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The Perception Of Social Security Incentives For Labor Supply And Retirement: The Median Voter Knows More Than You'd Think

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ABSTRACT

The degree to which the Social Security tax distorts labor supply depends on the extent to which individuals perceive the link between current earnings and future Social Security benefits. Some Social Security reform plans have been motivated by an assumption that workers fail to perceive this link and that increasing the salience of the link could result in significant efficiency gains. To measure the perceived linkage between labor supply and Social Security benefits, we administered a survey to a representative sample of Americans aged 50-70. We find that the majority of respondents believe that their Social Security benefits increase with labor supply. Indeed, respondents generally report a link between labor supply and future benefits that is somewhat greater than the actual incentive. We also surveyed people about their understanding of various other provisions in the Social Security benefit rules. We find that some of these provisions (e.g., effects of delayed benefit claiming and rules on widow benefits) are relatively well understood while others (e.g., rules on spousal benefits, provisions on which years of earnings are taken into account) are less well understood. In addition, our survey incorporated a framing experiment, which shows that how the incentives for delayed claiming are presented has an impact on hypothetical claiming decisions. In particular, the traditional "break-even" framing used by the Social Security Administration leads to earlier claiming than other presentations do.

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A data appendix is available at:
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1. Introduction

The Social Security system creates a complex set of implicit and explicit incentives for labor supply and retirement decisions. While previous work has found that incentives from the Social Security system affect labor supply and retirement behavior (Coile and Gruber, 2007; Gustman and Steinmeier, 2005a; Liebman, Luttmer, and Seif, 2009), we know little about the extent to which people understand these incentives. In this paper, we attempt to fill this gap by surveying individuals about their understanding of the Social Security benefit rules and their sources of information about the system.

There are three reasons why it is important to know how individuals perceive the incentives of the Social Security system and how these perceptions are formed. First, it is central to assessing the potential efficiency gains from Social Security reform. A common argument is that investment-based Social Security reform will improve economic efficiency by increasing the perceived link between retirement contributions and retirement benefits (Auerbach and Kotlikoff, 1987; Kotlikoff, 1996; Feldstein and Liebman, 2002). Under this argument, individuals currently respond to the Old-Age, Survivors, and Disability Insurance (OASDI) payroll tax as a pure tax, failing to recognize that the payment of Social Security taxes will increase their future Social Security benefits. With personal retirement accounts or a notional defined-contribution system, by contrast, the link between contributions and future income would be clear, and the economic distortions would be reduced. Yet there is little evidence as to whether people perceive the Social Security tax as a pure tax or whether they instead realize that the effective marginal tax rate is generally lower than the nominal Social Security tax rate because of the incremental benefits that are earned from incremental labor supply. Liebman, Luttmer, and Seif (2009) find that labor supply responds to marginal Social Security benefits, indicating that workers do perceive a tax-benefit link. But given the complexity of the Social Security benefit rules and the often long lag between when Social Security taxes are paid and when benefits are received, it would be beneficial to have direct evidence on the degree to which workers perceive this link.

Second, if there is a systematic misperception of the Social Security system among voters, political reform of Social Security will likely reflect these misconceptions, contributing to suboptimal policy choices.

Third, a misperception of incentives can lead to privately suboptimal decisions.[1] Measuring how widespread misperceptions are gives insight into the aggregate cost of suboptimal decision making and the potential gains from improving understanding. In addition, the nature of the misperceptions provides useful information on how best to disseminate information about the Social Security program. For consequential decisions like the choice of a retirement or benefit claiming date, it is important to know whether it might be possible to improve decision making by providing information in a different way.

Our survey was administered to a sample of individuals aged 50 to 70 that is nationally representative with regard to demographic characteristics. These individuals had previously been recruited by the survey firm Knowledge Networks through random-digit dialing to become part of its panel of respondents. These panelists agree to take a weekly survey via the Internet using a PC or WebTV in exchange for free Internet and WebTV access.[2] Our survey took about half an hour to complete and contained five sections. First, it asked about respondents' current or expected level of Social Security benefits, date of retirement, and start date for claiming benefits. Second, it measured respondents' perceptions of Social Security's incentives for labor supply by asking how additional earnings or additional years of work would affect their benefits. Third, we measured knowledge about specific provisions in the Social Security benefit rules, such as the effect of the age of first claiming on the level of benefits, the earnings test, and the rules on spouse and widow benefits.[3] Fourth, we experimentally varied how we framed the effect of delaying benefit claiming, and we examined whether these different frames affected attitudes towards delayed claiming. Finally, we asked respondents about their valuation of the Social Security annuity and collected data on a large number of background questions, which allow us to identify factors that predict the accuracy of the perceptions. Because our survey contained questions that could potentially be challenging for some respondents to answer, we

[1] Similarly, misperceptions of the level of benefits can lead to suboptimal savings decisions. Rohwedder and Van Soest (2006) show that those who overestimated their benefits before retirement are worse off in terms of several well-being measures during retirement.

[2] The WebTV option means that individuals did not need to be computer users to be recruited into the panel.

[3] Perceptions of the level of Social Security benefits have previously been studied by Bernheim (1988), Bernheim and Levin (1989), Gustman and Steinmeier (2001, 2005b), and Dominitz and Manski (2006). The general conclusion from this literature is that, while response rates to questions about Social Security benefit levels are low, the median (or average) perception is reasonably accurate despite a wide dispersion of answers. Surveys that examine knowledge about the Social Security system more generally (such as how it is funded) are reviewed in Barabas (2011). Benítez-Silva et al. (2009) and Greenwald et al. (2010) conduct nationally representative surveys that examine knowledge of various Social Security benefit rules. Our research adds to this literature by providing an in depth examination of the perceived labor supply incentives provided by the Social Security benefit rules.

randomized the wording and numerical parameters of key questions in a way that allows us to assess whether respondents provided meaningful responses.

We have three main findings. First, our results indicate that a majority of respondents perceive significant positive labor supply incentives from the Social Security benefit rules. About two-thirds of respondents report that their benefits will increase if they work an additional year (holding constant the age at which they start claiming benefits), and over half of respondents state that additional earnings before claiming benefits would result in higher benefits. Since an individual's actual labor supply incentives are a complex function of his or her own exact earnings history as well as his or her spouse's earnings history, we cannot determine with certainty whether these perceptions are correct at the individual level, but in aggregate they are quite reasonable. Among those who report positive labor supply incentives, the median perceived size of the incentive tends to be larger than what we would expect for a typical worker with positive labor supply incentives.

Second, we find that some features of the Social Security system are relatively well understood while others are not. For example, people are very familiar with the so-called early retirement penalty. About 85 percent of respondents correctly answer that a delay in claiming benefits between the age of 62 and 66 will increase the benefit amount, and the median perceived benefit increase per year of delay (5.0 percent) is reasonably close to the actual increase (6.25 percent). People are also largely aware that delays in claiming between the ages of 66 and 70 increase benefits; however, about two-thirds of respondents incorrectly believe that delays beyond the age 70 will further increase benefits. Thus, the rules governing how the age of first claiming affects benefit levels seem to be well understood, at least for the age range that is relevant for most respondents (generally between ages 62 and 70 in our sample). Similarly, the provisions regarding widow/widower benefits are relatively well understood. In particular, 52 percent believe that they would receive the same benefits if they become widowed, while 42 percent believe their benefits would rise – and the responses vary with the ratio of own to spouse primary insurance amount in an appropriate way.

For other features of Social Security, there is considerable heterogeneity in understanding. For example, about half the sample incorrectly believes that his or her spouse would not be eligible for any benefits if the spouse had never worked, not realizing that the spouse could potentially claim benefits based on the respondent's earnings history. However,

among those who do believe that the spouse could receive benefits, the median respondent perceives the spousal benefit to be 49 percent of his or her own benefit, which is quite close to the true figure of 50 percent. Knowledge about the earnings test is also limited, with only about 40 percent correctly identifying the direction of its effect. Yet, among those who are aware of the earnings test, the median respondent believes the threshold is $12,200, which is quite close to the actual threshold of about $13,560. Lastly, knowledge about which years of earnings enter the benefit formula is very low. Given a four-item multiple-choice question, only about 30 percent indicate that some portion of the highest years of earnings count towards benefits. Further, the median respondent believes that only the 10 highest years of earnings count, far fewer than the actual figure of the 35 highest years.

Third, we find that how information about the effects of delayed claiming is framed alters retirement intentions. In particular, when we switch from the frame traditionally used by the Social Security Administration ("the break-even frame") to alternative frames, the fraction favoring retirement at age 65 rather than at age 62 rises to about 70 percent from 60 percent. Given that our respondents' four most highly rated information sources are all communications from the Social Security Administration, this result suggests that the way the Social Security Administration is presenting information may be affecting retirement decisions. These results are consistent with Dominitz, Hung, and van Soest (2007), who also found that the way information about Social Security is presented affects people's hypothetical claiming decisions. More recent work by Brown, Kapteyn, and Mitchell (2014) shows that the "break-even frame" leads to earlier hypothetical claiming behavior relative to a neutral framing.

Taken together, our results indicate that there is widespread awareness of the incentive effects of the Social Security benefit rules, even though some of the Social Security benefit rules themselves are less well understood. This suggests that the potential efficiency gains from increasing the transparency of the link between Social Security benefits and taxes are likely to be smaller than is generally assumed. While the median response to many of our survey questions was often very close to the true answer, the substantial heterogeneity of responses to most questions suggests that there could be large costs associated with individuals making privately suboptimal decisions because of misperceptions. However, to the extent that policy choices are based on perceptions of the median voter, the additional deadweight loss associated with

suboptimal policy decisions may be limited, since the median voter appears to be well informed about many features of Social Security.

2. Survey Design and Sample Characteristics

We contracted with Knowledge Networks to administer our survey instrument to a sample of its panel of respondents. These panelists, originally recruited through random-digit dialing, agree to take a 15-20 minute survey once a week via the Internet using a PC or WebTV in exchange for free Internet and WebTV access. Knowledge Networks collects basic demographic characteristics for all of its panelists, and its panelists are roughly representative of the adult U.S. population according to these characteristics. Administering the survey online was beneficial because this method allowed us to ask more complicated questions than could be asked using a phone survey, and the cost of fielding the online survey was only a fraction of what an in-person survey would have cost.

2.1 Survey Instrument

Our survey instrument consists of 77 questions, though the typical respondent was not asked every question because of skip patterns present in the instrument. The complete survey instrument, which consists of five parts, is contained in Appendix A. In the first part (Sections 1 and 2), we asked the respondents whether they are retired, when they retired or expect to retire, whether they currently claim Social Security, when they started claiming Social Security or expect to start claiming, and what their actual or expected level of Social Security benefit is. We also asked married respondents to answer these questions on behalf of their spouses. The questions in the first part of the survey are used to determine the appropriate tense, wording, and skip patterns for later questions. For example, when asking about the effect of working one less year on the level of Social Security benefits (Q3.1), we adjust the wording of the question depending on whether or not the respondent already collects Social Security benefits and whether the respondent is still working or already retired. In addition, the question wording contains the respondent's earlier answer about the (expected) age of retirement, the (expected) start age of claiming Social Security, and her (expected) monthly Social Security benefit.

The second part (Sections 3 and 4) contains questions about the perceived labor supply incentives of the Social Security benefit rules. We asked respondents what they believe will

happen (or would have happened) to their Social Security benefits if they were to work (or had worked) one year less. The response to this question is the perceived incentive on the extensive margin of labor supply. We solicit both a qualitative answer, where respondents indicate whether their benefits would rise, stay the same, or decline; and a quantitative answer, where respondents specify what the resulting new level of benefits would be. We also asked about the perceived incentive on the intensive margin, namely the perceived effect of higher earnings on Social Security benefits. We also measure this incentive in both qualitative and quantitative terms. The true incentives of Social Security on labor supply vary widely across individuals because these incentives are a complex function of past earning history, marital status, and spousal earnings history (for details, see Feldstein and Samwick 1992 on intensive-margin incentives and Goda et al. 2009 on extensive-margin incentives). Because we only have approximate information about these determinants of true incentives, it is difficult to determine whether perceived labor supply incentives correspond to actual incentives for any given individual. Thus, the primary purpose of these questions is to estimate the population distribution and correlates of these perceptions, though we will also compare self-reported perceptions are correct to our best predictor of the actual incentives given the information available to us.

In the third part (Sections 5-8), we asked respondents about their knowledge of five important components of the Social Security benefits rules: (1) the effect of the age of first claiming Social Security benefits on the level of benefits, (2) the earnings test, (3) the spousal benefit rules, (4) the widow(er) benefit rules, and (5) which years of earnings are used in the benefit calculation. In some cases, we ask about these rules as they pertain to the respondent (e.g., what would happen to your benefits if you became widowed?). The advantage of tailoring the questions to the respondent is that respondents may be more motivated to answer questions about themselves than about hypothetical persons or about Social Security rules per se. Moreover, we would expect that respondents are more likely to have information about features of rules that are directly relevant to them. The drawback, however, is that it is not always possible to ascertain the correct answer for any given respondent or whether any given respondent understands the rule. For example, a respondent might answer that his benefits would remain the same if he became widowed. If, in fact, this respondent's benefit would remain the same because his own benefits are higher than his spouse's benefits, we cannot tell

whether he applied the rule correctly or was not aware of the rule. Moreover, to the extent that we do not know his own exact PIA and his spouse's true PIA, we cannot tell for sure what would happen to his benefits if he were to become widowed. To overcome this drawback, we also ask some questions about hypothetical persons or explicitly about Social Security rules. For these questions, we can directly determine whether the answer is correct, which allows us to examine the predictors of knowledge about the Social Security benefit rules.

The fourth part (Section 9) consists of a framing experiment, in which we experimentally vary how we present the effect of the age of claiming on the level of Social Security benefits. We present the effect as an increase in monthly benefits for later claiming (gain frame), a decrease in monthly benefits for early claiming (loss frame), or the first age at which the lifetime benefits under delayed claiming exceed the lifetime benefits under early claiming (the break-even frame). The wording of the break-even frame closely follows the wording that the Social Security Administration currently uses on its web site to educate people about tradeoffs from claiming earlier or later. After presenting one of these three frames, we ask a randomly selected group of respondents whether they think a neighbor would be better off claiming early or late. We ask the remaining respondents about their own preferred claim date, which is a counterfactual question for those who have already claimed Social Security benefits.

The final part of the survey (Sections 10-14) contains a variety of questions about the respondent's background. Some these questions, such as the ones about earnings histories, allow us to make a rough estimate of the true incentives faced by the respondent. Other questions are potential predictors of respondent knowledge about the Social Security system. For example, the questions regarding sources of information about Social Security will enable us to test whether respondents with a better understanding of Social Security rules get their knowledge from particular sources. In a similar vein, we ask questions to gauge a respondent's financial literacy, which Lusardi and Mitchell (2007a, b, c) and Lusardi (2008) have shown to be very important for decisions related to retirement. We also ask about the importance of Social Security for retirement spending and the fraction of a respondent's friends who are retired (and might therefore be a source of knowledge). We ask about each respondent's total number of siblings as well as the number of older siblings, since siblings are a potential source of information about the program. Finally, we ask how the respond values the annuity stream of Social Security

benefits relative to receiving a lump-sum payment at age 62 or one year from now (whichever is later).

Because the survey asked many relatively hard questions, we also experimentally varied the way some of the questions were asked to determine whether respondents could give meaningful answers. For example, when we ask respondents how an increase in earnings would affect their Social Security benefits, we randomly choose this increase in earnings to be $5,000 or $10,000. This allows us to test whether those who were asked about larger earnings increases report larger benefit increases. We included a number of such experimental variations in question wording, and most results indicate that the respondents varied their answers in the expected direction. This increases our confidence that many respondents were able to give meaningful answers even to our relatively difficult questions.

2.2 Sample Characteristics

Knowledge Networks fielded the main survey from November 6 to November 23 of 2008.[4] A total of 3255 panelists between the ages of 50 and 70 were invited to participate in our survey. When they received their weekly invitation from Knowledge Networks to participate in a survey, the invitees did not know the topic of the survey. Eighty-two percent of invitees (2661 respondents) chose to take the survey, at which point the subject of the survey was revealed. Of those who began the survey, 268 failed to complete it. Thus the completion rate among those choosing to take the survey was 90 percent. In addition, 62 respondents reported not being eligible at all for Social Security benefits – not on their own record, nor on the record of a spouse, ex-spouse, or late spouse. After excluding the incomplete and ineligible responses, our analysis sample contains 2331 observations. Conditional on completing the survey, the item-response rates were very high, generally above 95 percent. The median completion time was 32 minutes, and respondents were paid a $5 incentive because the survey length exceeded the typical length (about 20 minutes) for Knowledge Networks' surveys.

We oversampled working individuals between the ages of 60 and 65 because this group is on the verge of making retirement decisions, and refer to this group of individuals as the "older-worker group." The older-worker group contains 1636 observations and has demographic

[4] About 92% of the data comes from the main survey, while 8% comes from a pilot survey that was fielded August 20, 2008, to September 9, 2008.

characteristics that are roughly representative of all working individuals between the ages of 60 and 65. Similarly, when we weight the observations of all 2331 sample members to compensate for oversampling among the older-worker group, the demographic characteristics are roughly representative of all individuals between the ages of 50 and 70 nationwide.[5] We refer to this broader group as the "representative group." Unless otherwise noted, results described in this paper apply to the representative group.

Table 1 shows the demographic composition of the representative group and the older-worker group. The representative group has an average age of about 59 years, is just over half female, and is mostly non-Hispanic white (80 percent). The majority of respondents (63 percent) are married, and about three quarters live in one- or two-person households. The variation in income and education across respondents generally reflects the heterogeneity of the U.S. in this regard. About 10 percent of our respondents are high school dropouts and about 20 percent have a household income of less than $25,000 per year. About 29 percent of the respondents have a college degree and about 19 percent have a household income of more than $100,000 per year. When Knowledge Networks asked respondents about their labor force status (a 7-option multiple choice question), about 54 percent reported that they were working and about 26 percent reported that they were retired. When we asked respondents whether they are currently working for pay (with at least $2500 in annual earnings), about 52 percent answer affirmatively. We classify respondents as retired if they both (i) do not currently work for pay (with at least $2500 in annual earnings) and (ii) do not expect to work for pay in the future (with at least $2500 in annual earnings). This definition, which we use in the rest of the paper, yields a retirement rate of 39 percent. The older-worker group is more highly educated and has higher incomes than the representative group.[6] This is not surprising since it consists only of those individuals between the ages of 60 and 65 who were still working.

