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THE ANNUITY PUZZLE REVISITED:
BARRIERS, BEHAVIOR, AND POLICY PATHS TO LIFETIME INCOME

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ABSTRACT

Wealth decumulation decisions, or how to optimize consumption over an uncertain remaining lifespan, are among the most difficult people face. They involve intertemporal tradeoffs, uncertainty, complexity, and emotion, yet many consumers receive little formal guidance. A central challenge is securing lifetime income and avoiding outliving resources, particularly through life annuities that guarantee income for life. Standard economic models predict high demand for annuities, but in practice few individuals purchase them, a gap known as the annuity puzzle. This paper introduces annuities, examines limited adoption among consumers and plan sponsors, reviews leading explanations, and outlines approaches to increase uptake and improve decision quality.

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The Annuity Puzzle Revisited: Barriers, Behavior, and Policy Paths to Lifetime Income

As global aging continues to rise, individuals, households, employers, and policymakers are becoming increasingly interested in how retirees will finance their retirement years. Traditionally, retirement plan design and academic research have focused on wealth *accumulation*, emphasizing how to encourage employees to begin saving and contribute at rates sufficient to support financial security later in life. The expansion of defined contribution (DC) plans such as 401(k) plans in the United States, along with the adoption of behavioral “nudges” like auto-enrollment and auto-escalation, has strengthened retirement preparedness for many Americans (Benartzi & Thaler, 2004).

Nevertheless, the process by which retirees spend down their wealth has historically received far less attention from academics, policymakers, and industry. Wealth decumulation decisions, or how to optimize consumption over an uncertain remaining lifespan, are among the most difficult ones that people face. These decisions involve intertemporal tradeoffs, uncertainty, complexity, and emotional considerations, yet individuals often approach them with little formal guidance (Ritholtz, 2017; Shu & Shu, 2018). Many decumulation choices are also difficult to reverse once implemented, which raises the stakes for getting them right. Recent U.S. legislation, including the SECURE Acts of 2019 and 2022, has sought to address some of these challenges by expanding access to retirement income options.

Despite these recent changes, debate persists about the desirability of different retirement income options and how far policymakers and employers should go in shaping individual choices. A central unresolved issue concerns how individuals can secure lifetime income and protect

against outliving their resources, particularly the role of life annuities as a tool for providing guaranteed income.

In this article, a life annuity refers to a product sold by an insurance company in which the consumer exchanges a sum of money for guaranteed lifetime income that may start immediately or at a future date. A large body of economic literature has concluded that consumers should place a high value on annuities, yet in practice, few individuals voluntarily annuitize, a conundrum known as the “annuity puzzle.” There is also a substantial disconnect between the roughly half of consumers who report they would favor buying an annuity to protect against running out of money in retirement and the much smaller share of about 12 percent that actually do (Arapakis & Wettstein, 2024). This gap between stated preferences and observed behavior remains a central motivation for policy and research.

In what follows, we aim to provide policymakers and researchers with a clearer understanding of annuities and the annuity puzzle. We begin with a brief primer on life annuities and their limited use, then review leading explanations for why they have not been more widely adopted by consumers and plan sponsors, and conclude by outlining several potential policy approaches to improving annuity choice.

Defining Annuities and the Annuity Puzzle

In his 1927 textbook on insurance, Solomon Huebner, a Wharton professor and the founder of The American College of Financial Services, wrote:

“The prospect, amounting almost to a terror, of living too long makes necessary the keeping of the entire principal intact to the very end, so that as a final wind-up, the savings of a lifetime, which the owner does not dare to enjoy, will pass as an inheritance to others. In view of these facts, it is surprising that so few have undertaken to enjoy without fear the

fruits of the limited competency they have succeeded in accumulating. This can be done only through annuities. Why exist on \$600, assuming 3% interest on \$20,000, and then live in fear, when \$1,600 may be obtained annually at age 65, through an annuity for all of life and minus all the fear.” (Huebner, 1927, p. 140).

Huebner captured an enduring motivation for annuities: they can reduce fear about outliving savings by converting a stock of wealth into a predictable stream of income that continues for life. His question, “*Why exist on \$600....and then live in fear?*,” frames the behavioral and psychological dimensions of retirement income planning.

Around the time of Huebner’s death, the economist Menahem Yaari formalized this intuition in a lifecycle setting. By incorporating mortality risk into the Ando/Modigliani life-cycle model (Ando & Modigliani, 1963), Yaari (1965) showed that a utility-maximizing consumer with no bequest motives would fully annuitize retirement wealth. The intuition is straightforward: mortality risk pooling allows higher consumption while alive because payments to survivors are partly financed by the forfeited balances of those who die earlier. If consumers place no value on bequests, then shifting resources from states of death to states of survival increases welfare.

Yaari’s modeling assumptions were quite restrictive, and subsequent work showed that many of them can be relaxed without losing the core insight. Davidoff, Brown, and Diamond (2005), for instance, showed that the marginal rate of annuitization remains high under a range of more realistic conditions, even when full annuitization is not optimal. When desired consumption paths diverge from the fixed payouts available in commercial markets, or when liquidity is valuable, the *full* annuitization result can break down, but the case for partial annuities often remains.

