

PRELIMINARY DRAFT.

What Makes Annuity More Appealing?

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I. Introduction

Most households resist annuitization. When a lump-sum payment is available in a defined benefit pension plan, about half of households take the lump sum, even though the annuity is framed as the “default” option and opting out requires time-consuming paper work (Benartzi, Previtro and Thaler, 2011). In defined-contribution plans that offer annuities, the rate of annuitization is generally very low. Resistance to annuitization is referred to as the “annuitization puzzle” (Modigliani, 1986). In this paper, we identify some of the factors that influence consumer attitudes toward annuitization. We focus on product design and choice architecture.

To study this issue, we field two large surveys of individuals aged 55-70, in which we present a series of hypothetical choices about lump sum payments and lifetime income paths. We consider both existing products and new ones that could be introduced, and we also alter the way that choices are framed. In particular, we examine 1) what factors people say are important to their annuitization choices, 2) how offering “partial annuitization,” rather than an all or nothing choice, influences outcomes, 3) what slopes of retirement payouts people prefer and whether people want cost of living adjustments in their lifetime income paths, 5) whether altering the framing used to describe options influences the rate of annuitization, and 6) whether there is demand for an annuity product with “bonus” payments.

The use of a survey such as this one has advantages and disadvantages. On the positive side, we can ask questions that directly measure specific preferences, including preferences for products not yet available on the market. We can also examine economic environments that differ from the current one. On the negative side, the choices people make do not influence their actual life outcomes, so the results may not correspond to the choices people would make in real life settings. Surveys like this provide a starting point for designing field experiments with very

large stakes. Related work using surveys to examine the effect of framing on annuitization includes Brown, Kling, Mullainathan, and Wrobel (2008), Agnew, Anderson, Gerlach, and Szykman (2008), and Brown, Kapteyn, and Mitchell (2012).

Five findings emerge from our surveys. First, respondents report that three considerations (one positive and two negative) are the most important for their choices about annuitization: “Want to make sure I have enough income later in life,” “Want flexibility in the timing of my spending,” and “Worried about company not being able to pay me in the future.”

Second, we find that a substantial fraction of people choose partial annuitization when offered it, and that offering partial annuitization rather than “all-or-nothing” annuitization increases the percentage of people choosing any annuitization and the average percentage of wealth that is annuitized.

Third, holding net present value fixed, very few respondents choose declining real income paths. Our respondents prefer flat or rising real paths. We also find that highlighting the effects of inflation on real values increases people’s demand for cost of living adjustments (COLAs).

Fourth, we find that two framing changes significantly influence annuitization decisions: one that focuses on flexibility and control, and a second that relates to investment risk. Four other framing changes (“Good Deal”, “Total Income”, “Longevity Insurance”, and explaining “Mortality Credits”) did not have a significant effect on overall annuitization decisions.

To pursue the notion that people might value flexibility in the timing of their spending, we developed a simple new product that expands annuitants’ control over their high frequency payout streams without jeopardizing the low frequency withdrawal restrictions that make longevity insurance possible. This new product offers an intra-year “bonus” payment that is funded with slightly lower payments during the rest of the year. We find that about sixty percent

of our subjects prefer this new product to the traditional (uniform-payout) annuity product.

Our analysis has implications for product design, choice architecture, and public policy. Our results imply that annuities would be more appealing if consumers were given the ability to personalize these products. Our bonus-annuity is an example of personalization that increases flexibility and control without compromising longevity insurance. Other personalization schemes are easy to imagine – for instance, multiple annual bonuses, or age-contingent slopes.

Framing changes may also increase the appeal of annuities, especially frames that highlight the risk-reducing properties of longevity insurance and discourage the investment frame (see Brown, Kling, Mullainathan, and Wrobel, 2008).

In addition, policy makers could increase annuity demand if they adopted policies that would reduce fear of counterparty risk. For example, policy makers could unshroud *existing* institutions that mitigate counterparty risk, including back-stop state insurance funds. Current regulations *ban* insurance companies from mentioning back-stop funds in their marketing materials. While such bans are conceptually defensible – they reduce moral hazard problems by encouraging consumers to be selective in their choice of insurance companies – such bans have the perverse effect of driving down annuity demand.

The paper is structured as follows. In Section II, we describe our two surveys. In Section III, we present our empirical results. Section IV discusses the implications of our findings for the design of pensions and annuity products.

II. Survey design

We designed two surveys (S1 and S2), and used the online survey firm Toluna to

administer the survey to 1,000 (S1) and 4,000 (S2) U.S. residents ages 50-75.¹ The surveys were administered in August 2011 and June 2012 respectively. The median times taken to complete the surveys were 13 minutes (S1) and 7.6 minutes (S2). Participants in both surveys were presented with sets of hypothetical pension choices. They were then asked to rank the importance of different reasons for their choices, and finally, they were asked a set of demographic questions.

By using hypothetical annuitization choices, we were able to examine participant tastes for products that are not currently available in the annuities market. We were able to vary the framing of how the annuities were presented, which allowed us to examine how different perceptions of annuities influence the desire to purchase one. However, hypothetical choices may not correspond to what people would choose in real life, since participants' life outcomes do not actually depend on the choices they are asked to make.

A. Survey 1

In Survey 1, the participants were told the following hypothetical scenario: “Just before you retire at age 65, you are working for a company that will give you pension payments every month for the rest of your life after you retire. This income is guaranteed, but the payments will stop when you die. You will also receive Social Security benefits every month for the rest of your life after you retire.”

Respondents were told that they should assume that the cost of living would increase by 2% each year for the rest of their lives, i.e. that inflation would be steady at 2% for the rest of their lives. We described inflation as follows: “With inflation, prices rise, so you get less for

¹ Participants were part of a large panel maintained by Toluna who are paid for their participation in each survey. The total sample size of Survey 1 was 2,000, but 1,000 of these were presented with a different assumption about the inflation rate, and these are analyzed in a separate study (see Beshears, Choi, Laibson, Madrian, and Zeldes, in progress).

your money than you used to. For example, suppose a basket of groceries costs you \$100 today. A year later, the same groceries will cost you \$102. The price of the groceries has gone up because there has been inflation.”² They were also told that “the interest rate will be 5% for the rest of your life.”

We presented participants with a few sets of choices related to the slope of the annuity payouts, the opportunity to receive “bonus” payments, and how much of their pension stream to “cash out”, i.e. to receive as a lump sum. In each case the payment streams were chosen such that the present value of the options were the same, based on the stated interest rate and assumed mortality tables. We included no fees or markups for costs. Nowhere in the survey is the word “annuity” or “annuitization” used.

Slope of annuity payouts:

In the first question, participants were told “Suppose the company lets you choose between the following two retirement income options. The total cost to the company of providing these lifetime payments to you is expected to be the same under either option.” They were presented with two options: A) “Match-Inflation Income,” where they would receive monthly payments that would sum to \$24,200 in the first year and increase by 2% (the inflation rate) each year for the rest of their lives; and B) “Steady Income,” where they would receive \$29,000 a year that would remain constant (in nominal terms) across time, thus implying a 2% per year decline in real terms. Participants were told that “Your monthly payments will stay the same for the rest of your life. Because inflation is 2% each year, the amount you can buy with your income will fall by 2% each year.” Below this explanation and before they were asked to make their choice, subjects were shown three graphs. The first was a graph depicting “the likelihood that a 65 year old person will live to at least ...” a set of ages from 70 to 100. The

² The actual survey is presented in an appendix that is available upon request.

second was a graph showing how much something that cost \$1 today would cost in the future, from age 65 to 100. The third graph showed the yearly amount they would receive under each option (in nominal terms) from age 65 to 100.

Participants were then asked to make another choice between two options: A) “Match-Inflation Income” as described in the previous question, and B) “High-Growth Income,” where they would receive a initial yearly income of \$19,900 that would then increase by 4% every year, with the increase in payments therefore being two percent higher than inflation (“The increase in these payments will be larger than the increase in prices (inflation).”)) They were then shown a graph depicting the yearly amount they would receive under each option (in nominal terms) from age 65 to 100.

Bonus payments:

Participants were asked two questions that included the addition of bonus payments to their income options. We asked participants to choose between A) “Match-Inflation Income”, described as a \$2,000 monthly payment that increases by 2% every year for the rest of the participant’s life, and B) “Match-Inflation Income with Bonuses,” where participants would receive \$1,900 every month per year except for one month where they would receive \$1,900 plus an extra \$1,200. They were told they could choose which month to receive the bonus and that the “Match-Inflation Income with Bonuses” would grow by 2% every year. If they chose the bonus option, they were then asked to select the month when the bonus would be paid.