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[5] Appendix Table A1 examines the representativeness of the representative group by comparing its demographic characteristics to those of observations in the Current Population Survey (CPS) that match our sample selection criteria of being between the ages of 50 and 70. Relative to the CPS, our sample has somewhat more whites (80% vs. 75%), is more educated (61% with at least some college vs. 56%), is slightly less likely to be married (63% vs. 68%), and is somewhat less likely to be working (54% vs. 60%). While many of the demographic characteristics are statistically significantly different between the CPS sample and our representative group, the economic magnitude of these differences is moderate in size. We therefore think of the sample as broadly representative of the U.S. population of individuals between the ages of 50 and 70.

[6] Members of the older-worker group were selected prior to the administration of the survey based on Knowledge Networks' work status variable, which might not always be fully current. This explains why the fraction working (according to the question on our survey) is less than 100% for the older-worker group.

2.3 Claim Status and Benefit Receipt

Two important dimensions along which respondents differ are retirement status and Social Security claim status. Retirement status matters because labor supply incentives from the Social Security benefit rules are still relevant for future decisions only for non-retired individuals. Social Security claim status is important since those who have already claimed Social Security benefits have had more contact with the Social Security system and, in the process, may have gained more knowledge about the benefit rules. About 39 percent of our respondents currently receive some form of Social Security benefits. If we exclude the 13 percent of respondents who report receiving disability benefits after they stopped working (not all of whom were receiving OASDI benefits), the fraction of respondents receiving Social Security benefits becomes 31 percent. The age at which people first claim Social Security benefits, their "claim age," is often different from their retirement age, which is defined as the age at which they stop working and have no intention to work in the future. Slightly over half of our sample report a claim age that differs from their retirement age. This distinction is also evident in Table 2, which shows that 19 percent of our sample is either still working while receiving benefits or retired but not yet receiving benefits.

We measure Social Security benefit levels by combining reported current benefit levels among those who are already claiming benefits with expected benefit levels among those not yet claiming. We adjust benefit levels to the level that they would be if each person had started claiming (or expected to start claiming) at age 66. As shown at the bottom of Table 1, the average adjusted benefit level reported by our representative group respondents is $1263. This level closely matches administrative data from the Social Security Administration, which shows that the average PIA for retired workers making initial benefit claims in 2008 was $1259. [7] Table 3 shows that the characteristics of those currently receiving Social Security benefits differ markedly from those who have yet to receive benefits. Not only are those claiming benefits on average almost 10 years older, they also have lower levels of education, are less likely to be married, and more likely to be female. Since there are such large demographic differences by claim status, it will be important to control for demographic characteristics when examining

[7] See Table 6.A2 of the 2010 Annual Statistical Supplement to the Social Security Bulletin available at http://www.ssa.gov/policy/docs/statcomps/supplement/2010/6a.pdf.

whether knowledge about Social Security is influenced by current claim status so as to avoid confounding claim status and demographic characteristics. Current recipients receive benefits that are about $200 per month (or about 18 percent) lower than the expected benefits of those not yet claiming. However, virtually all of this difference can be explained by the fact that the current recipients of Social Security started claiming benefits at an earlier age. If all benefits are adjusted to the level that they would be if each person had started claiming (or expected to start claiming) at age 66, then both current recipients and future recipients have mean (adjusted) benefits that is within 10 dollars of the overall average of $1263 per month. Figure 1 presents the cumulative distribution functions (CDFs) of the actual and adjusted Social Security benefits, which shows that the distribution of reported benefits levels appears very plausible. Figure 2 reports the CDF of adjusted benefit levels for those already claiming and those yet to claim Social Security benefits. This figure confirms that the distribution of benefit levels is very similar for those groups, which indicates that, on average, those not yet receiving benefits have a reasonably good impression of the benefits that people actually receive.[8] Finally, Figure 3 shows that the older-worker group expects higher benefits than the representative group, which is as expected since the older-worker group has higher earnings.

The finding that mean levels of reported benefits correspond to averages from administrative data is consistent with respondents having unbiased perceptions of benefit levels, but it does not establish that individuals' perception of benefit levels are accurate. Ideally, we would compare individual perceptions of benefits or incentives to actual benefits or incentives based on administrative records. Unfortunately, we cannot link our respondents to administrative data at the individual level. Instead, to predict individual benefits we apply the Social Security benefit rules to each respondent's self-reported length of work history (number of years worked for pay), earnings in last year of work, earnings in a typical year relative to the last year, (planned) age of first claiming benefits, and (planned) retirement age. Given that this

[8] Dominitz and Manski (2006) and Delavande and Rohwedder (2008) have gone one step further and elicited individuals' perceived probability distribution of their future Social Security benefits. Delavande and Rohwedder (2008) compare people's point estimate of their future Social Security benefits to their expected Social Security benefits (where the expectation is based on the perceived probability distribution) and find that both figures are very similar. This evidence suggests that the point estimates that we elicit in our survey can be interpreted as expectations. In addition, Rohwedder and Kleinjans (2006) examine the dynamics over time of individuals' perceived Social Security benefits and find that perceptions tend to become more accurate as people approach retirement.

prediction is based on a relatively coarse description of the individual's earnings history, our predictor is only a rough proxy for true benefits.

In Table 4, we regress self-reported Social Security benefits on our predictor for benefits (in the odd columns) and vice versa (in the even columns). We limit the sample to those who report to claim benefits on their own earnings record, because we don't have the required information to estimate benefits for those who (partly) claim based on the record of a current, former, or late spouse. Columns 1 and 2 report the results for the representative group whereas columns 3 and 4 report the results for the older-worker group. The table shows that an additional dollar of predicted benefits is associated with increase in self-reported benefits of about half a dollar, and that this association is highly significant. Error in our predictor will cause the coefficient on the predictor to be biased toward zero, which may explain why the coefficient is less than one. Particularly for those already receiving benefits, the reverse regression yields slightly higher coefficients (but still less than 1), which is consistent with self-reported benefits being somewhat more accurate than our predictor. The predictor is able to explain about 30 percent of variation in self-reported benefit levels. The results are similar for the representative group and the older-worker group, and do not vary substantially by claim status. In short, Table 4 shows that the heterogeneity in self-reported benefits corresponds to what we would expect given our information about respondents' earnings histories and planned retirement and claiming ages, and we therefore conclude that respondents are able to give meaningful answers regarding Social Security benefit levels.

3. Perceptions of Social Security Incentives

Before turning to perceptions of incentives from the complex Social Security benefit rules, we first present perceptions of the marginal OASDI tax rate (Q3.3).

3.1 Perceptions of the Marginal OASDI Tax Rate

In 2007, the actual OASDI marginal tax rate was constant at 12.4 percent for the first $97,500 of earnings and was 0 percent for earnings above that amount. We explicitly differentiated between and asked about the employee and the employer portion. Among the 89 percent of respondents who reported earning less than $100,000 in the last year they worked, the median response is that the respondent and his employer combined would have paid $150 more

in OASDI taxes if he had earned $1000 more in the last year he worked. In other words, the median perception of the OASDI tax is 15.0 percent, which is quite close to the true figure of 12.4 percent.[9] A number somewhat above 12.4 percent could arise if some respondents mistakenly included the 2.9 percentage point Medicare payroll tax in their answer. Moreover, about three quarters of the non-self-employed respondents with earnings less than $100,000 correctly report that the employee and the employer share the OASDI tax equally. Figure 4 shows the distribution of perceived marginal OASDI tax rates among those subject to the tax on the margin. The figure confirms that that the median perception is very close to the actual rate but also shows that there is a fair amount of dispersion around this median, with an interquartile range from 7 to 30 percent.

3.2 Perceptions of Incentives to Work Additional Years

We measured perceptions of extensive margin incentives by asking two questions (Q3.1 and Q3.2). First, we asked respondents what would happen to their Social Security benefits if they had stopped working for pay earlier than they did, but had started collecting Social Security at the age that they actually did. Note that this question is hypothetical for those who have already retired. For those still working, the question asks about the effect of stopping work earlier than the age they had indicated as their expected retirement age. We asked a random third of respondents about the effects of retiring one year earlier, another third about retiring two years earlier, and a final third about retiring five years earlier. The question explicitly held the claim age constant so as not to measure the effect of the claim age on benefits.

We decided to ask about retiring earlier rather than about working additional years because respondents should have a better idea about their earnings during years that actually took place or that they expect to take place than about earnings in years when they did not work or do not expect to work. Moreover, if we had asked about working longer while keeping the claim age constant, there is a greater possibility that answers would have reflected the earnings test (which temporarily reduces benefits) rather than the effect of additional work on long-run benefits. The question was divided into two parts. We first asked whether benefits would increase, stay the same, or decrease if they had stopped working earlier. Then, for respondents

[9] The median response among respondents earning more than $100,000 was a marginal OASDI tax rate of 0%.

who reported that retiring earlier would change their benefit level, we asked what the resulting new amount of their benefits would be.

Table 5 reports individuals' perceptions of the incentives for working longer as provided by the Social Security benefit rules. We recoded the answers from the original question (which asked about working fewer years) so that higher numbers correspond to positive labor supply incentives. Panel A shows that 31 percent of respondents believe that working additional years would have no effect on their benefits and that 65 percent believe that this would increase their benefits. Social Security rules dictate that extra years of work will either increase or not change a person's benefits, depending upon (i) whether or not the person claims solely on his or her own record and (ii) whether the additional year will be part of the 35 highest years that enter the AIME calculation. About 10 percent of respondents do not claim solely on their own record, so for them working an additional year should not affect benefits. Moreover, of those claiming on their own record, about 75 percent indicate that they will have an earnings history of at least 35 years at their retirement age. Thus, it is plausible that for some fraction of this latter group, the last year of work would not be included in the 35 highest years. The results in Panel A therefore suggest that, overall, people appear to be well aware that more years of work generally lead to higher Social Security benefits. This perception is somewhat stronger among those not yet receiving benefits compared to those already receiving benefits.

Panel B of Table 5 examines the perceived percentage increase in Social Security benefits from working one additional year among the subsample of respondents who believe that benefits will be strictly higher if they work an additional year. The median response is 6.7 percent per year of additional work with an interquartile range of 4.0 to 10.0 percent. The CDF of the responses is shown in Figure 5.

Because we are asking respondents a relatively complicated question, we built in random variation in our instrument that allows us examine the quality of the responses. In particular, the reported total reduction in benefits should be strongly related to the randomly selected number (1, 2, or 5) of reduced work years. This is indeed what we find. The median response of those asked about working one fewer year is a 9.1 percent (s.e.: 0.4) reduction in benefits, whereas the comparable figures for those asked about 2 and 5 fewer years of work are respectively a 15.0 percent (s.e.: 0.6) and a 21.8 percent (s.e.: 1.0) decline in benefits.

The actual incentive on the extensive margin varies across individuals and depends on the person's exact earnings history. As an illustration, consider an individual who in the last year of work had indexed earnings of twice her average yearly income and who had an earnings history such that the lowest year of earnings among her 35 highest years was half her average earnings. By replacing the lowest year by the current year, her AIME would rise by 100*(2-0.5)/35 = 4.3 percent. If she is on the 32 percent segment of the AIME-PIA schedule, and her PIA/AIME ratio is 50 percent, then the 4.3 percent increase in her AIME would translate into a $4.3 \times 0.32/0.50 =$ 2.7 percent benefit increase. We performed more refined calculations of typical incentives by calculating the effect of working one additional year on a sample of Health and Retirement Study (HRS) respondents between the ages of 50 and 70, and for whom linked administrative earnings histories are available. Hence, for this sample, we can accurately calculate the effect on benefits of an additional year of work. We find that the median return is 3.3 percent, with an interquartile range of 2.2 to 4.5 percent. When combined with our survey results, these calculations suggest that individuals' perceptions of the extensive margin incentives are somewhat higher than true incentives.

To explore whether the spread in self-reported incentives on the extensive margin represents heterogeneity in true incentives or misperception, we predicted for each individual whether they have a positive or zero incentive for working additional years. This predictor is based on the individual's own earnings history, spouse's earnings history, planned retirement date, and whether the individual plans to claim benefits in part on the earnings record of a current, late, or former spouse. Table 6 compares the self-reported qualitative perceptions on the extensive margin to our predictor. The first two columns limit the sample to those perceiving zero or positive incentives for working more years, while the last two columns also includes those perceiving negative incentives and adjusts the predictor to take the earnings test into account. We find that we can statistically significantly predict the qualitative perceptions of extensive margin incentives, but the coefficient on the predictor is far below 1 and the R^2 is quite low. We suspect the low predictive power is in large part due to the coarse information about earnings histories available to us, but we cannot rule out that widespread misperceptions of the incentives also contributed to this finding.

3.3 Perceptions of Incentives to Earn More

We used two different frames for the questions that measure incentives on the intensive margin, monthly and lifetime, and randomized respondents into one of the two frames. In the monthly frame, each respondent indicated what would happen to her monthly benefits if she had earned a given amount more in the last year she worked (Q4.1 and Q4.2).[10] The lifetime frame asks each respondent what would happen to the total Social Security benefits that she receives over her lifetime if she had earned more, and as a result, she and her employer combined had paid $1000 more in Social Security taxes in the last year that she worked (Q4.3 and Q4.5). Both frames asked first for a qualitative answer and subsequently solicited a quantitative answer. The benefit of the monthly frame is that the question is more concrete and does not implicitly ask respondents to calculate the expected present discounted value of the benefit increase. However, when applying the lifetime frame, we can interpret people's responses to these questions as the fraction of the Social Security tax that is returned in the form of higher benefits; in other words, the question yields a direct estimate of the perceived effective Social Security tax rate.

Panel A of Table 7 presents the qualitative responses. Combining the qualitative answers from both frames in the first column, we find that 57 percent of respondents believe that higher earnings in the last year that they worked would have resulted in higher benefits, while 37 percent of respondents believe that higher earnings would not have affected their benefit level. As was the case with the extensive margin incentives, the actual intensive margin incentives depend in a complex way upon the individual's earnings history, marital status, and spouse's earnings history. In particular, future benefits remain the same if (i) the individual does not claim benefits solely off of her own earnings record, (ii) the individual earns more than the maximum taxable amount of about $100,000, or (iii) the higher earnings occur in a year that will not be among the 35 highest years of earnings when benefits are determined. Given these rules, it is quite plausible that for a substantial portion of respondents the true intensive margin incentive is indeed zero. Using a sample of HRS respondents between the ages of 50 and 70 for whom linked administrative earnings histories are available, we calculate that approximately 79

[10] We randomly selected the hypothetical increase in earnings to be $5,000, or $10,000 to test whether the respondents' answers vary in the expected direction to the amount mentioned in the question. A few respondents in the pilot survey were also asked about a hypothetical $1,000 earnings increase, but we didn't ask this in the main survey because a $1,000 earnings increase has only a very small impact on benefits for a typical respondent. We also randomized the number of years over which the hypothetical earnings increase happened between one year or five years. In the main survey, we made sure to ask only about combinations of the annual increase and the number of years over which the increase took place that yielded a total increase (annual increase × number of years) in lifetime earnings of at least $10,000.

percent of this sample should have strictly positive intensive-margin incentives. Hence, the fraction of respondents perceiving strictly positive intensive-margin incentives is about 22 (=79-57) percentage points lower than the true fraction having strictly positive incentives. The 2nd and 3rd columns show that the fraction perceiving strictly positive incentives on the intensive margin is similar among those not yet receiving benefits and those already receiving benefits. Columns (4) and (5) show that perceptions of the intensive margin incentives are 18 percentage points more likely to be positive with the monthly frame than with the lifetime frame. This should serve as a reminder that respondents find these questions challenging and that answers may depend on the way in which we solicit their perceptions.

In Panel B, we present the quantitative results for this question using the monthly frame. We report the perceived dollar increase in the monthly Social Security benefit per $1000 of hypothetical additional earnings and limit the sample to those who indicate strictly positive benefit increases. The median respondent perceives $1000 in extra earnings to result in a $4.0 increase in monthly benefits, with an interquartile range from $2 to $8. The full distribution of responses is shown in Figure 6a. As a benchmark, consider a worker who is on the 32 percent segment of the AIME-PIA schedule. A $1000 yearly earnings increase corresponds to an $83 (=1000/12) increase in monthly earnings for the year in question, which in turn would cause the AIME to increase by $83/35=$2.40, assuming this year would be part of the 35 highest years of earnings. On the 32 percent AIME-PIA segment, this $2.40 increase in the AIME would raise the PIA by 0.32×$2.40 = $0.75. On the 15 percent AIME-PIA segment the PIA would increase by $0.36. A more refined calculation based on HRS observations ages 50-70 with administrative earnings records shows that the median increase in monthly benefits per $1000 of additional earnings is $0.64, with an interquartile range of $0.53 to $0.86. Clearly, the median perceived response to the intensive margin incentive is multiple times larger that the actual incentive for a typical worker.

To examine the quality of the responses we randomly varied the amount and duration of the hypothetical additional earnings. If respondents are able to meaningfully answer the question about incentive margin incentives, they should report larger benefit increases in response to larger earnings increases. As the hypothetical earnings increase rises from $10,000 to $25,000, the median expected increase in Social Security benefits goes from $50/month (s.e.: 3) to $100/month (s.e.: 1), indicating that respondents do pay attention to the size of the hypothetical

earnings increase. However, when we further raise the hypothetical earnings increase to $50,000, we see no further rise in the expected benefit increase, which suggests that the question about intensive margin incentives was challenging for many respondents.

Panel C examines the quantitative responses from the lifetime frame. Among those who perceive a strictly positive intensive-margin incentive, the median person believes that for $1000 in additional Social Security taxes paid, she will receive an additional $1000 in benefits over the course of her lifetime.[11] The interquartile range for the responses spans $100 to $3000, and the full distribution is shown in Figure 6b. As a benchmark, the $1000 in extra earnings for the worker considered above would have resulted in $124 in additional OASDI tax payments. Assuming the worker had a life expectancy of 20 years and a discount rate of 5 percent, the value of the extra $0.75 per month paid over his lifetime would have been $131. Thus, this worker would indeed over the course of her lifetime receive the additional Social Security taxes paid back in the form of higher benefits. This admittedly crude calculation is consistent with the much more refined calculations presented in Liebman, Luttmer, and Seif (2009), where we show that Health and Retirement Study participants, whose average age of 60 is the same as that of the respondents to our survey, receive additional Social Security benefits over their lifetimes that on average have an expected present discounted value of $560 for $1000 in additional taxes paid. This average includes individuals who do not receive higher benefits when they pay more tax (e.g., because they claim spousal or widow benefits). Thus, in contrast to the monthly frame, the lifetime frame yields measures of perceived incentives on the intensive margin that are roughly similar to the actual incentives.

