The Effect of Savings Annuitization on Elderly Outcomes

Extended Abstract - Please do not circulate

Tatiana Hiller

University of California Davis

November 20, 2025

Population aging represents an increasingly pressing challenge for countries worldwide. The share of individuals aged 65 and older is projected to more than double in the next three decades, raising concerns about how to ensure adequate income security in old age. Because pensions already constitute a substantial and growing component of public spending in both advanced and developing economies, the fiscal sustainability of these systems has become a central policy issue.

Concerns about fiscal sustainability have contributed to a shift from defined-benefit (DB) to defined-contribution (DC) pension plans in both the public and private sectors[1]. DB plans have traditionally provided longevity risk insurance by paying lifetime annuities. In DC plans, by contrast, contributions are made to individual accounts and workers can typically access their stock of savings as a lump-sum at retirement. As a direct consequence of moving from DB to DC plans, longevity risk is shifted from governments or employers to individual retirees. Despite the scale and policy relevance of this shift, there is little evidence on the post-retirement causal effects of savings annuitization on individuals' well-being[2]. Estimating this effect poses an identification challenge as the form of pension payout is endogenous to individuals' characteristics and behaviors.

This paper estimates the causal effects of annuitizing pension savings—relative to lump-sum withdrawals—on retirees' subsequent outcomes: mortality, reliance on social programs, and entrepreneurship. I address the identification challenge by exploiting an institutional rule in Colombia's private pension system that determines the pension payout form based on whether an individual's accrued savings exceed a legally mandated threshold at retirement. Variation in the parameters determining the savings threshold—most notably the statutory minimum wage—results in large and unpredictable shifts over time. For individuals near the cutoff, these shifts generate plausibly exogenous variation in the form of pension payout available for workers at retirement. I first show that the likelihood of annuitization changes discontinuously at the threshold

[1] According to Bennett et al. (2025), in the U.S. defined-benefit plan coverage declined from 59% to 21%, while defined-contribution plan coverage increased from 55% to 83% between 1990 and 2022.

[2] There is a large literature on pensions, including differences between DB and DC plans (Poterba et al., 2007) and theoretical arguments for annuitization (Yaari, 1965; Mitchell et al., 1999; Davidoff et al., 2005). Evidence documents adverse selection in annuity markets (Finkelstein and Poterba, 2004) and low annuity take-up (Brown et al., 2021). However, to the best of my knowledge, no prior study provides causal estimates of the consequences of annuitization.

(see Figure 1) and I provide evidence that individuals do not manipulate their savings or retirement timing to sort on either side of the discontinuity.

The analysis relies on a novel confidential administrative dataset that covers the universe of affiliates to the Colombian private pension system between 2007 and 2023. The data consist of annual records submitted by all private pension fund administrators and include detailed information for more than 15 million workers and approximately 600,000 retirees. For each individual, the dataset reports yearly wages, pension contributions, accumulated savings, retirement timing and type, and key demographic characteristics. I link these records to several publicly available administrative sources that provide the primary outcome measures for the analysis: mortality records (death status and date of decease), individual entrepreneurship data (business creation and closure dates), and eligibility for government safety- net programs (SISBEN score: the main instrument used by the government to target social welfare programs based on a proxy-means survey that assigns households a score based on living standards).

Preliminary estimates indicate that the pension payout form affects post-retirement outcomes. Figure 2 plots the survival rate of individuals retiring just above and below the savings threshold. Survival rates differ markedly by group: ten years after retirement, annuitants are 3.3 percentage points more likely to be alive than lump-sum retirees. Similarly, Figure 3 reports living-standards outcomes. Annuitants are less likely to be classified in moderate or extreme poverty and, correspondingly, less likely to qualify for means-tested elderly programs. To the best of my knowledge, these results provide the first causal evidence on the post-retirement effects of savings annuitization, indicating that annuitization reduces mortality risk and economic vulnerability.

References

Bennett, J., Hathhorn, B., & Owyang, M. T. (2025). Pension or 401(k)? Retirement plan trends in the U.S. workplace [Technical report]. Federal Reserve Bank of St. Louis.

Davidoff, T., Brown, J. R., & Diamond, P. A. (2005). Annuities and individual welfare. American Economic Review, 95(5), 1573–1590.