Participants were then asked to choose between A) the “Match-Inflation Income” of \$2,000 every month plus 2% growth per year, and B) the “Match-Inflation Income with Travel Bonuses,” where the participant would receive \$1,800 every month except for June, when the participant would receive \$1,800 plus an extra \$3,000 to travel. During the participants’ 70s, they would receive an extra \$2,000 every June, and during the participants’ 80s, they would receive

an extra \$1,000 every June, with no bonuses in the 90s. The monthly payments would still increase by 2% every year.

Lifetime income stream versus a lump sum

We included three questions where participants were asked to choose between a lifetime income stream or a lump sum, or half of each, all of which cost the company the same on average. The first question asked participants about the “Match-Inflation” stream, and let them choose between three “cash-out” options: A) “0% Cash Out,” where participants would receive income of \$24,200 per year with an inflation increase of 2% per year, and no lump sum payout, B) “50% Cash Out,” where participants would receive \$165,000 immediately, plus a yearly payment of \$12,100 total with a 2% increase per year, or C) “100% Cash Out,” where participants would receive \$330,000 immediately and no other payment for the rest of their lives. Participants were then shown a graph of the (nominal) yearly amounts they would receive under each option, from ages 65 to 100, with option C) being \$0.

The second and third questions asked about cash-out rates for the “Steady Income” and “High-Growth Income” options, respectively, again letting subjects choose in each case between A) “0% Cash Out,” B) “50% Cash Out,” and C) “100% Cash Out” after showing them a graph depicting the nominal yearly amounts they would receive from ages 65 to 100 under each option.

Participants were asked to rate the importance (0 for not important, 5 for very important) of a list of reasons to their annuitization choices. Participants were also asked about their life expectancy relative to the average person, and a set of demographic questions. We finished the survey with a couple of questions on the clarity of the survey. The first asked whether they thought the questions were clear or confusing, with a scale of 0 (completely clear) to 5 (completely confusing). The second question had an open box for them to explain what was unclear or confusing. Overall, 90% of participants in Survey 1 found the survey to be “Clear” or

“Mostly clear,” where less than 1% found the survey to be “Mostly Confusing” or “Completely confusing” (see Table 1). This suggests that the vast majority of participants thought the questions were understandable and clear.

B. Survey 2

In Survey 2, similar to Survey 1, participants were presented with a hypothetical retirement scenario, and then asked to make annuitization choices based on that scenario. The scenario was described in the first page of the survey:

“Suppose that you are 65 years old. You are about to retire and have accumulated \$500,000 in the pension plan at your current employer. Your employer wants to know whether you prefer to receive this balance as a lump sum payment right now (in other words, a single \$500,000 payment) or as a stream of fixed payments over your lifetime, which your employer calls the guaranteed lifetime income option. This stream of fixed payments is based on current market interest rates. The fixed payments won’t change in the future even if market interest rates do change.”

An annuity was described throughout the survey as a “guaranteed lifetime income option.” As in S1, nowhere in S2 is the word “annuity” or “annuitization” used.

In contrast with Survey 1, we obtained competitive price quotes from Western National Life Insurance, as of 03/01/2012, for \$500,000 annuities and used these in our analysis. For participants who were single, we averaged the monthly payout for the male single life annuity (\$2,790.74), and the female single life annuity (\$2,627.87), and multiplied the average by 110%. For participants who were married, we started with the joint and 100% survivor annuity monthly payout of \$2,378.20 and multiplied it by 110%. We multiplied the annuity monthly payouts by 110% to account for a likely reduction in fees when purchasing an annuity through an employer

and to provide a best price scenario for participants. The final 100% annuity monthly payout presented to single participants in the survey was \$2,981 per month, and \$2,616 for married participants.

Participants were randomly presented one of eight different annuitization choice treatment arms. The “All-or-Nothing” treatment arm only allowed participants to make one of two choices, to either annuitize their entire \$500,000 pension plan, or to receive a \$500,000 lump sum payment. The remaining seven treatment groups allowed participants to choose the percent of the \$500,000 that could be taken as a lump sum (between 0% lump sum and 100% lump sum in 25 % increments). These seven treatment arms vary how annuitization is framed.

- Minimal Framing Baseline: Participants were presented with the option to partially annuitize. They were shown a scale with “Lower lump sum/More guaranteed income” on the left, and “Higher lump sum/Less guaranteed income” on the right, with five possible choices ranging from left to right, 100% annuitization³ and 0% lump sum payment, 75% annuitization and 25% lump sum payment, 50% annuitization and 50% lump sum payment, 25% annuitization and 75% lump sum payment, and 0% annuitization and 100% lump sum payment. These annuitization choices were used in all of the remaining treatment groups.
- “Good Deal” treatment: The following was included in the description of the annuity: “The guaranteed lifetime income option gives you higher payments than you would get by buying an identical product from an insurance company, because your employer will not charge you fees.”
- “Total Payment” treatment: We added a calculation for the expected total lifetime

³ In the survey, the exact text for married participants was: 0% lump sum, 100% guaranteed income (\$0 up front, \$2,981 monthly payment).

payments of a 100% annuitization choice, which was \$695,765 for single participants, and \$775,382 for married participants.⁴

- “Investment Framing” treatment: We included a discussion of how the rate of return would vary with length of life: “Under the guaranteed income option, you get a higher return on your \$500,000 investment if you die old and a lower return if you die young. Under the lump sum, you get the same return whether you die young or old.” We also relabeled the annuitization scale to show “Higher return if you die old/Lower return if you die young,” on the left side with the 100% annuitization, and “Same return whether you die young or old,” on the right side with the 100% lump sum payment.
- “Flexibility and Control” treatment: We added language about flexibility and control: “Choosing a bigger lump sum gives you more control over your investments and more flexibility over the timing of your spending.” We also relabeled the scale to “You have less control and less flexibility” on the left side with 100% annuitization, and “You have more control and more flexibility,” on the right side with 100% lump sum payment.
- “Longevity Insurance” treatment: We added language describing an annuity as a way to assure you will not outlive your savings: “Choosing more guaranteed income gives you more assurance that you will not outlive your savings, since the monthly payments will continue as long as you live.” We also relabeled the annuitization scale to show “Less risk of outliving your savings,” on the left side with 100% annuitization, and “Greater risk of outliving your savings,” on the right side with 100% lump sum payment.
- “Mortality Credits” treatment: We added the following language describing how the annuity payment compares to investing the lump sum: “The monthly payment from the guaranteed lifetime income option is much higher than the interest you would receive

⁴ Discuss how calculation was made.

from investing the lump sum. The guaranteed income option stops payments when you are no longer alive. In return, the guaranteed income option delivers very high pay-outs as long as you live. You are giving up payments when you are no longer alive (and don't need the money) and receiving extra-large payments as long as you are alive (and need the money).”

Participants were then shown a graph of the likelihood that a person aged 65 today would live to at least age 70, 75, 80, 85, 90, 95, and 100. They were asked to again choose how they would receive their pension payment, with the qualification that it was fine to give the same answer as the previous question.

Participants in every annuitization treatment arm were randomly asked one of three questions on adding a cost-of-living-adjustment (COLA) to their annuity purchase. We determined that the initial payment for the annuity with COLA (for both married and single participants) would be 68.2% of the non-COLA annuity. We based this ratio on live quotes from Principal Life Insurance Company for joint and 100% survivor annuity for \$500,000, starting 6/13/2012, for an annuity with and without an inflation adjustment based on changes in the Consumer Price Index for All-Urban Consumers (CPI-U).⁵ The annuity monthly payout quoted on 6/6/2012 for purchase through 6/13/2012, was \$2,232.42 per month for a joint and 100% survivor annuity with no inflation adjustment, and \$1,524.44 per month for a joint and 100% survivor annuity with the inflation adjustment changes, for a ratio of 68.2%.

Participants were presented with the following scenario: “Now suppose that your employer only offers a guaranteed lifetime income option. But you can choose whether you want

⁵ The CPI-U rider had no cap on the amount of increase, and the periodic benefit would be adjusted annually, on the contract anniversary date. If the CPI-U should be negative, the periodic benefit would not decrease. If the change in CPI-U is negative, there is cumulative “catch-up” provision. A future year’s periodic benefit will not change until the positive change in the future CPI-U is sufficient enough to offset any prior negative year(s).

a cost-of-living adjustment (COLA) to your payments.” They were then randomly asked one of the three COLA questions:

- “Inflation Minimal Information”: Participants were told if they did not choose a cost-of-living adjustment, then their monthly pension would be \$2,981 a month (if they were single) or \$2,616 a month (if they were married). They were told if they did choose a COLA, then their payment would be \$2,033 a month (if they were single) or \$1,784 a month (if they were married), and that it would increase over time at a rate equal to the inflation rate (as measured by the Consumer Price Index). Participants were then asked to choose which option they would prefer: no cost-of-living adjustment, or a cost-of-living adjustment.
- “Exponential Decay Calculation”: Participants received the same information as the “Inflation Minimal Information” question, but with the added explanation that if they did not choose a COLA, that as the cost of living increases, their annuity would buy fewer goods and services. We gave them an example: “For example, if the cost of living increases by 2% per year for the rest of your life and you don’t have a cost-of-living adjustment, your monthly pension payment will buy 33% fewer goods and services at age 85 than it does at age 65.” We also explained that if they did choose a COLA, their “monthly payment will buy about the same amount of goods and services at every age in the future as it does at age 65.” Participants then had to choose between a cost-of-living adjustment and no cost-of-living adjustment.
- “Exponential Decay Calculation with a Graph”: Participants were given the exact same information as in the “Exponential Decay Calculation”, but with the inclusion of a graph of what their payments would be from age 65 to 95 for both the cost-of-living adjusted annuity and the flat, no COLA annuity, both in nominal terms. Participants then had to

choose between a cost-of-living adjustment and no cost-of-living adjustment.

