

# WORKING PAPER

## *Executive Summary*

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## HOW DO SUBJECTIVE MORTALITY BELIEFS AFFECT THE VALUE OF SOCIAL SECURITY AND THE OPTIMAL CLAIM AGE?

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Households that delay claiming Social Security are, in effect, making additional purchases of the Social Security annuity. They can be thought of as returning this month's benefit check to the Social Security Administration in return for an increase in their future lifetime income. Theoretical calculations show that delayed claiming is optimal, even for high-mortality households. Yet most people claim well before the theoretically optimal age.

Using the *Health and Retirement Study* (HRS) data, this paper investigates whether subjective mortality beliefs contribute to the prevalence of early claiming. The value of Social Security and other annuities depends partly on life expectancy. But it also depends on uncertainty surrounding the individual's age of death. At one extreme, an individual who can predict his age of death with certainty will value the income stream at its present value, the value of the income stream to the age of death. This is because he can decumulate unannuitized wealth over a period ending with his date of death. At the other extreme, an individual with the same life expectancy who is highly uncertain as to his age of death will value an annuity at considerably more than its expected present value, because if he chooses not to annuitize, he will need to substantially reduce his consumption to guard against the perceived high risk of outliving his wealth.

Participants in the HRS are asked to assess their probability of surviving to age 75. It is now 16 years since participants were first interviewed, making it possible to compare expectations with mortality outcomes. We show that although men's forecasts are, on average, correct, women understate their survival probabilities by an average of 10 percentage points. We find that individuals are prone to more extreme forecasts than is justified by their health and socio-economic status. We also find that subjective mortality beliefs do not predict survival to age 75 after controlling for health and socio-economic status. This implies that insurance companies selling annuities might be able to use medical underwriting to eliminate adverse selection based on private mortality information.<sup>1</sup>

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<sup>1</sup> Insurance companies might still suffer from passive selection if annuitization rates were correlated with mortality, after controlling for the above factors.

The self-assessed survival probabilities exhibit clustering at focal points – for example, zero, 50 or 100 percent. A potential concern is that individuals providing focal-point answers may have little idea of their relative mortality risk or be incapable of probabilistic thinking. We find that although individuals who are unable to provide any estimate of their survival probabilities are significantly more likely to be members of minorities, be in poor health, and to have less than a high school education, there are few consistent and significant differences in either socio-economic characteristics or mortality rates between those who state that their estimates are precise, and those who say that they are approximations.

We recover annual survival probabilities from subjective mortality beliefs. For each individual, we calculate self-assessed life expectancy, and the standard deviation of the age of death. Although our results are somewhat sensitive to our treatment of individuals who report their age-75 or age-85 survival probabilities as zero or 10 percent, we find that for any given life expectancy, individuals are more certain of their age of death, relative to individuals whose annual mortality risk equals that predicted by life tables.

We then consider whether these variations in subjective mortality beliefs are sufficiently large to influence the Social Security claiming decision. We follow Sun and Webb (2010) and consider a single-earner couple in which the husband is three years older than the wife. We assume the household has the following utility function:

$$C_{t,m} = \frac{(C_{t,m} + \lambda C_{t,f})^\gamma}{1-\gamma}$$

where  $\gamma$  is the coefficient of risk aversion and  $\lambda$  measures the complementarity of consumption between husband and wife. The wife's utility function is symmetrical, and we assume that  $\lambda = 0.5$  and  $\gamma = 5$ . The rates of interest and time preference are assumed to be 3 percent.

When the household separates retirement from the Social Security claiming decision, we assume the household has an amount of financial assets equal to the expected present value of its Social Security wealth. In each period, the household decides how much to consume, whether the husband should claim his Social Security retired worker benefit, and whether, if the husband has claimed his retired worker benefit, the wife should claim her spousal benefit.

We find that observed variations in subjective mortality beliefs have almost no effect on the optimal combination of claiming ages. For our prototypical household, the optimal strategy is for the husband to claim his retired worker benefit when he is 68 and the wife to claim her spousal benefit at the same time. If both husband and wife have subjective mortality beliefs at the 10th percentiles of the distributions of both life expectancy and standard deviation of anticipated age of death, it is optimal to claim somewhat earlier, when the husband is age 65. But our theoretical calculations confirm the findings of empirical research, namely that subjective mortality beliefs cannot alone explain the prevalence of early claiming.

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