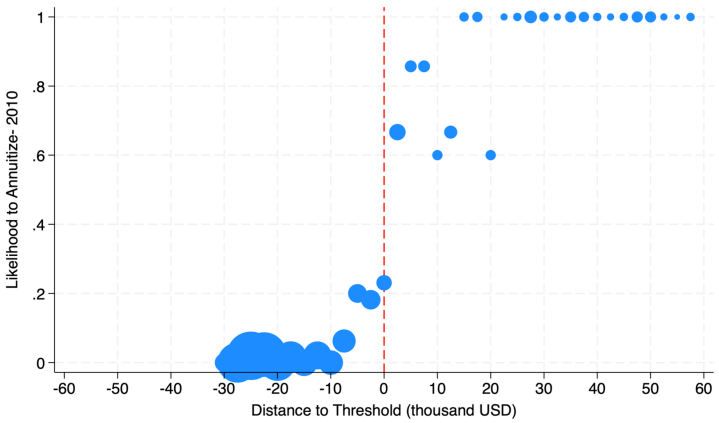
Finkelstein, A., & Poterba, J. (2004). Adverse selection in insurance markets: Policyholder evidence from the U.K. annuity market. Journal of Political Economy, 112(1), 183–208.

Poterba, J., Rauh, J., Venti, S., & Wise, D. (2007). Defined contribution plans, defined benefit plans, and the accumulation of retirement wealth. Journal of Public Economics, 91(10), 2062–2086.

Yaari, M. E. (1965). Uncertain lifetime, life insurance, and the theory of the consumer. The Review of Economic Studies, 32(2), 137–150.

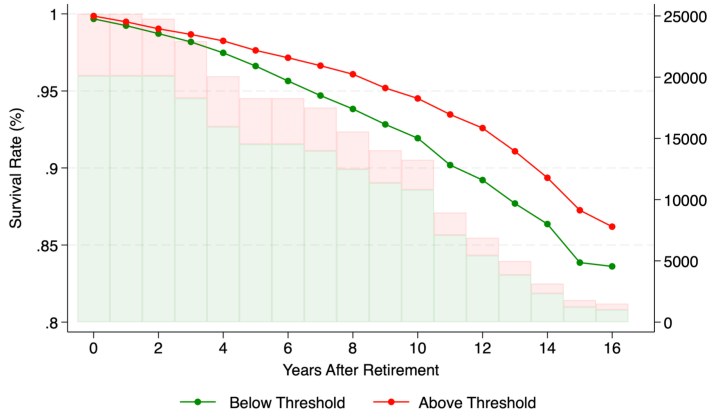
Figures

Figure 1: Annuitization likelihood around the savings threshold



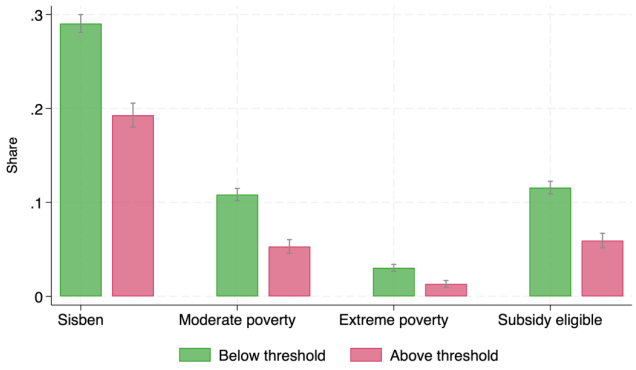
Notes: The x-axis shows the monetary distance between individuals' accumulated savings and the legislated savings threshold at retirement (savings minus threshold, in USD). Positive values indicate that individuals get a mandatory annuity based on their pension savings; negative values indicate individuals can only withdraw their pension savings as a lump-sum. The blue dots denote the share of individuals in equally spaced distance bins ($2,500 USD) that annuitize.

Figure 2: Survival rate after retirement



Notes: The survival rate is computed as the share of retirees from each cohort who remain alive in each year after retirement. Cohorts are defined by retirement year (2008–2023) and by position relative to the savings threshold (above vs. below), restricting to individuals within a $20,000 bandwidth around the threshold at retirement. The survival rate corresponds to the number of retirees still alive divided by the total number of retirees who could be alive in that cohort-year. The right axis reports the total number of retirees, shown as bars—red for those retiring above the threshold and green for those below.

Figure 3: Living-standards after retirement



Notes: SISBEN is the government's primary instrument for targeting social programs. It assigns a household-level score using a proxy-means survey based on housing quality, durable goods, access to utilities, and human capital indicators, among other variables. Program eligibility is determined by score cutoffs and associated poverty classifications. The figure reports mean differences in probabilities—being assigned a SISBEN score, being classified in moderate or extreme poverty, and being eligible for an elderly subsidy—by retirees' position relative to the savings threshold (above vs. below), restricting to individuals within a $20,000 bandwidth at retirement.