Similar to S1, participants were then asked to rate the importance (0 for not important, 5 for very important) of a list of reasons to their annuitization choices. Participants were also asked questions on their life expectancy, their motivations for their annuitization choices, and demographic questions. We also finished S2 with questions on the clarity of the survey. Overall, 93% of participants for S2 found the survey to be “Clear” or “Mostly clear,” and less than 1% found the survey to be “Mostly Confusing” or “Completely confusing” (Table 1). This suggests that, as was the case with S1, the vast majority of participants thought the questions were understandable and clear.

C. Summary statistics

Table 2 presents summary statistics on the demographic questions for S1 and S2, including life expectancy. The populations recruited were similar across surveys. The mean age for S1 was 59.5 years, and 59.6 years for S2. An average of 50.2% of participants in S1 were male, compared to 49.7% in S2. In S1, 55.4% of participants were married, with 54.5% married in S2. In both surveys, there was an average of about 2 children per participant. Approximately 36% of respondents in S1 were retired, while 40.3% were retired in S2. Participants who already had an existing pension averaged 39.3% of participants in S1, compared to 37.6% participants in S2. The median net worth for participants in S1 was \$165,000 and \$150,000 in S2. The education distribution of participants was also very similar across surveys. Toluna was able to recruit demographically similar participants for both surveys.

We asked respondents how much longer they expected to live. Figure 1A presents the combined results for both S1 and S2, with 54% of participants responding that they expected to live about the same as the average person their age, 34% responding they expected to live longer than the average person, and 11% responding they expected to live shorter than the average

person their age. It is interesting to note that the average annuitization rate (i.e. the average across respondents of the percent of wealth annuitized) was significantly lower for the respondents with lower self-reported life expectancy than for the rest of the population (47% versus 57%; see Figure 1B).

III. Results

We present five sets of findings, related to: 1) obstacles to and motivations for annuitization, 2) partial annuitization, 3) the desired slope of retirement income and the demand for COLAs, 4) framing and annuitization, and 5) “bonuses” (uneven intra-year payments).

A. What are the obstacles to and motivations for annuitization?

In Figure 2B we present summary results for S2 on the factors that individuals report as being important to them when making annuitization choices.⁶ Participants were asked to rate the importance of a list of reasons on a scale of 0 (not important) to 5 (Figure 2A). The category with the average highest rated importance was “Have enough income for later,” with an average importance of 3.9 out of 5. The next highest category was “Flexibility in the timing of spending,” with an average importance of 3.5, and closely following was “Worried about company not paying,” with an average importance of 3.4.

In contrast, “Keeping money away from children/others,” was rated the lowest with an average importance of 1.4. The next lowest category for average importance was “Want to prevent over-spending,” with an average of 2.7. Participants were most concerned about losing flexibility/control over their retirement income, as well as the potential risk of their company not paying out their full annuity. They were motivated in their decision making by ensuring they

⁶ The options differed slightly across surveys, but the overall responses were very similar across surveys.

had late life income, and did not outlive their resources.

B. Partial annuitization

Many DB pension plans offer individuals a choice between taking a lump sum and an annuity. A 2011 Aon Hewitt survey of 227 sponsors of pension plans found over 40% of sponsors indicated that they offered a lump sum option, with over 20% more responding they were “very likely to implement” or “somewhat likely to implement” a lump sum payment option (Aon Hewitt 2011). Within plans that offer this choice, some offer only an “all or nothing” choice. Others technically offer intermediate options, but this option is not made salient on the relevant forms. The US Treasury Department recently proposed a new regulation to make it easier for DB pension plans to offer a combination of an annuity and a lump sum (Federal Register, 2012). In an interview with Bloomberg Businessweek, Mark Iwry, senior adviser to the Secretary of the Treasury and deputy assistant secretary for retirement and health policy, explained the US Treasury Department would like to see the annuities choice move away from an “all-or-nothing” choice between an annuity and lump sum, to a variety of choices combining annuity and lump sum options (Steverman, 2012).

To examine this issue further, we compare annuitization choices in the two treatments described above: “All-or-Nothing”, in which people must choose either 0% or 100% annuitization, versus the “Partial Annuitization” treatment (referred to above as the “Minimal Framing Baseline”), in which people can choose an annuitization rate between 0%, 25%, 50%, 75%, or 100% (Figure 3). Tables 3 and 4 present our results. First, we find that a majority of individuals (59%) choose partial annuitization, given the opportunity to do so. Second, allowing partial annuitization increases the fraction of people choosing some annuitization (i.e. annuitization greater than zero) from 50% to 80%. Finally, and most importantly, allowing

partial annuitization raises the average percent of pension wealth annuitized from 50% to 57%, the difference of which is associated with a p-value of 0.008. This suggests that expanding the use of partial annuitization in defined-benefit settings might lead to higher overall annuitization rates.

C. Slopes of annuity payments and COLAs

We also studied respondents' attitudes about the slope of the annuity payout stream. It is conceivable that potential annuitants prefer rapidly downward sloping paths (e.g., if their discount rates are relatively high). *If* there were a preference for strongly downward sloping payout streams, the absence of such products in the real-world annuity market could help to explain the lack of annuity demand.

We create a slope preference variable, by combining the results of the two binary slope questions, and discarding participants (10.8% of sample) with internally inconsistent rankings.⁷ Among the consistent respondents, 19% preferred the declining real annuity (-2% per year), 32% chose the flat real annuity, and 50% chose the rising real annuity (+2% per year) (Figure 4). In other words, our respondents overwhelmingly tend to prefer flat or rising real retirement consumption paths rather than downward sloping real paths (holding the NPV of their streams fixed).

Using this result, we can use a standard consumption Euler equation to bound the long-run rate of time preference (excluding mortality, since we are studying an annuitized payment stream). Assuming constant relative risk aversion, the Euler equation can be written,

$$E \Delta \ln C = \frac{1}{\gamma} (r - \rho - I * \mu(t)) + \text{variance term}$$

where γ is the coefficient of relative risk aversion (and the inverse of the elasticity of

⁷ We define inconsistent respondents as those who prefer the path with the real -2% slope to the real 0% slope and also prefer the real 2% slope to the real 0% slope.

intertemporal substitution), r is the real rate of interest, ρ is the rate of time preference, $\mu(t)$ is the mortality probability, and I is an indicator variable equal to 1 if there is no annuities market and 0 if there is an annuities market. If we assume that the strong preference for a flat or rising real annuity stream implies a desire for consumption growth to be non-negative, this implies that right hand side of the expression above is greater than or equal to zero. If we set the variance term to zero⁸ and assume the existence of a nearly fair annuities market, this in turn implies that $\rho \leq r$. Since the real rate of return is 2% (or less), the discount rate would be bounded above at 2%.

Our respondents' preference for flat or upward sloping (real) payout paths is potentially paradoxical, since observed consumption paths are robustly downward sloping during retirement. For example, Hurd and Rohwedder (2011) find that real consumption declines by about 2% per year during retirement (holding household composition fixed). This amounts to a decline in real per capita consumption of approximately 50% from age 65 to age 95. Why do respondents prefer rising consumption profiles in our survey when they are observed to implement downward profiles in the field? Numerous complementary explanations are plausible and our survey data does not discriminate among them. Here are a few examples.

First, most households are unwilling to voluntarily annuitize even a small amount of their financial assets (e.g., due to a perceived⁹ fear of counter-party risk). Assume that households are constrained to hold no annuity other than Social Security. If such constrained households were otherwise optimizing, then they might choose a downward sloping real consumption path, since mortality would increase their effective discount rate. This is the

⁸ Retirees face relatively little income risk and have substantial government-provided health insurance. We leave incorporating the remaining uncertainty about out-of-pocket medical expenses remains to a future draft.

⁹ Annuities are insured through multiple channels: state insurance funds back up annuities written by insurance companies; the PBGC backs up pension claims against employers (up to a limit).

approach taken in Hurd and Rohwedder (2011).