The Puzzle

What economists label the “annuity puzzle” is often traced to Franco Modigliani’s 1985 Nobel Prize address:

"It is a well-known fact that annuity contracts, other than in the form of group insurance through pension systems, are extremely rare. Why this should be so is a subject of considerable current interest. It is still ill understood. Adverse selection, causing an unfavourable payout, and the fact that some utility may be derived from bequest are, presumably, an important part of the answer." (Modigliani, 1986, p. 2)

In the decades since Yaari’s article, scholars have proposed many explanations for the annuity puzzle. Some argue the puzzle is more severe than Modigliani suggested, while others argue it is overstated, since many American households already receive annuitized income from Social Security and pensions. Moreover, optimal annuitization varies with preferences, health, and other constraints. Financial economists debate optimal allocation between annuities and conventional assets, while product designers propose new annuity structures intended to address consumer concerns and market frictions. (For other key articles on ‘the puzzle’, see also Davidoff et al., 2005; Benartzi et al., 2011; Inkmann et al., 2011; Pashchenko, 2013).

At first glance, it might seem strange to use the word puzzle given the size of the annuity market. Broadly defined, annuities generate hundreds of billions of dollars in sales annually in the U.S. alone, and insurance companies hold trillions in assets (LIMRA). In practical terms, Americans purchase large volumes of products labeled as annuities every day.

The resolution is that, by the term “(life) annuity,” economists mean something very specific: a stream of income payments that are conditional on the policyholder’s survival. That is, unlike some other types of annuities, it provides income that continues for as long as the individual lives. In this sense, Social Security programs and defined benefit (DB) pensions are life annuities.

In industry and regulation contexts, however, the term annuity is a legal classification that includes a wide range of products, many of which have little or no active lifetime income component. For example, the U.S. Internal Revenue Service (IRS) defines an annuity as “a series of payments under a contract made at regular intervals over a period of more than 1 full year” (IRS, 2025). Notice that this definition says nothing about life-contingency.

Several modern annuity products also embed derivative securities or structured-crediting features, intended to protect from adverse outcomes associated with a bear market just before or soon after retirement. They can be thought of as investments with downside protection, which is valuable but a distinct benefit from the pooling of mortality risk.

In this paper, we focus on products with a lifetime income component. We will often use the term “life annuity” to emphasize this feature, and unless otherwise stated, “annuity” will refer to products in which payouts are contingent on survival.

When economists discuss the annuity puzzle, they are referring to the fact that only a small fraction of the dollars flowing into the broadly defined annuity category is directed toward products that lock in guaranteed lifetime income. For example, the simplest form of such a contract is the single-premium income annuity (SPIA), in which a lump-sum premium is exchanged for a guaranteed stream of monthly income that begins immediately and lasts for life. SPIA sales are only about \$15 billion per year, compared with \$500 billion for other annuity types (CANNEX, 2025). Moreover, at least 60% of SPIA buyers elect refund features (e.g., return-of-premium guarantees) that reduce mortality pooling and thereby limit the amount of pure longevity insurance purchased.

In that sense, the puzzle remains a conundrum worthy of policymakers' attention: Why are people reluctant to enter into mortality risk-sharing agreements? When they do annuitize, why are

they often demanding money-back guarantees at death, which reduce risk-sharing? Should consumers be encouraged to obtain longevity insurance, and if so, how could this be done? These are precisely the types of questions where behavioral science can make meaningful contributions.

How Can Consumers Purchase Annuities?

For purposes of this paper, we define a life annuity as a financial tool that provides consumers with a stream of income that continues for as long as the policyholder lives. This includes benefits paid by the U.S. Social Security system, as well as lifetime benefits paid from traditional Defined Benefit (DB) pension plans. The latter are still prevalent in the public sector, though they have become increasingly rare in the corporate sector.

Except for those provided by Social Security and many DB plans, life annuity products are offered by insurance companies (at least in the U.S.), which are responsible for product design, pricing, issuance of contracts, ongoing administration, and management of reserves backing guarantees. Insurance companies are regulated primarily at the state level: each state insurance department oversees insurer solvency, enforces actuarial and reserving standards, and approves annuity contracts before they may be sold within that jurisdiction.

There are two main avenues for a consumer to gain access to an annuity product. The first are life annuities made available through employer-sponsored plans, such as 401(k) or 403(b) plans. The second are life annuities sold directly to individuals. These are meaningfully different systems, governed by different regulatory regimes and offering different product designs.

The history of defined contribution plans, such as the 401(k), is that they started out as supplementary savings vehicles rather than retirement plans *per se*. This history, along with the lack of strong consumer demand and a regulatory and fiduciary environment that discouraged plan sponsors from offering them, led to annuities being absent from most 401(k) plan designs. In contrast, annuities have played a much larger role in the 403(b) market serving the not-for-profit sector, with providers such as TIAA offering annuity options to plan participants.

On the retail side, the market is fragmented and complex. The annuity puzzle is often framed as a failure of consumers to voluntarily annuitize wealth, but it is notable that, in practice, the decision to purchase an annuity is often shaped by, or even initiated by, a financial professional. Many consumers rely heavily on advisors or agents to help them solve the problem of generating retirement income, shifting the locus of decision-making away from the consumer alone. Sitting between the insurance company and the advisor can be an array of intermediaries, such as wholesalers, whose role is to educate and support financial intermediaries rather than sell directly to consumers. In this system, wholesalers shape which products are understood, emphasized, and ultimately offered, while advisors frame how annuities are positioned within a broader financial plan. The roles, attitudes, and practices of wholesalers and advisors in this process would be a rich area for future research, as there is little empirical evidence on how they influence it.