To explore the heterogeneity in self-reported incentives on the intensive margin, we predicted for each individual whether they have a positive or zero incentive for increasing their earnings on the margin. This predictor is based on the earnings history, the spousal earnings history, the planned retirement date, whether current earnings exceed the Social Security earnings limit, and whether the individual plans to claim benefits in part on the earnings record of a current, late, or former spouse. Table 8 compares the self-reported qualitative perceptions on the intensive margin to our predictor. The first two columns limit the sample to those perceiving zero or positive incentives for working more years, while the last two columns also

[11] It conceivable, however, that a $1000 benefit increase became a focal point for answers because the question asked about a $1000 tax increase. To the extent this is the case, the lifetime frame question may not have elicited actual perceptions of the incentive on the intensive margin.

includes those perceiving negative incentives and adjusts the predictor to take the earnings test into account. Similar to our earlier investigation of the predictability of extensive-margin incentives, we find a statistically significantly effect of our predictor on the qualitative perceptions of intensive margin incentives, but the coefficient on the predictor is far below 1 and the R^2 is quite low. We suspect the low predictive power is in large part due to the fact that it is hard to predict intensive-margin incentives accurately with the limited information about earnings history available to us, but, as before, we cannot rule out that widespread misperceptions of the incentives also contributes to the low correlation.

3.4 Perceptions of Incentives to Claim Later

Next, we examine respondents' perceptions of the incentives for delaying the claiming of Social Security benefits. Strictly speaking, these incentives are not related to labor supply since the claim decision is separate from the retirement decision. However, in practice, many people are likely to see these decisions as connected, especially if people mistakenly believe that the earnings test removes any incentive to work after claiming Social Security benefits. We asked two questions about incentives for delaying claiming. First, we asked respondents what they believe would happen to their own Social Security benefits if they were to delay claiming benefits by one year, holding constant the age at which they stop working (Q5.1).[12] The advantage of this question is that it asks about a delay in the claim decision around the age at which the respondent actually claims or expects to claim benefits. The drawback, however, is that we do not learn about the respondent's perceptions of the incentive to delay claiming at other ages. To overcome this drawback, we also asked all respondents about the benefits that a hypothetical person would receive if the person claimed benefits at ages 62, 66, 70, and 74 (Q5.2). In this question, we randomized between listing the hypothetical person's benefits at claim age 62 at $1000/month and listing the benefits at claim age 66 at $1000/month. The respondents had to fill out their best estimate of the hypothetical person's benefits at the remaining three claim ages.

[12] For those reporting a claim age between 63 and 69, we ask about a one-year delay in claiming to a random half of the sample and ask the other half about claiming one year earlier. For those reporting a claim age of 62 or lower, we always ask about a one-year delay in claiming and for those reporting a claim age of 70 or higher, we always ask about claiming one year earlier.

Table 9 presents the responses for both questions. Because benefits do not in fact depend on marginal variations in the claim age beyond age 70, we show the results for those who report (expected) claim ages that are valid and in the range where benefits vary with claim age. The first column of Panel A shows that only 60 percent believe that a delay in claiming would raise their benefits, while 34 percent believe that their benefits would remain the same. This result is consistent with results by Dominitz et al. (2007), who ask a similar question to respondents in the RAND American Life Panel and find that 61 percent of respondents report that benefits would increase with the age of claiming.

For respondents with reported claim ages between 63 and 69, we randomized whether we asked about the effect of claiming one year earlier or one year later. This randomization gives us an indication of the quality of the answers. Respondents generally paid attention to whether the question was about earlier or later claiming. When asked about claiming earlier, 76 percent of respondents claiming on their own earnings record said this would lower their monthly benefit and only 5 percent said it would increase their benefit. When asked about claiming later, only 4 percent said this would lower their benefit and 58 percent said this would increase their benefit. However, the percentage saying their benefits would remain the same increases from 19 to 38 percent when we switch from asking about claiming earlier to claiming later. This difference is statistically significant and indicates that about a fifth of respondents with (planned) claim ages between 63 and 69 and who claim on their own earnings record believe to be claiming at a kink point in the benefit schedule, even though in fact there are no such kink points at those claim ages.[13]

In columns 3 through 5 of Table 9, we examine the respondents' perceptions of the effect of delayed claiming for a hypothetical person. Here, 86 percent correctly answer that delaying claiming from age 62 to age 66 would increase benefits, and 84 percent correctly respond that a delay from age 66 to age 70 would raise benefits. However, 69 percent mistakenly believe that claiming at age 74 instead of at age 70 would lead to higher benefits when in fact this delay has no effect on benefits. Thus, a large majority appears to be aware that benefits rise with claim age between the ages of 62 to 70, but just under a third understands that this increase does not occur beyond the age of 70. The finding that a large majority is aware of the incentives to delay

[13] We limit the sample here to those claiming on their own record, because there is no return to delaying claiming after the full-benefit age for those claiming benefits (partly) on their spouse's record.

claiming (at least between the ages of 62 and 70) is consistent with evidence from Coile et al. (2002) who find that that the observed pattern of claim decisions generally corresponds to the pattern predicted by these incentives.

Panel B of Table 9 presents respondents' perceptions of the percentage increase in monthly benefits per year of delay in claiming. We limit the sample to respondents who perceive strictly positive returns from delaying and express the increases as a percentage of the benefits at the full-benefit age. For delays in claiming between the ages of 62 and 66, the median response is that each year of delay leads to a 5.0 percent increase in monthly benefits, which is slightly below the true figure of 6.25 percent. The median perceived increase in monthly benefits as a result of delaying claiming between the ages of 66 and 70 is also 5 percent, whereas the true figure is 8 percent. While this median perceived benefit increase is still relatively close to the actual figure, most people are apparently unaware that benefit increases from delaying claiming are higher between the full-benefit age (generally age 66 in our sample) and age 70 than between age 62 and the full-benefit age. Finally, the last column of panel B shows that the median perceived monthly benefit increase from delaying claiming from age 70 to age 74 is still 5.0 percent per year when in truth there is no effect at that point. Of course, since most people claim benefits well before age 70, there is little incentive for most people to acquire information about that aspect of the delayed claiming rules. Figures 7a and 7b show the full distribution of perceived returns to delaying claiming by one year for the three age ranges considered. Figure 7a shows the perceptions for the representative group and Figure 7b shows them for the older-worker group. The sample in Figure 7a and 7b is limited to those who perceive strictly positive returns to delaying claiming benefits.

The perceived percentage increase in monthly benefits per year of delayed claiming were only minimally affected by whether we randomly pre-filled the benefits amount at claim age 62 or at claim age 66 at $1000. Generally, perceived percentage increases were about half a percentage point lower when the benefit amount was pre-filled at age 62. While this difference is statistically significant, economically the size of the effect is limited, and we see this as an indication that respondents were not strongly affected by anchoring.

4. Knowledge about Provisions of the Social Security Benefit Rules

In this section, we examine the extent to which respondents are aware of four important provisions in the Social Security rules: (i) the earnings test, (ii) spousal benefits, (iii) widow(er) benefits, and (iv) which years enter into the AIME calculation. The degree of respondents' awareness of these provisions is helpful for understanding why perceived incentives for labor supply vary across individuals with different earnings histories and marital statuses. It is also relevant for thinking about how well voters are informed about Social Security.

4.1 Knowledge of the Earnings Test

The earnings test is a provision in the Social Security rules that reduces benefits for some people who continue to work after claiming benefits. Specifically, it applies to people who claim benefits before the full-benefit age (generally 66 for our respondents) and have current annual earnings above a certain threshold ($13,560 in 2008). For people satisfying these criteria, current monthly benefits are reduced by $1 for every $2 in earnings above the threshold. However, upon reaching the full-benefit age, the benefit level is recalculated, treating the sum of benefit reductions due to the earnings test as equivalent to deciding to claim at a later date, thereby raising subsequent benefit levels. Because of this benefit recalculation, the earnings test effectively shifts the benefit payments to a later age but does not substantially affect the total lifetime benefits paid to an average person. If, as evidence by Van Soest and Michaud (2007) suggests, people view the earnings test as a pure tax on earnings (and do not recognize that foregone benefits in the short-term are returned in the form of higher future benefits), then the earnings test will create an incentive to retire immediately upon reaching the earliest eligibility age (age 62) or to reduce earnings from age 62 to 65 so that they are below the earnings test threshold.

We asked respondents to consider the (possibly) hypothetical situation that they had stopped working at age 62 and also had started claiming benefits in that year. We then asked a random 50 percent of them to consider what would happen to their benefits at age 64 if they return to work for one year at that age and earn $20,000 that year (Q5.3). Since the $20,000 exceeds the earnings threshold and 64 is below the full-retirement age, the correct answer is that benefits in that year would be reduced. For the other 50 percent, we asked the same question but replaced age 64 by age 68. Because age 68 exceeds the full-benefit age, the earnings test would

not be applied, and the correct answer is that benefits would stay the same. The first column of Panel A in Table 10 shows the distribution of answers for those asked about earnings at age 64, while the second column pertains to age 68. In each column, a plurality of the representative group chooses the correct answer, but this plurality consists of only 40-43 percent of the respondents. Among those in the older-worker group (columns 3 and 4), awareness of the earnings test is slightly greater with about 47-53 percent choosing the correct answer in each column. Thus, while many respondents have some knowledge of the earnings test, this awareness is far from pervasive.

Next, we examine the perceived level of the earnings threshold among those respondents who possibly believe a threshold exists (namely, those answering that benefits would remain the same or be reduced as a result of the earnings test). For the exact wording, see Q5.4a and Q5.4b. Column 1 of Panel B shows that the median perceived level of the earnings test for earnings at age 64 is $12,200, which is very close to the actual value of $13,560. For earnings at age 68, the median perceived threshold is $21,000 (see column 2). The fact that that median response is higher for age 68 than for age 64 reflects the fact that a greater proportion of respondents indicate that there is no threshold for earnings at age 68, which we coded as a threshold of infinity. Still, the median perception is that earnings at age 68 are subject to an earnings test and that the threshold for this test is not very high. Members of the older-worker group have more accurate perceptions of the earnings threshold, with a median response of $13,000 at age 64 and of "no limit" at age 68. Figures 8a and 8b show the full distribution of perceived levels of the earnings test for the representative group and the older-worker group, respectively. The sample for these figures is limited to those who answered that earnings while receiving benefits would either reduce current benefits or would not affect them.

As a follow-up, we asked those who believe an earnings threshold exists (namely, those who stated that earnings at age 64 above some limit will cause Social Security benefits to be reduced) whether future benefits would increase if current benefits were reduced due to the earnings test. Only 40 percent believed this to be the case, with 52 percent answering that future benefits would be unaffected and the remaining 8 percent answering that future benefits would also be cut. Thus, people appear to have little awareness of the provision that benefits received after the full-benefit age will be increased to roughly compensate for the benefits lost due to the earnings test.

4.2 Knowledge of Spousal Rules

A married individual collects benefits equal to either 100 percent of the benefits based on the individual's own PIA or 50 percent of the benefits based on his or her spouse's PIA.[14] This provision has important implications for labor supply incentives. A worker whose benefits are determined by her spouse's PIA will have no incentive on the margin to earn more since additional earnings will not affect her benefits. On the other hand, a worker whose spouse claims benefits on his record has an additional incentive to earn more since these additional earnings will increase not only his own benefits but also those of his spouse. Whether or not it is optimal to claim spousal benefits depends on the ratio of the spouse's PIA to the respondent's PIA. If this ratio is smaller than 0.5, then it is optimal for a respondent's spouse to claim benefits on the respondent's record. If the ratio is larger than 2.0, then it is optimal for the respondent to claim on his spouse's record. For each respondent we calculate this PIA ratio by adjusting the reported own and spousal benefits for reported claim ages and taking the ratio of the adjusted benefit amounts.

Table 11 examines individuals' awareness of the spousal benefit rules by asking the respondent what would happen to his or her spouse's benefit if the respondent had worked more and therefore received benefits that are $100 greater than they actually are (Q6.1 and Q6.2). The correct answer is that there would be no change if the spousal to own PIA ratio exceeds 0.5 and that the spouse's benefits would increase by $50 if the PIA ratio is less than 0.5. The first two columns of Panel A present the answers of all married respondents from, respectively, the representative group and the older-worker group while the remaining four columns split out the answers from the representative group by PIA ratio. Overall, we find that 83 percent of all respondents believe that an increase in their benefits (caused by working more) would not affect the benefits their spouses receive. Even among those respondents whose spouses likely claim benefits off the respondent's record (because the PIA ratio is less than 0.5), 61 percent nonetheless believe that their spouse's benefits would not be affected if their own benefits were to rise. While our estimated PIA ratio undoubtedly has measurement error, this measurement

[14] Technically, everyone first receives their own ("retired worker") benefits and then is eligible for spousal benefits to make up any difference between their own benefits and 50% of the benefits based on the spouse's PIA. Divorced individuals who have not remarried can claim benefits based on their ex-spouse's record if they were married to that spouse for at least 10 years.

error would need to be quite severe to account for 61 percent that perceive no effect. Among those with spousal to own PIA ratios exceeding 0.5, 81 percent to 93 percent correctly believe that own benefits increases caused by working more will not affect their spouse's benefits. Thus, the percentage of respondents who believe that extra earnings do not affect spousal benefits increases from 81 percent among those with a PIA ratio between 0.5 and 1 to 93 percent among those with a PIA ratio higher than 2. This finding indicates that there is some understanding of the spousal benefit rules, but this understanding is far from complete.

In Panel B, we examine the magnitude of the perceived impact of increased own benefits (due to working more) on spousal benefits for the subset of respondents who believed this impact was not zero. The median perceived effect is $50, which is the correct answer if the spouse claims benefits based on the respondent's earnings record.

Because the linkage between the respondent's additional earnings and the spouse's benefits may be somewhat subtle and hard to understand, we asked a second question to assess spousal benefits. We asked the respondent what his or her spouse's benefit level would be if the spouse had never worked (Q6.3). The correct answer is that the spouse's claim-age adjusted benefits would be 50 percent of the respondent's claim-age adjusted benefits. We asked this question of all respondents with a PIA ratio of less than 2.0 and asked the reverse question, namely what would happen to the respondent's benefit if he or she had never worked, to those with a PIA ratio above 2.0. Panel C of Table 11 shows that 53 percent of all respondents believe that their spouse would still receive some benefits even if their spouse had never worked. Panel D shows that, among those who believe their spouse would receive some benefits, the median respondent believes that the adjusted benefits for the spouse in that case would be 49 percent of the respondent's own adjusted benefits. This answer is quite close to the true figure of 50 percent, and the responses are reasonably tightly distributed around the median, as Figure 9 shows.

Of course, given that some people may mistakenly feel that everyone is entitled to a minimum Social Security benefit, the finding above does not necessarily imply that a respondent realizes that his spouse's benefits can be based on his earnings record. To investigate this possibility, we regress the spouse's adjusted benefits for the case that she had never worked on the respondent's own adjusted benefit using the subsample of respondents who reported that their spouse would receive some positive amount. We find a strong, highly statistically

significant, positive effect of the respondent's benefit. The estimated coefficient is 0.35, which indicates that an increase in $100 of the respondent's adjusted benefits is associated with a $35 increase in the spouse's adjusted benefits for the case where the spouse had never worked. This is reasonably close to the actual increase of $50 per $100 of higher own benefits.

4.3 Knowledge of Widow(er) Rules

Widowed individuals receive benefits that are the maximum of the benefits available based from their own PIA and those based on their deceased spouse's PIA. Thus, whenever the ratio of spousal PIA to own PIA exceeds unity, it is optimal to claim widow(er) benefits. This provision strengthens the labor supply incentives for the spouse with the higher PIA.

We examine whether respondents understand this provision by asking what would happen to their Social Security benefits if they were to become widowed (Q7.2). The correct answer is that their benefits would not be affected if the spousal to own PIA ratio is less than unity and that benefits would rise if the PIA ratio is greater than one. Columns 1 and 2 of Panel A of Table 12 show the responses for all married individuals from, respectively, the representative group and the older-worker group, while the remaining four columns break out the responses from the representative group by PIA ratio. We find that 52 percent of all respondents believe they would receive the same benefits if they became widowed while 42 percent believe that their benefits would rise. Consistent with a widespread awareness of the widow(er) rules, the fraction that believes that benefits would remain the same drops monotonically from 84 percent for those with PIA ratios less than 0.5 to just under 13 percent for those with PIA ratios greater than 2.0. Conversely, the fraction that believes benefits would increase rises as the PIA ratio increases. This apparent awareness of widow(er) benefits is also evident in Panel B, which shows the perceived widow(er) benefit if the respondent became widowed as a percentage of her own current benefit. Those with a PIA ratio less than one would continue to claim their own benefits if they became widowed, and this percentage should therefore be 100, while those with a PIA ratio greater than one would now claim widow(er) benefits based on their spouse's PIA and have a percentage greater than 100. The table shows that the median response indeed follows this pattern.

We also asked the respondent what would happen to her spouse's benefits if her spouse were to become widowed (Q7.3). When the spousal to own PIA ratio exceeds one, the spouse's

benefit would not be affected if the respondent died; while for PIA ratios less than one, the spouse's benefits would increase. As panel C shows, this prediction is clearly borne out by the responses. The fraction of respondents who believe that their spouse's benefit would increase if their spouse were to become widowed declines from 78 percent for a PIA ratio less than 0.5 to about 29 percent for those with a PIA ratio greater than 2.0. Panel D shows that the median benefit for a widowed spouse as a fraction of the spouse's current benefit also follows the expected pattern. Thus, overall, Table 12 shows that respondents appear to be well aware of the widow(er) provisions in the Social Security benefit rules.