Second, households may have biased expectations. For example, households may underestimate the frequency of transitory spending needs (e.g., storm damage to roof, transmission replacement, wedding gift for grandchild, co-payment for CAT scan, co-payment for new diabetes drug, cost of home-visits from health care workers, etc...). This is an availability bias: it is hard to anticipate the many types of shocks that hit a household. If households underestimate the average burden of these transitory spending needs, they will tend to spend more than the annuity value of their wealth in the short-run, and, due to the budget constraint, end up with a realized consumption path that tends to decline over time. Households may also be overoptimistic about their asset returns, which would also cause the realized consumption path to tilt down relative to the consumption path that households were anticipating.

Third, many households exhibit money illusion. Households with money illusion will not fully appreciate that a flat nominal path is a real path that falls at the rate of inflation. We leave the discussion of money illusion in the annuity market to a companion paper (Beshears et al, in progress) but we do discuss demand for cost of living adjustments (COLAs) in the current paper.

Specifically, in S2 we asked respondents to choose between a nominally fixed lifetime income stream or an inflation-linked lifetime income stream – in other words, an annuity with a COLA. We included two treatments that differed in the way in which inflation was described. The first was the baseline treatment, and the second was the “highlight inflation” treatment, in which we added a description of how inflation reduces the purchasing power of a constant nominal payment stream. We found (see Figure 5) that respondents who were shown the “highlight inflation” treatment were significantly more likely to choose a COLA than those shown the baseline treatment (67% vs 44%). In other words, highlighting the effects of inflation

on purchasing power drastically increases demand for COLA's.

D. Framing and Annuitization

How do alternative ways of framing influence annuitization choices? As described above, in S2 we considered seven different framing treatments for “incremental” annuities, including the “Minimal Framing Baseline.”

In Table 5, we present results from a regression of annuitization rates on the six framing treatment dummies (the Minimal Framing dummy was the excluded dummy) and a set of demographic variables. Regarding demographics, participants who were married had annuitization rates that were 4.1 percentage points higher than those who were single (significant at the 1% level), and retirees had annuitization rates that were 2.6 percentage points higher than non-retirees (significant at the 10% level). Other demographic variables were statistically insignificant.

Two of the framing treatments were statistically different than the “Minimal Framing” benchmark. In the “Flexibility and Control” treatment, participants were told that “choosing a bigger lump sum gives you more control over your investments and more flexibility over the timing of your spending.” Including this language led to annuitization rates that were 8.6 percentage points lower than the benchmark, statistically significant at the 0.01 level (see also Figure 6).

Brown, Kling, Mullainathan, and Wrobel (2008) show that an investment frame discourages annuitization relative to a consumption frame, however Brown, Kapteyn, and Mitchell (2012), in the context of Social Security claiming age, did not find this effect. In our “Investment Framing” treatment, participants were told that their return on investment for an annuity would be high if they lived long, but low if they were to die young, whereas the lump

sum was framed as being the same return whether an individual died young or old. The “Investment Framing” treatment reduced annuitization rates by 6.0 percentage points, statistically significant at the 0.01 level (see also Figure 7). Our results are thus consistent with, but smaller than, the significant results found in Brown et al (2008).

The remaining four treatments had coefficients closer to zero and were statistically insignificant.

As a final framing experiment, we showed participants a graph of the probabilities of surviving to different ages (conditional on living to age 65). We then asked participants to make their annuitization choice again, with the assurance that they were free to make the same choice they had previously. Figure 8 displays the average annuitization rates for participants before and after seeing the mortality chart. The average annuitization rate in every treatment arm is lower than before they were shown the survival probabilities graph, with the average annuitization rate dropping from 55.4% to 52.2%. This could be solely a result of asking the same question a second time or it could be indicative of a causal relationship between showing the graph and annuitization choices. We don’t yet have an explanation of why such a causal relationship exists.

E. Annuities with “bonuses”

Among the factors that decrease demand for annuitization (Figure 2B), the most influential is a desire for “flexibility in the timing of spending.” With this consideration in mind, we amended the traditional annuity product to give the beneficiary more control over the timing of the stream of payments. Specifically, we asked participants if they would prefer a regular annuity (\$2,000 per month, indexed to inflation) or a slightly less generous regular annuity (\$1,900 per month, indexed to inflation) with an *added* bonus (\$1,200, indexed to inflation) paid

in a single month of the respondent's choosing.

Figures 9 and 10 present our results.¹⁰ Sixty percent of respondents prefer the annuity with the bonus to the annuity without the bonus. Respondents overwhelmingly want the bonus payments during the winter holiday season. Fifty-eight percent of the responses fall in those three months. However, the question used December as an example of when a bonus might be received, so it is not clear how much of the holiday season effect is an experimental demand effect or some other bias (e.g., availability).

A caveat of this finding is that we did not ask questions that measure willingness to pay for this bonus feature, and thus we don't know whether those choosing the bonus annuity had a strong (or weak) preference for it.

In the next section we offer some speculative observations about other types of flexibility that might be added to annuity contracts.

IV. Implications for product design and choice architecture

This research identifies many lessons for product design and choice architecture. Insurance companies and other annuity providers should design products that give beneficiaries more flexibility and control. Our bonus-annuity is an example of personalization that increases flexibility and control without compromising longevity insurance. Other personalization schemes are easy to imagine. For instance, an annuity could have multiple annual bonuses. Such bonuses could either be pre-selected at the time the annuity was purchased or selected at the beginning of each calendar year. In fact, the payout stream for a given year could be made completely flexible without creating a substantial adverse selection problem. Problematic

¹⁰ We leave a discussion of the second type of bonus annuity, the “declining travel bonus annuity” to a future draft.

adverse selection would only arise if inter-year reallocations were allowed (e.g., a beneficiary drains his entire annuity following a significant adverse health event).

Many other forms of personalization/flexibility could also be adopted, including limited penalty-free early withdrawals and even asset allocation flexibility (adopting some features of the variable annuity market). Of course, there is a tradeoff between greater flexibility/control and greater complexity. Too much flexibility may drive some consumers away from annuities (cf. Lyengar and Kamenica 2010). Finding the sweet spot in the product design space is a significant challenge, but one that is worth taking on because of the scope for large potential welfare benefits.

Framing changes may also increase the appeal of annuities, especially frames that highlight the availability of partial annuitization. Our results imply that most consumers prefer partial annuitization of their retirement nest egg over either 0% or 100% annuitization. We find that the availability of partial annuitization also raises the average fraction of wealth that ends up annuitized. In addition, framing changes that highlight insurance features rather than investment risk may also increase annuitization rates.

More generally, annuitization tools (“wizards”) should be developed that make annuitization (1) easier to understand, (2) easier to conceptualize as longevity insurance, (3) easier to implement, and (4) easier to personalize, thereby improving the beneficiary’s sense of control and flexibility.

Finally, policy makers could increase annuity demand if they adopted regulations that would reduce fear of counterparty risk. For example, policy makers could unshroud *existing* institutions that mitigate counterparty risk, including back-stop state insurance funds. Current regulations *ban* insurance companies from mentioning back-stop funds in their marketing materials. While such bans are conceptually defensible – they reduce moral hazard problems by

encouraging consumers to be selective in their choice of insurance companies – such bans could have the perverse effect of driving down annuity demand.

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Table 1: Survey Assessment

Assessment of Clarity	Survey 1	Survey 2
Clear	55.9%	64.3%
Mostly Clear	33.8%	28.2%
Sometimes Clear	3.8%	3.2%
Sometimes Confusing	5.8%	3.2%
Mostly Confusing	0.3%	0.4%
Completely confusing	0.2%	0.2%
Decline	0.4%	0.4%
Total	100%	100%

Table 2: Demographic Characteristics for Surveys 1 & 2

Demographics similar across all treatment arms in both surveys

Category	Survey 1	Survey 2
Age (mean)	59.5	59.6
Male (%)	50.2	49.7
Married (%)	55.4	54.5
# of Children	2.1	2.0
Retired (%)	35.6	40.3
Existing Pension (%)	39.3	37.6
Own Home (%)	70.4	69.5
Net Worth		
Median	\$165,000	\$150,000
Mean	\$257,619	\$248,598
Sample Size	1,000	4,130

Category	Survey 1	Survey 2
Education (%)		
< High School	1.9	1.7
High School	22.9	23.8
Some College	35.0	35.8
College	27.1	26.6
> College	12.8	11.8
Missing	0.3	0.3