Types of Annuities

Annuities differ along two primary dimensions: when income begins and how returns are generated. An *immediate annuity* is one that begins making payments shortly after the product is purchased. A *deferred annuity* is one that has payments starting at some future date. A *fixed annuity* is intended to provide a fixed return before payments begin, or a guaranteed income level after

payments begin. A *variable annuity* has returns or payouts linked to an underlying portfolio of risky assets.

This two-by-two product grid yields a variety of products, each with its own nomenclature (and acronyms) in the industry. Adding to the confusion is that companies often give their products branded names for marketing purposes, which increases market complexity and makes it seem as if dozens, if not hundreds, of products are available.

For example, a Single Premium Immediate Annuity (SPIA) is a product for which an individual pays a lump-sum premium in return for the (nearly) immediate start of monthly payments that last for life. These products have been the subject of numerous academic studies on pricing (e.g., Mitchell et al., 1999).

The way products are discussed in the market does create confusion. For example, the term “Variable Annuity” is most often associated with products that are deferred and that are rarely ever converted to an income stream, despite having the option to do so. As such, in practice, they often operate like a mutual fund within an insurance contract, serving primarily as an accumulation device with potential tax advantages.

Not all products fit neatly into the 2x2 matrix described. For example, the most popular offering in the retail market is one that provides longevity insurance, giving consumers the option for guaranteed income, referred to broadly as the “income benefit.” The predominant form of income benefit is the Guaranteed Lifetime Withdrawal Benefit (GLWB), a contractual provision in the annuity that ensures the consumer can take systematic withdrawals from the contract and receive income for life, even if the contract's cash value depletes. The GLWB imposes rules and provisions (often complex), regarding the amount of the income guarantee and the withdrawals permitted under the contract. Before the individual begins taking withdrawals, the GLWB is an option for future income that allows contract growth and simultaneous protection of future income. Many owners end up never taking withdrawals and thus never exercise the option.

How do consumers make decisions about annuitization?

For policymakers and plan sponsors seeking to influence annuitization decisions, understanding the sources of observed behavior is essential. If retirees are already optimizing given their constraints and available products, behavioral nudges may be unnecessary or even counterproductive. If limited take-up instead reflects supply-side or institutional barriers, reducing those frictions may be more effective. When suboptimal choices stem from cognitive limitations and behavioral biases, decision design interventions may offer greater promise. In what follows, we group explanations for the annuity puzzle into three categories: rational optimization, institutional constraints, and behavioral impediments.

Why People May Rationally Choose Not to Annuitize

Several economic factors can rationalize limited annuity demand even in the absence of behavioral frictions.

Bequest Motives and Family Risk-Sharing

Standard lifecycle models often abstract from bequest motives, yet many households value retaining liquid assets to leave to heirs. Empirical evidence on the strength of bequest motives is mixed (Hurd, 1987; Brown, 2001), though some work suggests they can meaningfully reduce annuity demand (Lockwood, 2012). Even when explicit bequests are not a priority, informal family risk-sharing arrangements can partially substitute for formal annuities (Kotlikoff & Spivak, 1981; Brown & Poterba, 2000).

Liquidity and Flexibility

Many annuity product purchases are fully or partially irreversible, a feature that helps insurers manage adverse selection as individuals learn about their mortality over time. For retirees facing uncertain expenses, such as medical shocks or long-term care costs, this illiquidity can be costly. In incomplete markets, liquidity needs can make partial annuitization more attractive than full annuitization (Davidoff et al., 2005). Partial annuitization allows retirees to balance the tradeoffs between access to savings for unexpected expenses and the security of guaranteed lifetime income.

Pre-Existing Public Annuities

Social Security already provides a substantial stream of guaranteed lifetime income, particularly for households lower in the income distribution, and may satisfy much of the demand for longevity insurance for many retirees.

Option Value of Waiting

Delaying annuitization can sometimes be optimal because it preserves the option value of waiting if the income is not yet needed for immediate consumption. Postponement allows individuals to incorporate new information about health, interest rates, and longevity expectations before making an irreversible commitment (Milevsky & Young, 2007).

Heterogeneous Preferences and Uncertainty

Heterogeneity in preferences and consumption needs can reduce demand for standard annuity products. Desired consumption may decline with age or vary with health in ways that do not align well with the payout structures of commercially available products (Davidoff et al., 2005).

It may also be that consumers simply do not want what insurers have to offer, as happens in many markets. If that, plus all the factors above, fully accounted for the low observed demand, limited annuitization would not necessarily signal a market failure. Nevertheless, they do not tell the full story. Institutional constraints and market frictions also appear to play an important role in limiting take-up.

Institutional Barriers that Constrain Optimal Decisions

Institutional and market frictions further constrain annuity take-up.

Pricing and Adverse Selection

Adverse selection raises prices and reduces value for average retirees, as individuals with longer life expectancy see more value and are thus more likely to purchase annuities. These higher prices make annuities less attractive to the average retiree.