4.4 Knowledge of the 35-Year Rule and Two Other Factual Questions

Social Security benefits are based on the average of the 35 highest years of indexed earnings (including zeros if the person has worked fewer than 35 years). This implies that the return to working an additional year is lower for those with more than 35 years of earnings because an additional year of working replaces an earlier year of nonzero earnings in the average. To find out whether people are aware of this provision, we gave them a multiple choice question that asked which years of earnings determine the benefits of a person with a 40-year work history who claims benefits on his or her own record (Q8.1). Respondents could choose from four options: (a) based on the average of the ___ most recent years of earnings, (b) based on the average of the ____ highest years of earnings, (c) based on the average earnings between the ages of 16 and _____, or (d) based on the total number of years that the person had earnings exceeding $2500 between the ages of 16 and _____. We asked respondents to choose one option and to fill in the corresponding blank. The correct option is option (b), and 35 should be entered into the corresponding blank. Panel A of Table 13 shows that option (a) was chosen most often with about 34 percent of respondents selecting it. Only about 32 percent of respondents correctly answered option (b), which is not much higher than the fraction that would choose this by pure chance. Thus, relatively few people seem to be aware of which years are taken into account. It is true that for people with fewer than 35 years of earnings or with a strictly increasing earnings profile, the highest years are also the most recent years, so options (a) and (b) coincide, and that for most others the difference between options (a) and (b) might in practice be very minor. However, respondents also have large misperceptions about the number of years of earnings that are considered. For options (a) and (b), the median response is that 8 to 10 years are considered

and even the 75th percentile is only 10 years. Thus, most respondents seem to think that the benefits are based on relatively few years of earnings.

These figures could explain why we found that perceived incentives on both the extensive margin and the intensive margin were higher than actual incentives; if the average is taken over only a few years, then increasing earnings in a single year has a greater impact on the overall average than if that average is taken over many years. In theory, it might also imply that people view the payroll tax as a pure tax for most of their careers, but we find that individuals between the ages of 30 and 49 also perceive significant positive labor supply incentives from the Social Security benefit formula, and their perceived incentives are quantitatively similar to those of the representative group.[15]

We also asked respondents two other factual questions about the Social Security system: the portion of earnings that are subject to the Social Security (OASDI) tax, and the earliest age at which one can claim Social Security retired worker benefits. Since we considered these less crucial aspects of knowledge, we asked each question only to a random third of respondents in order to limit the total duration of the survey. Panels B and C show the responses to these questions. We find that 62 percent of respondents mistakenly believe that the OASDI tax applies to all earnings, while 30 percent correctly answer that only earnings below a certain limit are subject to the OASDI tax. However, among this 30 percent the perception of the level of the limit is very accurate, with a median response of $99,000 and an interquartile range of $90,000 to $102,000. The actual figure for 2008 was $102,000. Among those reporting earning $85,000 or more, 54 percent know that there is an upper limit on earnings subject to the OASDI tax. This indicates the individuals are better aware of rules that are more likely to be relevant for themselves. Finally, Panel C shows that 70 percent of respondents answer exactly 62 in an open-ended question about the earliest age at which one can start receiving Social Security retired worker benefits. In other words, individuals are well aware of the Social Security benefit eligibility age.

[15] We collected a small additional sample of 216 individuals between the ages of 30 and 49 to investigate whether younger workers perceive the Social Security tax-benefit linkage. This sample was collected at the same time as our main survey using the same survey instrument. Among the younger workers, 72% (s.e.: 3%) perceive positive extensive-margin incentives and 58% (s.e.: 3.5%) perceive positive intensive-margin incentives.

4.5 Predictors of Misperceptions

In order to design interventions to correct misperceptions about Social Security, it would be helpful to identify population subgroups in which misperceptions are particularly common and to understand the mechanisms through which people come to have either accurate or inaccurate perceptions.

Table 14 presents our predictors of knowledge about Social Security. The variable *Financial Literacy* is constructed as the number of correct answers to four multiple-choice questions on general financial literacy asked at the very end of the survey (Q14.2-Q14.6). On average, respondents give 2.6 correct answers to these four questions. The financial literacy questions have been asked before in the Health and Retirement Study or in the RAND American Life Panel (ALP). Respondents in the Knowledge Networks sample answer the question about diversification roughly as well as HRS respondents, but do substantially better on the numeracy question, though this latter difference may be due to the fact that our instrument was administered online but the HRS was administered in-person. In general, Knowledge Networks respondents are somewhat less financially literate than ALP respondents. These comparisons indicate that our sample is not unusual in terms of financial literacy. The variable *Knowledge about Social Security* is a self-assessed measure of the respondent's understanding of Social Security measured on a 5-point scale. The variable *Reliance on Social Security* measures on a 4-point scale the importance of Social Security income for retirement spending. The variables *Share of Friends Retired* (on a 4-point scale) and *Fraction of Siblings Older* are measures of potential amount of knowledge about Social Security in the respondent's social network.

Our measure of misperceptions in the level of Social Security benefits is the difference between the respondent's self-reported (expected) level of benefits and our predictor of benefits. It is important to keep in mind that the predictor of benefits is merely a proxy for true benefits, so our measure of misperceptions can partly be driven by variation in the accuracy of the predictor. Table 15 presents regressions of our measure of misperceptions of benefits on measures of knowledge and demographic characteristics. The first two columns show the results for the representative group, and the latter two those for the older-worker group. The results are further split between those not yet receiving benefits (odd columns) and those already receiving benefits (even columns). We generally find misperceptions are lowest for those with higher levels of self-assessed knowledge about Social Security, for those saying they rely more on Social

Security for retirement spending, and for those with lower levels of education. The latter finding could be explained by Social Security being a more important source of retirement income for those with less education but could potentially also be caused by our predictor of benefits being more accurate for that group.

In Table 16, we examine correlates of misperceptions of the effect of delaying claiming on the monthly benefit level. We measure these misperceptions as the absolute difference of the perceived percentage increase in benefit levels from one year's delay in claiming and the true percentage increase. We find that misperceptions about the effect of delayed claiming are statistically significantly lower for those with higher levels of financial literacy and with higher self-assessed levels of knowledge about Social Security. Among members of the older-worker group, we find in addition that misperceptions are lower if the respondent has a higher fraction of older siblings, indicating that older siblings may be a source of accurate information.

We saw in Tables 6 and 8, that our predictors of extensive- and intensive-margin incentives only explain a small fraction of perceived labor supply incentives. We suspect that this low predictive power is due in part to noise in our predictor, which is based only on the relative crude information on earnings history available to us. This means that correlates of misperceptions of extensive- and intensive-margin incentives could very well be picking up correlates of the accuracy of our predictor, and for that reason we believe analyzing these correlates is somewhat less informative. Keeping the caveat of the accuracy of our predictor in mind, we find among older-worker group members significantly lower misperceptions of labor supply incentives among those with higher self-assessed Social Security knowledge, those relying more on Social Security, and those with a higher fraction of older siblings. In other words, the pattern of correlations is roughly similar to earlier results. For the interested reader, we included these correlations as Appendix Tables A2 and A3. The knowledge that benefits are based on the 35 highest years of indexed earnings is an important piece of information for understanding the labor supply incentives of Social Security. Therefore not understanding the role of earnings history in the determination of benefits should be a reasonable proxy for misperceiving labor supply incentives. Table 17 presents a regression of a dummy for not correctly answering a multiple-choice question on how earnings history is used to determine benefits. We find misperceptions about the role of earnings history area are statistically significantly lower among those with higher self-assessed knowledge about Social Security. The

effect is also meaningful in size; those with the highest levels of self-assessed knowledge are 16 to 18 percentage points less likely to give a wrong answer than those with the lowest levels of self-assessed knowledge. Financial literacy marginally significantly reduces misperceptions of the role of earnings history, while misperceptions are marginally significantly higher amount those relying more on Social Security for their retirement spending.

Overall, we notice that the tables on correlates of misperceptions (Tables 15, 16, 17, A2, and A3) provide a reasonably consistent set of results. The predictive power of knowledge measures and demographic characteristics is generally quite low, implying that we cannot easily predict who misperceives features of the Social Security system. Nevertheless, individuals are to some extent aware of their own lack of understanding. Individuals who self-report being knowledgeable about Social Security are less likely suffer from misperceptions about particular features of Social Security. We also find that financial literacy is negatively correlated with misperceptions after controlling for self-assessed knowledge, indicating that self-assessed knowledge is not a sufficient statistic for actual knowledge. Finally, we find that misperceptions are less common among those for whom Social Security is an important source of retirement income, which is consistent with people investing more in uncovering the correct information when the costs of misperceptions are high.

5. Further Results

5.1 Marginal Valuation of Annuity Stream of Social Security Benefits

Except for the lifetime frame of our measure of intensive-margin labor supply incentives, all our measures of perceptions of incentives are expressed as effects on the stream of Social Security benefits. Thus, when acting on these incentives, individuals trade off a stock quantity (e.g., income or leisure in a given year) for changes in the stream of Social Security benefits. It is therefore important to understand how much individuals value the fact the Social Security benefits are paid out as an annuity.

To measure value of the Social Security annuity, we offered respondents an hypothetical choice between receiving a permanent $100/month increase in their own Social Security benefits or receiving a one-time lump-sum amount of $X at age 62 or one year from now (whichever occurs later). We specified that the lump sum would at age 62 because that is when individuals

can start claiming Social Security retired-worker or spouse benefits, but required that the lump sum would be paid at least one year in the future (relevant for those age 62 or older) to avoid having the estimate be driven by any present bias. Formally, our annuity value question elicits bounds on the equivalent variation of a permanent $100 increase in Social Security benefits. The equivalent variation is bounded from below by the lump-sum amounts that the respondent rejected and bounded from above by those accepted.

We asked the annuity question to each respondent for four values of X. If the increase in the Social Security benefits was chosen over the lump-sum amount, we offered a higher value of X the subsequent time the question was asked. Likewise, if the lump-sum amount was chosen, X was lowered the subsequent time. Thus by asking the question four times, we were able to place each individual's valuation in one of 16 ($=2^4$) brackets. The brackets spanned a range from 0 to $200,000, and were narrower at low values and wider for high values. Two-thirds of the respondents ended up in a bracket that spanned $5000 or less. The first value of X was randomized between $15,000 and $40,000 to allow us to test whether the starting value of X affected respondents' reported answers, but we made sure that that the final set of possible brackets spanned the same range.

Figure 10 presents the cumulative distribution of the marginal valuation for the representative group of a permanent $100 increase in Social Security benefits. The figure shows that the upper bound (red line on the left) and the lower bound (blue line on the right) form relatively tight bounds on the valuation for most respondents. The median valuation of a permanent $100 increase in Social Security benefits is $17,500, which is reasonable close to the market price of a $100 annuity for a typical 62 year-old individual.[16] This means that the median individual values incentives that operate through a permanent change to the Social Security benefit stream roughly as one would expect based on the market value of an annuity of the same size. The figure, however, also shows a substantial amount of dispersion, with the interquartile range of the annuity value ranging from approximately $10,000 to $70,000.

The random variation in the starting value of X allows us to examine to what extent respondents had true underlying valuations that, by definition, are insensitive to the starting

[16] Brown, Kapteyn, Luttmer, and Mitchell (2014) do a much more extensive study of valuations of the Social Security annuity, and their focus is the role of cognitive constraints on people's ability to value annuities. They use respondents of the American Life Panel and one of their annuity valuation questions is similar to the version we ask. For this version of their question, they find a somewhat lower median valuation ($12,500).

value and to what extent individuals let their answers be guided by how we asked the question. If people have true underlying valuations of the Social Security annuity, they should be more likely to reject the first lump sum offered if the first lump sum offered is $15,000 rather than $40,000. This is indeed the case, respondents are a highly statistically significant 13 percentage points less likely to accept the first lump sum offered if the first lump sum offered is the low amount. Hence, we can reject that no respondents had a true underlying valuation. Yet, the starting value did matter for some fraction of respondents. The midpoint of the final bracket selected was a statistically significant 48 log points higher when the higher starting point was offered. As a point of comparison, a respondent who would randomly give answers would on average end up in a bracket that is 83 log points higher when the higher starting value is offered. Thus, if we were to categorize respondents into one of the two extremes of either having an immutable underlying valuation or giving purely random answers to our question, we would classify 58 percent (=48/83) as pure randomizers and just 42 percent as having a true underlying valuation. Even if this classification is not literally true because many respondents are somewhere in between having an immutable underlying valuation and completely randomizing, this finding indicates that a substantial fraction of respondents has trouble reporting their valuation of the Social Security annuity. The median reported value, however, does not vary significantly by starting value; the higher starting value raises the median by $5000 (p-value 0.12). Thus, it appears that those who behave as if they are randomizing end up sufficiently often in the tails of the distribution so that the median is not affected much. We therefore place more confidence in the median reported valuation of the Social Security annuity than in the entire distribution of reported valuations.

5.2 A Framing Experiment about Benefit Claiming

People's decisions about when to claim benefits may be sensitive to how this choice is framed. To the extent that people link their retirement age to their claim decision, the framing of when to claim will also affect retirement behavior. People who consider claiming Social Security often visit a Social Security office or the Social Security website or call the Social Security Administration. As we will show in Section 5.3 below, the four most useful sources of Social Security information according to our respondents all come from the Social Security

Administration. Mastrobuoni (2010) presents further evidence that information from the Social Security Administration has a causal impact on knowledge about Social Security benefits.

At the time of our experiment, the Social Security website presented the choice of a benefit claiming date in a break-even frame: the age "at which the accumulated value of higher benefits (from postponing retirement) will start to exceed the accumulated value of lower benefits (from choosing early retirement)." Traditionally, Social Security employees have also been instructed to use this break-even frame when counseling clients about when to start claiming benefits. Alternatively, this decision could be presented with a gain frame (the increase in monthly benefits from postponing claiming) or with a loss frame (the decrease in monthly benefits from claiming early). Because a delay in claiming is likely to induce people to work longer, it will alleviate fiscal pressure associated with population aging. Thus, if a simple change in framing has an effect on the claim decision, it could provide a useful tool for policy makers who wanted to encourage people to claim later.[17]

To examine whether the choice of framing has the potential to affect claim decisions, we randomly assigned one of the three frames to each respondent. In particular, we used the following wording for the three frames:

> Loss frame:
> *The amount of someone's Social Security benefits depends on the age at which the person starts collecting Social Security benefits.*
>
> *In particular, if a person starts claiming Social Security benefits at age 62 rather than at age 65, all his/her future benefits will be cut by 20% for as long as he/she lives.*
>
> Gain frame:
> *The amount of someone's Social Security benefits depends on the age at which the person starts collecting Social Security benefits.*
>
> *In particular, if a person starts claiming Social Security benefits at age 65 rather than at age 62, all his/her future benefits will be increased by 25% for as long as he/she lives.*
>
> Break-even frame:
> *The amount of someone's Social Security benefits depends on the age at which the person starts collecting Social Security benefits.*

[17] SSA is now using a more neutral presentation of the tradeoffs on its web site. It is unclear to what extent there has been a change in how field staff describe the claiming choice. We know of two recent benefit applicants, and both were encouraged to claim early by SSA employees using the break-even framing.

In particular, a person who postpones claiming benefits from age 62 to age 65 has a break-even age of 76 years and 11 months. This means that at 76 years and 11 months, the accumulated value of higher benefits (from postponing retirement) will start to exceed the accumulated value of lower benefits (from choosing early retirement). Note: interest is not considered in the calculation.

We measured the respondent's attitude towards early claiming in one of two ways. We either asked the respondent whether a neighbor would be better off first claiming benefits at age 62 rather than at age 65 (Q9.2), or we asked the respondent at which age the respondent him or herself would start claiming if given the choice between claiming at age 62 or 65 (Q9.3).

Table 18 shows how respondents' attitudes towards claim behavior responded to the frame manipulations. Panel A shows that about 74 percent of the respondents who saw the gain frame or the loss frame said that the neighbor would be better off claiming at age 65 than at age 62. In contrast, only 67 percent of those who were exposed to the break-even frame thought that the neighbor would be better off claiming at age 65. Compared to the gain or the loss frame, the break-even frame reduces the fraction of respondents who believe it is best to delay claiming by 7 percentage points, which is statistically significant at the 10-percent level. Panel B examines the effect of framing on respondents' own hypothetical claim decisions. Here we find that 56 percent of those who saw the loss frame favor delaying claiming and 64 percent of those who saw the gain frame favor delaying claiming, but that delay is only favored by 46 percent of those who saw the break-even frame. Thus, as with the advice to neighbor question, only under the break-even frame does a majority of respondents favor claiming early. Relative to the gain or loss frame, the break-even frame reduces the fraction of respondents who favor delaying claiming by 14 percentage points, which is statistically significant at the 5-percent level. Finally, Panel C combines the responses from Panels A and B. Not surprisingly, the combined results are a weighted average of those in Panels A and B, with the break-even frame causing a 9 percentage point reduction in the fraction of respondents who favor later claiming. A probit regression shows that the impact of the break-even frame is statistically significant at the 1-percent level. These results are consistent with results by Dominitz, Hung, and van Soest (2007), who in a similar experiment find that the framing of the benefit of delayed claiming can affect hypothetical claim decisions. More recent work by Brown, Kapteyn, and Mitchell (2014) confirms that gain and loss framing leads to later hypothetical claiming behavior relative to

break-even framing. It further shows that neutral framing leads to later hypothetical claiming than does break-even framing.

5.3 Usefulness of Information Sources

Table 19 shows which information sources respondents report using to gain knowledge about their Social Security benefits. For each source of knowledge, we asked respondents to rate that source's usefulness on a 5-point scale, where 1 corresponds to "not useful at all" and 5 indicates "very useful." The table shows that mailings from Social Security are the most frequently consulted source with 92 percent answering that they use this source. Mailings are followed by consulting with one's spouse (81 percent) or with another relative (71 percent). A visit to the Social Security office and a mailing from Social Security are tied at the first place in terms of the usefulness as a source of knowledge, with an average rating of 4.19 on a five-point scale. In fact, the four most useful sources of knowledge are the various forms of information provided by the Social Security administration (in person visit, phone call, web site, and mailings). The fifth most useful information source is information gained by talking to a financial advisor. Eldred (1977) also surveyed individuals about their sources of knowledge about the Social Security system. While his methodology was somewhat different, it is nevertheless interesting to note that about thirty years ago only a small minority (17 percent) listed information from the Social Security administration as their most important source of knowledge about the program.