Figure 1A: Life Expectancy Compared to the Average Person-Survey 1 & 2

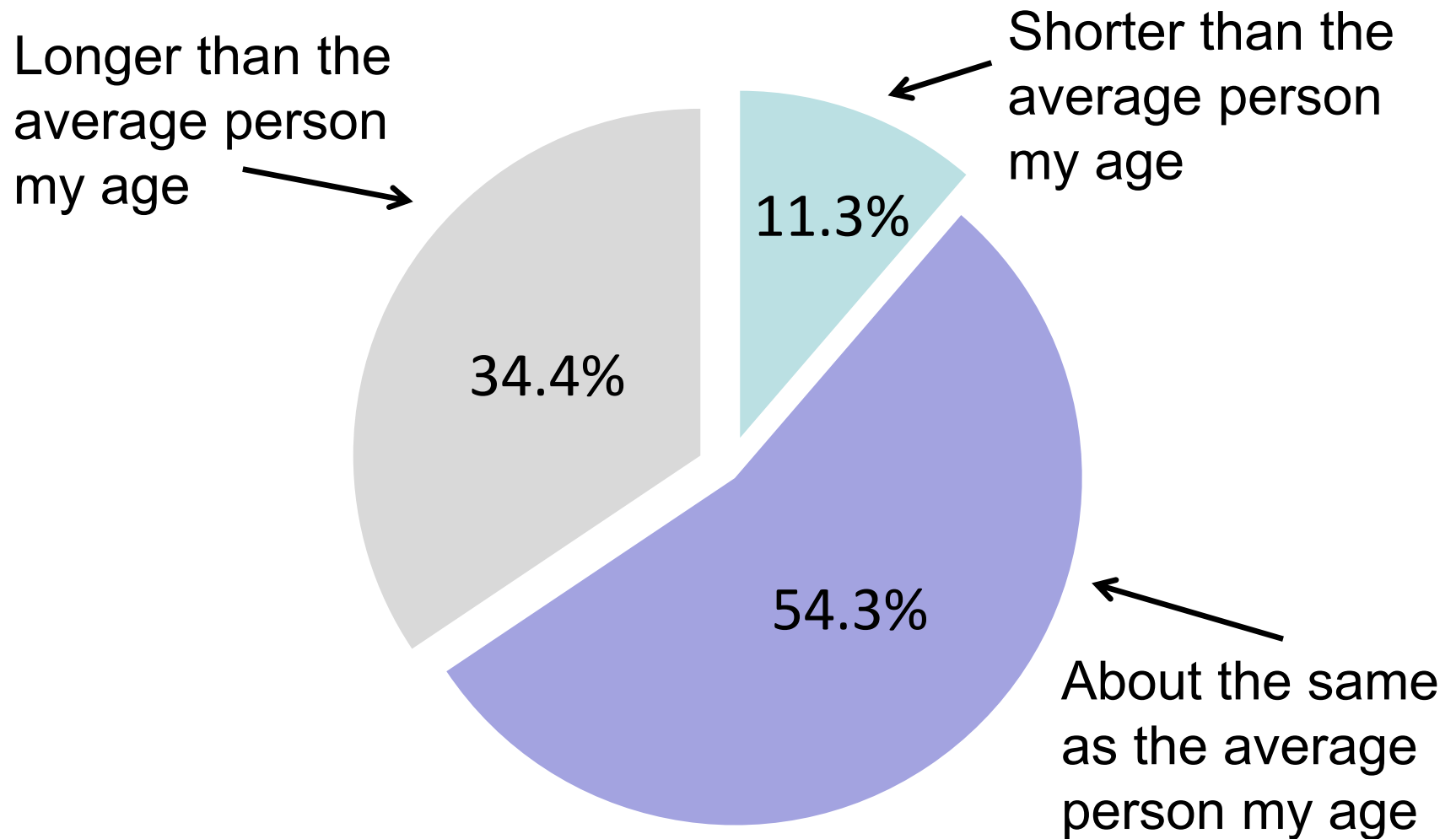


Figure 2A: Motivations and Obstacles to Annuitization

- Want to invest the money on my own
- Want flexibility in the timing of my spending
- I might have a big spending need sometime during retirement
- Want to give money to children or others
- Worried about dying early
- Worried about inflation
- Worried about company not being able to pay me in the future
- Want to prevent overspending
- Want to keep money away from children or others
- Want to make sure I have enough income for later
- Other (Please Specify)

0 (Not Important)	1	2	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Figure 2B: Motivations and Obstacles to Annuitization—Results