Incomplete or Imperfect Markets

Real-world annuity markets are incomplete. Common products provide only partial insurance: nominal annuities fail to hedge inflation, variable annuities expose retirees to market

risk, and state-contingent payouts, such as higher income in long-term care states, are rarely available despite clear demand.

Default Risk

An annuity is a long-term contract, so payments depend on the insurer's ability to pay claims over many decades. Although state guaranty associations in the U.S. offer meaningful protections, these safeguards are not well-advertised and do not entirely eliminate default risk.

Employer Constraints

On the supply side, many employers are reluctant to offer annuities due to fiduciary concerns, including potential liability if an insurer later fails or product costs are challenged. A common theme of these considerations is that policymaker interventions could have a positive impact by providing consumers (especially those who want to optimize) with more choices.

Behavioral Impediments that Sub-Optimally Limit Demand

Finally, in addition to the numerous rational and institutional barriers listed above, the past two decades have produced a burgeoning behavioral literature that casts significant doubt on any claim that observed behavior in this setting is consistent with rational agents optimizing their decisions. As this evidence grows, it strengthens the case for using policy and plan design interventions to nudge behavior and overcome cognitive and decision-making biases.

Framing and Mental Accounting

A central theme in the literature is that consumers often evaluate annuities using inappropriate mental frames (Agnew et al., 2008). For instance, people tend to focus on the chance of “losing” principal when they die, rather than on the insurance value of having lifetime income protection. When the same products are framed as consumption insurance, willingness to annuitize increases substantially (Brown et al., 2013). The mere fact that people are so sensitive to how

information is framed rather than to the information itself suggests that a large fraction of the population is not optimizing.

Loss Aversion and Reference Dependence

People's loss aversion and reference dependence further discourage annuitization. The upfront premium required to purchase an annuity may be perceived as a loss relative to salient reference points, even when expected lifetime utility gains are positive (Hu & Scott, 2007). Furthermore, retirees who have worked for decades to build a healthy retirement savings balance are likely to feel strong ownership and endowment over those balances, making the transfer of these funds to an insurance company in exchange for an annuity highly uncomfortable. The combination of high ownership and high loss aversion at the moment of annuity purchase contributes to a concern that the products are unfair regardless of the potential payback (Shu et al., 2018).

Complexity and Cognitive Constraints

Cognitive constraints may also play a role. Many individuals struggle to evaluate long-term payment streams, and large gaps between willingness-to-buy and willingness-to-sell valuations are systematically associated with lower financial literacy and numeracy, patterns inconsistent with fully rational decision-making (Brown et al., 2013, 2021).

Present Bias

Present-biased preferences can deter annuitization because costs are immediate while benefits accrue far in the future, helping to explain observed age gradients in expressed preferences for guaranteed income (Laibson, 1997; Schreiber & Weber, 2016). Retirees at age 65 may find it hard to imagine what their income needs will be at age 95. Hyperbolic discounting can also predict

why younger individuals prefer annuitized wealth to a lump sum more strongly than older individuals (Schreiber & Weber, 2016).

Anchoring and Instability of Preferences

Experimental evidence shows that annuity valuations depend on the initial numbers that are presented (anchor values), such as recommendations, or even historical regulatory benchmarks (Hurwitz et al., 2020). This sensitivity to arbitrary starting points suggests that preferences are constructed and unstable rather than fixed (Hurwitz et al., 2020; Simon, 1955).

Mispredictions of Uncertain Outcomes

People are often poor at predicting probabilities of future outcomes, especially at the tail ends of the probability spectrum (Kahneman & Tversky, 1979). These mispredictions can be important for retirement uncertainties, such as health or economic shocks, and especially for predictions of longevity, where the chances of living beyond 90 or 100 can be small but impactful. A retiree who underpredicts the chances of a long life is likely to underannuitize.

Status Quo and Inertia

As with savings plan participation, inertia and status quo bias matter for annuitization decisions. When lump sums are the default option, annuitization rates are substantially lower even when annuities are readily available. Institutional features, such as Required Minimum Distribution rules, may therefore serve as implicit defaults that guide decumulation behavior (Brown et al., 2025).

Taken together, although rational factors and market frictions do explain part of the annuity puzzle, growing evidence indicates that cognitive limitations and behavioral biases also play a meaningful role.

As a result, improving annuity take-up may require not only better pricing and product design, but also better framing, education, and defaults to assist boundedly rational consumers.

Approaches to Addressing Longevity Risk

As we have shown, lifetime annuities are theoretically attractive, yet low adoption rates suggest that barriers to adoption remain substantial. Survey evidence also suggests that many older Americans regret not having purchased annuities, highlighting the consequences of this gap (Hurwitz & Mitchell, 2025a). Closing it will likely require interventions on both the demand and supply sides, including improving financial and longevity literacy and changing product design, default terms, and delivery channels. Policy plays a central role by shaping the regulatory environment, and mandates have been used in countries such as Singapore and Israel (Fong & Li, 2022; Hurwitz et al., 2020). At the same time, many practical advances have emerged from industry innovation and could be further accelerated.

In the sections that follow, we offer a range of potential solutions to increase retirees' use of longevity insurance, therefore improving retirement sustainability and well-being. In doing so, we focus on 1) industry initiatives that address rational demand factors, 2) policy interventions that reduce institutional barriers, and 3) consumer-facing approaches designed to mitigate behavioral impediments. Note that barriers at the institutional level require responses not just from industry stakeholders but also from policymakers, which is why we suggest solutions at both levels, even though they address the same underlying barrier. Table 1 summarizes all suggestions.