6. Discussion

The Social Security benefit formula implicitly provides positive incentives for labor supply by rewarding higher earnings and additional years of earnings with higher future Social Security benefits. By fielding a survey about Social Security among a random sample of 50 to 70 year-old individuals, we have gained a better understanding of how Americans perceive the incentives that Social Security benefit rules provide for labor supply. We find that a clear majority of individuals understand that increased labor supply leads to higher future benefits. Indeed, the median response suggests that people perceive their benefits to be more sensitive to labor supply than is actually the case. These results indicate that it is incomplete to merely consider the disincentive effects from the Social Security tax without taking into account the

Social Security benefit rules that provide a positive incentive for work. Moreover, the potential efficiency gains from increasing the transparency of the link between Social Security benefits and taxes are likely to be smaller than is generally assumed in Social Security reform discussions. We also find that there is considerable dispersion in the perceived incentives and that many people misperceive these incentives. Since misperceptions can lead to privately suboptimal labor supply decisions, better information about the link between labor supply and future Social Security benefits would be valuable to individuals.

In our survey, we also asked about people's understanding of various features of the Social Security benefit rules. We find high levels of understanding of the provisions on widow(er) benefits and the rules governing how the age at which benefits are claimed affects benefit levels. However, understanding of the earnings test and of the rules on spousal benefits is much more limited. We also find that the Social Security Administration is the most important source of information about Social Security benefits for most people.

Since it is the most important information source, the way the Social Security Administration presents its information may affect people's decisions. Indeed, we found suggestive evidence that this is the case from an experiment where we changed the frame of the effects of delayed claiming. The experiment shows that the frame that was traditionally used by the Social Security Administration ("the break-even frame") significantly increases the fraction favoring retirement at an early age compared to alternative frames.

The fact that people perceive a link between current work and future benefits when responding to a survey does not necessarily imply that they think about this link when they make labor supply decisions. However, recent research suggests that they do. In Liebman, Luttmer, and Seif (2009), we find that, at least on the extensive margin, labor supply does respond to the tax-benefit link. Moreover, in Liebman and Luttmer (2014), we present results from a field experiment in which a random subsample of older workers was given information about key Social Security provisions, while a control group was not. We found that our relatively mild intervention (sending an informational brochure and an invitation to a web tutorial) significantly increased labor force participation one year later. Thus, understanding about Social Security can affect actual decisions, not just hypothetical ones.

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Figure 1: CDF of Social Security Benefits

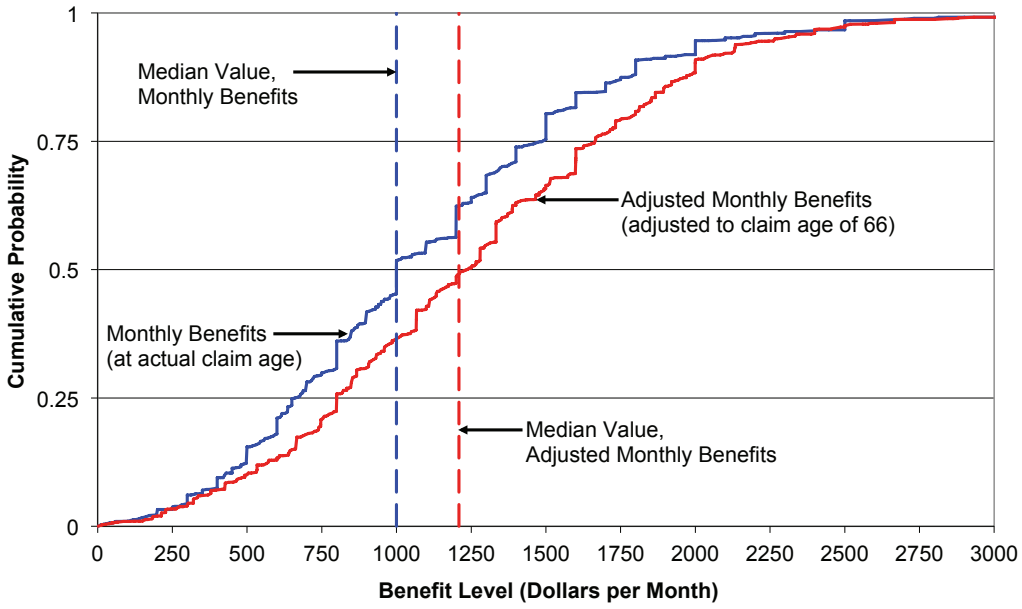

Figure 2: CDF of Adjusted Social Security Benefits by Claim Status

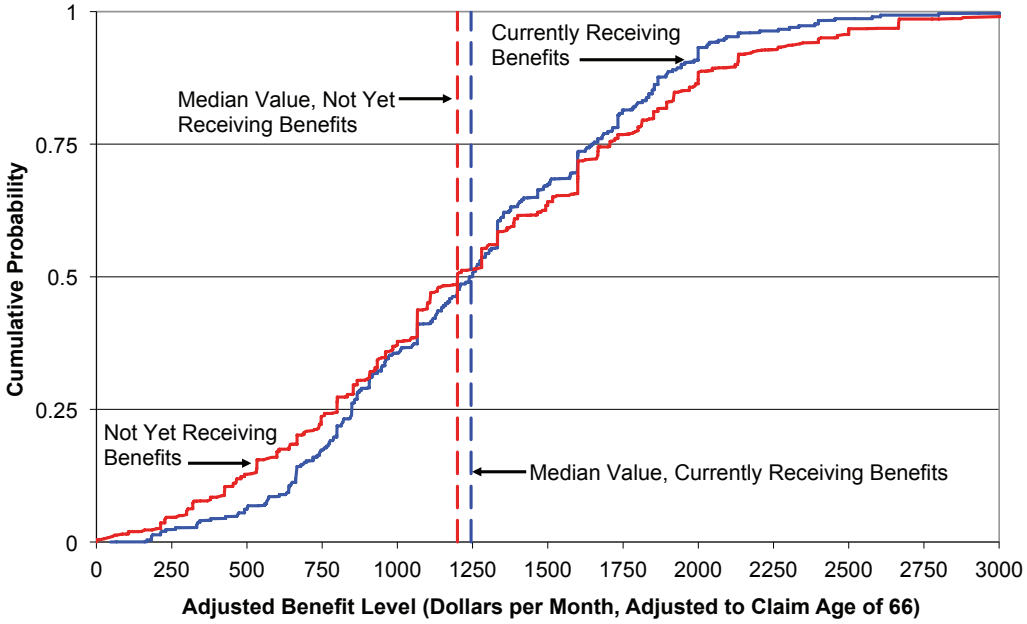

Figure 3: CDF of Adjusted Social Security Benefits by Sample Group

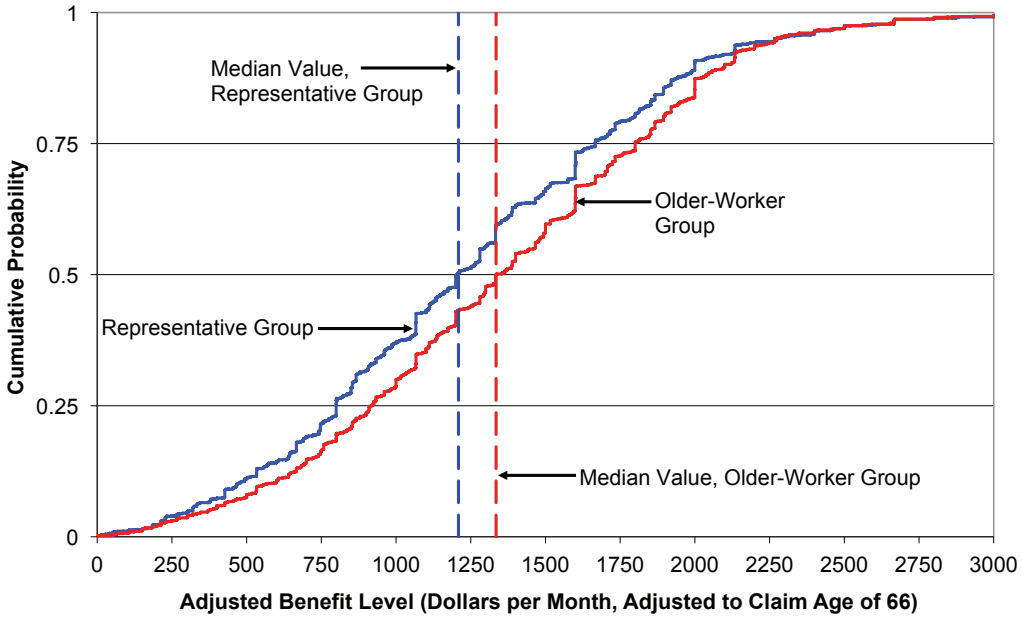

Figure 4: CDF of Perceived Marginal Social Security (OASDI) Tax

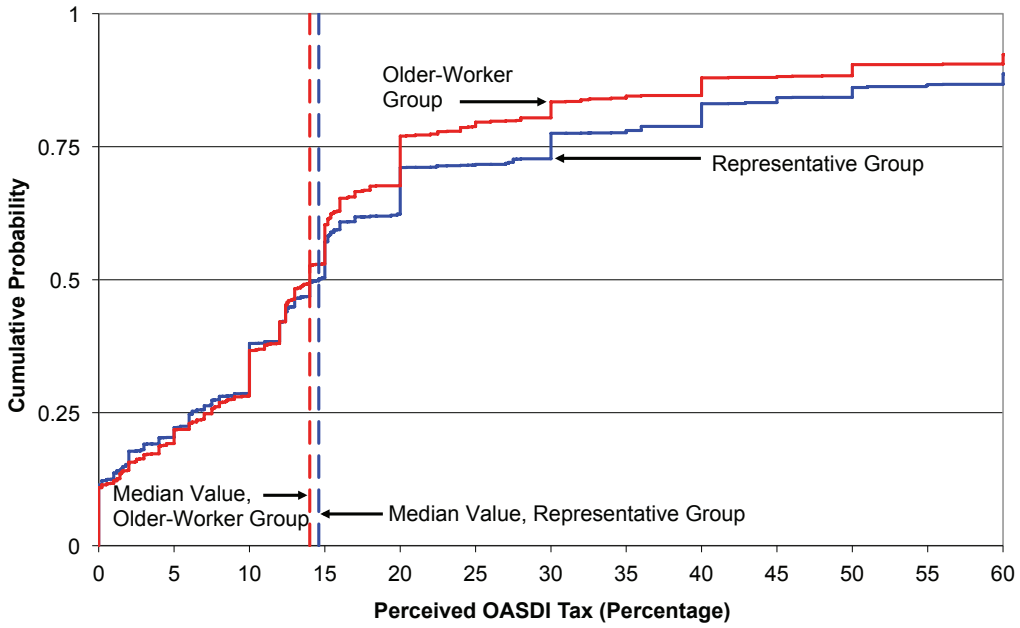

Figure 5: CDF of Perceived Incentive to Work an Extra Year

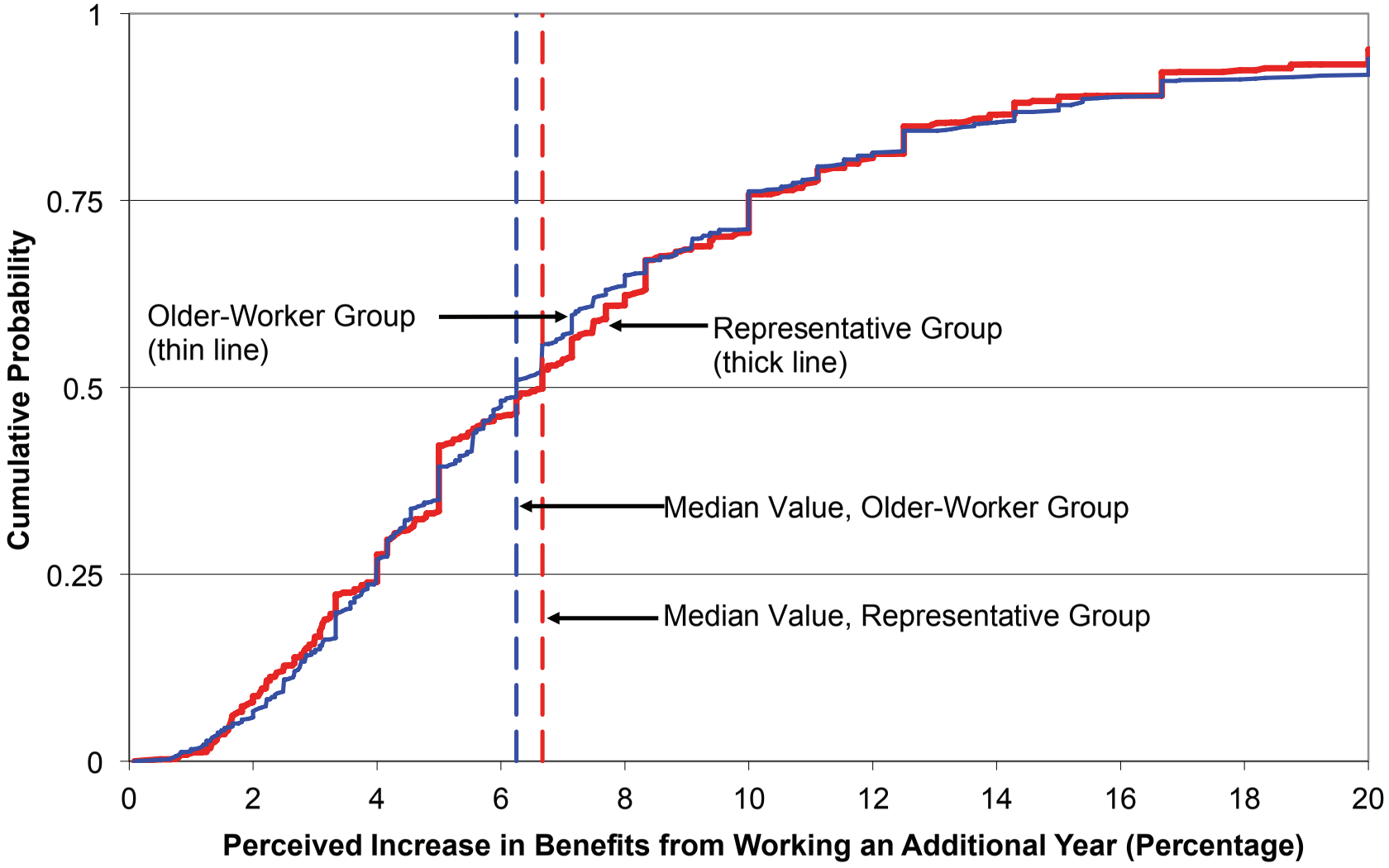

Figure 6a: CDF of Perceived Incentive to Earn More (Monthly Frame)

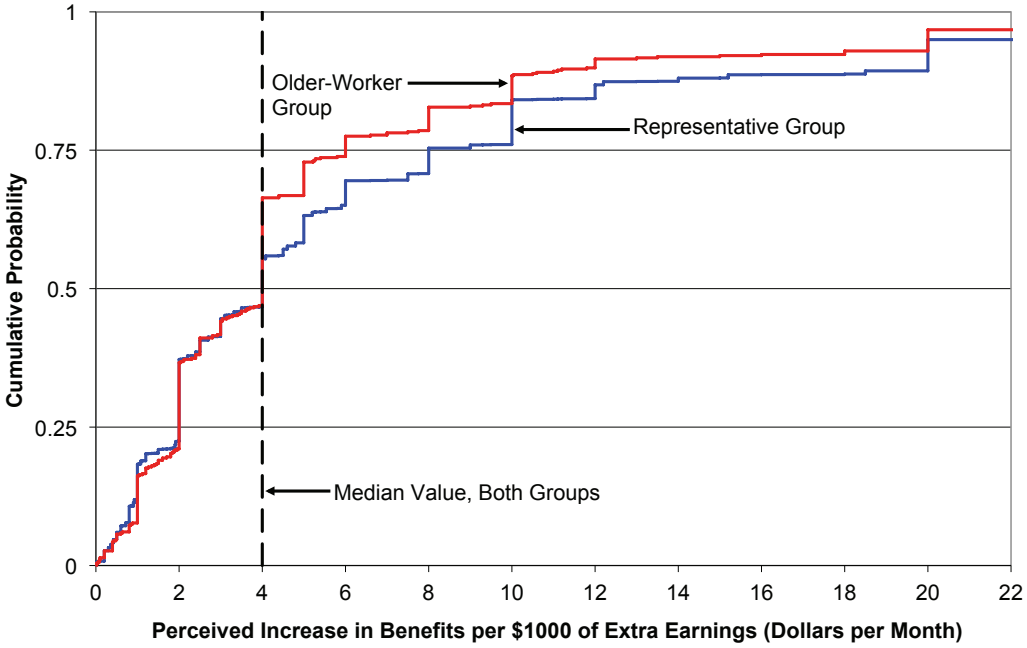

Figure 6b: CDF of Perceived Incentive to Earn More (Lifetime Frame)