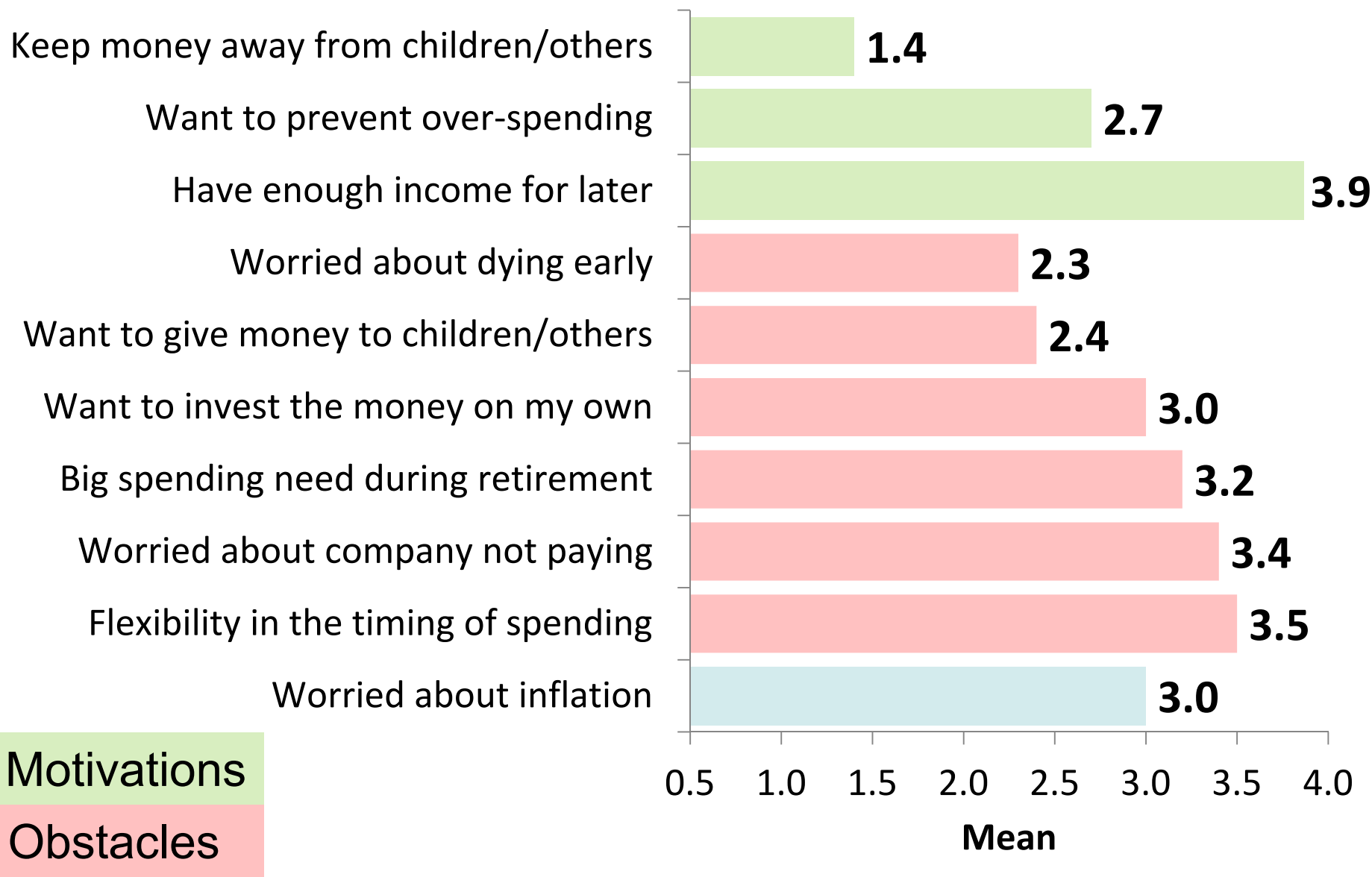


Figure 3: All or Nothing Menu vs. Partial Annuitization Menu

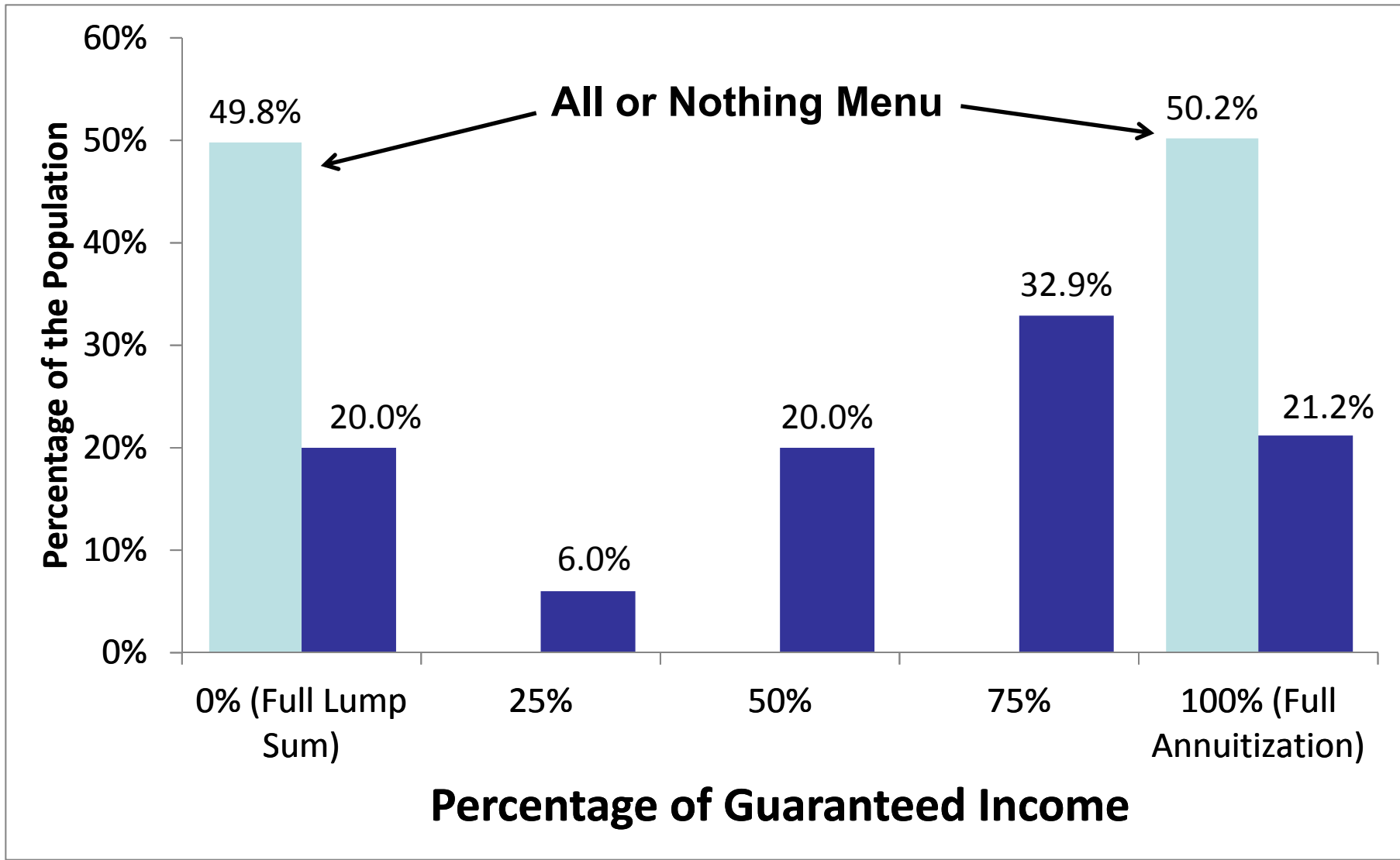


Table 3: Impact of the Partial Annuitization Menu

	All or Nothing	Partial Annuitization	P-value
Subjects choosing partial annuitization	---	58.8%	---
Subjects choosing any annuitization	50.2%	80.0%	---
Dollar-weighted annuitization rate	50.2%	57.3%	0.008