Industry Solutions

Industry design choices can strongly influence annuitization outcomes across a continuum from mandatory to voluntary. At one end of the spectrum, some retirement systems require partial annuitization. In Singapore, for instance, the Central Provident Fund requires that a portion of

workers' accumulated balances be converted into lifelong income (Fong et al., 2011), and Israel's occupational pension system similarly requires that part of people's retirement contributions be used to buy lifetime income benefits, while preserving flexibility for remaining assets (Gavious et al., 2009). Such mandates ensure a baseline level of longevity protection but can reduce welfare for individuals in poor health. They have also proven politically fragile, as illustrated by the United Kingdom's elimination of mandatory annuitization in the early 2010s.

Less coercive approaches rely on defaults rather than mandates. Default annuitization can substantially increase take-up by leveraging inertia, as seen in Sweden's national pension system and in many Swiss occupational plans (Bütler & Teppa, 2007; Hagen et al., in press). At the same time, defaults may disadvantage individuals with poor health by dampening their responsiveness to private information about mortality risk.

Product design can also balance flexibility and insurance. Deferred annuities that begin payments at advanced ages preserve liquidity early in retirement while providing protection against very old-age poverty, with research documenting substantial welfare gains at relatively low cost (Horneff et al., 2020, 2025). Because irrevocability remains a major deterrent, some proposals emphasize greater reversibility, including time-limited trial periods. Empirical evidence suggests limited experimentation with such designs, though notable examples exist, such as TIAA (Gale et al., 2008; Brown, 2026).

Modifications that address concerns about bequest, regret, and loss aversion can also increase demand. Refundable income annuities, including cash-refund and installment-refund variants, reduce the perceived risk of "losing" principal at early death, though they weaken risk pooling and lower payouts (Brown, 2009; Milevsky & Salisbury, 2022; van Boxel et al., 2024).

Experimental evidence further indicates that consumers often overvalue period-certain features, potentially reducing welfare (Shu et al., 2016).

Finally, incomplete markets remain a constraint on adoption. Inflation-linked annuities, while widely viewed as desirable for protecting purchasing power, are often scarce and expensive. Even when available, high prices can materially suppress demand (Beshears et al., 2014; Peijnenburg et al., 2016).

Policy Solutions

The dominance of DC over DB plans highlights the long-term shift in responsibility for retirement income security from employers to employees. Most individuals are ill-equipped to plan for their own retirement income. While the rise of defaults has reduced barriers to saving and increased wealth accumulation, many workers are still left to manage retirement income decisions on their own.

For instance, automatic enrollment, automatic escalation, and default investment options, most commonly implemented through target-date funds, have been particularly effective in raising savings rates, especially among workers with lower financial literacy. These successes motivate interest in applying similar design principles to decumulation. Nevertheless, greater irreversibility and substantial heterogeneity in retirement circumstances mean that decumulation defaults require more careful design.

Employers currently have little incentive to support decumulation solutions like annuities, and, until recently, were even overtly discouraged from doing so by outdated regulatory standards that imposed a very high fiduciary burden on selecting an annuity provider, a burden that could be entirely avoided by simply allowing participants to fend for themselves.

The improvement of retirement security through increased use of life annuities has received greater bipartisan support in recent years (Umpierrez, 2026). The focus for these efforts has been on measures to increase participant access to annuities within the defined contribution system, both during accumulation and at retirement. As a result of this focus, in the discussion that follows, we primarily spotlight opportunities to overcome barriers to employer adoption and to improve the access and ease with which retirees can begin receiving lifetime income.

Policy and Regulatory Actions

Under the Employee Retirement Income Security Act (ERISA), plan sponsors are responsible for prudent selection of plan investments, including annuity providers, and litigation risk has made many sponsors cautious. Although qualified default investment alternative (QDIA) safe harbors helped accelerate the adoption of target-date funds, progress on annuity integration has been slower.

The prevalence of litigation over retirement plan benefits has made many employers skittish about investment selection, particularly when it comes to the default investment for contributions made by participants who don't choose an alternative, which is most of them. The qualified default investment alternative (QDIA) creates a safe harbor that has accelerated the use of target date funds and grown the category to \$4.7 trillion (Randall, 2025).

While the QDIA does not explicitly permit annuities, guidance from the U.S. Department of Labor (DOL) clarifies that annuities may be included in the default so long as they otherwise meet the requirements. Nevertheless, the industry continues to demand additional safe harbors, guidance, and certain technical regulatory fixes to make annuities work better within retirement plans. In December 2025, the largest provider of QDIA products – Vanguard – announced a

partnership with the largest private sector provider of life annuity products – TIAA – to include life annuities as a replacement for part of the fixed income sleeve of Vanguard target date funds in the decade or so prior to retirement.

The DOL’s Employee Benefits Security Administration took the approach of including lifetime income with target date investments in a 2025 Advisory Opinion that clarifies the use of the income benefit as a valid component of a QDIA and reinforces the idea that an investment manager can serve as the fiduciary selecting and monitoring the insurer and product (U.S. Department of Labor, Employee Benefits Security Administration [EBSA], 2025). The Advisory Opinion reinforces existing practice and further allays concerns about risk to fiduciaries using such products. It is worth noting that participants are persistently confused about how target date funds work, to the extent that three-quarters believe that target date funds already provide guaranteed income (MFS Investment Management, 2025). Thus, to some extent, the idea of combining target-date funds with lifetime income annuities helps fill a gap between consumer expectations and the reality of financial products.