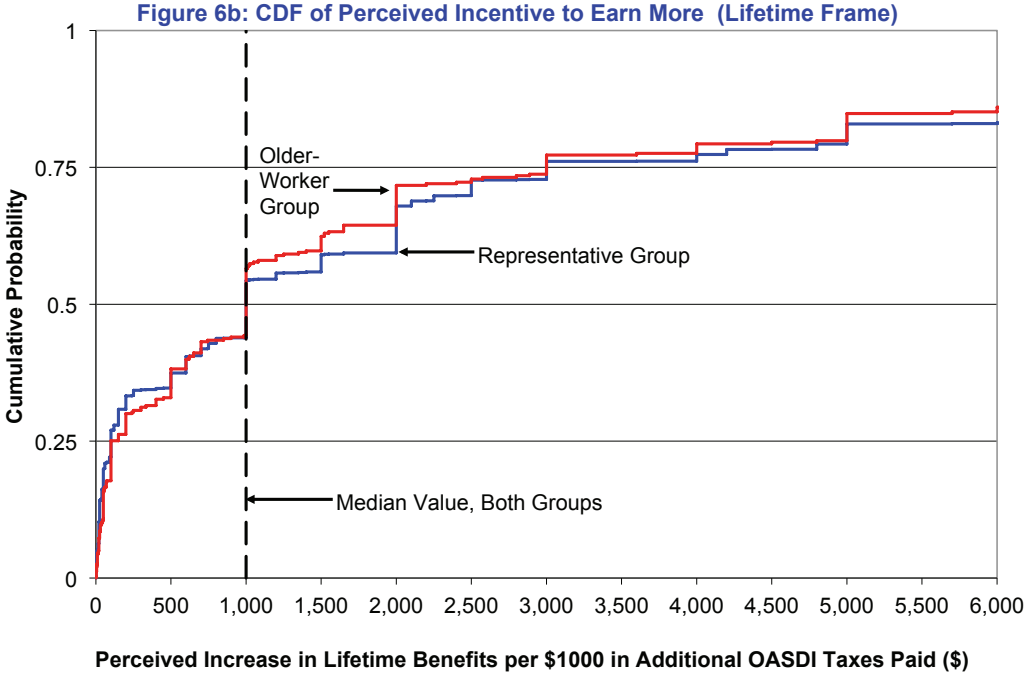

Figure 7a: Perceived Incentive to Delay Claiming Benefits, Representative Group

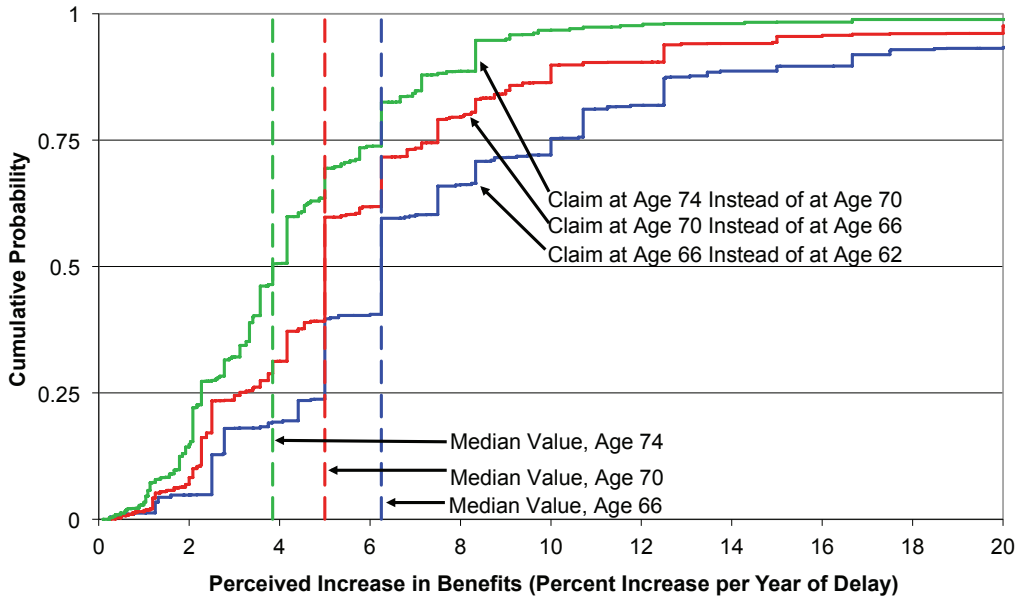

Figure 7b: Perceived Incentive to Delay Claiming Benefits, Older-Worker Group

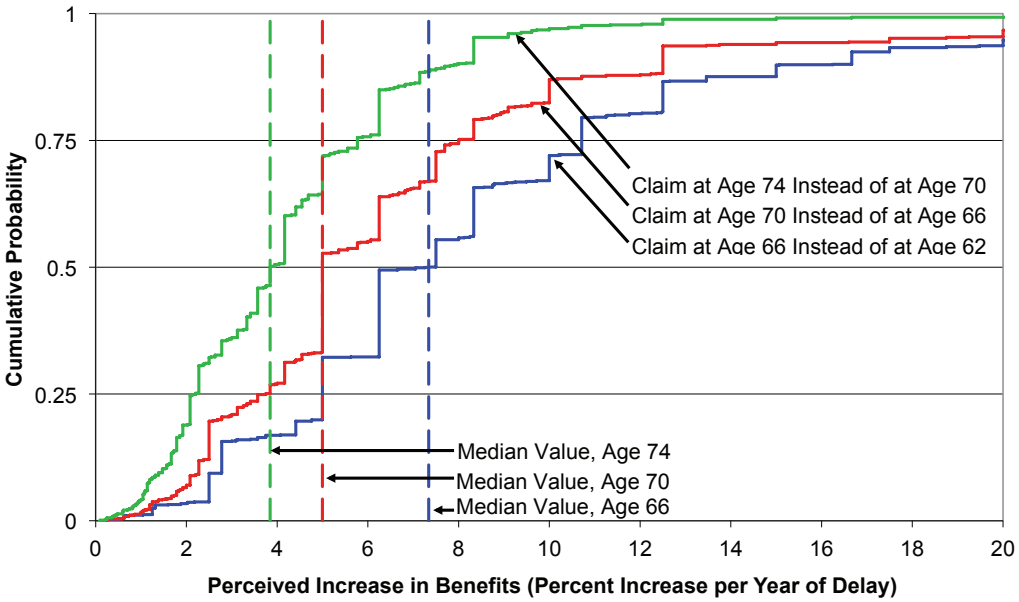

Figure 8a: Knowledge of the Existence of the Earnings Test, Representative Group

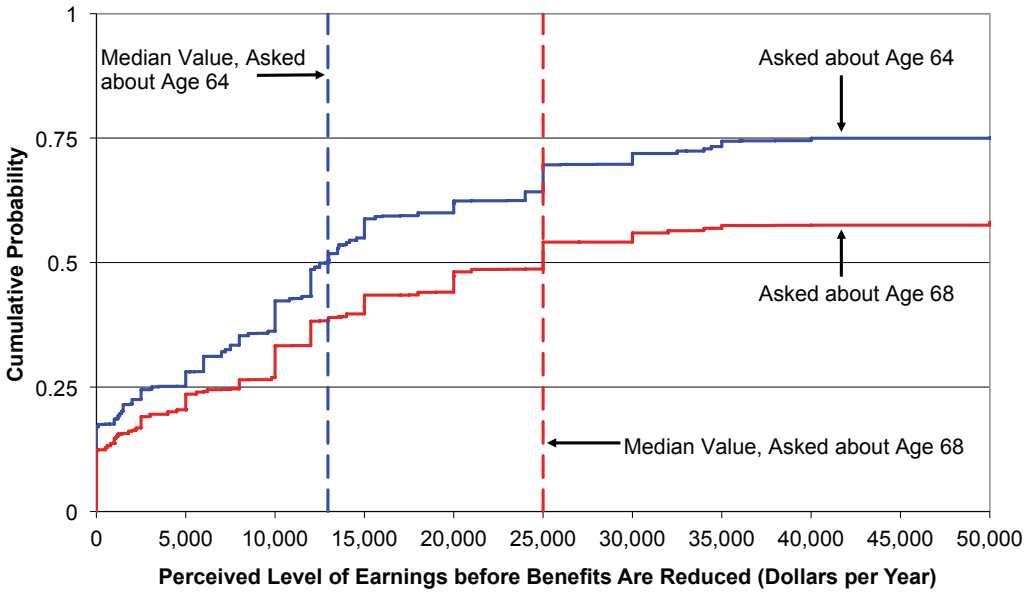

Figure 8b: Knowledge of the Existence of the Earnings Test, Older-Worker Group

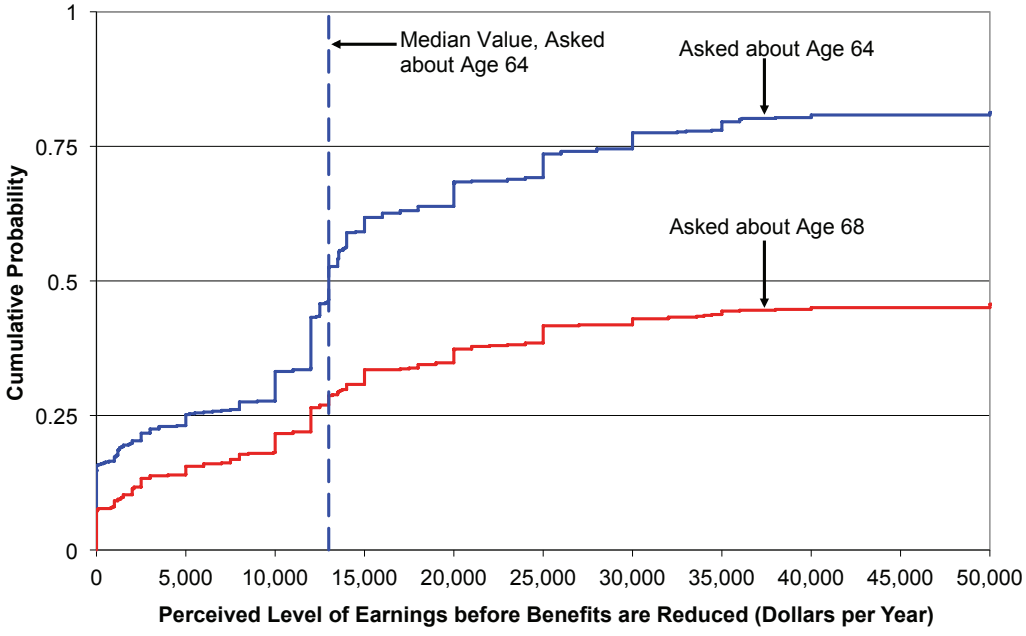

Figure 9: CDF of Perceived Spousal Benefits for a Nonworking Spouse

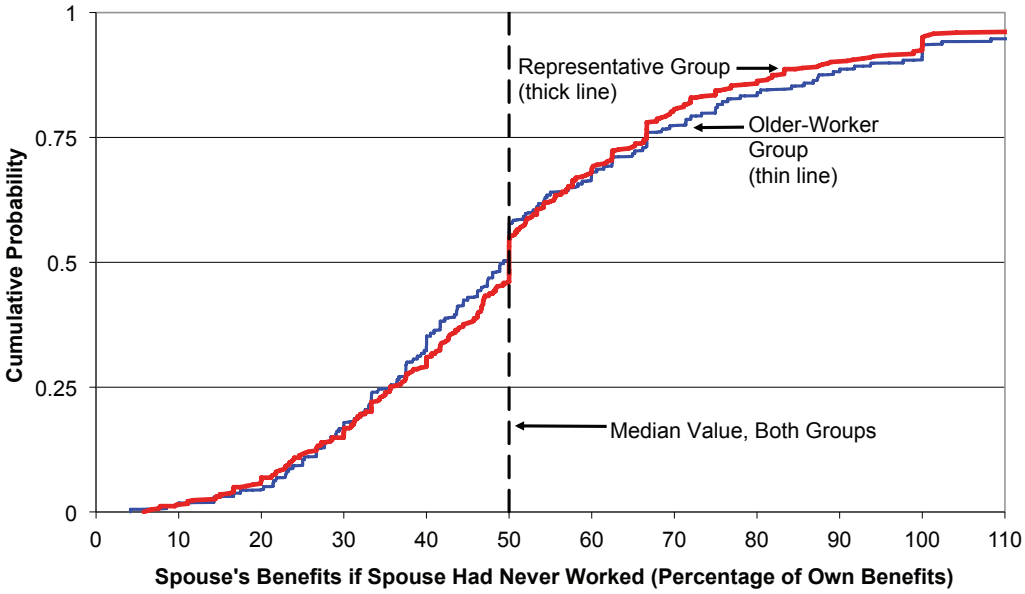

Figure 10: CDF of Valuation of the Social Security Annuity

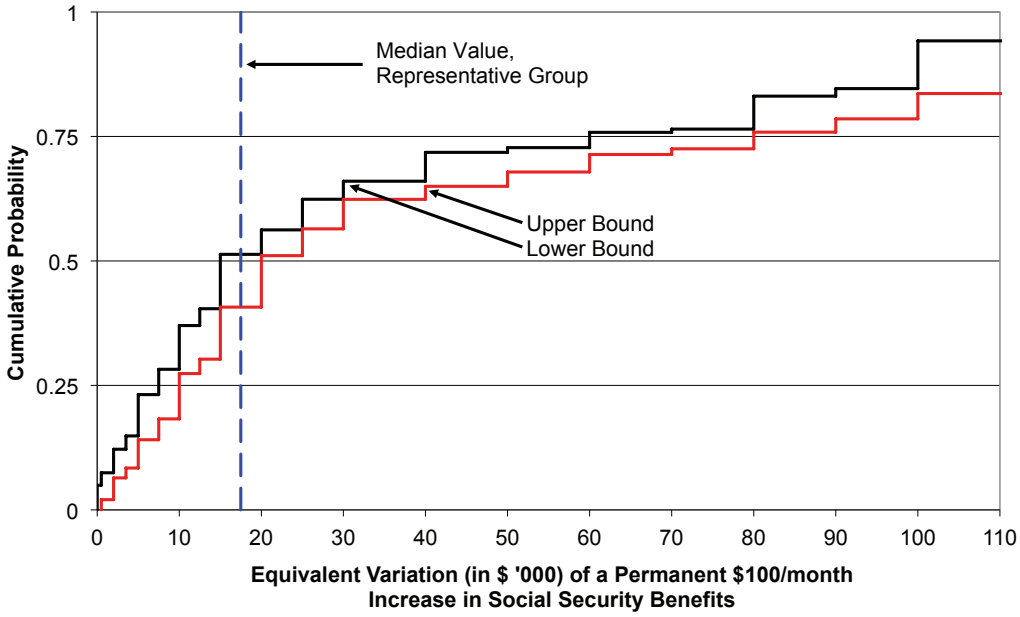

Table 1: Demographic Characteristics of the Sample

	Mean (representative group)	Mean (older-worker group)
Age	59.0	62.0
Female	0.54	0.55
Black	0.07	0.05
White	0.80	0.88
Other	0.13	0.08
Marital Status		
Married	0.63	0.65
Widowed	0.04	0.06
Divorced	0.18	0.19
Separated	0.02	0.01
Never Married	0.08	0.05
Living with a Partner	0.05	0.04
Household Size		
1 Person	0.27	0.28
2 People	0.46	0.55
3 + People	0.27	0.18
Education Level		
High School Dropout	0.10	0.02
High School Degree	0.29	0.15
Some College	0.32	0.34
College Degree	0.29	0.49
Household Income		
$24,999 or less	0.20	0.07
$25,000-$49,999	0.25	0.21
$50,000-$74,999	0.21	0.24
$75,000-$99,999	0.16	0.20
$100,000+	0.19	0.28
Work Status		
Working	0.52	0.87
Retired	0.39	0.09
Disabled	0.13	0.01
Unemployed	0.03	0
Not Working	0.05	0
Region		
Northeast	0.19	0.19
Midwest	0.23	0.26
South	0.34	0.29
West	0.25	0.26
Social Security Benefits		
Actual or Expected Claiming Age	63.7	65.1
Actual or Expected Retirement Age	61.3	66.2
Receiving Benefits	0.31	0.18
Adjusted Monthly Benefit Level	1,263	1,359
N	2331	1636

Note: The representative group includes respondents age 50 to 70, whether working or not, and the older-worker group includes only respondents aged 60-65 who are currently working (according to Knowledge Networks' definition of working). The Knowledge Networks definition of working reflects the respondents' reported work status as of the most recent date when Knowledge Networks collected demographic information; our definition is based on the answer to survey Q1.11. Respondents indicating that they currently work for pay were coded a 1 on our Working variable.

Table 2: Distribution of Retirement Status and Claim Status

	Retirement Status		
Social Security Status	*Not Retired*	*Retired*	Total
Not Yet Receiving Benefits	60.1%	9.2%	69.3%
	(1.8%)	(1.1%)	(1.7%)
Currently Receiving Benefits	9.6%	21.2%	30.7%
	(1.0%)	(1.5%)	(1.7%)
Total	69.7%	30.3%	100%
	(1.7%)	(1.7%)	

Note: N=2215. Each entry shows the percentage of respondents in the corresponding cell. Standard errors reported in parentheses. Sample is representative of individuals aged 50-70 who do not receive disability benefits. Responses based on Q1.4, Q1.11, and Q1.12; see Appendix A for details on question wording.

Table 3: Demographics and Social Security Benefit Levels by Claim Status

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Representative Group Age 50-70									Older-Worker Group		
	All Respondents			Receiving Benefits			Not Yet Receiving Benefits			All Respondents		
	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.	Median	Mean	S.D.	Median
Age	58.9	5.99	58	65.5	4.26	67	56.0	4.03	56	62.0	1.66	62
Married	0.65	0.48	1	0.60	0.49	1	0.67	0.47	1	0.64	0.48	1
Female	0.53	0.50	1	0.60	0.49	1	0.50	0.50	1	0.54	0.50	1
High School Dropout	0.07	0.26	0	0.10	0.30	0	0.06	0.24	0	0.01	0.12	0
High School Degree	0.29	0.46	0	0.36	0.48	0	0.26	0.44	0	0.15	0.34	0
Some College	0.32	0.47	0	0.33	0.47	0	0.32	0.46	0	0.34	0.48	0
College Degree	0.31	0.46	0	0.21	0.41	0	0.36	0.48	0	0.49	0.50	0
Claim Age	63.7	5.1	64	60.6	6.6	62	65.0	3.6	65	65.1	3.2	65
Retirement Age	61.3	12.8	65	58.9	16.4	62	62.4	10.7	65	66.2	7.2	66
Receiving Benefits	0.31	0.46	0	1	0	1	0	0	0	0.18	0.39	0
Retired (our definition)	0.30	0.46	0	0.69	0.46	1	0.13	0.34	0	0.083	0.28	0
Monthly Benefit Level	1,136	605	1,000	989	443	1000	1,201	654	1,200	1,289	621	1,200
Adjusted Monthly Benefit Level	1,263	626	1231	1,246	539	1262	1,271	661	1,204	1,359	605	1,336
N		2215			492			1723			1621	

Note: Sample is restricted to respondents who do not receive disability benefits. The Adjusted Monthly Benefit Level is the actual or expected benefit level adjusted to hold the age of benefit claiming constant at age 66.

