger than 60, effective January 2017.

[5] Appendix A describes each module and the construction of the analytic sample.

[6] Although I provide descriptive statistics on expectations among those with a *my* Social Security account, I exclude them from the regression analyses. Simply put, they differ from those without *my* Social Security accounts in multiple respects: age, education, income, and knowledge about Social Security. Furthermore, differences by 2017 *my* Social Security accountholder status are present even in the 2010 survey results, *before* *my* Social Security accounts were introduced. Including them as "controls" in a regression is thus not appropriate, as they differ so consistently from those who receive mailed *Statements*.

[7] In fact, SSA would change its original plan for reintroducing mailed *Statements* and discontinue *Statement* mailings to individuals younger than 60, effective January 2017. As a result, a person born in November 1984 who does not have a *my* Social Security account is now not scheduled to receive a *Statement* in the mail until shortly before turning 60 in 2044.

[8] For brevity, I use "recipients" to refer to all individuals who, by date of birth, should have been sent a *Statement*, whether they reported receiving one or not.

[9] Appendix A discusses comparisons across recipient groups and with *my* Social Security accountholders.

[10] Thirty-six percent of the sample (316 of 875) holds a *my* Social Security account—much higher than the prevalence among the entire working population. The difference may reflect the fact that ALP respondents have Internet access and frequently use it. To the extent that Internet connectivity increases interaction with online Social Security resources, the estimates in this study may understate the effect of the paper *Statement*.

[11] Note also that once individuals start receiving Social Security benefits, SSA no longer mails *Statements* to them.

[12] The average ages do not statistically differ across *Statement* recipient categories. However, the higher frequency of Social Security income among the 2016 recipients is, because of sampling variability, driven by a larger proportion in this sample of respondents who just turned 65 and claimed Social Security benefits, as well as those who have turned 60 and claimed survivor benefits. Controlling for age and clustering standard errors at the age level led to no statistically significant effect of *Statement* receipt on Social Security income receipt.

[13] Because this question was not included in prior modules, I cannot estimate the extent to which the *Statement* affected peoples' reasons for not expecting benefits, or if the *Statement*'s effect varied by reason. Furthermore, I do not use answers to this question to define the analytic sample, precisely because the *Statement* may have differential effects by the reason for not expecting benefits, especially if the reasons are mistaken. For example, individuals may correctly report that their current occupation is not covered by Social Security, but they may be eligible for retirement benefits based on past employment, or for spousal or survivors' benefits.

[14] This statistic combines the overall effect of 2016 *Statement* receipt (0.3280) and the interaction effect of the prior-knowledge measure, which is the product of the mean literacy score (3.7) and the per-point prior-knowledge effect for 2016 *Statement* recipients (−0.0492), or −0.18204. Thus, 0.3280 − 0.18204 = 0.14596, rounded to 15 percentage points.

[15] That is, I estimate the *Statement*'s effect on the intensive margin.

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[17] This text varies slightly from year to year, with different projected years of trust fund reserve depletion and fractions of scheduled benefits to be paid, depending on current actuarial assumptions.

[18] Including each question as a separate indicator and interaction with *Statement* receipt does not qualitatively change the findings of this analysis, although doing so limits its statistical power. Analysis of the principal components of the seven-question sequence indicates substantial correlation in correctly answering the first four True or False questions. Using one indicator for answering all of the first four correctly and separate indicators for correctly answering the remaining three questions also does not change the findings.

[19] Logit and probit analyses for binary outcomes produced statistically indistinguishable results and are available on request.

[20] Because the outcome measures reflect a static point in time (2017), age clustering is equivalent to clustering at the birth-year level.

[21] This approach also avoids placing a specific functional form on how the effect varies with time since *Statement* receipt and, unfortunately, sample size limitations prevent me from conducting a nonparametric estimation of how the *Statement*'s effect changes over time.

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