From another perspective, the prevalence of QDIAs and reliance on investment defaults to improve outcomes for disengaged workers means that the failure to connect the annuity to defaults would effectively remove the annuity from the radar for many. To address this deficiency, we focus on leveraging defaults to improve both access to and use of lifetime income for retirement plan participants.

Annuity Defaults

Defaults have been proposed as a way to increase annuitization, building on evidence that automatic enrollment substantially increased retirement plan participation (Madrian & Shea,

2001). Because annuitization decisions are more difficult to reverse than contribution choices, default design in this context requires additional safeguards. Recent research shows that defaults need not force immediate annuitization to deliver meaningful welfare gains. Deferred annuity structures that preserve liquidity early in retirement while providing protection at advanced ages can substantially improve outcomes at relatively low cost, highlighting how carefully designed defaults can balance flexibility and insurance (Horneff et al., 2020, 2025).

One policy approach involves expanding regulatory safe harbors to support a broader range of retirement income options, both guaranteed and non-guaranteed, while pairing defaults with targeted education for participants approaching retirement. Another focuses on establishing safe harbors for default distribution pathways at retirement, with defaults tailored to observable participant characteristics such as account balances, salary, or other proxies for retirement needs. Policy could also build on experience with Qualified Default Investment Alternatives by amending QDIA rules to encourage, or potentially require, the inclusion of at least one distribution-oriented default option.

These policy directions align with a growing product ecosystem that integrates investment management and guaranteed income features within QDIA-compatible structures. As this category continues to evolve, it may provide a practical foundation for implementing annuity defaults in ways that balance protection, flexibility, and heterogeneity across retirees.

There is an interesting and diverse array of products that combine annuities with investments to deliver a QDIA-eligible portfolio. These concepts will continue to evolve within the bounds of current safe harbors and product restrictions.

A Partial Annuitization Default

Horneff et al. (2025) have proposed that defaulting 20% of one's 401(k) balance over a threshold level at age 67 provides a "pretty good" level of lifetime income. Their study modeled the preferences of a variety of workers differentiated by sex and education, and it concluded that this was a reasonable way to balance the needs of various groups, although policy could allow further segmentation based on worker characteristics.

Trial Periods and Exit Options

Many retirees choose annuity features that include death benefits, such as return-of-premium provisions¹, particularly in plan-based settings. Some retail products also allow commutation, permitting the exchange of future payments for a discounted lump sum (Finke & Toland, 2025). A limited, underwritten exit window could help alleviate concerns about irrevocability without undermining the fundamental insurance nature of annuities by treating them as fully reversible.

Recordkeeper and Plan Sponsor Implications

Since modern-era annuity solutions for defined contribution plans entered the market over a decade ago, it has been clear that a long, incremental path of regulatory and legislative actions would be necessary to turn the tide toward annuity adoption. Retirement plan fiduciaries seek guidance and clarity even within the existing safe harbors.

At the same time, the gradual improvements in technology and connectivity are creating a more robust ecosystem that will ultimately better support the accumulation of annuity income across multiple employers. As romanticized as the historical defined benefit (pension) options have

¹ A return of premium death benefit is a life insurance feature that pays the policy beneficiary the total premiums paid, typically in addition to or instead of the policy's stated death benefit, if the insured dies. Horneff et al. (2025) use a life-cycle model to show that such money-back guarantees are costly for retirement savers and that for many retirees abandoning them could raise old-age consumption without hurting pre-retirement consumption.

become, a single-employer benefit does not align with work lifecycles in which individuals transition through multiple careers and workplaces.

The marketplace recognizes the obvious fact that participants rarely choose annuity income, even when offered, even though many of surveys of retirement plan participants demonstrate that a large majority of want guaranteed lifetime income (e.g., 86% want a steady stream of income, Allianz Center for the Future of Retirement, 2025; 93% think it's important for a plan to offer an annuity option, Nuveen & TIAA Institute, 2025; 90% like the idea of guaranteed income as part of their plan, J.P. Morgan Asset Management, 2024).

Behavioral Solutions

Consumer-facing interventions represent the third prong of efforts to improve retirement income decisions. Decumulation differs from accumulation in ways that fundamentally shape intervention design. Namely, accumulation decisions are typically made earlier in life and often without professional guidance: defaults, simple rules of thumb, and self-directed choices dominate. Since employees, employers, financial institutions, and policymakers all generally agree that more retirement savings is better than less, incentives are well aligned to put “one size fits all” solutions into place that encourage more saving. By contrast, decumulation decisions occur later in one's career, and the vast majority of annuity purchases occur through financial intermediaries. Industry data indicate that a vast majority of retail annuity sales involve an advisor, broker-dealer representative, or insurance agent, rather than direct-to-consumer channels (LIMRA, 2025). Furthermore, because every retiree's situation differs based on health, family, and financial constraints, one-size-fits-all solutions such as defaults and rules of thumb are not always appropriate. Each individual requires a customizable solution that fits their personal situation.