Table 4: Predictability of Self-Reported Benefits

	(1)	(2)	(3)	(4)
	Representative Group		Older-Worker Group	
	Dep. Variable: Self-Reported Benefits ($/month)	Dep. Variable: Predicted Benefits ($/month)	Dep. Variable: Self-Reported Benefits ($/month)	Dep. Variable: Predicted Benefits ($/month)
Panel A: All Respondents				
Predicted Benefits ($/month)	0.533***		0.517***	
	(0.039)		(0.517)	
Self-Reported Benefits ($/month)		0.574***		0.576***
		(.042)		(0.028)
R^2	0.306	0.306	0.298	0.298
Root MSE ($/month)	508	527	521	551
N	1935	1935	1452	1452
Panel B: Not Yet Receiving Social Security				
Predicted Benefits ($/month)	0.547***		0.523***	
	(0.045)		(0.028)	
Self-Reported Benefits ($/month)		0.547***		0.523***
		(0.047)		(0.030)
R^2	0.299	0.299	0.274	0.274
Root MSE ($/month)	538	539	543	543
N	1581	1581	1220	1220
Panel C: Receiving Social Security				
Predicted Benefits ($/month)	0.494***		0.396***	
	(0.066)		(0.057)	
Self-Reported Benefits ($/month)		0.609***		0.572***
		(0.081)		(0.075)
R^2	0.301	0.301	0.227	0.227
Root MSE	396	439	386	464
N	354	354	232	232

Note: Robust standard errors reported in parentheses. Predicted benefits are calculated by applying the Social Security benefit rules to the individual's self-reported earnings history and age of first claiming benefits. * indicates p-value<.10, **indicates p-value<.05, ***indicates p-value<.01. Sample limited to non-disabled, claiming at age 62+, claiming on their own record.

Table 5: Incentives on the Extensive Margin by Claim Status

	(1)	(2)	(3)	(4)
	Representative Group			Older-Worker Group
	All Respondents	Receiving Benefits	Not Yet Receiving Benefits	All Respondents
Panel A: Qualitative Results				
Perceived Effect of Working Longer on Benefits				
Lower	4.5%	8.3%	2.9%	3.9%
	(0.8%)	(1.9%)	(0.7%)	(0.5%)
Same	31.1%	32.7%	30.4%	32.8%
	(1.7%)	(3.2%)	(2.0%)	(1.2%)
Higher	64.5%	59.0%	66.7%	63.2%
	(1.7%)	(3.4%)	(2.0%)	(1.2%)
N	2179	472	1707	1605
Panel B: Quantitative Results				
Perceived Percentage Increase in Benefits per Year of Extra Work				
25th Percentile	4.00	3.10	4.00	4.00
	(0.25)	(0.25)	(0.16)	(0.11)
Median	6.67	5.06	6.67	6.25
	(0.21)	(0.57)	(0.22)	(0.20)
75th Percentile	10.00	10.00	11.11	10.00
	(0.41)	(0.58)	(0.69)	(0.27)
N	1348	259	1089	989

Note: Standard errors reported in parentheses. Sample is restricted to respondents who do not receive disability benefits. The sample in Panel B is further limited to those reporting an increase in benefits in response to working more years. Responses based on Q3.1 and Q3.2; see Appendix A for details on question wording.

Table 6: Predicting Extensive-Margin Labor Supply Incentives

	(1)	(2)	(3)	(4)
	Earnings Test Ignored: Dep. Variable is Dummy for Self-Reported Positive Incentive		Earnings Test Accounted For: Dep. Variable is Self-Reported Incentive (-1, 0, 1 variable)	
	Representative Group	Older-Worker Group	Representative Group	Older-Worker Group
Predicted Incentive	0.152*** (0.041)	0.107*** (0.029)	0.143*** (0.041)	0.060** (0.026)
R^2	0.022	0.010	0.016	0.004
N	2045	1527	2129	1590
Self-Reported Incentives				
Positive Incentive (+1)	67.8%	65.8%	65.2%	63.3%
No Incentive (0)	32.2%	34.2%	30.9%	32.8%
Negative Incentive (-1)			3.9%	3.9%
Predicted Incentives				
Positive Incentive (+1)	69.7%	74.6%	68.6%	71.0%
No Incentive (0)	30.4%	25.4%	30.2%	24.5%
Negative Incentive (-1)			1.2%	4.6%

Note: Robust standard errors reported in parentheses. * indicates p-value<.10, **indicates p-value<.05, ***indicates p-value<.01. All regressions exclude respondents claiming disability benefits or (planning on) claiming before age 60. In the regressions in columns (1) and (2), the dependent variable is a dummy for the respondent's self-reported positive extensive-margin labor supply incentive and the sample excludes those reporting a negative incentive. The predicted incentive variable does not take the earnings test into account and is therefore only zero or positive. In columns (3) and (4), the sample includes those reporting a negative incentive. The dependent variable takes on one of three values, -1 for those reporting a negative incentive, 0 for those reporting no incentive, and +1 for those reporting a positive incentive. The predicted incentive variable does take the earnings test into account and is measured on the same scale as the dependent variable. Predicted incentives are calculated by applying the Social Security benefit rules to the self-reported own and spousal earnings history and the self-reported (planned) retirement date. When taking the earnings test into account, the prediction is in addition based on the self-reported age of (planned) first claiming Social Security benefits and on the earnings at the time the incentive is measured.

Table 7: Effect of Higher Earning in Most Recent Year of Earnings on Benefits

	(1)	(2)	(3)	(4)	(5)	(6)
	Representative Sample					Older-Worker Group
	All Respondents	Receiving Benefits	Not Yet Receiving Benefits	Monthly Frame	Lifetime Frame	All Respondents
Panel A: Qualitative Results						
Benefit Levels in Response to Additional Earnings						
Lower	5.8%	9.0%	4.5%	3.8%	7.5%	4.9%
	(0.9%)	(2.0%)	(0.9%)	(1.1%)	(1.4%)	(0.5%)
Same	37.4%	35.3%	38.3%	30.0%	43.8%	39.7%
	(1.8%)	(3.4%)	(2.2%)	(2.6%)	(2.6%)	(1.2%)
Higher	56.8%	55.7%	56.7%	66.2%	48.7%	55.4%
	(1.9%)	(3.6%)	(2.2%)	(2.6%)	(2.6%)	(1.3%)
N	2105	446	1659	1006	1099	1584
Panel B: Quantitative Results (Monthly Frame)						
Monthly Benefit Increase in Dollars per $1000 of Total Earnings Increase						
25th Percentile	2.0	0.9	2.0			2.0
	(0.1)	(0.5)	(..)			(0.03)
Median	4.0	3.5	4.0			4.0
	(0.2)	(0.8)	(..)			(0.2)
75th Percentile	8.0	5.5	10.0			6.0
	(1.5)	(1.2)	(0.9)			(0.6)
N	644	126	518			494
Panel C: Quantitative Results (Lifetime Frame)						
Lifetime Benefit Increase in Dollars per $1000 in Additional OASDI Taxes Paid						
25th Percentile	100	50	150			100
	(38)	(53)	(171)			(35)
Median	1,000	1,000	1,000			1,000
	(..)	(342)	(93)			(..)
75th Percentile	3,000	2,000	4,200			3,000
	(1,156)	(985)	(859)			(643)
N	432	76	356			343

Note: Standard errors reported in parentheses. (..) indicates that the mass of observations clustered around the percentile in question is sufficiently large that the standard error is estimated as zero. The sample is restricted to respondents who do not receive disability benefits. The sample in Panels B and C is further limited to those who perceive a strictly positive increase. The frame type used in columns 4 or 5 is randomly assigned. Responses in Panel A are based on Q4.1 and Q4.3, in Panel B on Q4.2, and in Panel C on Q4.5A,B; see Appendix A for details on question wording.

Table 8: Predicting Intensive-Margin Labor Supply Incentives

	(1)	(2)	(3)	(4)
	Earnings Test Ignored: Dep. Variable is Dummy for Self-Reported Positive Incentive		Earnings Test Accounted For: Dep. Variable is Self-Reported Incentive (-1, 0, 1 variable)	
	Representative Group	Older-Worker Group	Representative Group	Older-Worker Group
Predicted Incentive	0.104** (0.041)	0.184*** (0.027)	0.082* (0.043)	0.166*** (0.027)
R^2	0.010	0.031	0.005	0.026
N	1961	1499	2061	1573
Self-Reported Incentives				
Positive Incentive (+1)	60.7%	58.2%	57.4%	55.5%
No Incentive (0)	39.3%	41.8%	37.2%	39.8%
Negative Incentive (-1)			5.4%	4.7%
Predicted Incentives				
Positive Incentive (+1)	63.6%	65.8%	63.1%	63.8%
No Incentive (0)	36.4%	34.2%	35.1%	31.8%
Negative Incentive (-1)			1.8%	4.4%

Note: Standard errors reported in parentheses. * indicates p-value<.10, **indicates p-value<.05, ***indicates p-value<.01. All regressions exclude respondents claiming disability benefits or (planning on) claiming before age 60. In the regressions in columns (1) and (2), the dependent variable is a dummy for the respondent's self-reported positive intensive-margin labor supply incentive and the sample excludes those reporting a negative incentive. The predicted incentive variable does not take the earnings test into account and is therefore only zero or positive. In columns (3) and (4), the sample includes those reporting a negative incentive. The dependent variable takes on one of three values, -1 for those reporting a negative incentive, 0 for those reporting no incentive, and +1 for those reporting a positive incentive. The predicted incentive variable does take the earnings test into account and is measured on the same scale as the dependent variable. Predicted incentives are calculated by applying the Social Security benefit rules to the self-reported earnings history and the self-reported (planned) retirement date. When taking the earnings test into account, the prediction is in addition based on the self-reported age of (planned) first claiming Social Security benefits and on the earnings at the time the incentive is measured.

Table 9: Perceived Incentive to Delay Claiming Social Security Benefits

	(1)	(2)	(3)	(4)	(5)
	Effect of Claiming Later on Own Benefits		Effect of Claiming Later on Hypothetical Person's Benefits		
	Claim between Ages 62 and 70, Representative Group	Claim between Ages 62 and 70, Older-Worker Group	Claim at Age 66 Instead of at Age 62	Claim at Age 70 Instead of at Age 66	Claim at Age 74 Instead of at Age 70
Panel A: Qualitative Results					
Perceived Effect of Delayed Claiming on Level of Benefits					
Lower	6.0%	3.1%	2.8%	1.7%	1.3%
	(0.9%)	(0.4%)	(0.7%)	(0.5%)	(0.5%)
Same	33.7%	27.3%	11.1%	14.3%	29.8%
	(1.8%)	(1.1%)	(1.3%)	(1.4%)	(1.9%)
Higher	60.3%	69.6%	86.1%	83.9%	69.0%
	(1.9%)	(1.2%)	(1.4%)	(1.5%)	(1.9%)
N	2067	1539	1764	1745	1729
Panel B: Quantitative Results					
Perceived Increase in Benefits per Year of Delay in Claiming as a Percentage of Benefits at the Full-Benefit Age (FBA)					
Actual Increase			6.25	8.0	0
25th Percentile			3.8	3.6	2.5
			(0.2)	(0.5)	(..)
Median			5.0	5.0	5.0
			(0.1)	(0.1)	(..)
75th Percentile			7.1	7.5	7.5
			(0.4)	(0.2)	(..)
N			1559	1462	1135

Note: Standard errors reported in parentheses. (..) indicates that the mass of observations clustered around the percentile in question is sufficiently large that the standard error is estimated as zero. The sample is restricted to respondents who do not receive disability benefits. The sample in Panel B is further limited to those who perceived a strictly positive incentive to delay. The sample in columns (1) and (2) is restricted to those planning to claim between the ages of 62 and 70. This restriction eliminates 8.8% of observations from the representative group and 3.7% of observations from the older-worker group. Responses in Columns 1 and 2 are based on Q5.1, with a randomly assigned condition for claiming either one year earlier or one year later, and responses in Columns 3-5 are based on Q5.2; see Appendix A for details on question wording.

Table 10: Knowledge of the Earnings Test

	(1)	(2)	(3)	(4)
	Representative Group		Older-Worker Group	
	Asked about Effect of Earnings at Age 64	Asked about Effect of Earnings at Age 68	Asked about Effect of Earnings at Age 64	Asked about Effect of Earnings at Age 68
Panel A: Qualitative Perceptions of Social Security Benefits				
Effect on Current Benefits of Earning $20,000 while Receiving Benefits				
Lower	39.7%	32.9%	47.0%	25.2%
	(2.5%)	(2.5%)	(1.8%)	(1.5%)
Same	35.4%	42.6%	34.7%	52.7%
	(2.5%)	(2.5%)	(1.7%)	(1.8%)
Higher	24.9%	24.5%	18.3%	22.1%
	(2.3%)	(2.2%)	(1.4%)	(1.5%)
N	1075	1095	785	810
Panel B: Quantitative Perceptions				
Maximum Allowable Earnings while Receiving Benefits before a Reduction in Benefit Levels				
25th Percentile	3,500	7,500	5,000	12,000
	(1,330)	(1,919)	(1,608)	(735)
Median	12,200	21,000	13,000	"No Limit"
	(439)	(3,063)	(136)	(..)
75th Percentile	40,000	"No Limit"	30,000	"No Limit"
	(26,929)	(..)	(2,122)	(..)
N	849	836	636	624

Note: Standard errors reported in parentheses. The question in Panel B was asked only of the subsample who answered that earning $20,000 while receiving benefits would lower benefits or keep them the same. Responses are based on Q5.4 and Q5.5a,b; see Appendix A for details on question wording.

Table 11: Spousal Benefits

	(1) All Respondents, Representative Group	(2) All Respondents, Older-Worker Group	(3) By Ratio of Spousal Adjusted Benefits to Own Adjusted Benefits, Representative Group ≤ 0.5	(4) 0.5 - 1	(5) 1 - 2	(6) > 2
Panel A: Qualitative Perceptions of Relation between Own and Spouse's Social Security Benefits						
What Happens to Spouse's Benefits if Own Benefits Increase by $100/month (Due to Working More)?						
Change	17.2%	14.1%	38.6%	19.0%	10.8%	7.1%
	(1.7%)	(1.1%)	(5.5%)	(3.0%)	(2.4%)	(2.9%)
No Change	82.8%	85.9%	61.4%	80.9%	89.2%	92.9%
	(1.7%)	(1.1%)	(5.5%)	(3.0%)	(2.4%)	(2.9%)
N	1408	1006	229	498	494	187
Panel B: Quantitative Results For Those Reporting A Change						
Size of Spouse's Benefit Increase if Own Benefits Increase by $100/month (Due to Working More)?						
25th Percentile	5	10	15	-100	40	100
	(36)	(32)	(11)	(42)	(69)	(289)
Median	50	50	50	50	100	100
	(4)	(3)	(7)	(7)	(25)	(76)
75th Percentile	100	100	50	100	100	200
	(27)	(13)	(43)	(31)	(41)	(248)
N	208	138	72	88	37	11
Panel C: Qualitative Perception of Spousal Benefits if Spouse Had Never Worked						
Perceived Spousal Benefit Level if Spouse Had Never Worked						
Zero	48.3%	51.4%	54.5%	45.9%	48.4%	
	(2.5%)	(1.7%)	(6.0%)	(3.8%)	(3.8%)	
Some Positive Amount	52.7%	48.6%	45.5%	54.0%	51.6%	
	(2.5%)	(1.7%)	(6.0%)	(3.8%)	(3.8%)	
N	1190	870	211	492	484	
Panel D: Quantitative Results For Those Reporting Some Positive Amount						
Adjusted Perceived Spousal Benefits if Spouse Had Never Worked as Percentage of Own Adjusted Benefits						
25th Percentile	35.2	35.6	27.6	33.3	41.7	
	(1.6)	(1.5)	(3.5)	(2.4)	(3.6)	
Median	48.9	50.0	37.6	43.7	61.5	
	(1.1)	(0.4)	(5.4)	(3.0)	(3.3)	
75th Percentile	66.7	66.6	48.9	55.0	87.5	
	(4.0)	(1.7)	(1.2)	(5.3)	(9.0)	
N	590	423	108	256	224	

Note: Standard errors reported in parentheses. The sample is restricted to respondents who do not receive disability benefits. The sample in Panel B is limited to those who respond their spouse's benefits would change if their own benefits would increase. The questions of Panels C and D were not asked if the ratio of spousal adjusted benefits to own adjusted benefits was greater than 2 because in those cases the respondent typically was the secondary earner. The sample in Panel D is further limited to those who answered that the spouse would receive some positive amount. Responses are based on Q6.1 (Panel A) , Q6.2 (Panel B), Q6.3 (Panel C), and Q6.4 (Panel D); see Appendix A for details on question wording.

Table 12: Widow Benefits

	(1) All Respondents, Representative Group	(2) All Respondents, Older-Worker Group	(3) By Ratio of Spousal Adjusted Benefits to Own Adjusted Benefits, Representative Group	(4)	(5)	(6)
			≤ 0.5	0.5 - 1	1 - 2	> 2
Panel A: Own Widow Benefits, Qualitative Results						
Effect of Becoming Widowed on Own Benefits						
Lower	6.8%	5.2%	4.8%	11.1%	5.2%	2.7%
	(1.1%)	(0.7%)	(2.4%)	(2.4%)	(1.7%)	(1.7%)
Same	51.6%	59.0%	83.7%	65.0%	41.5%	12.5%
	(2.2%)	(1.5%)	(4.2%)	(3.6%)	(3.8%)	(3.5%)
Higher	41.7%	35.8%	11.5%	23.9%	53.3%	84.9%
	(2.2%)	(1.5%)	(3.6%)	(3.2%)	(3.8%)	(3.8%)
N	1437	1022	229	498	488	189
Panel B: Own Widow Benefits, Quantitative Results						
Own Widow Benefits as Percentage of Own Current Benefits						
25th Percentile	100.0	100.0	100.0	100.0	100.0	142.9
	(0.5)	(0.6)	(3.7)	(0.8)	(0.9)	(15.2)
Median	100.0	100.0	100.0	100.0	111.1	220.0
	(..)	(0.8)	(4.1)	(0.9)	(6.1)	(11.6)
75th Percentile	142.9	128.6	100.0	100.0	147.1	330.8
	(6.0)	(3.6)	(5.2)	(3.6)	(6.8)	(58.7)
N	1437	1022	229	498	488	189
Panel C: Spouse's Widow Benefits, Qualitative Results						
Effect of Spouse's Becoming Widowed on Spouse's Benefits						
Lower	7.0%	5.2%	1.7%	7.1%	10.7%	4.2%
	(1.1%)	(0.7%)	(1.4%)	(2.0%)	(2.4%)	(2.1%)
Same	48.5%	49.4%	20.4%	34.3%	66.2%	66.9%
	(2.2%)	(1.6%)	(4.5%)	(3.6%)	(3.6%)	(5.1%)
Higher	44.5%	45.4%	77.9%	58.5%	23.1%	28.9%
	(2.2%)	(1.6%)	(4.7%)	(3.7%)	(3.2%)	(4.9%)
N	1407	1004	229	496	491	191
Panel D: Spouse's Widow Benefits, Quantitative Results						
Spouse's Widow Benefits as Percentage of Spouse's Current Benefits						
25th Percentile	100.0	100.0	106.7	100.0	100.0	100.0
	(..)	(0.2)	(14.5)	(1.2)	(0.4)	(0.1)
Median	100.0	100.0	200.0	117.1	100.0	100.0
	(0.5)	(0.3)	(21.8)	(6.2)	(0.4)	(0.2)
75th Percentile	144.4	150.0	311.1	156.6	100.0	104.5
	(5.1)	(3.0)	(29.8)	(6.1)	(4.3)	(5.5)
N	1407	1004	229	496	491	191

Note: Standard errors reported in parentheses. The sample is restricted to respondents who do not receive disability benefits. Responses are based on Q7.2 (Panels A and B) and Q7.3 (Panels C and D); see Appendix A for details on question wording.