Figure 4: Slope Preferences Over Payment Stream

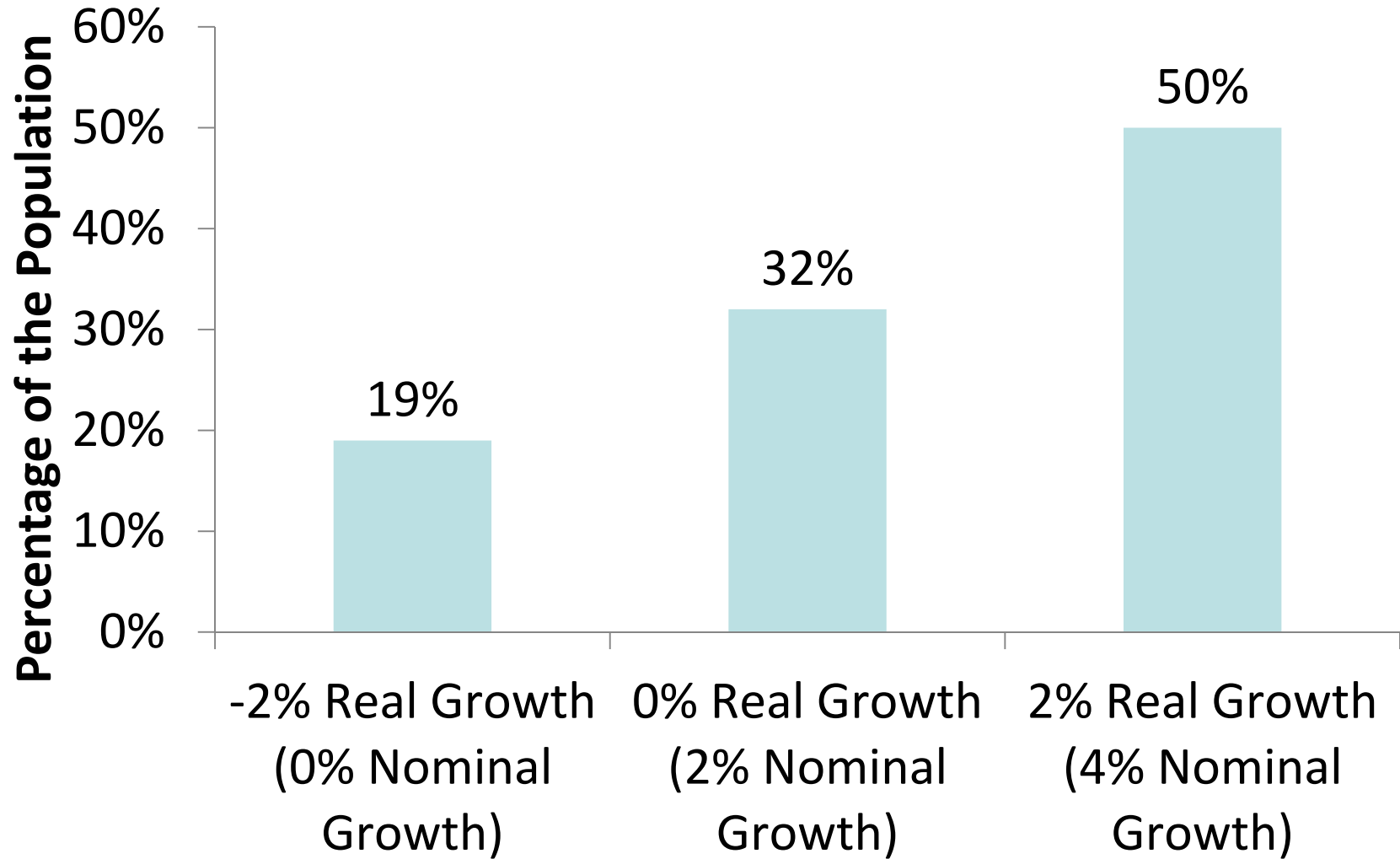


Figure 5: Effect of highlighting Inflation on COLA Take-Up

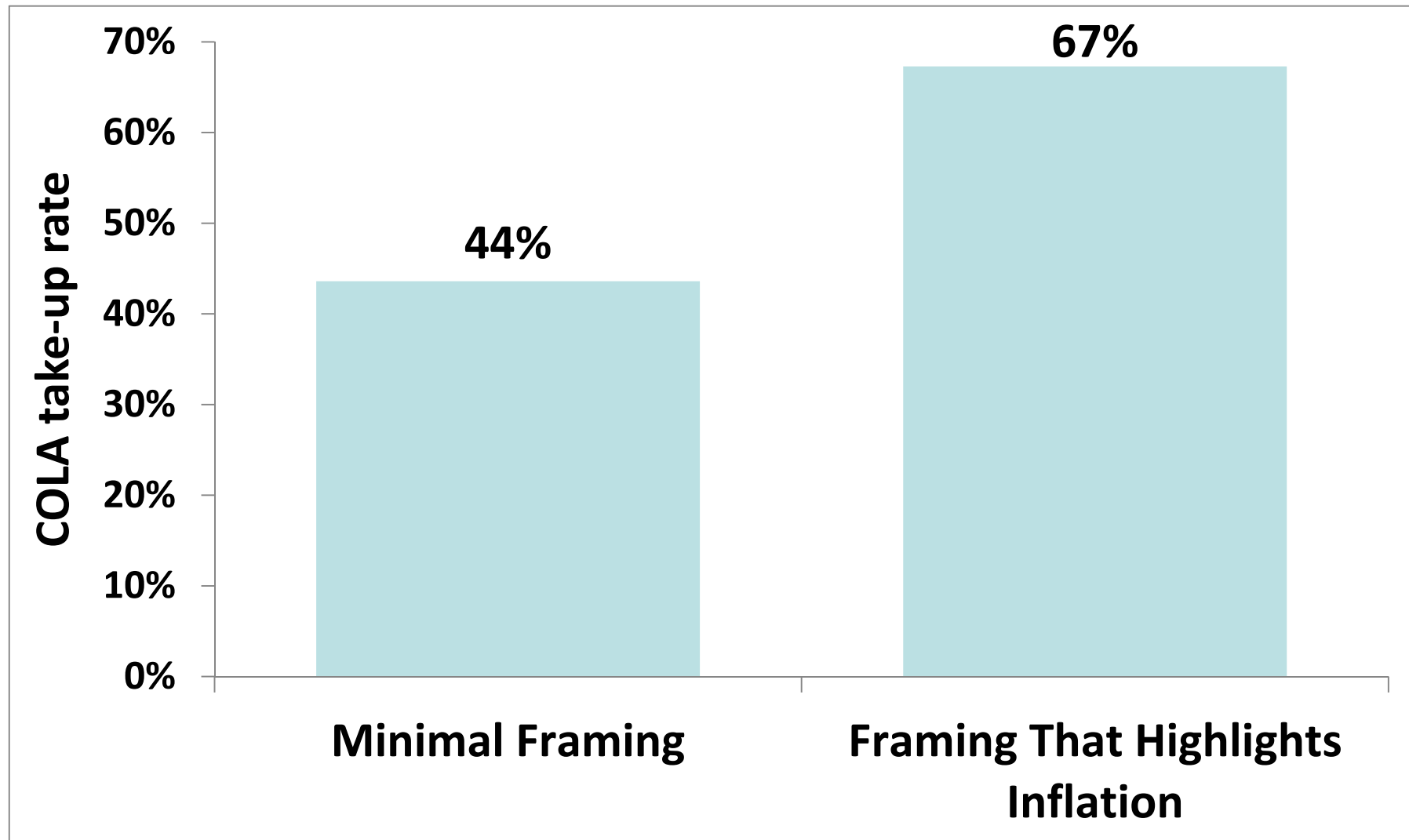


Table 4—Effect of Allowing Partial Annuity on the Annuity Rate

Explanatory Variables	Annuity Rate
Partial Annuity (Minimal Framing)	0.0733*** (0.027)
Age	-0.0003 (0.003)
Male	-0.0277 (0.028)
University Degree	-0.0064 (0.028)
Married	0.0712** (0.030)
Retired	0.0098 (0.034)
Number of Children	-0.0072 (0.007)
Homeowner	-0.0146 (0.031)
Constant	0.5169*** (0.142)
Observations	1,018
R-squared	0.013

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: Dependent variable is the “Rate of Annuity” which takes on the values: 0, 0.25, 0.50, 0.75, 1.00

Table 5—Effect of Framing on Annuitization Rates

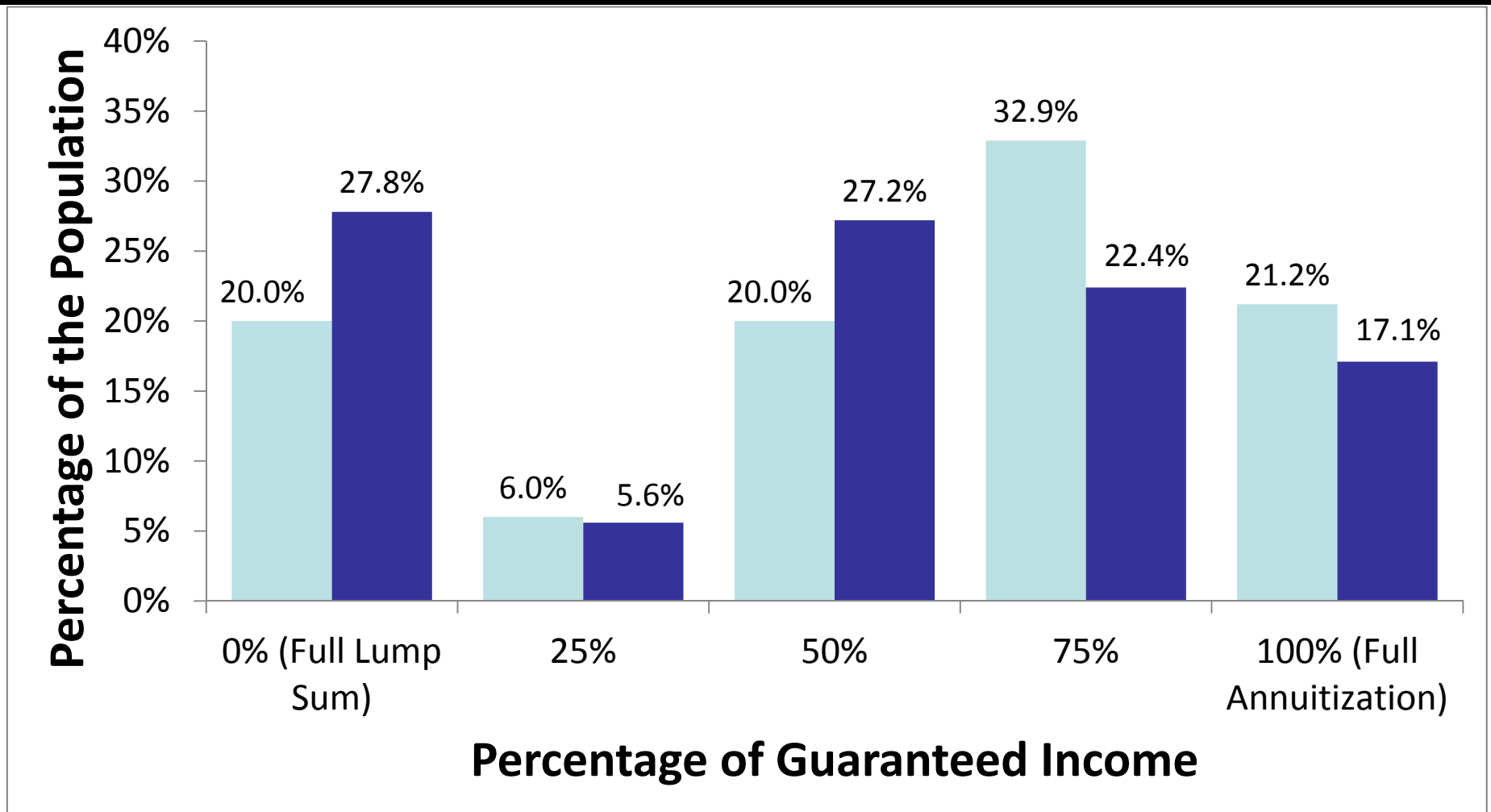
Explanatory Variables	Annuitization Rate
Good Deal (F2)	-0.0017 (0.022)
Total Income (F3)	0.0201 (0.022)
Investment Framing (F4)	-0.0595*** (0.022)
Flexibility and Control (F5)	-0.0856*** (0.022)
Longevity Insurance (F6)	0.0185 (0.022)
Mortality Credits (F7)	0.0148 (0.022)
Age	0.0001 (0.001)
Male	-0.0194 (0.012)
University Degree	0.0018 (0.012)
Married	0.0411*** (0.013)
Retired	0.0257* (0.014)
Number of Children	-0.0031 (0.003)
Homeowner	0.0105 (0.014)
Constant	0.5430*** (0.062)
Observations	3,554
R-squared	0.017