Incentives among all the involved parties are not necessarily aligned, or in the case of former employers, even relevant.

These differences matter. While behavioral solutions for accumulation problems can be delivered largely in a “Business-to-Consumer” format, aimed directly at individuals, behavioral solutions for decumulation may need to operate more as “Business-to-Business-to-Consumer” interventions – supporting advisors, educators, and the salesforce so that they, in turn, can guide consumers effectively. These decumulation guides need to be sensitive to the level of personalization required for each customer to best meet individual needs. Since not all individuals can afford an unbiased advisor to guide them through an annuity purchase, the balance between personalized solutions and low-cost guidance remains a significant challenge in addition to the specific individual differences among customers as listed below.

Financial Literacy

One set of interventions would involve enhancing financial and longevity literacy, as low levels of financial literacy remain a major impediment to effective retirement planning (Lusardi & Mitchell, 2024). This ability is especially important for annuities, given the complexity of the decision process required (Brown et al., 2021). Although evidence on whether general financial literacy increases annuity demand is mixed, annuity-specific knowledge appears to be positively associated with annuity demand (Goedde-Menke et al., 2014; Hurwitz & Mitchell, 2025b).

Firms and insurers can support market development by offering accessible financial education to individuals approaching retirement. Programs such as workplace seminars, interactive online tools, and standardized income projections can help consumers translate their savings into expected monthly income streams and better recognize the value of longevity protection they might otherwise overlook.

Longevity Literacy

A closely related concept is longevity literacy, the understanding of survival probabilities and the financial implications of living longer than expected. Prior research indicates that individuals often hold systematic biases in their longevity expectations. For example, Heimer et al. (2019) report that younger individuals tend to underestimate their survival probabilities, whereas older individuals often overestimate them. Similarly, Wu et al. (2015) find that people's subjective life expectancies frequently diverge from actuarial estimates across age groups. Another common bias is over-optimism: smokers, for example, often have overly optimistic views of their own life expectancy (Hurwitz & Sade, 2020). Longevity perceptions are further shaped by framing effects, particularly whether expectations are presented in a "live-to" or "die-by" format (Payne et al., 2013). These misperceptions can result in insufficient saving and reduced annuity demand.

As a result, providing information about longevity risk can reduce survival ambiguity (Daminato & Gemmo, 2025) and increase annuity demand, particularly when education explicitly links survival probabilities to income sustainability over retirement (Hurwitz et al., 2022; Yakoboski et al., 2023).

Framing

Decades of behavioral economics, psychology, and marketing research indicate that how choices are framed affects how they are perceived. In the annuity space, because annuities are often discussed in conversations with financial advisors, consumers may mistakenly view them as part of their investment portfolio. As an investment, however, annuities may appear inferior given their relatively low rate of return. But, because annuities are meant to act as insurance against outliving one's savings, they may be better received when framed as such. Indeed, prior work has found that people are willing to pay extra for certainty (Kahneman & Tversky, 1979). What's

more, when annuities were framed as an investment, hypothetical take-up was considerably lower (21% compared to similar products). But when annuities were framed in a consumption frame in terms of the spending power they could produce, hypothetical take-up was much higher (70% compared to similar products; Brown et al., 2008).

Combating Present Bias

Prior research has found that when the future is made more vivid or salient, motivations for accumulation are heightened. For example, when lab participants and real consumers were presented with age-progressed images of their future selves, they were more likely to want to, and ultimately, follow through on increasing their saving rates (Hershfield et al., 2011; Robalino et al., 2023). Thus, one way to combat present bias and help consumers better anticipate their needs not only on the first day of retirement, but in all the years that follow, is to enhance the salience and vividness of their later selves when they are offered annuities (e.g., by drawing out a detailed narrative about what life in retirement could look like).

Perhaps counterintuitively, another mechanism for combating present bias is precommitment. Just as setting an alarm clock at night helps fight the urge to sleep longer the next morning, precommitting to a retirement-income strategy can overcome the frictions of making a decision at the point of retirement. Research regularly shows that individuals are more interested in the concept of annuities when they are in their 40s, decades before retirement, than they are in their 60s (Schreiber & Weber, 2016; Shu et al., 2016), possibly because they have not yet built up strong feelings of ownership and potential loss aversion toward the retirement savings that would be required to purchase an annuity. Allowing purchase over time through smaller, regular payments that start during working years, rather than a large lump-sum payment at the point of

retirement, avoids the problems of loss aversion and psychological ownership and allows precommitment to a lifetime income solution.

Simplification

Decumulation decisions, as noted throughout, are complex. To reduce the likelihood that consumers defer from the decision-making process simply because it is too onerous, we suggest that the decision process itself be as simple and straightforward as possible. More concretely, beyond defaulting consumers into “pretty good” annuities, as discussed earlier, financial intermediaries may wish to simplify the menu of annuity options, potentially defaulting consumers to a default option most relevant to a target group.

Information Display

Because valuing a future stream of income is inherently difficult, and because consumers may inadvertently think that their nest eggs will be adequate when they are not in reality (Goldstein et al., 2016), it may be helpful to display annuity payouts in specific ways. Items to be considered would include 1) the monthly stream of income they will generate, 2) the portion of a consumer’s current monthly expenditures that that stream would cover, and 3) the retiree’s remaining gap after Social Security payments are taken into account. By doing so, consumers may be better able to visualize how payouts from an annuity purchased earlier in life will help them maintain their anticipated standard of living later in life.