Table 13: Three Factual Questions about Social Security Rules

	(1)	(2)	(3)	(4)	(5)
			Answer to Fill-in Value *X*, Representative group		
	Representative Group	Older-Worker Group	25th Percentile	Median	75th Percentile
Panel A: Which Years of Earnings Are Used to Compute Benefits?					
(a) The *X* Most Recent Years	33.7%	32.1%	5	8	10
	(1.7%)	(1.2%)	(0.6)	(2.0)	(0.9)
(b) The *X* Years with Highest Earnings	31.5%	36.0%	5	10	10
	(1.7%)	(1.2%)	(..)	(2.6)	(2.4)
(c) Years between Ages 16 and *X*	10.2%	10.6%	62	64	65
	(1.1%)	(0.8%)	(1.0)	(1.3)	(1.3)
(d) Years between Ages 16 and *X* with Earning Exceeding $2500	24.5%	21.3%	62	65	65
	(1.5%)	(1.1%)	(0.6)	(0.3)	(0.3)
N	2149	1528			
Panel B: What Portion of Earnings is Subject to the Social Security (OASDI) Payroll Tax?					
(a) This tax applies to all earnings	61.8%	48.6%			
	(3.6%)	(2.2%)			
(b) This tax applies to earnings above *X*	8.3%	8.9%	1,600	3,390	12,000
	(2.1%)	(1.3%)	(477)	(3,501)	(14,801)
(c) This tax applies to earnings below *X*	29.8%	42.5%	90,000	99,000	102,000
	(3.3%)	(2.2%)	(6,621)	(1,235)	(10,021)
N	628	506			
Panel C: Earliest Eligibility Age for Social Security Retirement Benefits?					
(a) Answer was 61 or less	13.8%	7.5%			
	(2.4%)	(1.1%)			
(b) Answer was exactly 62	70.2%	84.6%			
	(3.2%)	(1.6%)			
(c) Answer was 63, 64, or 65	14.1%	5.8%			
	(2.5%)	(1.0%)			
(d) Answer was 66 or higher	2.0%	2.1%			
	(1.0%)	(0.6%)			
N	687	533			

Note: Standard errors are reported in parentheses. The questions in Panel B and Panel C were each asked to a random 3rd of the non-disabled sample. The question for Panel C was an open-ended question; we grouped the answers into the four categories. Responses based on Q8.1 (Panel A), Q4.6 (Panel B), and Q5.7 (Panel C); see Appendix A for details on question wording.

Table 14: Predictors of Knowledge

	Representative Group		HRS	ALP	Older-Worker Group	
	Mean	S.D.	Mean	Mean	Mean	S.D.
Financial Literacy (0-4)	2.57	1.20			3.02	1.03
Numeracy Question Correct	0.74		0.44		0.83	
Compound Interest Question Correct	0.61			0.78	0.75	
Inflation Question Correct	0.59			0.80	0.67	
Diversification Question Correct	0.64		0.61	0.83	0.76	
Knowledge about SS (1-5, self-assessed)	3.00	1.03			3.25	0.90
Reliance on SS (1-4)	2.84	1.05			2.64	1.00
Share of Friends Retired (1-4)	1.79	1.03			1.77	0.91
Fraction of Siblings Older (0-1)	0.46	0.38			0.40	0.40

Notes: 'Financial Literacy' ranges from 0 to 4 and correspondents to the number of correct answers on a financial literacy quiz (Q14.2-Q14.6). Knowledge about Social Security' is self reported and ranges from 1 to 5, representing 'not at all knowledgeable,' 'less than knowledgeable,' 'somewhat knowledgeable,' 'relatively knowledgeable,' and 'very knowledgeable' respectively (Q1.3). 'Reliance on Social Security ' indicates the importance of income from Social Security for retirement spending, and ranges from 1 to 4, representing 'Not so important (<25% of spending),' 'Important (25-50% of spending,' 'Very Important (50-75% of spending,' and 'Extremely Important (>75% of spending),' respectively (Q12.1). 'Share of Friends Retired' is a 1 to 4 indicator, representing 'Relatively few (<25%),' 'Many (25-50%),' 'Most (50-75%),' 'By far most (>75%),' respectively (Q12.3). 'Share of Siblings Older' is a continuous ratio (Q12.4)

The representative group, HRS, and ALP samples are limited to individuals 50 to 70 years of age. The Health and Retirement Study (HRS) numeracy question data was extracted from the 2006 HRS Core survey file and the HRS diversification question data was extracted from the 2004 HRS Core survey file. The American Life Panel (ALP) data was extracted from the ALP public data file for the 'Well Being 64' survey from March 2009. The Knowledge Networks means and standard deviations come for the representative group, are weighted to correct for oversampling of working individuals between the ages of 60 and 65. The HRS means and standard deviations are weighted to match the CPS. The number of observations in the HRS is 10,079 for the numeracy question and 787 for the diversification question. The number of observations in the ALP is 774 for the compound interest and inflation questions and 407 for the diversification question.

Table 15: Determinants of Absolute Difference Between Predicted and Reported Benefits

Dependent Variable: Absolute difference between predicted and self-reported Social Security benefits ($/month)	(1) Representative Group: Does Not Receive Social Security		(2) Representative Group: Receives Social Security		(3) Older-Worker Group: Does Not Receive Social Security		(4) Older-Worker Group: Receives Social Security	
Financial Literacy (0-4)	-0.5	(28.0)	-21.0	(26.3)	-18.5	(17.1)	-48.1	(32.3)
Knowledge about SS (1-5)	-24.0	(22.6)	-32.1	(24.6)	-60.5***	(16.1)	-8.9	(22.6)
Reliance on SS (1-4)	8.6	(21.6)	-50.1*	(28.9)	-51.7***	(16.6)	-59.4***	(22.2)
Share of Friends Retired (1-4)	19.1	(31.5)	3.8	(24.4)	-0.2	(17.3)	33.8	(21.6)
Fraction of Siblings Older (0-1)	81.6	(55.6)	50.2	(68.1)	-49.5	(31.2)	89.7	(55.6)
Retired	-82.9	(62.3)	-68.4	(54.9)	30.9	(80.4)	-0.6	(49.4)
Age (65-70 omitted)								
50 to 54	125.5*	(75.3)						
55 to 59	95.8	(71.9)						
60 to 64	75.3	(62.7)	-39.4	(54.5)				
Education Level (College+ omitted)								
High School Dropout	-136.0	(100.9)	-138.8	(114.5)	-233.7***	(60.4)	-46.7	(110.5)
High School Degree	-137.2**	(60.2)	-140.7*	(77.9)	-131.9***	(39.6)	-129.9*	(70.3)
Some College	-35.3	(49.7)	-7.6	(76.0)	-41.7	(29.6)	-150.8**	(61.2)
Household Income (0-25k omitted)								
25k - 50k	14.5	(64.0)	-69.4	(78.5)	74.3	(55.0)	41.8	(68.3)
50k - 75k	30.6	(72.9)	50.7	(88.7)	55.4	(56.7)	15.8	(72.1)
75k - 100k	-38.9	(67.4)	-116.4	(90.9)	166.3***	(60.8)	-76.3	(80.2)
100k +	62.3	(71.4)	-37.6	(91.3)	126.7	(63.0)	70.7	(85.0)
Female	-33.6	(42.5)	-125.4**	(56.0)	-11.4	(27.3)	-113.3**	(48.1)
Non-Hispanic black	106.3	(105.6)	-2.3	(98.0)	76.6	(78.8)	7.8	(82.8)
Other race / ethnicity	36.9	(69.1)	16.6	(77.9)	58.0	(60.6)	100.2	(92.4)
Married	32.2	(42.8)	64.7	(60.5)	-13.6	(29.6)	3.9	(58.7)
R^2	0.041		0.173		0.059		0.154	
Number of Respondents (N)	1581		354		1220		232	

Note: Standard errors reported in parentheses. * indicates p-value<.10, **indicates p-value<.05, ***indicates p-value<.01. In all cases, the dependent variable is the absolute prediction error, calculated as the difference between the predicted and reported Social Security benefit levels (in $/month) for each respondent. See the note to Table 14 for the definitions of the explanatory variables. Missing values are dummied out.

Table 16: Misperceptions in the Return to Delayed Claiming

Dependent Variable: Absolute value of the difference between the actual and the perceived return to delaying claiming Social Security benefits	(1) Representative Group		(2) Older-Worker Group	
Financial Literacy (0-4)	-0.271**	(0.107)	-0.373***	(0.077)
Knowledge about SS (1-5)	-0.360***	(0.106)	-0.213***	(0.077)
Reliance on SS (1-4)	0.010	(0.103)	-0.009	(0.073)
Share of Friends Retired (1-4)	-0.058	(0.122)	0.011	(0.080)
Fraction of Siblings Older (0-1)	-0.005	(0.254)	-0.404**	(0.166)
Receives Social Security	0.571	(0.392)	0.275	(0.195)
Retired	-0.256	(0.295)	0.017	(0.275)
Age (50-54 omitted)				
55 to 59	0.430	(0.276)		
60 to 64	0.068	(0.221)		
65 to 70	-0.095	(0.410)		
Education Level (College+ omitted)				
High School Dropout	-0.174	(0.507)	0.704	(0.625)
High School Degree	-0.118	(0.270)	0.260	(0.229)
Some College	0.106	(0.242)	0.144	(0.157)
Household Income (0-25k omitted)				
25k - 50k	-0.010	(0.367)	-0.181	(0.317)
50k - 75k	-0.722**	(0.367)	-0.169	(0.313)
75k - 100k	-0.561	(0.378)	0.207	(0.335)
100k +	-0.664	(0.398)	-0.070	(0.330)
Female	0.019	(0.203)	-0.171	(0.141)
Non-Hispanic black	0.395	(0.442)	0.167	(0.345)
Other race / ethnicity	0.101	(0.296)	0.191	(0.233)
Married	-0.010	(0.228)	-0.124	(0.158)
R^2	0.093		0.051	
N	1731		1284	
Mean of the Dependent Variable	3.0		2.7	

Note: Standard errors reported in parentheses. * indicates p-value<.10, **indicates p-value<.05, ***indicates p-value<.01. In all cases, the dependent variable is a measure of the misperception of the return to delaying claiming Social Security benefits. It is calculated as the absolute percentage point difference between the perceived annual return to delaying claiming to age 66 from age 62. The absolute difference is topcoded at 10. See the note to Table 14 for the definitions of the explanatory variables. Missing values are dummied out.

Table 17: Misunderstanding of Role of Earnings History

Dependent Variable: Dummy for giving incorrect answer regarding the years of earnings that determine benefits	(1) Representative Group		(2) Older-Worker Group	
Financial Literacy (0-4)	-0.029*	(0.016)	-0.024*	(0.013)
Knowledge about SS (1-5)	-0.045***	(0.016)	-0.041***	(0.014)
Reliance on SS (1-4)	0.030*	(0.017)	0.025*	(0.014)
Share of Friends Retired (1-4)	-0.029	(0.019)	-0.020	(0.014)
Fraction of Siblings Older (0-1)	0.023	(0.040)	0.042	(0.031)
Receives Social Security	0.022	(0.052)	-0.050	(0.035)
Retired	-0.066	(0.045)	-0.003	(0.046)
Age (50-54 omitted)				
55 to 59	0.026	(0.044)		
60 to 64	-0.021	(0.043)		
65 to 70	-0.054	(0.061)		
Education Level (College+ omitted)				
High School Dropout	0.159**	(0.068)	0.086	(0.096)
High School Degree	0.073	(0.049)	-0.003	(0.039)
Some College	0.096**	(0.043)	0.012	(0.029)
Household Income (0-25k omitted)				
25k - 50k	-0.070	(0.049)	-0.018	(0.051)
50k - 75k	-0.073	(0.054)	-0.029	(0.053)
75k - 100k	0.052	(0.058)	-0.016	(0.056)
100k +	0.002	(0.061)	-0.058	(0.058)
Female	-0.009	(0.033)	-0.064**	(0.026)
Non-Hispanic black	-0.003	(0.068)	0.090	(0.056)
Other race / ethnicity	0.087*	(0.047)	0.041	(0.045)
Married	-0.075**	(0.035)	-0.041	(0.029)
R^2	0.088		0.033	
N	2149		1528	
Mean of the Dependent Variable	0.68		0.64	

Note: Standard errors reported in parentheses. * indicates p-value<.10, **indicates p-value<.05, ***indicates p-value<.01. The dependent variable is a dummy variable that equals one if the respondent did not give the correct answer (option b in Table 13) to the multiple-choice question (Q8.1) on which years of earnings determine Social Security benefits. See the note to Table 14 for the definitions of the explanatory variables. Missing values are dummied out.

Table 18: Effect of Framing on Timing of Benefit Claiming

	(1)	(2)	(3)	(4)	(5)
		By Frame Type			Effect of Break Even
	All Respondents	Loss Frame	Gain Frame	Break Even Frame	Frame Relative to the Other Two Frames
Panel A: Advice to Neighbor					
Retire at 62	28.4%	25.6%	26.4%	33.1%	
	(1.9%)	(3.1%)	(3.4%)	(3.5%)	
Retire at 65	71.6%	74.4%	73.6%	66.9%	-7.1%
	(1.9%)	(3.1%)	(3.4%)	(3.5%)	(4.2%)
N	1495	512	472	511	1495
Panel B: Own Hypothetical Retirement Decision					
Retire at 62	44.3%	43.4%	36.1%	53.9%	
	(2.9%)	(5.1%)	(4.8%)	(5.1%)	
Retire at 65	55.7%	56.1%	63.9%	46.1%	-14.0%
	(2.9%)	(5.1%)	(4.8%)	(5.1%)	(6.2%)
N	782	254	263	265	782
Panel C: Advice to Neighbor and Own Hypothetical Decision Combined					
Retire at 62	33.9%	31.6%	30.2%	40.0%	
	(1.6%)	(2.7%)	(2.8%)	(3.0%)	
Retire at 65	66.1%	68.4%	69.8%	60.0%	-9.1%
	(1.6%)	(2.7%)	(2.8%)	(3.0%)	(3.5%)
N	2277	766	735	776	2277

Note: Standard errors are reported in parentheses. All results are for the representative group. Disabled individuals were not asked about the hypothetical own retirement decision. The frames are randomly assigned. A random 67% of the sample was asked about advice to a neighbor while the remaining 33% was asked about the own hypothetical retirement decision. Responses based on Q9.1 (the frame manipulation), Q9.2 (Panels A and C), and Q9.3 (Panels B and C); see Appendix A for details on question wording

Table 19: Information Sources

	(1)		(2)		(3)		(4)	
	Representative Group				Older-Worker Group			
Source of Knowledge	Fraction Who Use Source		Mean Usefulness of Source		Fraction Who Use Source		Mean Usefulness of Source	
Visiting a Social Security Office	61.5%	(1.7%)	4.19	(0.05)	52.2%	(1.2%)	4.00	0.045
Phone Call to Social Security	61.3%	(1.7%)	3.60	(0.06)	52.0%	(1.2%)	3.43	0.049
The Social Security Website	56.7%	(1.7%)	3.71	(0.06)	59.0%	(1.2%)	3.79	0.039
A Mailing from Social Security	91.5%	(1.0%)	4.19	(0.04)	93.7%	(0.6%)	4.25	0.026
Information from Your Employer	65.2%	(1.6%)	3.04	(0.06)	63.0%	(1.2%)	2.80	0.043
Information from the AARP	63.8%	(1.6%)	3.23	(0.06)	63.1%	(1.2%)	3.18	0.038
An On-Line Financial Calculator	49.8%	(1.7%)	2.86	(0.06)	49.8%	(1.2%)	3.00	0.044
Other Internet Websites	48.3%	(1.7%)	2.82	(0.06)	46.1%	(1.2%)	2.80	0.043
Talking to a Financial Advisor	56.6%	(1.7%)	3.55	(0.06)	60.4%	(1.2%)	3.57	0.041
Talking to a Coworker	64.0%	(1.6%)	2.62	(0.05)	64.8%	(1.2%)	2.51	0.036
Talking to Friends	70.5%	(1.6%)	2.79	(0.05)	74.1%	(1.1%)	2.71	0.033
Talking to Your Spouse	81.3%	(1.7%)	3.42	(0.06)	84.0%	(1.1%)	3.25	0.043
Talking to A(nother) Relative	70.8%	(1.6%)	2.94	(0.05)	69.7%	(1.1%)	2.82	0.036
Newspapers and Magazines	67.5%	(1.8%)	2.62	(0.05)	71.5%	(1.1%)	2.71	0.035

Note: Standard errors are reported in parentheses. The usefulness scale is defined as the average of all non-missing responses, ranging from 1 (not useful at all) to 5 (very useful). Responses based on Q10.1; see Appendix A for details on question wording.