Standard errors in parentheses

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

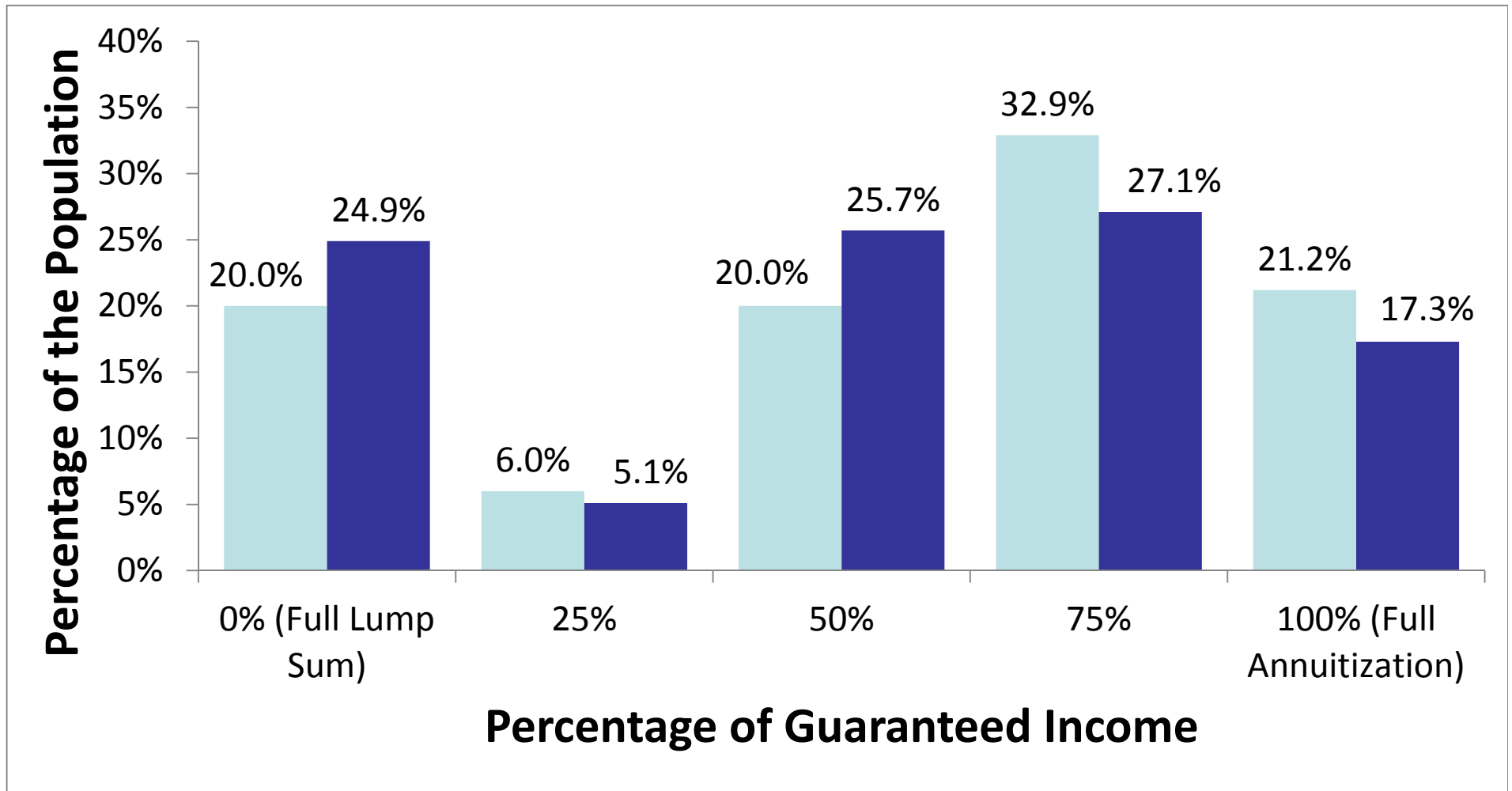
Note: Dependent variable is the “Rate of Annuitization” which takes on the values: 0, 0.25, 0.50, 0.75, 1.00

Figure 6: Minimal Framing vs. Flexibility and Control



- Overall, highlighting that annuitization reduces flexibility and control reduces annuitization rates by 8.4 percentage points

Figure 7: Framing: Minimal Framing vs. Investment Framing



Overall, framing annuity as an investment reduces annuitization rate by 5.6 percentage points.

Figure 8: Annuitization Rate Before and After Being Exposed to a Mortality Chart

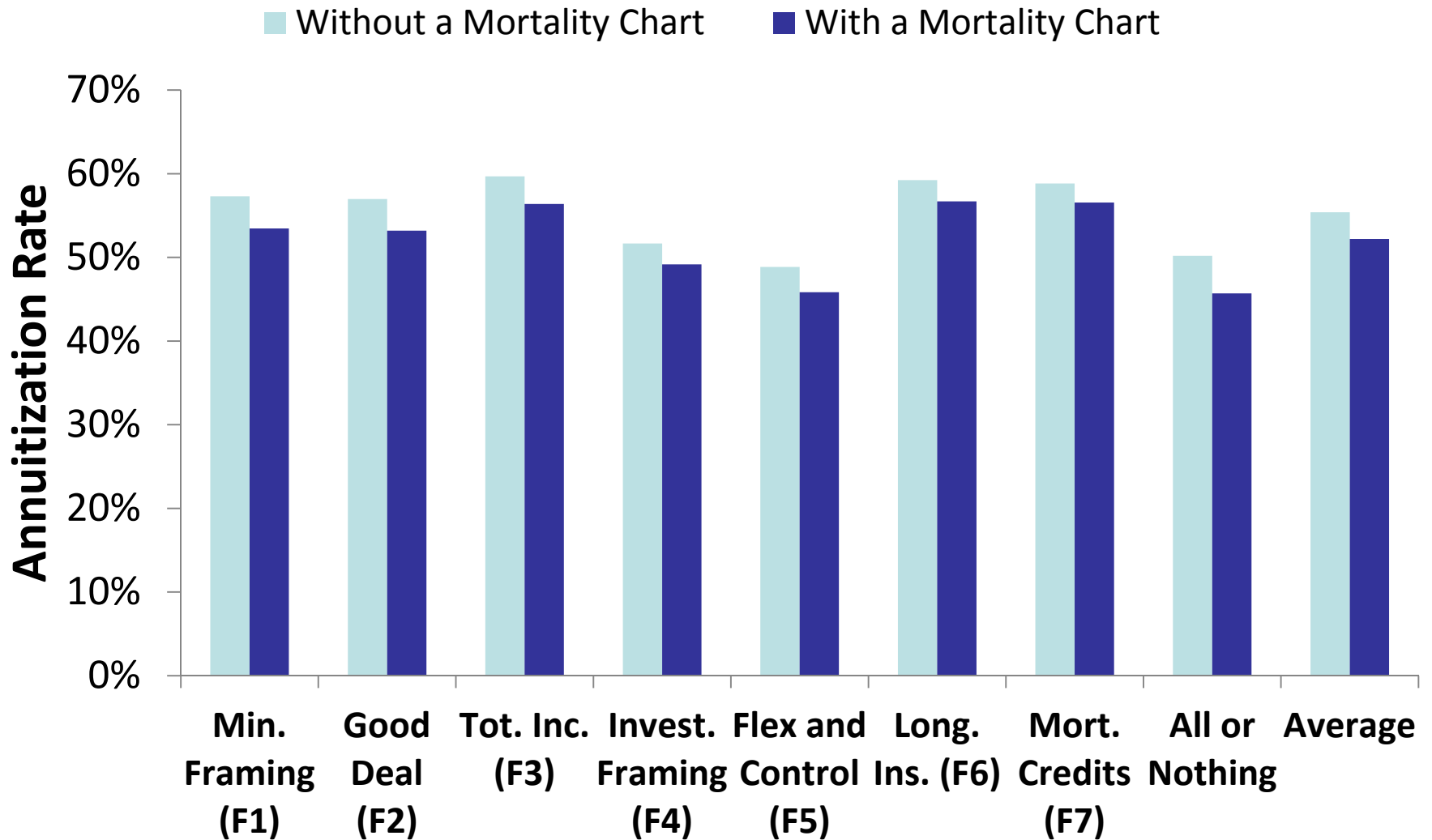


Figure 9: Bonus Annuity vs. Standard Annuity

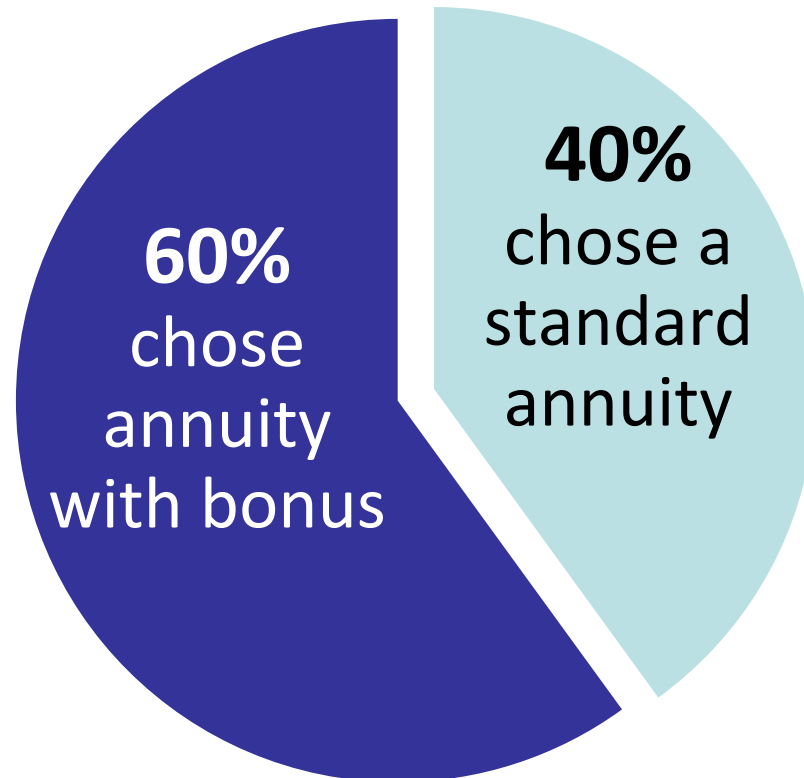


Figure 10: Month of Bonus Selection