Information display can also be useful for highlighting various attributes of annuities that are obscured when focusing only on the monthly payment amount. For example, showing the cumulative payment amount based on various life expectations can highlight the longevity insurance aspect of the product, and highlighting how payments are affected by annual inflation adjustments and period certain guarantees can lead to those attributes being valued more closely

to their expected value (Shu et al., 2016). Information may also be useful for increasing consumer understanding of how the annuity market operates, especially the aspect of sharing longevity risk through the pool of other annuity holders. Concerns about perceived unfairness of annuities are a strong predictor of which individuals are uninterested in annuities (Shu et al., 2018) but individuals who understand their shared risk model are more interested in them (Hurwitz et al., 2022; Hurwitz & Mitchell, 2025; Shu et al., 2018).

Conclusion

In this paper, we have pursued two objectives. First, we outlined the purpose and historical development of life annuities as longevity insurance to provide income for as long as the policyholder lives, reducing the risk of outliving savings through the pooling of mortality risk. Second, we examined key features of the modern annuity market, including how products are designed, distributed, and understood by consumers.

Beyond this, we have also explained why life annuity take-up rates remain below theoretical predictions, a phenomenon often referred to as the annuity puzzle. We grouped the leading explanations for this puzzle into three categories: rational factors that reduce optimal demand, institutional barriers that constrain choices, and behavioral impediments that distort decision-making. We then outlined potential solutions in each category, including product innovation, regulatory safe harbors, default structures, and behavioral interventions targeted at consumers and intermediaries.

The solutions we have offered will not work in isolation from one another. Structural reforms can expand access, and defaults can move behavior toward “pretty good” outcomes, but long-run success will depend on whether those defaults become widely accepted, as well as

whether participants engage sufficiently to make decisions better aligned with their individual circumstances. Addressing behavioral barriers requires designs that reduce loss concerns, make the probability and consequences of a long life salient, highlight the value of income security over long horizons, and recognize emotional goals such as protecting family members.

Creating more effective retirement income choice environments will require coordination among employers, insurers, advisors, regulators, and policymakers, even when incentives are imperfectly aligned. No single innovation or regulatory change will reliably deliver the outcomes predicted by idealized economic models. Meaningful progress will instead depend on a combination of education, carefully designed nudges, and continued innovation in products and choice architecture.

Table 1. Summary of Proposed Changes to Increase Annuitization Rates

Category	Solution	Description
Policy	Expanded Regulatory Safe Harbors	Broaden QDIA rules and fiduciary safe harbors so that plan sponsors can include annuity options in default investment pathways without excessive litigation risk.
	Annuity Defaults	Leverage inertia by defaulting a portion of retirement assets into annuities at retirement. Research suggests that defaulting 20% of people’s 401(k) plans at age 67 (above a threshold) provides “pretty good” lifetime income for a diverse range of retiree profiles.
	Default Distribution Pathways	Establish safe harbors for default payout options at retirement, tailored to participant characteristics such as account balance, salary, and retirement needs.
	Annuity-Integrated QDIAs	Encourage or require inclusion of lifetime income components within Qualified Default Investment Alternatives (e.g., embedding annuities in target-date funds approaching retirement).
	Trial Periods and Exit Options	Permit limited, underwritten exit windows or commutation options that alleviate irrevocability concerns without undermining the risk pooling function of annuities.
Industry	Default Annuitization	Use defaults rather than mandates to increase annuity take-up within retirement plans, leveraging participant inertia as demonstrated in Sweden and Swiss occupational systems.
	Deferred Annuities	Offer annuities that begin payments at advanced ages, preserving liquidity in early retirement while providing low-cost protection against late-life poverty.
	Reversibility Features	Design products with time-limited trial periods or commutation options, allowing consumers to exchange future payments for a discounted lump sum if circumstances change.
	Refundable Annuities	Include cash-refund or installment-refund provisions that reduce the perceived risk of “losing” principal at early death, addressing bequest concerns and loss aversion.
	Inflation-Linked Annuities	Develop annuity products with payouts indexed to inflation, protecting purchasing power over long retirements despite higher upfront costs.

Consumer Behavior	Financial Literacy Education	Provide financial education on longevity risk and the protective role of annuities through workplace seminars, online tools, and standardized income projections to help consumers translate savings into expected retirement income.
	Longevity Literacy	Educate consumers about longevity risk and the financial implications of living longer than expected, reducing survival ambiguity and increasing demand for longevity insurance.
	Consumption Framing	Present annuities as consumption insurance rather than investments, emphasizing the spending power and income security they provide rather than rates of return.
	Future Self Salience	Combat present bias by making the future self more vivid and salient at the point of decision, using techniques such as age-progressed imagery and detailed retirement narratives.
	Precommitment	Allow gradual annuity purchases through smaller regular contributions during working years, bypassing loss aversion and psychological ownership that can be triggered by a large lump-sum exchange at retirement.
	Simplification	Reduce the complexity of the annuity decision by streamlining product menus and defaulting consumers into a well-suited option for their target group.
	Information Display	Present annuity payouts in terms of monthly income, coverage of current expenditures, and the gap remaining after Social Security, helping consumers visualize the product's value over the full span of retirement.

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